MENTAL REPRESENTATIONS OF ATTACHMENT:

IMPLICATIONS FOR

HEALTH-PROMOTING BEHAVIOR

AND PERCEIVED STRESS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for

the Degree Doctor of Philosophy in the Graduate

School of the Ohio State University

By

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* * * * *

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DEDICATION

To my mother, Martha J. Reed Hoopengardner (1911 - ) who gave me roots, and my father Adrian Deam Hoopengardner (1906 - 1993) who gave me wings.
ACKNOWLEDGEMENTS

Many people have contributed to the development and completion of this work.

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And, finally, to my husband Bob, my unending love and thanks for your confidence in me, and to our children Andrew, Rob, Joy, Julie and Paul your support and patient endurance has made the difference.
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CHAPTER I

INTRODUCTION

Background and Significance

Attachment theory is rapidly taking a leading role in research on the development of emotions, self-esteem, and mental health across the lifespan. John Bowlby (1969, 1973, 1980) began formulating this theory in the 1950's from observations that showed the detrimental effects of institutional care on infants and young children.

These studies, together with the work of Mary Ainsworth and her colleagues beginning in the 1960's (Ainsworth & Wittig, 1969; Ainsworth, Blehar, Waters, & Wall, 1978; Ainsworth, 1991), contributed to the identification of three possible patterns of infants' attachments to their primary caregivers and the conditions that promote them. These patterns are described as 1) secure attachment, the pattern that promotes healthy emotional development and the one in which the child feels loved and develops confidence in the responsiveness of the primary caregiver, 2) anxious-resistant attachment, a pattern believed to result from inconsistent availability of the parent, causing uncertainty in the child, a tendency toward separation anxiety, and anxious concern in the exploration of his world, and 3) anxious-avoidant attachment, the result of the child being constantly
rebuffed, leading him to lack confidence that his caregiver will respond helpfully, therefore necessitating the development of self-sufficiency, and learning to live without the love of others.

Bowlby (1969, 1973) theorized that internal working models of attachment relationships, developed within the context of early interaction with caregivers, operate as sets of rules that, at an unconscious level, either allow or restrict access to attachment-related information. This information involves not only mental representations of attachment relationships, but also includes mental representations of the self, the environment, and others that are significant to the self. Behavior and feelings are believed to be guided by these rules, as well as memory, attention, cognition, and appraisal of experience (Cicchetti & Aber, 1985).

Bretherton (1985) has observed that it is perhaps in Bowlby's concept of internal working models of the attachment figure and the self where the construction of the child's self-concept and self worth first begins. Within the close interaction of this dyadic experience, the child constructs representations of the attachment figure as either responsive and comforting, or unresponsive and rejecting. It is also proposed that the child's internal working model of himself will be developed through this interaction, thus coming to view himself as worthy or unworthy of comfort, protection and care.

Over the past decade, increasing numbers of studies have found significant results linking the quality of early infant-caregiver attachment relationships to later resilience or vulnerability in social and emotional development. These findings
have been demonstrated in infants (Benoit, Zeanah & Barton, 1989; Main &
Goldwyn, 1984), pre-school age children (Sroufe, Egeland, & Kreutzer, 1990),
school age children (Cassidy, 1988), adolescents (Kobak & Sceery, 1988), college
age students (Kenny, 1987), and in adults (Crowell & Feldman, 1989). In
addition, Grossman and Grossman (1990) have reported similar findings from
studies of attachment theory in several cultures in countries other than the United
States.

Early research on attachment phenomena focused primarily on the
experience of infants and children, however, in the last ten years, adults have been
brought into this developing theory. The measurement of mental representations
of attachment relationships in adults has been pioneered by Mary Main and her
colleagues (Main & Goldwyn, 1984; Main, Kaplan & Cassidy, 1985). The Adult
Attachment Interview (AAI) (George, et al., 1985) is a structured interview that
assesses the subjects' current thinking with regard to early relationships with their
parents. The scoring of this interview involves verbal descriptions, memories that
support or contradict the experiences described, and the subjects' appraisal and
coherency of thought in discussing these early relationships.

Main, Kaplan & Cassidy (1985) have identified three categories of
attachment patterns in adults that correspond to Ainsworth's childhood attachment
classifications of secure, insecure-avoidant and insecure-resistant. Adults classified
as secure (having secure mental representations of attachment relationships) could
easily recall early relationships and had reflected upon and integrated these
experiences. Adults who considered attachment relationships of minimal concern or influence in their lives were classified as dismissing, similar to the insecure-avoidant childhood category. Those who were preoccupied with attachment issues and had dependency feelings toward their parents were classified as Preoccupied, a category analogous to the insecure-resistant childhood group.

Several studies have investigated the link between mental representation of attachment relationships and state of emotional health in adults (Dozier, et al., 1991; Manassis, et al., 1994; Patrick, et al., 1994). However, only a few studies have examined the relationship of attachment status to both emotional and physical well-being.

Barnas, Pollina, and Cummings (1990) studied quality of attachment, physical well-being and strategies for coping with stress in two groups of adult women. One group was comprised of 48 elderly women, ages 65-87 years; mental representations of their attachment relationships with their adult children were assessed. The second group, 25 women ages 18-25 years and 25 women ages 30-50 years were assessed for significance of their closest self-identified attachment relationships. Results revealed no main effects for either group, however, in an exploratory analysis of extreme scores, they found a relationship between elderly women with insecure attachment classifications and relatively extreme negative ratings on scales measuring social, psychological, and physical well-being. In the group of younger and middle-aged women, again the analysis of extreme scores revealed that the subjects classified as insecure in their mental
representations of their closest attachment relationships, were more likely to be clinically depressed and were more apt to be rated by friends as more anxious. These researchers also found that insecure attachment in both groups was linked to increased numbers of coping responses reported by subjects in response to stress. Barnas, Pollina, and Cummings (1990) raise the question, "Do women with insecure attachments have more stressful lives, or are their lives simply perceived or responded to as more stressful...?" (p. 197).

Lipson-Parra (1990) conducted a study in which she developed an instrument to measure quality of attachment relationships in elderly adults. In the analysis of data, it was observed that the majority of the highest mean scores on strength of attachment were obtained by subjects who were 87 years of age and older. The question has been raised by Lipson-Parra whether the advanced age achieved by these individuals could be related to their highly positive attachment scores.

In a sample of 101 subjects recruited from a family practice clinic, Franks, Campbell and Shields (1992) examined family functioning and social support and how these are associated with social relationships, mental health, and health behaviors. They found that family functioning (interaction variables) had a more powerful influence on health behaviors than social support. Although this study was based on intergenerational family systems theory rather than attachment theory, many similarities between these two theories have recently been noted (Minuchin, 1985; Sherman, 1989; Stevenson-Hinde, 1989). The authors suggest
two pathways by which social support and family functioning can affect health behaviors. These are 1) by providing tangible support or resources, and 2) by influencing the individual’s psychological state, resulting in changes in health behaviors.

Rationale

In the social, emotional and physical development of women, the transition to motherhood is believed to be both a time of vulnerability and a time of opportunity. The new mother is not only learning and adapting to her new caregiving role, she is also experiencing a profound shift in the family system, and in her self-system (Minuchin, 1985).

Bowlby (1988) has suggested that this is one stage of development when adult attachment behavior is apt to be reactivated. Heightened anxiety at being alone or separated from spouse and close family members, and an expressed need for comfort and the support of significant others are among the attachment behaviors that may be observed in women during this transition.

Further, it has been proposed that an individual’s mental representation of attachment relationships, constructed in infancy and early childhood, remains relatively stable across the lifespan and usually does not change without a transformative experience such as psychotherapy (Bowlby, 1969; Ainsworth, 1991; Main, Kaplan & Cassidy, 1985). In this study, it is hypothesized that the experience of pregnancy, childbirth and parenting, with the increased vulnerability, need for support, and reworking of relationships known to occur at
this time, may provide a transition that results in a change in mental representation of attachment relationships.

In addition to possible changes in a new mother's mental representation of attachment relationships and her internal working model of self, it is hypothesized that she may initiate changes in her lifestyle that are health promoting and protecting. As a new mother experiences increased awareness of the need for protection of her infant, there may be a simultaneous, heightened sense of needing to maintain, protect, and promote her own health in order to increase her chances for survival and thus preserve the attachment relationship with her child. Viewed in this way, health protective and promotive behavior becomes an important part of the attachment behavior repertoire of the new mother.

The experience of stress is another factor acknowledged to be related to emotional and physical well being. Cohen, Kamarck, and Mermelstein (1983) point out that, in general, self-ratings of the stressfulness of events are more reliable predictors of health-related outcomes than simply counting objective events.

At the present time, no studies are known to this author that investigate the relationships among adult attachment status, health promotion behavior, and perceptions of stress in new mothers.
Purpose

The purpose of this study is threefold: 1) to assess the mental representation of attachment relationships in new mothers, 2) to investigate the current health status and health promotion behaviors of these same new mothers, and 3) to examine the new mothers' perceptions of stress in their lives.

Research Objectives

1) To assess the mental representation of attachment relationships (using the Adult Attachment Interview) in mothers of young children.
   a) To determine the percentage of new mothers who are classified as secure/autonomous and those classified as insecure in this sample.
   b) To assess the reliability of the AAI classifications in those subjects for whom a prenatal AAI is available (N=38), and to explore reasons for changes in classifications.

2) To investigate the current health status of mothers of young children.
   a) To determine the presence of physical symptoms related to current state of health.
   b) To assess health promoting behaviors of these mothers.
c) To investigate the relationships among current health status, health promoting behaviors and adult attachment classification.

3) To assess the new mothers' subjective perceptions of stress (Perceived Stress Scale) within the past month.

a) To determine if mothers classified as secure perceive less stress in their lives than mothers classified as insecure.

b) To explore the relationship between the practice of health promotion behaviors and subjective perceptions of stress of new mothers.
CHAPTER II
LITERATURE REVIEW

Introduction

The purpose of this chapter is to discuss theory and concepts pertaining to the study and measurement of mental representations of attachment relationships in adults, health promotion behavior, and the subjective experience of stress. Classical studies as well as current directions of research will be reviewed, and the rationale for this study will be presented.

Attachment Theory

The origins of attachment theory can be traced to several researchers from diverse backgrounds who were studying human development in the mid-1900's. Rene Spitz (1946), a psychoanalyst, observed that babies who were cared for in orphanages where they did not receive consistent loving handling of a caregiver, often did not thrive and grow.

Learning this, Harry Harlow (1958), an ethologist, conducted an experiment with rhesus monkeys to study the behavior of infant monkeys with two contrasting surrogate mothers, one made of wire, the other of terry cloth. The preference of the infant monkeys for the terry cloth mother, especially in seeming to use it as a base of support when frightened, lead to the conclusion that tactile
contact was the most important source of security for these monkeys. This seemed
to disprove the previously held belief that infants' attachments to their mothers
were primarily due to mothers being able to meet the need for food.

During these years, John Bowlby, a British psychiatrist, was influenced by
both Harlow and another ethologist, Konrad Lorenz, who first observed the
imprinting phenomenon of newborn goslings. Bowlby began to consider the
biological implications of the attachment bond for human infants. Following
World War II, he had collaborated with James Robertson on observations of
infants and children who had lost or been separated from their parents. Stimulated
by the discoveries of Harlow and Lorenz from ethology, Spitz and Freud from
psychoanalytic theory, and his own studies with Robertson, he synthesized the
ideas that have become known as attachment theory (1969, 1973, 1980).

Bowlby considered human infants as being equipped with, "...a distinctive
and in part pre-programmed set of behavior patterns," that serve the purpose of
keeping the infant's caregiver nearby; this biologically based behavior is described
as one of a cluster of behaviors that is vital for the protection and survival of the
infant (1988, p. 3). Crying, clinging to a parent, expressing anxiety when
separating from a parent are examples of behaviors that infants and children
typically use to maintain proximity to their preferred caregivers. Situations where
this behavior could be observed would usually involve increased uncertainty or
fear of separation, or possibly illness. Comforting in the form of holding,
soothing and close proximity of the caregiver, Bowlby suggested, will usually
provide the necessary feeling of security, and attachment behavior would then decrease or disappear. Bowlby believed that although most readily observed in children, some forms of attachment behavior occur throughout the lifespan (1988).

In addition to this concept of the attachment system as a behavioral control system, Bowlby contributed the idea that early infant-caregiver interaction results in the construction of internal working models of the self, the caregiver, and others who are significant persons in the infant's environment (1969). The patterns established in these early relationships will determine whether or not the child sees the parent as dependably available and responsive, and himself as worthy of care, or the parent as rejecting or inconsistent and the child as not worthy of care. Once established, these internal working models are believed to be stable and guiding forces in an individual's social behavior throughout life (Bowlby, 1988). These ideas set forth by Bowlby in his early writings provided fertile ground for continuing research and refinement of attachment theory.

In the 1960's, the stage was set for expanding knowledge of emotional development of human infants, however, a method was needed to operationalize the concepts described by Bowlby. The early work of Mary Ainsworth, first in Uganda, and later in Baltimore, provided a way to categorize and measure attachment phenomena (Ainsworth, 1991). The Strange Situation, a methodology devised to capture the essence of the relationship between a mother and her infant, has been utilized by researchers from several countries over the past two decades.
Ainsworth observed that 12 month old children behave in predictable ways when separated from and reunited with their mothers in a laboratory situation. These responses are associated with certain patterns of caregiving observed in the home environment during the first year of life. She described three classifications as a result of her studies. These are 1) securely attached (Type B), 2) insecure-avoidant (Type A), and 3) insecure-ambivalent (Type C).

Specifically, the type B, securely attached infants were observed to be cared for by mothers who responded promptly and sensitively to their infants' signals in the home environment during the first year of life. These infants openly sought comfort and contact with their mothers after a brief separation. The Type A, insecurely attached, avoidant group were cared for by mothers observed to be insensitive to infant signals and who indicated a personal aversion to physical contact with their infants in the early months. These infants avoided the mother after a brief separation in the laboratory situation. The Type C, insecurely attached, resistant infants demonstrated alternating approach, contact-seeking behavior, then angry, resistant behavior upon reunion with their mothers; these mothers were observed to be inconsistent in their responses to infants during the first year (Ainsworth, et al., 1978).

Ainsworth's major contributions to attachment theory are described by Bretherton (1991) as 1) her explanation of individual differences in attachment relations, and, 2) her idea that the infant uses the caregiver as a secure base. Home and laboratory observations of Ainsworth, et al. (1978) revealed that secure
infants who had been cared for by responsive, emotionally available mothers, seemed to use their mothers as a secure base during exploration of their environment. These infants would alternately use proximity-seeking behavior and exploratory behavior, depending upon effective, cognitive and behavioral inputs and their interpretation by the infant (Waters & Deane, 1985).

Bowlby (1969, 1973, 1980) envisioned early patterns of infant-caregiver attachment relationships as giving rise to internal working models of the self and of significant persons in the infant’s world. He believed these models are stable across the lifespan, guiding expectations regarding the responsiveness of attachment figures. Further, because early models of self and other are intimately connected in this attachment relationship, there will be complementary representations in this model: for secure infants, the attachment figure is represented as responsive and the infant begins to develop a working model of self as competent and worthy of achieving a caring response from others. When a caregiver responds insensitively or inconsistently, the infant will construct a working model of the attachment figure as inaccessible, unresponsive and unloving, and the self as unworthy of care.

**Review of Attachment Research Studies**

Over the past two decades, many of these concepts have been investigated and findings have expanded knowledge of the significance of early attachment relationships for the future social and emotional development of individuals.
Sroufe, Egeland and Kreutzer (1990) examined the proposition of Bowlby that early experiences are incorporated into an individual's internal working model and are influential in that child's later development. A sample of early elementary school age children was comprised of two groups, those who were observed to have insecure attachment to their primary caregivers in infancy, and those classified as having secure attachment status. Both of these groups of children had been followed during the preschool years and, at that time, all were having difficulty with adaptation in the areas of flexible problem solving, self-management, and curiosity. When the two groups were compared in early elementary school on measures of adaptation, the group that had been classified as securely attached in infancy demonstrated a return to positive functioning, while those who had been insecurely attached showed continued poor adaptation.

Initially, the quality of attachment relationships was measured by observations of the behavior of 12-18 month old infants upon reunion with their parents after a brief separation in the Strange Situation (Ainsworth & Wittig, 1969). However, recently, in a longitudinal study of the quality of child-parent attachment patterns, Main, Kaplan, and Cassidy (1985) developed an assessment method that relied upon language rather than behavior to capture mental representations of these relationships and the self in 6 year old children. The purpose of this study was to compare differences in security of attachment in infancy, as measured by behavior in the Strange Situation, with security of attachment in childhood, as measured by the representational level of speech and
behavior. In this sample of 40 children and their parents, findings revealed that initial classification of secure attachment to the mother (but not to the father) predicted the overall functioning of the child in interactions in the lab setting with a female researcher. Also, those classified as securely attached to the mother in infancy remained securely attached at 6 years of age; a weaker association was found with regard to stability of attachment to the father. In addition, quality of the mental representation of attachment relationships of both mother and father to their parents was assessed using the Adult Attachment Interview (George, et al., 1985). This status was significantly related to the previous classification observed for the infant and parent in the Strange Situation at 12 months of age.

The significance of this study was not only the support it provided for Bowlby's proposition that attachment patterns remain stable from infancy into childhood, but also, the exploration and use of measures of internal working models of attachment relationships that moved beyond observations of behavior to the level of representation expressed in language and speech patterns.

Further evidence was contributed by Jude Cassidy (1988) who investigated the relationship of a child's attachment to the mother and the child's representation of self. In a sample of 52 children, approximately 6 years of age, several self-esteem and self-image measures were used to assess the internal working models of these subjects. Ratings for security of attachment were obtained during two lab sessions and results supported the proposition that the child's internal
representation of self is related to the quality of attachment the child has to the mother.

The assessment of mothers' thoughts about their caregiving was investigated by George and Solomon (1989) who observed 32 mothers of 6 year old children. It was hypothesized that there would be a relationship between the mother's caregiving representations and the child's rating of attachment security. There was strong support for a relationship between mothers who had high scores on competence and secure base dimensions of caregiving representations, and children who were rated secure. These results support the link between a mother's internal representations and a child's rating with regard to quality of attachment relationships.

Kobak and Sceery (1988) investigated correlates of attachment organization in the developmental stage of late adolescence. They were interested in linking the concepts of working models of attachment and affect regulation. The Adult Attachment Interview (George, et al., 1985) was used to identify individuals who were secure, dismissing, and preoccupied with regard to attachment status. Other measures included self-administered reports of perceptions of self and others, and a Q-sort description of subjects provided by peers. Researchers hypothesized that subjects classified as secure would respond to distress by acknowledging it and seeking support of others; avoidant subjects would tend to minimize distress and those classified as preoccupied would be guided by rules that promote hypervigilance and anxiety in the experience of distress. Results supported the
idea that the AAI can be used to assess attachment functioning in this age group and that affect regulation and representation of self and others, as assessed by these measures, are linked to attachment classifications of the AAI.

**Adult Attachment**

As the study of mental representations of attachment relationships has expanded to include adults, this theory and its significance in explaining human development and individual differences continues to gain support. A current focus is the study of the intergenerational transmission of attachment and consequences for the socioemotional development of infants, children, and adults.

Benoit, Zeanah, and Barton (1989) used the Adult Attachment Interview (George, et al., 1985) to investigate the attachment history of 25 mothers of infants hospitalized for failure-to-thrive, and that of 25 mothers of hospitalized infants with normal growth patterns. Findings included insecure attachment classifications in 96% of the mothers of infants with failure-to-thrive, whereas, 60% of mothers of the infants in the control group were classified as insecure. The authors suggest that this evidence supports the idea that failure-to-thrive may be a relationship disorder between the infant and its primary caregiver that leads to a feeding problem. Further, it is emphasized that the content of early experiences, that is, the actual events reported as occurring in childhood, seem to be less significant than the individual's current interpretation of these experiences in determining quality of mental representation of attachment relationships.
Zeanah and Barton (1989) suggest that in the study of socioemotional development, there is a new emphasis on the subjective experience of relationships. The internal working model described by Bowlby (1969, 1973, 1980) is thought not only to regulate behavioral responses to a situation, but also, to screen and unconsciously select what stimuli are perceived and attended to, assign meaning to the information, determine the emotions that are felt and how the event is encoded in memory. Therefore, internal working models unconsciously serve to control and guide behavior in relationships.

Following this same line of thinking, Haft and Slade (1989) have pointed out that adults have strikingly different patterns of acknowledging feelings, integrating memories, and finding meaning in attachment relationships. They conducted a pilot study to investigate whether a mother's ability to acknowledge a variety of affects and experiences regarding her own early childhood attachment relationships would have an effect on the affects and experiences she could recognize in her own infant. Fifteen subjects who were first-time mothers were assessed for the quality of mental representations of their early attachment relationships using the Adult Attachment Interview (George, et al., 1985). Then, the mother and her infant (ages 9 to 13 months) were videotaped in a play session in a laboratory setting. The researchers were especially interested in reviewing with the mothers their fantasies about the infants during moments of attunement behavior. They found that secure mothers were both more attuned to their infants and attuned to a range of affect. Dismissing mothers were less apt to attune to
negative affect in their infant and preoccupied mothers were inconsistent, randomly responding to their infants' positive or negative signals. They suggest that one result of these processes for the infant may be learning that some experiences are shareable and others are not.

Further evidence for the link between quality of mental representation of attachment relationships of mothers and the interactional patterns established with their children was presented by Crowell and Feldman (1989). They conducted a study of fifty-one mothers of young children recruited from both a clinical (n=29) and nonclinical population (n=22). The mothers were assessed for security of attachment using the Adult Attachment Interview (George, et al., 1985) and for parenting behavior, and the behavior of the preschool age children was assessed in a semi-structured play session. Findings of these researchers included that they were able to see distinct interactional patterns that were reminiscent of the quality of early childhood attachment relationships reported by the mothers.

In a study of 30 mothers from nonabusing families, Main and Goldwyn (1984) found a systematic relationship between a mother's early experience of a rejecting mother and her rejection of her own infant, as observed in a laboratory setting. The Adult Attachment Interview was analyzed for coherency and ease of remembering childhood relationship experiences and it was found that the rejecting mothers tended to distort memories and idealize their rejecting parent. These distortions and misrepresentations are believed to be a part of the intergenerational transmission of child abusing patterns.
Measurement of Adult Attachment

The articles discussed in the previous sections presented evidence supporting Bowlby's theory of attachment and included studies of attachment behavior and representations, and their correlates, in infants, preschool age and school age children, adolescents, and adults. This section will describe current research on the measurement of mental representations of attachment relationships in adults.

The early exploration of attachment organization in adults was conducted by Mary Main and her colleagues. They developed the Adult Attachment Interview (George, et al., 1985; Main, Kaplan, & Cassidy, 1985) to assess an individual's mental representation of attachment relationships. This is an hour long interview which asks the subject for verbal descriptions of early childhood relationships with parents, siblings, and significant other persons. Questions probe for associated memories as well as the individual's current thinking with regard to these relationships. The interview consists of 18 questions and is audiotaped, then transcribed verbatim. Scoring in the Adult Attachment Rating and Classification System (Main & Goldwyn, in press) is based upon the idea that internal working models guide and restrict attention, memory, and cognition, as well as feelings and behavior. Therefore, patterns of language and coherency of discourse are considered, in addition to content with supporting and contradictory memories.

Another scoring method has been developed by Kobak et al., (in press) and is known as the Adult Attachment Interview Q-Set (AAQ). This system is based
upon the idea that working models of self and other provide sets of expectations regarding the availability of a caregiver and that the definition and measurement of attachment strategies goes a step further in describing how an individual has adapted to a particular caregiver. By using Q methodology, the dimensional aspects of attachment strategies, described by Main (1990) as primary and secondary strategies and thought to be co-active processes, can both be assessed. Other advantages of this rating method are that multiple raters produce more reliable results than single rater systems, halo effects are reduced, and in training, specific areas of disagreement can be identified.

In a sample of 53 first year college students, the AAI was administered, followed by a scoring process that included both the system of Main and Goldwyn (in press), and the AAQ (Kobak, et al., in press). Results showed that adequate agreement was reached between these two methods, including effective differentiation of secure from anxious subjects and dismissing from preoccupied groups.

Both of these scoring systems were used in a study of 49 women who participated in a longitudinal study of emotional health during the transition to motherhood (Lutz & Hock, 1995). An agreement of 96% was reached (47 of the 49 women were classified in the same category using both the AAI Q-Set and the Adult Attachment Rating and Classification System. These results suggest that subjects can be accurately classified using both scoring systems.
The AAI is a measure administered by a trained interviewer that attempts to surprise or uncover response of the attachment system of the subject. There are other measures that rely on self-report of attachment functioning. Among these is Hazan and Shaver's Attachment Style Measure (1987), based upon the 3 infant attachment styles. Subjects are asked to place themselves in one of the three categories that best describes the way they experience adult love relationships.

Collins and Read (1990) expanded Hazan and Shaver's categories, identifying the three dimensions of 1) depend, 2) anxiety, and 3) close; items in this scale measure 1) the extent to which a subject trusts and can depend on others, 2) items measuring anxiety and fear of abandonment in relationships, and 3) items concerned with the extent to which subjects felt they could be close or intimate with others. An advantage of a dimensional measure is pointed out as providing a more sensitive rating system than one that uses discrete categories; this enables researchers to assess the degree to which a style characterizes attachment functioning of an individual.

Treoux (1993) has attempted to determine if self-report measures of adult attachment correspond to the classifications determined by the AAI. He conducted a comparison study of three categories of self-report measures, including self-identification measures, self-report scales assessing relationship with mother, and, self-report scales assessing attachment-related constructs.

Results indicated that, for the self-designated attachment styles, there was no correspondence with the AAI classifications, and, for the self-report measures,
different aspects of relationships were being assessed than with the AAI.
Therefore, he concluded that these other measures, although having the advantage
of being easier and less costly to administer, should not be used as substitutes for
the AAI.

In a recent study comparing methods of assessing working models of
attachment in adults, the Adult Attachment Interview was compared with self-
report questionnaires assessing attachment style, temperament, and memories of
parental caregiving behavior. The purpose was to determine if similar data is
obtained using self-report measures as is uncovered with the AAI. Few significant
correlations between these methods were found, leading to the conclusion that
information about working models of attachment is probably not accessible through
self-report, and that temperament is a variable that needs to be measured
separately. (de Haas, et al., 1994).

Bakermans-Kranenburg and van IJzendoorn (1993) recently reported their
studies of the reliability and discriminant validity of the AAI. Subjects (n=83)
were mothers who were interviewed twice, about two months apart. The test-
retest reliability remained high over time and across different interviewers.
Discriminant validity tests included measures of non-attachment-related memory,
verbal and performance intelligence, and social desirability. These constructs
were found to be independent of AAI classifications.

The test-retest reliability of the AAI, the effect of different interviewers and
the influence of memory and intelligence abilities was investigated by Sagi, et al.
(1994). Reliability was high regarding test-retest results, results obtained by different interviewers were similar, and information and classifications of the AAI did not appear to be related to memory or intelligence-related skills.

Benoit and Parker (1994) assessed the attachment status of 84 women during the last month of pregnancy, and again, about 12 months later. They found a remarkably high reliability, with 90% of the subjects being classified in the same category at the second interview. The authors attributed this to a sample that was stable in terms of living circumstances and income, and also to a relatively high number of secure ratings (71%), known to be more stable than insecure ratings.

The AAI stands, at present, as the most valid measure of mental representation of attachment relationships currently used with adults. Continued investigation of the reliability of the AAI and definition of related constructs promises to uncover knowledge important to improving understanding of healthy socioemotional development in both children and adults.

**Health and Health Promotion Behavior**

The World Health Organization has defined health in the following way: "Health is a state of complete physical, mental, and social well being and not merely the absence of disease and infirmity" (1947). Edelman and Mandle point out the shortcomings of this definition as its "abstractness, simplicity, vagueness, and unsuitability for scientific interpretation;" however, they go on to support its identification of the individual as a total system, health as having both an internal
and external environment, and concern for "fulfillment of an individual's role in life" (1990, p. 6).

Noack uses the perspective of systems theory to frame a definition of health as, "...a state of dynamic balance - or, more appropriately as a process maintaining such a state - within any given subsystem..." (1987, p. 14). Noack points out that the capacity of the individual for self-renewal or self-repair through the use of positive and negative feedback is at least partly responsible for maintenance of this balance. This systems theory view is the definition of health that will be used in this study.

Historically, health promotion efforts have been concerned with control of infection and prevention of epidemics, however, this has changed dramatically during the second half of the twentieth century. Communicable diseases are still a focus, especially with the threat of a world-wide AIDS epidemic. However, it is the increasing recognition of the role of personal health-promoting behaviors that is bringing about a revolution in the thinking of the world's health leaders (Noack, 1987).

The three levels of disease prevention proposed by Leavell and Clark (1965) are primary, secondary, and tertiary. Primary prevention includes actions taken in the absence of disease in order to prevent illness or injury and would include immunizations against communicable diseases, fluoride treatment of water supplies to prevent dental caries, as well as general strategies of health education. Secondary prevention involves screening and early detection of diseases such as
diabetes and hypertension, and the use of measures to limit disability from disease processes. The objective of tertiary prevention is to stop disease and to return the individual to the highest level of functioning possible. Treatment of myocardial infarction and subsequent rehabilitation are examples of tertiary prevention.

There is considerable controversy regarding where health promotion fits in the framework of Leavell and Clark. Benson and McDevitt (1980) suggest that health promotion is primary prevention. Pender (1982) distinguishes between health promotion and primary prevention, pointing out that health promotion is approach behavior that is not disease-oriented, while primary prevention is avoidance behavior aimed at reducing the probability of illness or injury.

Personal health practices that make a difference in the physical health status of adults were the focus of a classic study of approximately 7,000 subjects in Alameda County, California, conducted by Belloc and Breslow (1972). The seven good health habits found to be positively associated with better physical health, independent of age and economic status, were obtaining 7-8 hours of sleep, regularly eating breakfast, little snacking between meals, maintaining near-optimal weight, exercising frequently, consuming alcohol in moderation, and avoiding smoking.

Other health promotive behaviors that have been added to this list by Kar and Berkanovic (1987) are: seeking medical check-ups, using measures to prevent hazard exposure and injury from accidents, the prevention of specific communicable diseases, responsible sexual behavior, including health care sought
to prevent sexually transmitted disease and unwanted pregnancy, and action taken
to seek social support for coping with stress and health risks.

**Determinants of Health Promotion Behavior**

John Travis, a leading figure of the wellness movement that began in the 1970's, put forth the idea that a positive state of health, or high level wellness, is not a goal in itself, but rather, a process one engages in throughout life. This process is viewed as a choice and relies heavily on personal responsibility of the individual (1981).

This perspective assumes that behaviors protecting and promoting health are conscious decisions. However, research studies have shown that many factors are involved in determining personal health behavior.

The Health Belief Model (Becker, 1974) was developed by the U.S. Public Health Service to assist health educators and care providers to assess perceptions of clients about their state of health and the likelihood of behavior change. Besides individual perceptions of vulnerability, value of health in a person's life is thought to influence behavior. Other factors addressed in this model include demographic variables and motivation, including past experiences. The Health Belief Model has been criticized for failing to recognize specific variables involving socioeconomic status, culture, and the influence of family and friends, as determinants of health behaviors (Damrosch, 1991).

In a study of the health promotive behavior of university students in England, Wardle and Steptoe (1991) found that beliefs about perceived benefits of
specific behaviors were strongly related to the practice of those behaviors. However, discrepancies were found between beliefs and behavior in the category of use of alcohol; even though registering a belief that one should not drive after drinking, behavior indicated that many students did drive after consuming alcohol. In the measurement of knowledge and its relationship to health practices, only a weak association was found, leading to the assumption that health promotion knowledge does not necessarily determine health promotive behavior and that although health beliefs are important, behavior is sometimes determined by other variables.

Pender's Health Promotion Model (1982) provides an in-depth conceptual framework for examining factors that determine health promotion behavior. Palank has reviewed determinants of health promotive behaviors using Pender's model and has pointed out that perceived self-efficacy has been found to positively influence physical activity and exercise, as well as being related to success in smoking cessation. The combination of social support and self-esteem are other factors that associate positively with health promotive behavior. Palank suggests that the constructs of communication of expectations and positive affect, a sense of belonging, and reciprocity, all characteristics of perceived social support, form a uniting theme evident in studies of determinants of health promotive behavior (1991). These constructs are also central to secure attachment functioning (Bretherton, 1985).
The Experience of Stress

The study of life stress and its physical and psychological consequences was pioneered by Hans Selye (1956). He and his colleagues noted that humans are basically vulnerable to life change because of the disequilibrium it causes and the period of readjustment that is necessary following change.

Early research by Holmes and Rahe (1967) followed this line of thinking. They assumed that all change, favorable or not, would have a negative effect because of the wearing down and exhaustion of the individual during the readjustment phase. They developed the Social Readjustment Rating Scale that measured the number of life events that had occurred within a particular time frame (usually 6-12 months). A cumulative stress score was calculated from the number of events that had occurred and the weight given to these events by judges, depending on the difficulty of adjustment required. A high accumulation of points in a given time period was said to predict the onset of illness.

Recognizing that objective measures of life events and global cumulative stress scores obtained from them did not take into account personal and contextual factors, Cohen, Kamarck and Mermelstein (1983) developed an instrument that would assess the subjective experience of stress. The Perceived Stress Scale is a 14-item questionnaire designed to measure the degree to which situations in one's life are appraised as stressful. The questions refer to the previous one month and include items regarding the degree to which individuals perceive their lives as unpredictable, uncontrollable, and overloaded.
In a study of the reliability and validity of the Perceived Stress Scale, these authors found that an instrument measuring perceived stress was a better predictor of health outcomes than an objective life events scale. They suggest this is because the level of stress experienced by the subject is measured more directly. Also, it is more sensitive to stresses that would not be listed on a life events scale, such as the anticipation of future stressful events, and ongoing stressful situations.

Other studies have included mediators of stressful events and outcomes of the stress process in order to unravel the meaning and consequences of these life events for individuals. Pearlin, Lieberman, Menaghan, and Mullan (1981) examined the process of stress with the purpose of developing and testing a model that would identify how the sources of stress, mediators of stress and manifestations of stress are interconnected. The variables included as sources of stress are the eventful experience, (how the individual experiences the event), chronic life strains precipitated by the event, and self concept, especially mastery and self-esteem (judgments one makes about one's own self-worth). Mediating resources identified and tested were coping and social supports, especially those relations where the presence of solidarity, trust, and an exchange of intimate communications takes place. Although there are numerous ways to measure manifestations of stress, a single, global indicator of stress, depression, was assessed in this study.

The authors describe a unidirectional stress process model that begins with the life event of job loss, proceeds to increase life strains, including economic
strain, moves on to the erosion of a positive self concept and results in vulnerability to the symptoms of depression.

They point out that an alternative view would be that the existing psychological state of low self-worth (or high self-worth) would predispose (or protect) an individual regarding the effects of chronic life strain and depression, with or without precipitating life events.

Ensel and Lin (1991), pursuing this line of research, collaborated on the testing of causal models of life stress. They focused on stressors and resources and how these affect psychological distress. They found that social resources, identified in this study as strong tie supports, act as deterrents to distress. Psychological resources, measured as self-esteem, had an indirect effect by enhancing social resources which then function to lower distress. They also found that the influence of both social stressors and social resources was persistent and enduring over time (two years).

Ensel and Lin (1991) reported results of a companion study in which physical health was measured as the manifestation of distress. In this case, psychological resources (self-esteem) did have a significantly strong direct deterrent effect on physical distress. These researchers describe the next phase of their work as an investigation of health behaviors such as diet and exercise to look for distress-deterring qualities.
Summary

In this review of research on attachment functioning in adults, health promoting behavior, and the experience of psychological stress, a common thread is apparent. Mental representations of self and other, when developed within secure attachment relationships, appear to have the capacity to provide resilience in adulthood. The psychological and socioemotional strengths that are found in secure adults, perceived self-efficacy, high self-esteem, social supports that promote trust and responsivity, are also singled out as important characteristics in individuals who participate in health promoting behavior, and who may benefit from altered perceptions of stress in their lives. This link provides the theoretical framework for this exploratory study into relationships and implications of attachment functioning for health-promoting behavior and perceived stress in the lives of mothers of young children. The following research questions will specify areas of inquiry in this study.
Research Questions

1) To what extent do AAI classifications change or remain the same following the transition to motherhood?

2) Are there demographic differences between subjects classified as secure and those classified as insecure, and between those whose status changed and those whose status remained the same?

3) What are these subjects' assessments of their current health status?

4) Is there a significant difference in overall Health-Promoting Lifestyle Profile scores of subjects with secure AAI classifications and those with insecure AAI classifications?

5) Which dimensions of the HPLP are highly correlated with the secure AAI group as opposed to the insecure AAI group?

6) To what extent do HPLP scores vary systematically with demographic variables of this sample?

7) Do new mothers classified as secure using the AAI perceive less stress in their lives than mothers classified as insecure?

8) Is there a significant relationship between the practice of health promotive and protective behaviors and perceptions of stress in this sample of new mothers?

9) Are there differences in demographic variables between subjects who perceive high stress in their lives and those who indicate a low perception of stress?
CHAPTER III

METHODOLOGY

Introduction

The methods for collection and treatment of data in this study will be presented in four sections. First, the strategies used for sample selection will be discussed. Next, the procedures used for data collection will be described. Third, a description of the instruments, including development, pretesting, and validity and reliability of each instrument will be presented. Finally, the fourth section will state the statistical procedures used for analysis of data.

Sample Selection

The subjects for this study were initially recruited for the Transition to Motherhood Study, a three year study investigating the emotional health of new mothers and funded by the National Institute of Mental Health (Ellen Hock, Ph.D., Principal Investigator). Each of these 192 subjects was in the third trimester of her first pregnancy. They were recruited from childbirth education classes, obstetric clinics, and private physicians offices. This study took place in a large metropolitan area in the Midwest.

A sample (n=49) of this original group (n=192) was randomly selected (every fifth subject was asked) to participate in a study investigating the
measurement of adult attachment representations, and exploring the relationship between adult attachment representations and maternal separation anxiety in first-time mothers (Lutz, 1993). The Adult Attachment Interview (George, Kaplan, and Main, 1984) was administered to each of these subjects before the birth of her child to assess quality of mental representations of attachment.

These same women were asked to take part in this study of attachment, health promotion behavior, and perceptions of stress. Of this group of 49 women, 38 were located and agreed to participate. Repeating the AAI with this group provided an opportunity to examine the stability of adult attachment classifications across the transition to motherhood. A second group (n=12) was randomly selected from the remaining original sample in order to achieve a total sample size of 50 subjects. The same procedures were used with both groups.

**Procedures**

Subjects were contacted by telephone and the study was explained; an invitation was offered to participate and a date and time were set to interview those individuals who wished to participate (See Appendix A). The interviews were conducted either in the laboratory of the Department of Family Relations and Human Development at Ohio State University (3) or in the subject's home (47); the location was determined by what was convenient for the subject.

The interview began with the interviewer establishing rapport with both the mother and with her children if they were present. A comfortable place to conduct the interview was identified and the study was explained again. After
this, the subject was asked to read and sign the consent form (OSU Consent Form HS-027), and the subject was given an opportunity to ask any other questions.

The three questionnaires (Perceived Stress Scale, Health-Promoting Lifestyle Profile, and the Social Readjustment Rating Scale) were then completed by the mother while the interviewer set up the tape recorder. If children were there, this time was used to establish a friendly, relaxed presence in the home.

Once the questionnaires were completed, the interviewer continued by completing the Mother's Information Form (Appendix B). The tape recorder was started at this point and the interviewer asked the questions on the Health Questionnaire (Appendix C). This was followed by the Adult Attachment Interview.

After the last question, each subject for whom this was a second AAI, was asked if she thought her answers were different this time. At the end of the interview, the subject was allowed time to ask questions and discuss feelings that she may have had during the interview.

These interviews took place over a 10 month period of time between December, 1993 and October, 1994.

**Instruments**

**Adult Attachment Interview (AAI)**

The Adult Attachment Interview (George, Kaplan, and Main, 1985) is a semi-structured, qualitative interview consisting of 18 items. It is considered neither a fully clinical interview nor a questionnaire. Its purpose is to assess the
quality of mental representations of attachment relationships an adult has with regard to parents and other significant caregivers of early childhood. This is accomplished by assisting the subject to verbally describe these early relationships in response to set questions, to thoughtfully provide memories and to expand upon biographical episodes. The subject is also questioned about evaluations of these experiences and current thinking with regard to attachment relationships (See Appendix D). The interview is audiotaped and then transcribed in its entirety.

All of the Adult Attachment Interviews in this study were conducted by the author. Training in administering the AAI began with the interviewer being given the AAI. Then, three pilot subjects were recruited and a critique of interviewing techniques was conducted by Dr. Wilma Lutz, Ph.D. who had obtained her training from Dr. Mary Main, Ph.D.

There are two scoring methods that may be used with the AAI. The Adult Attachment Rating and Classification System (ARCS) (Main & Goldwyn, in press) classifies data from this interview to assess an adult's "state of mind" with respect to attachment functioning. Preoccupied, Dismissing, and Free to Evaluate are the three categories in adults that correspond to the Anxious/Resistant, Avoidant, and Secure Classifications of infants.

The scoring method that was used in this study is the Adult Attachment Interview Q-set (AAQ) (Kobak, et al., in press). The AAQ was developed to assess attachment strategies as a measure of attachment organization.
Two raters read the interview transcript, then sorted 100 statements designed to assess organization of thought and quality of mental representations of attachment relationships; these raters then distributed these items among nine categories, ranging from Least Characteristic (1) to Most Characteristic (9). The resulting forced bell-shaped curve provided a Q-sort description for each subject.

Next, these scores were combined and a correlation coefficient was determined from this composite score by comparing it with a prototype score from each attachment dimension (Kobak, et al., in press). This procedure resulted in one of 3 types of correlations. A subject with a score that had a positive correlation with the secure-anxious dimension and a negative correlation with the repression-preoccupation dimension would be assigned a secure attachment classification. If the subject's score was negatively correlated with the secure-anxious dimension and positively correlated with the repression-preoccupation dimension, an attachment classification of dismissing was assigned. The preoccupied attachment classification was assigned to subjects whose scores were negatively correlated with both of these dimensions.

This scoring system allowed the researcher to use the scores in two different ways. First, a category was assigned, based upon interpretation of the correlation, as described above. Therefore, subjects were in one of three categories, secure, dismissing or preoccupied. (Because of small numbers in the dismissing and preoccupied categories, these two categories were combined into an insecure category for statistical procedures.)
A second way of using these scores was to enter the correlation coefficient as a continuous score. The advantage of using this continuous score is that the strength or weakness of the correlation is retained and can provide a more accurate picture of the mental representation of attachment than the categorical classification.

In this study, the author and one other rater had been trained in this method by Wilma Lutz, Ph.D., and completed the scoring for all of the transcripts. Kobak, et al. (in press) suggest that a third rater may be needed to complete the Q-sort if the composite reliability is less than .58, using the Spearman-Brown formula. In two transcripts where the interrater reliability was less than the recommended .58, Wilma Lutz served as the third rater.

Validity studies have shown that Secure subjects were effectively differentiated from Anxious subjects on the Security/Anxiety dimension; and, on the Repression/Preoccupation dimension, the Dismissing and Preoccupied subjects were also identified distinctly, although more overlap was found in these insecure groups than between Secure and Anxious subjects (Kobak, et al., in press).

**Health-Promoting Lifestyle Profile**

The Health-Promoting Lifestyle Profile (Walker, Sechrist, & Pender, 1987) is a 48-item rating scale that measures health-promoting behavior of the individual. (See Appendix E). Health-promoting behavior is defined as "...a multi-dimensional pattern of self-initiated actions and perceptions that serve to maintain
or enhance the level of wellness, self-actualization, and fulfillment of the individual" (p. 77).

This measure was initially developed within the framework of Pender's Health Promotion Model (Pender, 1982). In this model, a distinction has been made between health-protecting and health-promoting behavior, although both are considered complementary processes of a healthy life-style. Health-protecting behavior is considered to be any behavior that lessens the individual's chances of becoming ill, and, as such, is defined as a human stabilizing tendency. Health-promoting behavior is defined as an expression of the human actualizing tendency, and the goal of this activity is to move the individual toward a high sense of well-being and self-actualization.

The initial development of the HPLP took the form of a 100-item checklist, the Lifestyle Health Habits Assessment. The ten categories of this scale were believed to be the dimensions of a health-promoting life-style. Empirical validation was accomplished with a sample of 952 adults and the number of items was reduced to 48. Item analysis provided further refinement of the subscales from the ten that had been hypothesized to six. These are 1) Self-Actualization, 2) Health Responsibility, 3) Exercise, 4) Nutrition, 5) Interpersonal support, and 6) Stress Management. The response categories are scored as follows: Never (N) = 1, Sometimes (S) = 2, Often (O) = 3, Routinely (R) = 4. The mean of the responses to all 48 items is calculated to produce an overall score for health-promoting lifestyle. The six subscales are summed separately, then divided by the
number of items on the subscale to produce scores that can be compared meaningfully across dimensions.

Stability of the HPLP was evaluated by administering the measure twice to a sample of adults (n = 63) with an interval of two weeks. The authors report a Pearson r for the total scale of .926 with a range of .808 to .905 for the subscales. High internal consistency was reported for the total instrument, with an alpha coefficient of .922. Distribution of scores was found to be symmetrical and the range of scores in the four response categories was widely used (Walker, Sechrist, & Pender, 1987).

**Perceived Stress Scale**

The Perceived Stress Scale (See Appendix F) is a 14-item instrument designed to measure "...the degree to which situations in one's life are appraised as stressful" (Cohen, et al., 1983, p. 387). Research concerning stress and its effects on physical and psychological health initially focused on the effect of life events. Although objective life event scales are easier to administer and events can be simply identified without the problem of subjective bias, disadvantages are that the individual's cognitive appraisal regarding meaning of the events is not taken into consideration. It is this subjective perception of stress that concerned Cohen, Kamarck, and Mermelstein (1983).

These researchers predicted that, because the PSS is a more direct measure of the level of stress experienced by subjects than objective life event scales, health outcomes would be predicted more accurately.
Scoring of this measure allows the subject to respond to each item with one of five alternatives: 0=Never, 1=Almost Never, 2=Sometimes, 3=Fairly Often, 4=Very Often. Six of the items are scored in the reverse direction.

Validation studies were conducted with three samples, two composed of college students, both male and female, (n=332) and (n=114), and the third from a community smoking-cessation program (n=64). Five measures were completed by respondents: 1) an objective life events and their impact scale, 2) social anxiety, 3) depressive symptomatology, 4) physical symptomatology, and 5) the Perceived Stress Scale. Coefficient alpha reliability for the PSS was .84, .85, and .86 in these three samples. The test-retest correlation was .85 after a two day interval, however, it was found to be .55 after a six-week interval, confirming that the predictive ability will fall after a one-to-two month period.

In addition to these measures, utilization of the student health center by college student respondents was monitored and the number of visits for illness was calculated, including six weeks before the testing session and six weeks following the testing session.

These researchers found a small to moderate correlation between number of objective life events and the PSS in all three samples. However, they found a significant increase in this correlation when the scores reflecting impact of life events were analyzed with the PSS.

In using the PSS to predict depressive and physical symptoms, there was a very high correlation between the CES-D (depressive symptom scale) and the PSS.
Partial correlations were calculated, showing that both of these scales independently predicted physical symptomatology.

The PSS was also found to predict utilization of the health center, whereas correlation of life event scores and health center utilization were not significant.

Suggestions for use of this measure include investigations in which the appraisal and manifestations of stressful events can be altered by moderators such as social support and/or personality factors.

**Data Analysis Strategies**

Descriptive statistics, including group means, standard deviations, frequencies and percentages were used in the analyses of data derived from demographics, AAI classifications, and the comparisons of secure and insecure group scores on the SRRS, HPLP, and PSS instruments.

Correlational analyses were carried out to investigate relationships among the demographic variables, health behaviors, life events, perceived stress and attachment status.

A model was tested using hierarchical multiple regression to determine if attachment classification had a moderating effect between stressful life events (SRRS) and perceived stress (PSS).

A second model was investigated, again using hierarchical multiple regression, to determine variance in health behavior scores (HPLP) accounted for by attachment classification and perceived stress (PSS).
Summary

This chapter has presented the specific methodology used in seeking answers to the research questions. The setting and sample selection methods have been discussed, the procedures and instruments used have been described, and strategies for the analysis of data have been stated. The next chapter will present results of this study.
CHAPTER IV

RESULTS

Introduction

Results of this study will be presented in five sections. First, the demographic characteristics of this sample will be described. Next, the assessment of adult attachment relationships in mothers of young children will be reported; this will include the percentage of new mothers classified as secure, the percentage of new mothers classified as insecure, and the percentage of subjects from the previously assessed group (N=38) whose classification changed and those whose classification remained stable during the transition to motherhood.

The third section will present findings regarding the current health status of this group of mothers of young children. Specific results will include the presence of physical symptoms and personal perceptions of current states of health, health promotion behaviors of these subjects, and relationships among current health status, health promoting lifestyles and adult attachment classification.

The fourth section will report results of these new mothers’ perceptions of stress, examining differences between the secure and insecure groups, and will explore the relationships between the practice of health promoting behaviors and subjective perceptions of stress.
Finally, an analysis of demographic variables and their relationships to AAI classifications, health promoting behaviors, and perceived stress will be reported.

**Characteristics of the Sample**

This sample of 50 new mothers was recruited from a middle class population residing in a large metropolitan area in the Midwest. All were married; 49 were Caucasian, 1 was Hispanic. When originally interviewed for the Transition to Motherhood study, each woman was in the third trimester of her first pregnancy and was 19 years of age or older.

At the time of this study, ages of these women ranged from 25 years to 40 years. The mean age was 31.4 years (SD = 3.96). Years of education ranged from 12 years to 20 years, with a mean of 15.28 years.

Of those disclosing family income, (n=45), there was a wide range, from a low of $16,000 to a high of $130,000 annual income. The average family income for this sample was $52,160.

The number of children of these mothers ranged from 1 to 3, with 21 mothers having 1 child (42%), 22 mothers having 2 children (44%), and 7 mothers having 3 children (14%). The first children of these mothers were approximately 2 years 6 months to 3 years 6 months at the time of this study. Six subjects (12%) were pregnant with their second (5 women) or third child (1 woman).
Working patterns of this group of women included 29 women (58%) who were working full-time outside the home, 13 subjects (26%) who reported working part-time, and 8 mothers (16%) who were not employed outside the home.

**Assessment of Mental Representations of Attachment**

**Research Objective 1:** To assess the mental representation of attachment relationships (using the Adult Attachment Interview) in mothers of young children.

**Attachment Classifications of Entire Sample**

In this study of 50 new mothers, 33 (66%) were classified as secure/autonomous and 17 (34%) were classified as insecure. The AAQ scoring method (Kobak, 1989) further divides the insecure category into dismissing and preoccupied groups. The number of subjects classified as dismissing was 7 subjects or 14% of the total group. There were 10 subjects classified as preoccupied; this was 20% of the entire sample of 50 subjects. Because of these small group sizes, the two insecure categories were combined and analyses have been conducted using just two classifications, secure (autonomous) and insecure (dismissing and preoccupied) classifications.
Stability of Attachment Classifications in Test-Retest Group

Of this group of 50 subjects, 38 women had been interviewed approximately six weeks before their first children were born; the AAI was administered and attachment classifications were assigned to these subjects (Lutz, 1993). At that time, 30 (79%) of these 38 subjects were classified as secure, 8 (21%) were insecure. (Six or 16% were classified as preoccupied, and 2 or 5% were classified as dismissing within the insecure category.)

A comparison of results of the prenatal study with results from this study reveal that 27 of these 38 subjects (71%) were classified in the same category. Of these, 22 remained secure while 5 remained insecure. (See Table 1).

Table 1

Secure vs. Insecure (Time 1 and Time 2)

<table>
<thead>
<tr>
<th>Time 1</th>
<th>Insecure</th>
<th>Secure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insecure</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Secure</td>
<td>8</td>
<td>22</td>
</tr>
</tbody>
</table>

Eleven of the 38 subjects (29%) were classified in a different category after the second AAI was administered. Of those whose classification changed, 3 were in a positive direction, changing from insecure to secure, 1 changed from dismissing to secure and 2 changed from preoccupied to secure. In regard to the different ratings of insecure attachment, 8 subjects changed from secure to
insecure, 5 to dismissing and 3 to preoccupied. (See Table 2). A discussion of these results and possible reasons for these changes will be presented in Chapter V.

Table 2

Stability of AAI Classifications Over the Transition to Motherhood
(2½ to 3½ Year Period of Time)

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Autonomous</td>
<td>Dismissing</td>
<td>Preoccupied</td>
</tr>
<tr>
<td>Autonomous</td>
<td>22</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>(n=30)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dismissing</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>(n=2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preoccupied</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>(n=6)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Health Status of New Mothers

Research Objective 2: To investigate the current health status of mothers of young children.

This objective involved not only determining the presence or absence of physical symptoms, but also, the subjects' perceptions of their states of health, and assessment of specific health-promoting patterns of behavior used by this group of mothers.
In order to investigate the current health status of this group of mothers of young children, the following questions were asked at the beginning of each interview: (See Health Questionnaire, Appendix D).

1. Are you having any health problems or chronic symptoms at the present time?

2. Are you taking any medications or being treated by a medical doctor for any illnesses?

3. In your opinion do you feel like you are in relatively good health?

Descriptive analyses revealed that 42 (84%) responded that they were not having health problems or chronic symptoms. Of those 8 subjects (16%) who indicated that they were having health problems, chronic pain was mentioned as the problem by 5 of these women, specifically, pain in hand (possibly work-related), pain in neck, pain in ears (possibly an infection), pain in joints (this subject was having diagnostic tests for lupus), and TMJ pain. Other chronic symptoms mentioned were allergies and sinus infections, asthma and depression, and fatigue, stress, overweight and sleep problems.

Twelve individuals (24%) indicated that they were either taking medication or being treated by a doctor for a condition, or had recently been under the care of a physician. The treatments included counseling (for feeling "overwhelmed"), pain medications, antibiotics, birth control pills, an ovulation inducer, an anti-inflammatory medication, and anti-depressants (two were taking Prozac, two were taking Zoloft).
In answer to the question regarding subjects' perceptions of their own health, 49 of the 50 (98%) responded that they felt they were in relatively good health. The subject who felt she was not in good health related this to being in graduate school, having had an unplanned pregnancy, and to neglecting her own needs due to lack of time and money. She is currently on medication for depression. Interestingly, she was one of three subjects whose AAI classification changed from insecure to secure over the transition to motherhood.

**Health-Promoting Behaviors**

To further investigate the current health status of these mothers and their actions regarding seeking positive health, self-care behaviors were assessed using the Health-Promoting Lifestyle Profile (Appendix E). A high score indicates routine use of health-promoting behaviors.

An analysis of variance procedure was used to determine if the subjects with attachment classifications of secure and insecure differed significantly in health-promoting behaviors as measured on the HPLP questionnaire. All 50 subjects completed this self-administered measure and the scores ranged from a low of 91 to a high of 186. The highest possible score was 192. Results showed that the mean of the secure group was 134.73, higher than that of the insecure group, which was 124.29; this was not a statistically significant difference.

A closer exploration of the subscales of the HPLP revealed an interesting trend. In each category of this measure, that is, self-actualization, health responsibility, exercise, nutrition, interpersonal support, and stress management,
the mean scores of the secure group were higher than the mean scores of the insecure group. In a one-way ANOVA, results achieved statistical significance in the categories of health responsibility and interpersonal support. (See Table 3). A discussion of these results follows in Chapter V.

Table 3

Health Promoting Lifestyle Profile Scores

<table>
<thead>
<tr>
<th></th>
<th>Secure (N=33)</th>
<th>Insecure (N=17)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Health-Promoting Lifestyle</td>
<td>134.73</td>
<td>21.22</td>
</tr>
<tr>
<td>Self-Actualization</td>
<td>42.24</td>
<td>6.42</td>
</tr>
<tr>
<td>Health Responsibility (F=3.87, p &lt; .05)</td>
<td>23.94</td>
<td>6.53</td>
</tr>
<tr>
<td>Exercise</td>
<td>10.79</td>
<td>4.62</td>
</tr>
<tr>
<td>Nutrition</td>
<td>17.79</td>
<td>3.76</td>
</tr>
<tr>
<td>Interpersonal Support (F=6.37, p &lt; .01)</td>
<td>22.24</td>
<td>3.63</td>
</tr>
<tr>
<td>Stress Management</td>
<td>16.79</td>
<td>3.15</td>
</tr>
</tbody>
</table>

Multivariate analysis of variance was used to test a model with AAI scores as the dependent variable; Health Promoting Lifestyle Profile scores were entered as predictors of security of attachment. The Interpersonal Support subscale scores approached significance (F=3.77, p < .059), however, the other subscales, and the total HPLP score did not appear to contribute to the model in a meaningful way.
Research Objective 3: To assess the new mothers’ subjective perceptions of stress within the past month (using the Perceived Stress Scale).

The Experience of Stress

The difference between the occurrence of stressful events in an individual’s life (such as loss of a job), and the individual's perception of that event, has been investigated by Cohen, Kamarck, and Mermelstein (1983). Their research suggests that life events interpreted as stressful by one individual may not be perceived as stressful by another person. Therefore, documenting the actual life events that have occurred in the lives of these subjects, as well as their perceptions of those events, was considered important to the overall purpose of this study. The Social Readjustment Rating Scale (SRRS) (Holmes and Rahe, 1967) was included to meet this objective. (See Appendix D).

Scores for the Social Readjustment Rating Scale (SRRS) are determined by assigning numerical values to stressful events that have occurred in an individual’s life during the past year. Results were available for 47 of the 50 women who participated in this study. Three subjects did not complete this questionnaire.

Events that occurred frequently for the women who responded were pregnancy (23 subjects or 49%), gain of a new family member (17 subjects or 36%), change in financial state (18 subjects or 38%), mortgage over $10,000 (17
subjects or 36%), vacation (22 subjects or 47%), and Christmas (31 subjects or 66%).

Scores were extremely variable, ranging from a low of 25 to a high of 492. The mean for the sample of 47 subjects was 188.13. The mean for the secure group (n=31) was 198.90 (S.D. =117.72), while the mean for the insecure group (n=16) was 166.13 (S.D. =92.82). This did not represent a statistically significant difference between the secure and insecure groups.

The Perceived Stress Scale (PSS) is a 14-item self-report questionnaire used to measure an individual's perception of stress in his or her life within the past month. Subjects are asked to respond to questions choosing one of five responses: 0=Never, 1=Almost Never, 2=Sometimes, 3=Fairly Often, 4=Very Often. A higher score indicates higher perceived stress and less perceived control over events and difficulties in one's life.

Results revealed a slightly higher mean of 21.35 (S.D. =6.15) for the insecure group than that for the secure group of 20.79 (S.D. =6.38). Although this difference is not statistically significant, it is interesting to note the fact that the secure group had a higher mean score of stressful life events, as measured by the SRRS (198.90 as compared with the insecure group mean of 166.13), yet as a group scored lower in perception of that stress.

Pearson correlation coefficients were used in this analysis to determine if a relationship exists between perceived stress, as measured by the Perceived Stress
Scale, and health promoting behaviors, as measured by the Health Promotion Lifestyle Profile.

A negative correlation was revealed between PSS scores and HPLP scores. Low PSS scores (lower perception of stress) were correlated with high health promoting behavior scores. These correlations were moderately strong in the areas of exercise, self-actualization, and overall health promoting lifestyle scores. This would seem to indicate a link between the practice of certain health promoting behaviors and a lower perception of stress in the lives of these new mothers.

Another model was tested to investigate whether security of attachment, as represented by the continuous AAI score, had a mediating effect on actual stressful life events (SRRS) and would predict lower perceived stress scores. Again, findings were not significant in this analysis.

**Correlational Analyses Among Major Study Variables**

Correlational analyses were carried out among major study variables using the continuous AAI scores rather than categorical classifications. Significant associations were revealed between PSS scores, HPLP scores, and continuous AAI scores. Specifically, moderate to strong, negative correlations emerged between perceived stress and health promoting behavior scores. These associations indicated that higher health promoting behavior scores were related to lower
perceptions of stress as measured by the PSS. These findings were significant for each subscale of the HPLP except Health Responsibility. (See Table 4).

In addition, a significant positive relationship was revealed between security of attachment (using continuous AAI scores) and HPLP total scores ($r = .282$, $p < .05$). This association was also significant between security of attachment and the Interpersonal Support subscale ($r = .364$, $p < .01$).

The continuous AAI scores of subjects with dismissing attachment classifications were negatively associated with HPLP total scores ($r = -.315$, $p = .03$), and also with the Health Responsibility and Interpersonal Support subscales ($r = -.284$, $p = .05$; $r = -.395$, $p = .005$). Thus, the subjects with secure attachment representations were more likely to routinely practice health promoting behavior than those with insecure attachment representations.

There were no positive or negative correlations found between the continuous AAI preoccupied scores and PSS scores or HPLP scores. The reasons for this lack of any pattern are not clear and warrant further investigation.
Table 4

Correlations Among Major Study Variables

(N = 50)

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Perceived Stress</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Health Promotion</td>
<td>-0.497***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Self-Actualization</td>
<td>-0.562***</td>
<td>0.820***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Health Responsibility</td>
<td>-0.238</td>
<td>0.836***</td>
<td>0.534***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5. Exercise</td>
<td>-0.530***</td>
<td>0.695***</td>
<td>0.436*</td>
<td>0.520***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6. Nutrition</td>
<td>-0.301*</td>
<td>0.683***</td>
<td>0.378**</td>
<td>0.565***</td>
<td>0.395**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Interpersonal Support</td>
<td>-0.293*</td>
<td>0.829***</td>
<td>0.7057***</td>
<td>0.633***</td>
<td>0.445***</td>
<td>0.500***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Stress Management</td>
<td>-0.380**</td>
<td>0.827***</td>
<td>0.697***</td>
<td>0.624***</td>
<td>0.530***</td>
<td>0.463***</td>
<td>0.632***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Secure (AAI)</td>
<td>-0.058</td>
<td>0.282*</td>
<td>0.184</td>
<td>0.243</td>
<td>0.151</td>
<td>0.229</td>
<td>0.364**</td>
<td>0.169</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Dismissing (AAI)</td>
<td>0.067</td>
<td>-0.315*</td>
<td>-0.162</td>
<td>-0.284*</td>
<td>-0.213</td>
<td>-0.255</td>
<td>-0.395**</td>
<td>-0.201</td>
<td>-0.907***</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>11. Preoccupied (AAI)</td>
<td>0.044</td>
<td>-0.029</td>
<td>-0.082</td>
<td>0.010</td>
<td>0.026</td>
<td>-0.039</td>
<td>-0.071</td>
<td>0.035</td>
<td>-0.516***</td>
<td>0.126</td>
<td>1.000</td>
</tr>
</tbody>
</table>

* p < .05       **p < .01       ***p < .001
Multiple Regression with HPLP, AAI, and PSS Scores

A third model was investigated with Health Promoting Lifestyle Profile scores as the dependent variable, and PSS and AAI scores as the predictors. Using multiple regression, it was determined that a significant proportion of the variance in HPLP scores could be accounted for by the PSS scores and the continuous AAI scores (R = .311, F = 10.61, p = 0.0002). This is interpreted as, the higher the AAI score (the stronger the security of attachment rating), and the lower the perceived stress score, the higher the Health Promoting Behavior Score will be. This statistically significant finding will be discussed further in Chapter V.

Demographic Variables

Relationships Among Secure and Insecure Groups, HPLP Scores, PSS Scores, and SRRS Scores

The mean age of the secure group was 31.97 years, slightly older than 30.18 years, the mean age for the group classified as insecure. The mean for the entire sample was 31.36 years. When the continuous AAI score was entered with the variable of age, a negative association with subjects classified as preoccupied emerged, indicating that younger subjects were more likely to be rated as preoccupied.

The average number of children for this sample of 50 mothers was 1.72. Average number of children for the secure and insecure groups differed only slightly with 1.67 and 1.76 being the respective averages.
Regarding pregnancy status, 6 mothers were pregnant at the time of the interview. Four of these subjects were classified as secure, while two were classified as insecure. None of these subjects had changed attachment classification status.

Employment pattern findings revealed that 13 subjects (26% of the sample) are working part-time outside the home. Seven of these women (54% of this group of part-time workers were classified as secure, while six individuals (46%) were assigned an insecure classification.

A total of 29 women (58% of the sample) were employed full-time outside the home. Twenty-one of these subjects (72%) belonged to the secure group, while eight of these full-time workers (28%) were classified in the insecure group. Eight women (16%) reported that they were not working outside the home. Five (62.5%) of these women were classified as secure, three (37.5%) were classified as insecure.

Other demographic variables that are of interest are family income and education of the mother. The mean family income of those reporting these data (n=45) was $52,160 (range = $16,000 to $130,000). When the family incomes of secure and insecure groups were investigated separately, the mean income of the secure group was $49,838 and the mean income of the insecure group was $51,618.

The mean years of education for the sample (n=50) was 15.28 years. The mean of the secure group (n=33) was 15.36 years and the mean of the insecure
group was slightly lower at 14.53 years. Findings did not demonstrate differences of statistical significance between the secure group and the insecure group regarding these selected demographic variables.

Variability in HPLP scores, PSS scores, and SRRS scores was computed with these selected demographic variables, however these analyses did not result in significant findings.

Summary

In this chapter, findings of this study have been presented and have been related to the original research questions and objectives. The next chapter will focus on a discussion of these results.
CHAPTER V
DISCUSSION

Introduction
This chapter will present a discussion of the results of this study. The original research objectives will provide the framework for this discussion. It will begin with the results of the Adult Attachment Interview and will address the issue of stability of classifications as measured in this sample of new mothers.

A second theme will focus on health status and health promotion behaviors of this group of women. As stated in the rationale, links between mental representations of attachment and health promotion practices will be discussed.

The third section will focus on these new mothers' perceptions of stress in their lives and will examine relationships between AAI classifications, perceived stress, and health-promoting lifestyles.

Conclusions and implications for future study will be presented in the final section.

Adult Attachment Interview Classifications
First, it is interesting to note the distribution of attachment classifications of subjects in this sample. Of the 50 women interviewed, 33 (66%) were classified
as secure, 7 (14%) were dismissing, and 10 (20%) were preoccupied. This pattern can be compared with distributions from two other studies.

Fonagy, et al. (1991), interviewed expectant mothers in England (N=96) using the AAI and reported 59 (61%) were secure, 22 (23%) were dismissing, and 15 (16%) were preoccupied.

Another study of 83 mothers in the Netherlands found 46 (55%) were secure, 20 (24%) were dismissing, and 17 (20%) were rated as preoccupied, using the AAI (Bakermans-Kranenburg & Van IJzendoorn, 1993).

**Stability of AAI Classifications**

One of the primary objectives of this study was to assess the stability of mental representations of attachment over the transition to motherhood. Bowlby (1969) believed that an individual's state of mind with regard to attachment remains stable across the lifespan. However, he also suggested that transitions such as that experienced by women during pregnancy, childbirth, and parenting, reactivate attachment behaviors. These behaviors would include heightened anxiety at being alone and an expressed need for the support of significant others.

Related to this discussion of stability of attachment status is the proposal of Byng-Hall (1989) that a supportive spouse may provide a secure base for the new mother and help to bring about positive change in her mental representation of attachment. If this is true, it is important to keep in mind that the reverse could also be a possibility. When the new mother is vulnerable and needing reassurance, if support is not forthcoming from an attachment figure, and her
resilience is less than adequate, a negative change may be evident with regard to attachment status.

In this study, 38 of the 50 subjects had been interviewed using the AAI during the third trimester of their first pregnancy (Lutz, 1993). At this second administration of the AAI, their first children were between the ages of 2½ to 3½ years. Twenty-seven (71%) were classified in the same attachment category. Of the 11 (29%) subjects who changed categories, 3 changed from insecure to secure and 8 changed from secure to insecure. There were 2 subjects whose ratings changed within the insecure classification, one from dismissing to preoccupied, one from preoccupied to dismissing.

These results are similar to another study involving the reliability of the AAI. Bakermans-Kranenburg and Van IJzendoorn (1993) assessed mental representation of attachment using the AAI in a sample of 83 mothers in the Netherlands, as previously mentioned. Two administrations of the AAI over a two month period of time revealed that 58 subjects (71%) were classified in the same categories both times. This was exactly the same percentage as was found in the present study, even though a longer period of time (2½ to 3½ years) had elapsed.

Benoit and Parker (1994) also investigated the stability of the AAI in a group of 84 women. Attachment classifications were assessed during the last month of pregnancy and again about 12 months later. They found 90% of the mothers remained unchanged in their classifications at the second administration. The authors suggested that this remarkably high reliability finding may be due to a
sample skewed toward secure ratings (71%), known to demonstrate less change than insecure ratings.

In order to address the issue of change in the present study, the transcripts for each of the 13 subjects whose classifications changed were re-examined for key events or indications of conscious processes that might have contributed to change. Of the 3 subjects who changed from insecure to secure, 2 have been in therapy during the past year; both of these women are on anti-depressant medication. The third subject indicated in response to an AAI question, that over the past 3 years she had been through a process of resolution and forgiveness in a relationship with her mother that had been troubled since childhood. She stated this relationship is now close and supportive.

The subject whose rating changed within the insecure classification from preoccupied to dismissing had experienced depression for a year following the birth of her child. She sought therapy with a psychologist and stated she realized that she was "trying to be perfect like my mother;" she believes she is more realistic now in what she expects of herself. At the end of the interview, she did not remember whether her answers were different from those of the first interview.

The subject whose rating changed from dismissing to preoccupied stated she believed her answers were different because her feelings about her parents "have changed." She stated that she is angry and hurt because they have not made
an attempt to get to know her two children. She seemed to be re-experiencing the rejection she had reported living with as a child.

An examination of the transcripts of the 8 subjects whose classifications changed from secure to insecure revealed relationship problems in the families of each subject during their childhood years. Five of the eight subjects (62.5%) were raised in families with an alcoholic parent (4 were fathers, 1 was her mother). Violence in the home, abuse, and fear of the parent were described by these subjects as being experienced while they were children.

A sixth subject did not report alcohol abuse, however, she stated she was the youngest of 9 children and was afraid of her father because of his temper. The seventh subject had a very critical mother and stated she is still dealing with her mother's criticism as she tries to raise her own children. The eighth subject whose classification changed from secure to insecure was twelfth in a family of thirteen children. She expressed that she was unsure about how to be a good mother and how to talk with and interact with her children because she never had one on one time with either parent.

The angry words and emotional tone of one subject whose classification changed from secure to insecure (preoccupied) were revealing in their intensity. She had experienced physical and emotional abuse from her father who was an alcoholic. She stated, "I probably should go to therapy; I'm very angry at my whole childhood; I just can't forgive him."
Transcripts of the subjects who were classified as secure at the first interview, and who remained secure at the second interview, were examined in the same manner as those previously described, to determine the presence of an alcoholic parent during childhood. (The AAI questions asking the subject to describe her relationship with mother and with father were reviewed.) Of these 22 subjects, 2 described having been raised in a home where a parent was an alcoholic (both were fathers). This is 9% of the secure group who remained secure, a significant contrast to the 62.5% of the secure group who changed to insecure. Future studies are needed to further define the impact of negative relationship patterns and an alcoholic parent on attachment status.

The puzzle of why an individual's attachment classification would be rated in one category at the first interview, then change to a different rating at the second interview has been considered by others. Bakermans-Kranenburg and Van IJzendoorn (1993) found in their study of the reliability of the AAI, that subjects whose category changed over a two month period, seemed to have reflected more on the questions asked in the interview and on answers they gave.

Fonagy et al. (1991) refers to a reflective-self function as a characteristic that is identified with resilient mothers. One subject in the present study seemed to be describing this reflective process when she responded that she believed her answers were different this time. She stated that one question from the first interview had made a tremendous difference to her. The question was, "Why do you think your parents behaved as they did during your childhood?" She stated
she still remembers how this question started her on a process of trying to understand her parents' behavior. She reported that she began to see them in a different light, and, over the 3 years since the first interview, has been able to resolve formerly painful issues by reflecting on the answer to that question.

From the narratives of these women, it appears that the experience of learning to care for their own children may open up thought processes leading to reflection on painful childhood experiences and possible eventual forgiveness and resolution. This process may take years rather than months, and perhaps it is this reflection itself that shows up as a preoccupied classification in a formerly secure individual.

Fonagy et al. (1991) have suggested the possibility of a certain fragility in seemingly secure subjects. In a sample of 96 women in England, a prenatal AAI was administered, then the Strange Situation was used 12 months later to see if results of the AAI could predict security of attachment in the infants of these women. In 75% of the cases, the infants' classifications matched those of the mothers. It was in the cases of these seemingly secure mothers whose infants were insecure that this observation of fragile secure was proposed. It may be that the adaptation and defensive processes of these women are interpreted as secure at one point, then, with the role strains of motherhood or other stressful events or relationships, they are not able to maintain these defenses, and insecure mental representations become predominant.
Pearson et al. (1994) investigated depressive symptoms in a sample of 40 parents of preschoolers in terms of earned-secure and continuous-secure classifications of attachment. The earned-secure group, that is, those who had early relationship difficulties with parents, but had achieved secure status as adults, were significantly more likely to have depressive symptoms than the continuous-secure group (those who described secure childhood relationships with parents).

In each case of the present study where a subject's rating changed from secure to insecure, the woman had described overcoming difficult circumstances to achieve this initial secure attachment status. The Adult Attachment Interviews of the present study were not scored with earned-secure or continuous-secure ratings, however, the possible increased vulnerability of earned-secure individuals suggested by Pearson's study, may be one possible explanation for the changes in attachment status.

Sroufe et al. (1990) found that children who were classified as secure at one year of age, then went through a troubled phase (insecure rating) in their preschool years, returned to a secure classification in early elementary school years, demonstrating resilience and durability of the original AAI rating. It would be of interest to follow these women until their oldest children are six years of age and to re-administer the AAI to see if they return to a secure classification, just as the children did in Sroufe's study.
**Health Promotion Behaviors and AAI Classifications**

First, it is important to look at overall HPLP scores of this sample and how they compare to those of other studies. In a study of the determinants of health promotion behaviors in women ages 35 to 65 years (mean age 45.5 years, S.D.=8.3), Duffy (1988) reported a mean HPLP total score of 138.93, S.D.=19.40. This is a higher reported use of health promoting behaviors than was found in the present study (131.18, S.D.=21.8) among younger adult women, ages 25 to 40 years, (mean age 31.4 years, S.D.=3.96).

This finding of less routine use of health promoting behaviors among these younger adult subjects is similar to the results obtained when health behaviors of young, middle-aged, and older adults (both men and women) were compared (Walker, et. al., 1988). Although means and standard deviations were not stated, significant differences were reported for means on total health promoting lifestyle scores and for the subscales of health responsibility, nutrition, and stress management, with older adults having higher scores than middle-aged or younger adults.

Regarding health promotion behaviors and AAI classifications, it is acknowledged that many facets of a person's environment contribute to health and well-being. One idea pursued in this study is that secure mental representation of attachment, as measured by the AAI, would be positively correlated with health-promoting lifestyle patterns, as measured by the Health-Promoting Lifestyle Profile.
This is suggested by the idea of Bowlby (1988) that an infant learns self-worth from early interactions with a responsive caregiver, and that this working model of being worthy of care is stable throughout her life. It would then follow that as an adult, she would continue this caring pattern by incorporating positive self-care practices into her life.

It would also fit into Bowlby's ideas about the protective, survival function of attachment behavior that a mother of a young child would be especially concerned with her own safety and well-being in order to promote optimal probability that she will stay healthy to raise her child.

Although means of the secure group were higher overall and on each subscale of the HPLP, the only results approaching statistical significance in a one-way ANOVA were in the categories of health responsibility and interpersonal support. An examination of specific questions in these two subscales demonstrates a strong relationship with thought processes of concern in attachment theory, especially the subscale of interpersonal support.

For example, a high score would be given for answering "routinely" to the statements, "Discuss personal problems and concerns with persons close to me," "Maintain meaningful and fulfilling interpersonal relationships," "Find it easy to express concern, love and warmth to others." (See Appendix E).

When Pearson correlation coefficients were computed, using the HPLP scores and the continuous AAI scores, significant positive associations were
revealed. This finding suggests that secure mental representations of attachment are related to positive health promoting behaviors.

One other association that emerged in this analysis was a negative relationship between dismissing continuous AAI scores and overall HPLP scores, Health Responsibility scores, and Interpersonal Support scores. This negative association suggests that those individuals classified as insecure (dismissing) in terms of their mental representations of attachment, are less likely to report positive, health promoting behaviors.

In an attempt to explain determinants of health promotion behavior, the U.S. Public Health Service developed the Health Belief Model (Becker, 1974). The assumption of this model is that health promoting decisions are made on a conscious level. The model using HPLP scores as the dependent variable demonstrated that a significant proportion of the variance in scores (33%) could be accounted for by the continuous AAI Scores and the PSS Scores. This result suggests that health promotion behavior may be, at least in part, an unconscious process, guided by the internal working model of the individual.

**Perceptions of Stress**

Stress, as perceived by subjects in this study, was measured using the Perceived Stress Scale. (See Appendix F). The question being investigated was whether or not the subjects with secure attachment ratings would perceive significantly less stress in their lives than those who were rated as insecure. This question is derived from the characteristics of securely attached individuals to be
autonomous, to have a sense of control over their lives, and to be able to communicate a need for support from significant others. The data did not support such a relationship, although the mean of the secure group indicated slightly lower perceived stress than that of the insecure group.

The life events scale (Social Readjustment Rating Scale) (See Appendix G) results showed widely varying scores; these contributed to an understanding of the question of stress only in an indirect way. The scores of the secure group were higher than those of the insecure group, indicating more stressful life events happened to them in the past year, however, the perceived stress scores were slightly lower for the secure group. Because of the lack of statistical significance, no conclusions can be drawn from these data.

An interesting negative correlation was demonstrated when perceived stress scores were correlated with health promoting lifestyle scores. The negative correlation of overall scores of both measures was moderate to strong and this held for each of the subscales of the HPLP. These results suggest that individuals who incorporate more health-promoting behaviors into their lives also score lower on perceptions of stress in their lives.

Demographic Variables

The question of demographic variables was examined to determine if mother's age, years of education, family income, number of children or hours worked outside the home could be meaningfully associated with attachment status, health behaviors, or perceptions of stress. The only variable to reach statistical
significance was that of age, which was negatively associated with subjects who were classified as preoccupied. This suggests that younger subjects were more likely to be classified as preoccupied than older subjects. The other demographic variables were not significantly related to the major study variables.

Conclusions of the Study

Several interesting relationships have emerged in this study of mental representations of attachment, health promoting behavior, and perceived stress.

First, the distribution of subjects among the secure, dismissing and preoccupied categories was found to be similar to that of 2 other recent studies (Fonagy, et al., 1991; and Bakermans-Kranenburg & Van IJzendoorn, 1993).

The stability of these ratings over a 2½ to 3½ year period of time was also determined to be similar to that of the previously mentioned 2 studies, although a longer time period had elapsed in this study. This would add evidence to support Bowlby's belief that mental representation of attachment remains stable across life transitions. Stability was lower than that achieved in a test-retest study by Benoit and Parker (1994).

Possible mediators of change in mental representation of attachment have been suggested by this study. These are participation in psychotherapy, resolution and forgiveness in a previously troubled attachment relationship, and the re-experiencing of childhood rejection brought on by a subject's parents' current rejection of the subject's own children.
Other possible mediators of change involve the subject's self-reflection on issues raised, either by the transition to motherhood, or by the AAI, or possibly, by both. This reflective process may take years rather than months to reach resolution, if that is ever achieved, and may be measured as "preoccupied" within the scoring system of the AAI. This would place the preoccupied classification into possible interpretation as a dynamic movement toward self-understanding and growth, rather than as a static, unchanging, stable state of mind.

Significant associations were found among high HPLP scores and highly secure attachment when the continuous AAI scores were used in the analysis. This suggests that an unconscious mechanism such as the internal working model, as conceptualized by Bowlby (1969), may be a one determinant of an individual's self-care practices.

Perceived stress was not found to be significantly different for the secure and insecure groups. However, because of the moderate to strong negative relationship that emerged with HPLP scores, it appears that more routine positive health promoting practices are associated with a lower perception of stress in this sample of new mothers.

The demographic variable of age was negatively associated with subjects who were classified as preoccupied, indicating that younger subjects were more likely to be classified as preoccupied than older subjects.
Implications for Future Study

The middle to upper middle socioeconomic background and rather high educational achievement of this largely Caucasian sample is not representative of the general population. Future studies should attempt to include subjects from a wider variety of socioeconomic and cultural backgrounds. Also, the number of subjects in this study (n=50) limited the effectiveness of statistical procedures and meant that it was necessary to combine the dismissing and preoccupied subjects into one insecure group. Increasing sample size in future studies would help to avoid this limitation.

There were several subjects who seemed to experience the Adult Attachment Interview as a therapeutic intervention. It would be interesting to explore its usefulness with clinical populations, especially with clients and families who are seeking help with parenting issues.

The importance of spiritual growth and religious faith was mentioned by several subjects. Although a few studies have been reported that have explored attachment theory and religion (Kirkpatrick, 1992; Kirkpatrick & Shaver, 1990), this area of inquiry was not a part of the AAI and was not addressed in any of the instruments. However, the self-initiated insights shared by these women regarding their beliefs in the presence of a loving God, especially for those who lacked the experience of loving parents, indicate a need to include this topic in future studies of attachment.
Studies of physiological changes occurring during the Adult Attachment Interview indicate that certain defensive processes bring about changes in skin conductance, one measure of the stress response (Dozier & Kobak, 1992). This was especially marked in dismissing subjects during phases of the interview that asked for responses about separation or rejection experiences. In view of these findings, and the associations revealed in this study with regard to perceived stress and attachment classification, future research needs to further refine knowledge of the body's own physiological responses to the mental processes of the attachment system.

**Concluding Remarks**

In the initial stages of planning this study, one idea that guided the process was that the transition to motherhood is believed to be a time of both opportunity and vulnerability in the emotional development of women. One subject voiced this very thought. (She was one of 3 subjects who changed from insecure to secure.)

When asked if she thought she had answered the AAI questions differently this time, she replied, "Yes. I, ... definitely, because I was so ... so nervous." In explaining that difference, she answered, "Increased self-confidence ... because I have seen what a beautiful child she is, and ... it doesn't come from ... from the air. She came from me, you know? ... so there must be some good in there."

The willingness of these women to share their experiences and thoughts made it possible to explore the questions raised in this study. Their contributions have helped to increase our understanding of this time of reflection and growth.
APPENDIX A

Protocol for phone call to potential subjects

Hello, Mrs _______?

My name is Sara Rothschild. I'm a nurse doing graduate work with Dr. Ellen Hock in the Department of Family Relations and Human Development at Ohio State University.

I understand that you have been participating in the Transition to Motherhood Study during the past few years. Is that correct? We have appreciated your willingness to share your experiences with us and I'm calling to invite you to participate in a related study I'm conducting for my dissertation that will focus on women's health patterns, their experience of stress in their lives, and their memories of early childhood relationships with their parents.

Is this a convenient time for me to give you a little more information about this study? (If not, I will arrange to return the call at a later time. If she responds that she does not wish to participate, I will thank her and politely end the conversation).

I would like to arrange to interview you either at your home or at another location where we could talk for about an hour to an hour and a half. This could be during the day, evening or weekends, depending on what would work best for you. The interview would involve general questions about your early childhood memories; I would also be sending you three questionnaires, one about your perceptions of stress in your life, one about events or changes in your life over the past year, and the other is about health-related concerns. These could be completed at your convenience before we meet. I would be taping our interview.

I would like to emphasize that confidentiality of participants is maintained; numbers are used for identification purposes; the tapes will be destroyed after the information has been obtained for our research. You will be informed of the disposition of the tape at the conclusion of our study. Also, I want to assure you that you have the right to decide not to participate in this study at any time, including during the interview.
(If this person decides to participate, set time, date and location for the interview).

I will be sending you a letter that will review what we have talked about and confirm the time of our appointment. Included in the letter will be the three questionnaires I mentioned.

If you need to contact me to change the day or time of our appointment, you can reach me at 538-1044.

(I will close by thanking her for her willingness to participate in this study and tell her that I look forward to seeing her on the arranged date).
APPENDIX B
APPENDIX B

Mother's Information Form

1. Are you currently working outside the home? Yes No
   Hours per week:_________ Full-time____ Part-time____
   Is your husband working? Full-time____ Part-time____
   Have you had any major changes in income in the past 3 years?

2. Age of Mother____ Age(s) of Child (Children)________________
   Are you pregnant?______ Due Date?______
   Have you had any other pregnancies?________________

3. Marital Status? _____ Married _____ Separated
   _____ Widowed _____ Divorced

4. Current Address:__________________________________________
   Phone Number:__________________________________________
APPENDIX C

Health Questionnaire

1. Are you having any health problems or chronic symptoms at the present time?

2. Are you taking any medications or are you being treated by a medical doctor for any illnesses?

3. In your opinion, do you feel like you are in relatively good health?

4. What do you do (or do not do) to maintain your own health?

5. How would you explain why you do (or do not) take steps to maintain your own health?
   a) Would you say you do it for yourself?
   b) Would you say you do it for your child, so that you will stay healthy to be able to parent your child?
APPENDIX D

Adult Attachment Interview

1. Could you start by helping me get oriented to your early family situation, and where you lived and so on? If you could start out with where you were born, whether you moved around much, what your family did at various times for a living?

2. I'd like you to try to describe your relationship with your parents as a young child...if you could start from as far back as you can remember?

3. Now I'd like to ask you to choose five adjectives that reflect your childhood relationship with your mother. I know this may take a bit of time, so go ahead and think for a minute...then I'd like to ask you why you chose them.

4. Now I'd like you to choose five adjectives that reflect your childhood relationship with your father. I'm going to ask you again why you chose them.

5. To which parent did you feel the closest, and why? Why isn't there this feeling with the other parent?

6. When you were upset as a child, what would you do?

7. What is the first time you remember being separated from your parents? How did you or they respond? Are there any other separations that stand out in your mind?

8. Did you ever feel rejected as a young child? Of course, looking back on it now, you may realize it was not really rejection, but what I'm trying to ask about here is whether you remember ever having felt rejected in childhood?

9. Were your parents ever threatening with you in any way, --- maybe for discipline, or maybe just jokingly?

10. How do you think these experiences with your parents have affected your adult personality? Are there any aspects to your early experiences that you feel were a set-back in your development?
11. Why do you think your parents behaved as they did, during your childhood?

12. Were there any other adults with whom you were close, like parents, as a child? Or any other adults who were especially important to you, even though not parental?

13. Did you experience the loss of a parent or other close loved one (sibling, or close family member) while you were a young child?

Did you lose any other important persons during your childhood?

Have you lost other close persons, in adult years?

14. Have there been many changes in your relationship with your parents (or remaining parent) since childhood? I mean from childhood through until the present?

15. What is your relationship with your parents like for you now as an adult?

16. How do you respond now, in terms of feelings, when you separate from your child?

17. If you had three wishes for your child twenty years from now, what would they be? I'm thinking partly of the kind of future you would like to see for your child. I'll give you a minute to think about this one.

18. Is there any particular thing which you feel you learned above all from your own childhood experiences? What would you hope your child might have learned from his/her experiences of being parented?
APPENDIX E
### LIFESTYLE PROFILE

**DIRECTIONS:** This questionnaire contains statements regarding your present way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the regularity with which you engage in each behavior by circling:

- N for never,
- S for sometimes,
- O for often, or
- R for routinely.

<table>
<thead>
<tr>
<th></th>
<th>NEVER</th>
<th>SOMETIMES</th>
<th>OFTEN</th>
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<tbody>
<tr>
<td>1. Eat breakfast.</td>
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<td>2. Report any unusual signs or symptoms to a physician.</td>
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<td>3. Like myself.</td>
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<td>4. Perform stretching exercises at least 3 times per week.</td>
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<td>5. Choose foods without preservatives or other additives.</td>
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<td>6. Take some time for relaxation each day.</td>
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<td>7. Have my cholesterol level checked and know the result.</td>
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<td>8. Am enthusiastic and optimistic about life.</td>
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<tr>
<td>9. Feel I am growing and changing personally in positive directions.</td>
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<tr>
<td>10. Discuss personal problems and concerns with persons close to me.</td>
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<td>11. Am aware of the sources of stress in my life.</td>
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<td>12. Feel happy and content.</td>
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<td>13. Exercise vigorously for 20-30 minutes at least 3 times per week.</td>
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<td>14. Eat 3 regular meals a day.</td>
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<td>15. Read articles or books about promoting health.</td>
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<td>17. Work toward long-term goals in my life.</td>
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<td>18. Praise other people easily for their accomplishments.</td>
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<td>19. Read labels to identify the nutrients in packaged food.</td>
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<td>20. Question my physician or seek a second opinion when I do not agree with recommendations.</td>
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<td>21. Look forward to the future.</td>
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<td>22. Participate in supervised exercise programs or activities.</td>
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<tr>
<td>23. Am aware of what is important to me in life.</td>
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</table>
24. Enjoy touching and being touched by people close to me.  
25. Maintain meaningful and fulfilling interpersonal relationships.  
26. Include roughage/fiber (whole grains, raw fruits, raw vegetables) in my diet.  
27. Practice relaxation or meditation for 15-20 minutes daily.  
28. Discuss my health care concerns with qualified professionals.  
29. Respect my own accomplishments.  
30. Check my pulse rate when exercising.  
31. Spend time with close friends.  
32. Have my blood pressure checked and know what it is.  
33. Attend educational programs on improving the environment in which we live.  
34. Find each day interesting and challenging.  
35. Plan or select meals to include the "basic four" food groups each day.  
36. Consciously relax muscles before sleep.  
37. Find my living environment pleasant and satisfying.  
38. Engage in recreational physical activities (such as walking, swimming, soccer, bicycling).  
39. Find it easy to express concern, love and warmth to others.  
40. Concentrate on pleasant thoughts at bedtime.  
41. Find constructive ways to express my feelings.  
42. Seek information from health professionals about how to take good care of myself.  
43. Observe my body at least monthly for physical changes/danger signs.  
44. Am realistic about the goals that I set.  
45. Use specific methods to control my stress.  
46. Attend educational programs on personal health care.  
47. Touch and am touched by people I care about.  
48. Believe that my life has purpose.
APPENDIX F
APPENDIX F

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather, indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:

0. never
1. almost never
2. sometimes
3. fairly often
4. very often

1. In the last month, how often have you been upset because of something that happened unexpectedly? 0 1 2 3 4

2. In the last month, how often have you felt that you were unable to control the important things in your life? 0 1 2 3 4

3. In the last month, how often have you felt nervous and "stressed"? 0 1 2 3 4

4. In the last month, how often have you dealt successfully with irritating life hassles? 0 1 2 3 4

5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life? 0 1 2 3 4
6. In the last month, how often have you felt confident about your ability to handle your personal problems? 0 1 2 3 4

7. In the last month, how often have you felt that things were going your way? 0 1 2 3 4

8. In the last month, how often have you found that you could not cope with all the things that you had to do? 0 1 2 3 4

9. In the last month, how often have you been able to control irritations in your life? 0 1 2 3 4

10. In the last month, how often have you felt that you were on top of things? 0 1 2 3 4

11. In the last month, how often have you been angered because of things that happened that were outside of your control? 0 1 2 3 4

12. In the last month, how often have you found yourself thinking about things that you have to accomplish? 0 1 2 3 4

13. In the last month, how often have you been able to control the way you spend your time? 0 1 2 3 4

14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? 0 1 2 3 4
APPENDIX G
APPENDIX G

Social Readjustment Rating Scale

Please circle the number of the life events/changes that have occurred for you in the last year:

1. Death of spouse
2. Divorce
3. Marital Separation
4. Jail Term
5. Death of close family member
6. Personal injury or illness
7. Marriage
8. Fired at work
9. Marital reconciliation
10. Retirement
11. Change in health of family member
12. Pregnancy
13. Sex difficulties
14. Gain of new family member
15. Business readjustment
16. Change in financial state
17. Death of close friend
18. Change to different line of work
19. Change in number of arguments with spouse
20. Mortgage over $10,000
21. Foreclosure of mortgage or loan
22. Change in responsibilities at work
23. Son or daughter leaving home
24. Trouble with in-laws
25. Outstanding personal achievement
26. Spouse began or stopped work
27. Began or ended school
28. Change in living conditions
29. Revision of personal habits
30. Trouble with boss
<table>
<thead>
<tr>
<th></th>
<th>Change in work hours or conditions</th>
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<tr>
<td>32.</td>
<td>Change in residence</td>
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<tr>
<td>33.</td>
<td>Change in schools</td>
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<tr>
<td>34.</td>
<td>Change in recreation</td>
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<tr>
<td>35.</td>
<td>Change in church activities</td>
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<td>36.</td>
<td>Change in social activities</td>
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<tr>
<td>37.</td>
<td>Mortgage or loan less than $10,000</td>
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<tr>
<td>38.</td>
<td>Change in sleeping habits</td>
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<tr>
<td>39.</td>
<td>Change in number of family get-togethers</td>
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<td>40.</td>
<td>Change in eating habits</td>
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<td>41.</td>
<td>Vacation</td>
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<td>42.</td>
<td>Christmas</td>
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<td>43.</td>
<td>Minor violations of the law</td>
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REFERENCES


