

**THE STRANGE SITUATION ASSESSMENT
PROCEDURE: A CRITICAL REVIEW**

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THE STRANGE SITUATION ASSESSMENT

PROCEDURE: A CRITICAL REVIEW

A Research Paper

Presented to the
Graduate and Research Council of
Austin Peay State University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

by

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December 1990

ACKNOWLEDGEMENTS

The author wishes to express sincere appreciation to Dr. Patricia Chappell, Professor of Psychology, Austin Peay State University, for her aid, guidance and time given during the entire study.

Appreciation is extended to Ms. Janice K. Bell for her valuable assistance in making this study possible.

Additionally, the author wishes to thank Brenda and Amie for their love and understanding during the study.

To the Graduate and Research Council:

I am submitting herewith a research paper, written by Larry Post, entitled "The Strange Situation Assessment Procedure: A Critical Review." I have examined the final copy of this paper for form and content, and I recommend that it be accepted in partial fulfillment of the requirements for the degree Master of Science, with a major in Psychology.

Patricia F. Chazell
Major Professor

We have read this research paper, and recommend its acceptance:

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Chapter I

INTRODUCTION

As human infants interact with their caregivers an attachment relationship develops between them. The interactions between the infant and the caregiver are special from the outset; both caregiver and infant are mutually influenced by the behaviors each brings to the interactions. The nature of attachment that develops out of these interactions and the process whereby attachment forms have been of interest to both theorist and empirical investigator.

Several scholars have contributed to a theoretical formulation of attachment. Sigmund Freud, John Bowlby, and Mary Ainsworth all have contributed significant theoretical statements concerning the development of attachment. Freud's (1957) concept of tension reduction is central to his theory concerning attachment. Attachments between infants and caregivers develop as the infants recognize that the caregivers not only contribute to their pleasurable states but are more efficient in doing so than they themselves are. The attachment relationship to Freud was a very significant achievement as it would serve as a prototype for all other relationships through life.

Bowlby's (1969) attachment theory built on Freud's psychoanalytic concepts but incorporated concepts from ethology and control systems theory. Ethology provides an emphasis on the behaviors of the infant and response capabilities of the adult of the species which bring the pair members together and help to protect the life of the infant, and thus, the species. Control systems theory provides an explanation of how the physical proximity between the pair members is regulated. Bowlby described the course of the development of attachment in stages across the early years of the infant's life; under adequate caregiving conditions, infants will manifest a fully developed secure attachment and an internal representation of the caregiver by the end of the first year of life.

Ainsworth (1969) similarly described the development of attachment in stages across the early years of life in the human infant. Building on psychoanalytic theory, Ainsworth focused on the "felt security" which develops in the presence of the caregiver in those infants who, as Bowlby had also suggested, had experienced adequate and sensitive caregiving. Ainsworth's major contribution to the understanding of how attachment develops is the Strange Situation, a measure of individual differences in the quality of attachment. The Strange Situation is a laboratory measure which has the capability of differentiating among infants who vary in felt security

under standardized conditions. The laboratory assessment, the Strange Situation, exposes the infant to cumulative stress in order to evaluate how the infant used the caregiver to achieve a calm and secure state.

In this paper a description and evaluation of the instrument will be presented. In Chapter II, the theories of Freud, Bowlby, and Ainsworth will be discussed. A description of the Strange Situation will be given in Chapter III with an evaluation of its reliability and validity. Chapter IV will show how the instrument has enlightened our understanding of the development of attachment in infants and caregivers where development is atypical. Finally, in Chapter V, a summary of the study of attachment will be provided with directions for future research.

Chapter II

ATTACHMENT THEORIES

The study of the attachment relationship has occupied the scientific community for a significant part of the last 70 years. From Freud (1957) and his psychoanalytic approach to the current focus of cognitive developmental issues, each contribution has added to the theoretical basis for our work on attachment. Sigmund Freud (1957), John Bowlby (1969), and Mary Ainsworth (1969) have provided some of the most influential statements concerning attachment relationships. All three present the concept of biological instincts as the initial means for contact between infants and caregivers, but both Bowlby (1969) and Ainsworth (1969) focus on a cognitive perspective exhibited by the behaviors found in the attachment interactions.

Sigmund Freud

Freud's (1957) concepts concerning attachment were focused on the psychoanalytic perspective that biological instincts direct human infants in interaction with their caregivers. The biological needs of the infants, represented by the pleasure-oriented Id, create an inner tension for the infants, forcing them to reduce the tension by whatever means is available in order to return to a calm inner state. The biology of the young infants provides the infants with only the most primitive means of reducing the

inner tension (sucking) or expressing tension (crying). The caregivers provide food while also providing physical contact (stroking, patting, holding) for the infants, each of which helps reduce the infants' inner tension. The caregivers fill the role of regulating the infants' inner tension until the time when they are capable of doing so themselves. These interactions between the pair develop into an attachment relationship as infants come to realize caregivers are more effective in reducing tension than they are. Freud (1957) maintained that the relationship between infants and their caregivers (mothers) would be unique, without parallel, and would be considered the prototype for all future relationships in life.

Freud's theory of instinctual drives was one of the earliest attempts at understanding attachment, but his work fell short of answering all the questions or even in raising all significant questions concerning attachment relationships. Freud never expanded his work before his death and his work continues to be considered incomplete, scattered, and contradictory (Ainsworth, 1969).

Neo-Freudians differed in their theoretical approach as they tried to add to Freud's work. One group viewed the development of object relations as being an important concept in ego development. Fairbairn and other object-relations theorists (see Bretherton, 1987) differ from Freud primarily in their focus on the relationship between infants

and external objects (including other people), whereas Freud had focused on inner tension, e.g., between Id and Ego. Object relations theory has been important in directing our study of attachment since Freud, insofar as our current focus is on the study of the behavioral interactions between caregivers and infants. Although Freud presented an incomplete theory, his concepts provided the beginnings for other theories.

John Bowlby

Bowlby (1969) developed his attachment theory with the ethological approach but he also included a behavioral systems approach. Ethological theory states that a means for the continuance of the species is provided through evolution, and the behavioral systems approach refers to the means in which behaviors are developed that help maintain close proximity between infants and their caregivers. Bowlby (1969) distinguished four phases in the development of attachment behaviors. During phase one, the infants behave in certain characteristic ways toward all others. They orient toward others using visual and auditory stimuli from them, smile at, and grasp or reach for others. This phase usually lasts from birth until twelve weeks of age, though any stage may continue longer in unfavorable conditions. In phase two, the infants continue the early behaviors which are now more markedly directed toward the caregivers. This phase occurs between 12 weeks of age until

six months. By phase three, which lasts from seven months to the second and third years, the infants are maintaining close proximity to their caregivers through locomotion (crawling) as well as crying or smiling. In phase four, which occurs after the third year, the infants maintain close proximity by using newly developed behavior systems that are formed in response to novel situations found in their environment. The attachment behaviors which developed in phase three now become organized in a goal-corrected system. These goal-corrected behaviors are utilized with an internalized representation of the attachment figures which is formed through repeated interactions with others. Once this representation is formed the infants are capable of entering into a partnership in the attachment relationship. They are able to begin to understand that the caregivers' behaviors are influenced by other forces in the environment. The infants start to develop insight into the feelings and motives of the caregivers.

With the development of representation, an internal working model of attachment develops in order to be used in guiding the infants in novel situations (Bretherton, 1985). As the infants use this model (unconsciously) to interpret the current situations, they are also developing an awareness of future behaviors needed to maintain close proximity to the caregivers. The infants will assimilate new information in order to meet that goal. The working

models, though resistant to drastic change, must remain flexible in order to be revised often in life. As the infants' affective and cognitive understanding develop, the internal models of self, caregivers, and the physical environment increase in sophistication (Bretherton, 1985). The attachment behaviors are then seen less often as the internal working model is developed, until they are found mainly in stressful situations.

The internal working models of self and caregivers are constructed out of dyadic interactions and coexist independently of each other, but are mutually influential (Bretherton, 1985). If the caregivers reject or ridicule the infants, the internal working models of the caregivers reflect the rejections and the infants' self models are developed as such. Of course, if the caregivers provide good care, the internal working models for the caregivers are of caring people, and the self models are of people worthy of receiving care.

John Bowlby's attachment theory combines an instinctive behavioral approach with concepts from a cognitive perspective. Bowlby's theory makes use of an ethological concept, a control theory, and internal working model to explain how during the first year of life infants' attachment relationships are developed. Bowlby has incorporated categories involving behaviors that are developed out of cognitive representations which will

influence the infants' interactions with others throughout the course of their lives. His work has prepared the way for understanding how infants develop different personalities, and other scientists have continued to expand on his work using his concepts to further add to our understanding of the attachment relationship.

Mary Ainsworth

Mary Ainsworth (1969) is the third figure who has contributed most significantly to attachment theory. In 1969, Ainsworth referred to attachment as an affectionate tie that one person forms for a specific other. Mary Ainsworth's attachment theory is similar to John Bowlby's theory in that she included both psychoanalytic theory and ethological concepts but also the concept of a feeling of security by the infants. Applying these concepts to her observations of infants using their caregivers as bases from which they would explore their environment, Ainsworth began to observe developmentally different attachment behaviors. Ainsworth (1969) wrote that evolution prepared the infants with an innate ability to continue the species. Though primitive at first the behaviors became complex as interactions occur and time passes. Early in life infants are capable of using visual and auditory orientation to the caregivers in order to stay close to them. As seen in Bowlby (1969), the infants cry when the caregivers are out of contact with them. As the infants develop their

attachment, behaviors start to organize into what Bowlby (1969) referred to as goal-corrected systems (Ainsworth, 1969). These purposive and flexible systems provide the infants a means of maintaining a homeostatic balance within themselves. The infants use input information from the caregivers and the surrounding environment to maintain their physiological and behavioral balance by accommodating their behaviors if feelings of insecurity occur.

The presence of the caregivers provides the infants with the feeling of security, or what Ainsworth calls felt-security. As long as contact (auditory, visual, touching) is provided by the caregivers, the infants remain in a state of homeostatic balance within. If caregivers increase their distance from the infants, the infants will protest. As the infants become mobile they are able to use locomotion in order to maintain proximity and felt-security. Once the infants are able to crawl they begin to make little excursions away from the caregivers, returning periodically. The caregivers provide a secure base from which the infants use to explore their environment. Any stressful situation causes the infants to return to their secure base, thus, to retain a physiological and behavioral balance to its ideal level.

In agreement with Bowlby, Ainsworth, Bell, and Stayton (1972) stated that during the first year of life infants pass through four stages of attachment development. She

differs from Bowlby by expressing the notion that the main cause of the attachment behaviors is not to maintain close proximity, but to maintain a feeling of security.

Ainsworth's (1969) first phase, initial pre-attachment, starts at birth and ends between eight-and ten-weeks-of-age. The infants' fixed-action-patterns (visual and auditory orientation, crying or smiling, and non-crying vocalization) are used indiscriminately in this period. In phase two, the phase of attachment-in-the-making, the infants use the same behaviors but begin to discriminate between others and the caregivers. This phase begins at about 11 weeks of age and continues through the fifth month of life. Phase three starts around the sixth month of life and continues until the second and third year of life. This phase is called the clear-cut attachment phase. The infants become more active in maintaining their feelings of felt-security by using locomotion. They will grasp onto or crawl after the caregivers. The infants no longer rely on the caregivers to meet their need of felt-security, but are ready to become an active partner in this attachment relationship. The fourth phase is a goal-corrected partnership. Ainsworth proposes a lessening of egocentricity on the part of the infants at this time, with the ability to infer the caregivers' feelings and motives. This phase represents gradually a mature relationship which continues through the lifespan.

Ainsworth's studies with infants and their caregivers

in Uganda (1969) and with middle-class families from Baltimore, Maryland (1967) validate her stages of attachment. (See Table I for a comparison of Bowlby and Ainsworth's stages in the development of attachment.)

Ainsworth has presented an attachment theory parallel to Bowlby's theory but with the difference of felt-security as the motive for attachment behaviors. Her theory and empirical findings have created interest and led to continued research involving felt-security.

Summary

Overall the three attachment theories presented agree upon one basic concept; attachment behaviors begin with biological underpinnings. Freud's (1957) view is that inner conflict between Id and Ego brings the caregivers into the role of tension reducer through feeding and/or stroking, caring, and holding of the infants. All other attachment relationships by the infants will be similar to the one first developed between infants and their mothers. Bowlby's (1969) theory of maintaining close proximity in order to maintain or reduce inner tension is similar but he also adds that the infants must pass through developmental stages in order to build an attachment relationship with others. From innate behaviors to the development of an internal representation of the caregivers, the infants' behavior become more complex as attachment develops. Ainsworth's (1969) ethological concepts explain how the infants' close

Table 1

Comparisons of Attachment Stages

Bowlby's Stages		Ainsworth's Stages	
Stage I	Orientation and signals without discrimination of figure. From birth to twelve weeks of age.	Stage I	Initial pre-attachment from birth to between eight- and ten-weeks of age.
Stage II	Orientation and signaling directed toward one discrimination figure. From 12 weeks of age until six months. Orients toward discriminating figure with marked significance.	Stage II	Attachment-in-the-making From 11 weeks of age until seventh month of life. Fixed-action-patterns with discrimination between caregiver and others.
Stage III	Maintenance of proximity to a discriminated figure by means of locomotion as well as signals. From between six and seven months until third year.	Stage III	Clear-cut attachment. From seven months until second and third years. Use of locomotion to become active member of interactions.
Stage IV	Formation of a goal-corrected partnership. Begins around third year. Attachment behaviors become organized in a goal-corrected system due to informalized representation of the attachment figure.	Stage IV	Goal-corrected partnership. Begins around third year onward. Inference by infants to caregivers feelings and motives. Adjusting own behaviors accordingly.

Reported in Bowlby (1969, pg. 266-268); Ainsworth, et al., (1978, pg. 23-28).

contact with the caregivers maintain not only life but also the feeling of safety and caring. She too, writes that the infants pass through phases of attachment during the first year of life. Each phase is more complex than the previous one until attachment is fully developed; then an internal working model assists the infants in leaving their caregivers to explore their environment.

Since Freud, Bowlby, and Ainsworth all concluded that attachment behaviors are important in order for attachment to develop, it seems proper for an empirical study to incorporate the study of the attachment interactions between infants and caregivers. The study of naturally occurring early interactions is also of great importance in research of attachment development and the quality of attachment.

Research on the development of attachment has been largely facilitated through the efforts of Mary Ainsworth (1969) in developing a laboratory assessment that will evaluate attachment behaviors and the quality of the attachment, the Strange Situation. Between one and two years of age, infants are observed with their caregivers in the Strange Situation over multiple episodes during and following separation of the pair in a novel environment. The following chapters describe this procedure fully and report the results of research using the procedure.

Chapter III

THE STRANGE SITUATION

The purpose of this chapter is to present and evaluate the Strange Situation, the measure developed by Mary Ainsworth to evaluate the quality of attachment. Ainsworth's intentions were to design an assessment tool that she and others could use to view individual differences in attachment behaviors under conditions of stress and fatigue (Ainsworth et al., 1978). Studies will be reported describing the use of the Strange Situation in the different categories defining the quality of attachment. An evaluation of the Strange Situation will also be given, based on reliability and validity studies done in several different laboratories.

The Strange Situation was originally designed to observe how infants use their caregivers as secure bases to explore the environment, react to separation and reunion, and respond to a stranger. Ainsworth and Wittig (1969) initially looked at secure base behaviors: distress by separation, greeting upon reunion by seeking proximity, smiling, vocalizing, or waving. These behaviors would be evident during the assessment procedure, thus allowing the researcher to make predictions concerning behaviors later in the infants' lives. Each procedure, or episode, assessed

different behavior responses while adding cumulative stress for the infants.

There are seven three-minute episodes, along with an initial brief episode in which the pair is introduced to the observation room. These episodes are arranged to create increasing amounts of stress for the baby, enabling researchers to observe infant behavior structures relative to the caregiver when distressed. The Strange Situation is used with infants between 12 and 24 months of age.

During the first episode, the pair is introduced to the observation room. In Episode 2 the infant and caregiver are alone together. In Episode 3 a stranger joins the pair. The stranger will later engage the infant's attention so that the caregiver can leave the room for Episode 4. The caregiver returns and the stranger leaves in Episode 5. During Episode 6 the caregiver will again leave the infant, but this time the infant is left alone for three minutes (or less if the infant becomes markedly upset).

In Episode 7 the infant is rejoined by the stranger, and then the stranger leaves as the parent returns in Episode 8. Each adult responds to the infant but is advised not to initiate interaction. In analyzing the observations made during the Strange Situation, two levels of analyses are used.

The first level is a videotaped or narrative record of each episode to be reviewed by trained scorers. The infants are scored on uni-dimensional seven-point scales quantifying important aspects of the infant-caregiver interaction (proximity seeking, contact maintaining, resistance to contact or interaction, avoidance, search for parents during separation, and distance interaction). Each scale includes behavioral examples defining each point. Proximity seeking behavior refers to the degree of active initiative the infant exhibits in seeking physical contact to the caregiver. Contact maintaining refers to the degree of active initiative an infant uses to maintain physical contact. Resistance is shown by pushing away from, striking out at, squirming to get down from the adult, or rejecting toys. Avoidance refers to the infants' actively avoiding proximity and interactions with the caregivers in reunion episodes. Search is the behavior in which an attempt is made by the infants to regain proximity to the caregivers.

The second level has judges (using scores on the seven-point dimensions) classifying the infants into one of three groups (A, B, C) and eight subgroups (A_1 , A_2 , B_1 , B_2 , B_3 , B_4 , C_1 , C_2). Classifications assigned index the organization of behavior relative to the attachment system.

Group B infants are considered securely attached. They are not all greatly distressed by separation; they greet the caregivers upon reunion by seeking proximity directly or by

distal interaction (e.g., smiling, vocalizing, or waving). These securely attached infants will move away from the stranger to explore and interact with the environment, returning to the secure base periodically. Infants found in the four subgroups of the B classification differ in degrees of proximity they seek. B_1 infants are happy with distant interaction, whereas B_4 infants are concerned about making contact and are slow to comfort.

Group A and Group C infants are considered insecurely attached. The Group A infants are called avoidant because they avoid or ignore their caregivers at reunion. A_1 infants are always avoidant, whereas A_2 infants mix avoidant and proximity-seeking behavior. The Group C infants are called resistant because they mix proximity seeking behaviors with angry, rejecting behaviors, especially in reunion sessions. Their reunion responses seem ambivalent in quality. Group C infants are so preoccupied with their caregivers that they are unable to play independently. They are also unable to use the caregiver as a secure base from which to explore. Subgroup C_2 infants are more passive in the proximity-seeking behaviors. The C_1 infants are more active in both proximity-seeking and resistance.

Training and reliability create difficulties for researchers. Because the primary measures of the Strange Situation are categorical judgments concerning the infants' behaviors, the established inter-scorer reliability requires

extensive training and experience. Ainsworth et al. (1978) published detailed coding and classificatory instructions. Still extensive training is needed to guarantee reliable data.

From an empirical perspective the researchers must interpret Strange Situation behaviors since these classifications (as outlined above) are to reflect consistent dimensions of infant caregiver interactions. Thompson and Lamb (1984) and Vaughn, Egeland, Sroufe, and Waters (1979) wrote that the classification must reflect the quality of the interactions, but that quality changes when events or circumstances occur which influence the quality of the interactions. If the security of attachment did not change when circumstances change then the stability and validity of the Strange Situation would be in doubt. Keeping in mind the constant changes in life's quality, temporal stability and validity of attachment classifications must first be measured in short-term time periods. Waters (1978) saw the need for test-retest studies. This short-term stability test led to longitudinal research in which the Strange Situation was assessed for its appropriateness to measure attachment and its power in predicting development.

Stability

Claims concerning the stability of attachment classification are not central to some attachment

researchers, but to others it remains vital. Waters (1983) claims that evidence of high stability is of crucial importance to the predictability of Strange Situation behavior. This is mandatory since these classifications are presumed to reflect consistent dimensions of the infant-caregiver relationship.

In 1978, Waters looked at the reliability of some measures in test-retest studies. He confirmed that time-sample counts or ratings of discrete behaviors (e.g., looking, smiling) in the Strange Situation correlated poorly after a six-month period (12 to 18 months). However, his study did show that Ainsworth's interactive rating scores (e.g., proximity seeking, resistance) were more highly correlated over time. In fact 48 out of 50 infants obtained the same attachment classification at both ages. The stability of this classification was 96 percent. The sample population in this study was lower-middle to upper-middle-class intact families. Vaughn et al. (1979) stated that Waters selected stable middle class families because attachment relationships can be expected to be the most stable when the environment supports the interaction. His sample perhaps biased the results. Waters (1978) does state that the lack of information about family circumstances and life events between the two assessments makes the stability from his study difficult to interpret.

Ainsworth et al. (1978) reported results indicating poor stability in classifications. Fifty-eight percent of the infants were correctly classified over a two-week period. This instability was interpreted as being due to greater separation distress aroused in the second assessment due to the short time span between sessions.

Thompson, Lamb, and Estes (1982) also addressed the question concerning stability by studying a middle class sample of 43 dyads. They sought to see if life events (maltreatment, depression found in the caregivers, neglect, physical abuse and/or hostility, and psychological unavailability) affected the stability of attachment classification. They also looked at how the changes in life conditions were related to changes in Strange Situation behavior between 12-1/2 and 19-1/2 months of ages. They found that only 53 percent of their sample obtained the same attachment classification at both ages. Stability of subgroup classification was only 26 percent.

Vaughn et al. (1979) also reported poor stability over a six-month period. Vaughn et al. (1979) found 62 percent stability in a lower class sample. This sample was from families found in the Minneapolis study of disadvantaged families. The majority of the families reported income at less than the poverty level. One hundred of the 167 mothers and infants in the sample were observed in the Strange

Situation at 12 and 18 months. Only 62 percent obtained the same classifications at both ages.

When these percentages of correct reclassifications are compared to each other, the results seem to cast doubt on the stability of the Strange Situation if current life conditions are not noted. The stability of the Strange Situation measures over observations made at 12 and 18 months, however, may be related to factors closely related to attachment. Making observations six months apart, Egeland and Sroufe (1981) found that classification stability was 48 percent for dyads including mothers identified as neglectful, but 81 percent for dyads including mothers identified as excellent caregivers. Thompson et al. (1982) also found that events occurring in the family between Strange Situation sessions six months apart affected classification stability.

Considering its necessary sensitivity to sources of current stress in the family, the Strange Situation is relatively stable (Waters, 1978). Egeland and Farber (1984) employed multiple measures of mother and infant behavior and mother-infant interactions: maternal characteristics; seven- and ten-day Brazelton Neonatal Behavior Assessment Scale scores; six-month temperament ratings; nine-month Bayley scores; rating of mother-infant interaction during feedings at three and six months; and ratings of mother-infant play at six months. They found that stability

of major group classification over a six-month period was 60 percent for 89 additional dyads; they found, as well, that early maternal personality ratings was the only reliable predictor of change in Strange Situation classification (Egeland and Farber, 1984). Additional measures provided more stability for the Strange Situation measurement.

Predictive Validity

As mentioned earlier in this chapter, several studies have examined the relationships between behaviors in the Strange Situation and behaviors outside of the Strange Situation. The most widely cited studies concerning the predictive validity of Strange Situation classifications were conducted in Minneapolis by Sroufe and his colleagues.

In 1978, Matas, Arend, and Sroufe observed a middle class sample of infant/mother dyads. Matas et al. (1978) related security of attachment of the infants at 18 months to measures of the child and mother's behavior at 24 months in play, problem-solving, and clean-up situations. All were drawn from a list of parents who had volunteered. The volunteers were a stable sample to work with since they would also be available at the 18-months period. At the 24-months evaluation, raters scored: (1) the frequency of symbolic play during free play; (2) oppositional behavior during clean-up; (3) angry behavior during clean-up; (4) variables during the problem-solving task; (5) ratings of behavior during problem-solving; and (6) ratings of the

mothers' supportive presence and quality of assistance (encouragement, explanations) during problem-solving tasks.

There were no significant group differences in the factor analysis variables (competence and temperament) between Group B and Groups A or C infants. The Group B infants engaged in more symbolic play than both avoidant and resistant infants. In the problem-solving situation, the Group B infants were more enthusiastic and compliant than the non-B group infants. The avoidant and Group B infants also differed in the expected direction on five of seven measures tested. Ten of the 18 infants' behaviors and total maternal ratings revealed significant group differences between Group B and non-Group B infants. From these data, it appears that either Group B infants become better adapted toddlers and/or that the mothers who provided security at 18 months continued to be consistent at 24 months. At both the 18- and 24-months assessments, mothers were fostering either competent behaviors in their infants or more negative reactions. These data reveal that the Strange Situation was able to predict the infants' behaviors for at least six months.

Sroufe, Fox, and Pancake (1983) continued to collect data from the Matas et al. (1978) population. They hypothesized that infants who were secure in their attachments would also be less dependent as preschoolers. This was to contrast the view that a child could become too

dependent in infancy through direct conditioning (Matas et al., 1978). They wrote that if infants' emotional needs are met effectively early in infancy, their normal autonomy as preschoolers would be exhibited.

Sroufe et al. (1983) assessed 40 children with a mean age of 51 months. This longitudinal study used children who demonstrated a stable attachment between 12 and 18 months. From the 40 children in the sample, 34 showed stable attachment patterns. Of this 34, 16 were securely attached (Group B) at both 12 and 18 months. Ten anxious-avoidant infants (Group A) were found to be anxious-avoidant at both ages. Eight that were in Group C were anxious and resistant at both ages as well. The remaining six were mixed showing anxious patterns at one age and secure attachments at the other.

Sroufe et al. (1983) found that the preschoolers whose attachment at 12 months were not secure would manifest dependency problems in various ways. Both groups of anxiously attached infants were overly dependent on their preschool teachers. The avoidant preschooler would approach, but not initiate contact, or waited for help from the teachers. They projected an attitude of helplessness (Sroufe et al., 1983).

The children who were securely attached as infants exhibited less emotional dependence on their preschool teachers. They were active in seeking and maintaining

contact when distressed. Those children who showed an involvement with their mothers at 12 months (greeting and interacting) also exhibited independent behaviors as preschoolers (Sroufe et al., 1983). They greeted the teachers, interacted with them and other children, and shared their play. The secure preschoolers had learned to be confident and resourceful. Their secure attachment allowed them to interact with the environment with earnest intentions.

The Sroufe et al. (1983) longitudinal study gives additional evidence that Ainsworth's Strange Situation has validity in predicting attachment behaviors beyond the first year of life. Other studies using similar samples (Waters, Wippman, and Sroufe, 1979) generated similar data. Waters et al. (1979) studied thirty-six 18-month-olds. Five mother-directed behaviors indicating positive interaction, various combinations of their behaviors, and three non-independent ratings of affective sharing were scored from Episode 2 of the Strange Situation. The Group B infants were likely to smile at their mothers at 18 months, but there were no significant differences in the frequencies of showing or giving toys or looking at mother. There were significant differences between the Group B and non-B groups in affective sharing at both 18 and 24 months. There is no

mention of differences between avoidant and resistant infants on any of the measurements.

Pastor (1981) observed 62 children in a sample population at 20- to 23-months-of-age in a study of dyadic peers' interaction. Subjects were included if they had obtained the same classification at both the 12- and 18-months assessments. Twelve Group A, thirteen Group B, and twelve Group C infants were selected as target infants. Each was paired with another infant (always a Group B child) who was considered the central member. A Bayley assessment was done at 24 months. The Bayley Scales of Infant Development measures mental development on 163 items (shape discrimination, sustained attention, manipulation of objects, problem solving, etc.) and 11 items of behavior provides an overall measure of behavior quality (social orientation, cooperation, fearfulness, tension, etc.). The Bayley assessment revealed no group differences. Group B infants fared well, but both Group A and Group C infants did not manipulate objects, problem solve, or sustain their attention for a long period of time. They exhibited fearfulness and were generally less cooperative than the Group B infants.

Pastor (1981) included six five-point rating scores (overall sociability, orientation to peer, orientation to mother, activity level, mother supportiveness, and mother directiveness) along the with Bayley Scales. Twelve

categories of peer-directed behavior and 16 of mother-child interactions were also coded. Four of the six ratings revealed significant group differences, with Group B children scoring higher on overall sociability, orientation to peer, orientation to mother, and mother supportiveness than the Group A or Group C children. There were no differences between group A and Group C children. Three of the 12 discrete measures of peer-directed behavior revealed differences. Six of the discrete measures of mother-child interaction revealed significant differences.

Waters et al. (1979) gathered data concerning the relationship between Strange Situation behavior and peer competence. Waters et al. (1979) studied 36 subjects at 42 months of age. Naive observers performed Q-sort assessments on the basis of a five-week observation in a preschool setting. Two 12-item criterion Q-scales were used. The first 12-item set (peer competence) included all reliable items referring to initiative, skill, and engagement in interaction with peers. The second 12-item set (ego-strength/effectance) included all reliable items referring to personal motivational assets that do not assume an interaction context. Information concerning reunion behavior was supplemented by measures of separation and pre-separation behavior. The avoidant and resistant infants were placed together in a single "anxious" group for purposes of analysis. The Group B and "anxious" group did

not differ on Bayley scaled assessments of development at the one-month evaluation or on a Stanford-Binet assessment at 36 months evaluations. The two composite scores were correlated. This provided evidence of group differences, especially in peer competence, two years after group assignment. The original sample for this study used families who were selected on the grounds that their life circumstances were likely to remain stable throughout the duration of the study. This consistency in caregiving circumstances is likely to increase predictive validity from earlier attachment status, but the study adds further evidence of the predictive validity of the Strange Situation assessment tool.

One other longitudinal project by Lewis, Feiring, McGuffog, and Jaskir (1984) explored the relationship between Strange Situation behavior and later behavior problems. Lewis et al. (1984) developed attachment classification on the basis of reactions to reunion in a laboratory playroom following a simple brief (three-minute) separation. One-hundred-and-thirteen infants were seen at 12 months and again at six years of age. These researchers used Achenbach's Child Behavior Profile (CBP). In addition, cognitive functioning was assessed at 3, 12, 24, and 36 months. Demographic data by repeated interviews and other factors by maternal questionnaire, birth psychosocial

circumstances, and life stresses were gathered by a questionnaire.

The three groups were significantly distinguished from each other. Analysis of variance revealed that Group B males had the fewest and Group C males the most behavior problems as assessed by the total CBP score. For the girls, Group B children showed the most and Group C children the fewest behavioral problems (Lewis et al., 1984).

These results suggested that the quality of early attachment in interaction with subsequent experience influence whether or not children will later be at risk for behavioral problems. Possibly, early secure attachment renders males impervious to the effect of stress and places them at low risk for behavioral problems (Lewis et al., 1984).

Bell (1970) assessed 33 infants three times between 8-1/2 and 11 months on tests of object permanence. In all but three cases there were discrepancies between the measures within at least one of the testing sessions. For 23 subjects, the preponderance of discrepancies favored person permanence, termed a "positive decalage" with respect to person permanence. For seven subjects, the preponderance of discrepancies favored object permanence, a "negative decalage" with respect to person permanence.

Levitt, Antonucci and Clark (1984) found that the relationship between scores on measures of person and object

permanence and Strange Situation classification is not consistent with explaining Strange Situation performance in terms of lags in the development of person perception. It is possible that the difference between the Levitt et al. (1984) study and Bell's 1970 research is a function of the age difference in the samples they employed.

The Strange Situation assessment tool is not considered stable after a six-month period. When the stability of Strange Situation classification is known to be high, Strange Situation classifications are related to indices of sociability with unfamiliar adults, compliance, problem-solving behavior, and indices of personality functioning. The effects of the individual differences other than those found in the normal population will be revealed in the next chapter.

Chapter IV

THE STRANGE SITUATION IN NON-NORMAL CASES

As presented in Chapter III, Ainsworth's Strange situation is useful in measuring the quality of attachment relationships by categorizing infants' behaviors and then placing the infants into groups according to the attachment behaviors. The research reported earlier in Chapter III included subjects found within normal populations; later research began to examine the effects of situations that were considered stressful over an extended period of time. Questions about the effects of non-normal situations became the focus of research concerning prolonged stressors in the family and maltreatment of the infants. These non-normal situations were either experienced or provided by the caregivers; it is the adults' behavior that provided the infants with experiences that were assimilated into internal working models that developed from attachment interactions.

Both the infants and caregivers contribute to the interactions which lead to the formation of an attachment relationship. The infants have had few life experiences, limiting their abilities to interpret signals from the caregivers. The limited signals that have been acquired are offered to the caregivers who must interpret what the signals mean. Since the infants are also limited in their

ability to properly perceive and interpret signals from the caregivers, their input from the environment may also be inadequate at times. Their inability to completely comprehend negative and positive behaviors force the caregivers' responses to become more critical in the development of attachment relationships (Lamb, 1976).

Caregivers differ in two dimensions of their behaviors--predictability and appropriateness (Ainsworth, Bell, and Stayton, 1972). Caregivers who respond predictably and appropriately should foster the development of their infants who turn to them for comfort and security. This is considered the secure pattern of behaviors described by Ainsworth (1969). In contrast, those caregivers who are unpredictable and who sometimes respond adversely contribute to behaviors that result from uncertainty and ambivalence in their infants. Caregiver behavior which is fairly consistent but frequently inappropriate or aversive is associated with infant behaviors of turning away from, rather than toward, caregivers when distressed (Lamb, 1981).

Caregivers who are experiencing prolonged periods of stress or are maltreating their infants may respond in either of the predictable and appropriate or unpredictable, adverse dimensions. If the Strange Situation is useful in predicting attachment qualities according to behaviors rated early in life, then the effects of the caregivers' behaviors should develop attachment behaviors founded in non-B-Group

infants. The following major studies have used this question as the central focus of their research.

stress

Attachment relationships are expected to be most stable when environmental supports for interactions are also stable and unaffected by stress (Vaughn et al., 1979). Over a six-month period, Waters (1978), Vaughn et al. (1979), and Matas et al. (1978) assessed the patterns of attachment behavior. These studies used the Strange Situation to obtain data that would predict a certain pattern of behaviors exhibited by infants living in families affected by stress. In order for the assessment procedure to study the effect of prolonged stress, they used longitudinal evaluations across different contexts and time. These studies, along with Waters et al. (1979), reported that at different times in the infants' lives prolonged stress altered attachment behaviors.

Vaughn et al. (1979) used 100 infants from below poverty families to assess the changes in families under prolonged stress. By using the Strange Situation at 12 months old and again at 18 months, they were able to observe the effects of environment instability on attachment during a six-month period. Stressful events occurring between the 12-to 18-month assessments were reported and described. The Life Events I Inventory (Vaughn et al., 1979) was completed by the mothers when the infants were 18 months old. The

inventory consisted of 44 items concerning work, family and neighbors, finances, violence, involvement with the law, and health.

Maternal reports of stressful events during this six-month period distinguishes infants classified as secure from infants who were classified as anxiously attached at 18 months. Changes from secure to anxious attachment during the six-month period were associated with high frequencies of stressful events in maternal reporting and with high levels of stress and instability in the living situation. Maternal behaviors also were affected during this period (Vaughn et al., 1979). Stressful events interfered with the infant-mother attachment process, and since the quality of attachment depended on a two-way interaction, the stress blocked the potential for positive, stable caregiver-infant attachment. Therefore, the infants responded in an unpredictable manner. It is speculative then that high levels of stress had a negative effect on the interactions. Low frequency of stressful events and more stable living circumstances were conducive to but still not sufficient enough for improved interactions (Vaughn et al. 1978). Other factors such as the mothers' inability or lack of interest in understanding what was asked of them by the infants also affected the interactions.

Thompson et al. (1982) also used a maternal questionnaire to obtain information about general family

conditions, caretaking arrangements, and several forms of specific caretaker-infant experiences (e.g., separations lasting longer than a day). Separations and other changes in general family conditions were found to be significantly correlated with test-retest changes in classification of infants in the Strange Situation tool. Vaughn et al. (1979) only reported changes in classification from Group B to non-B in response to stress, whereas Thompson et al. (1982) found that increases in measured stress not only predicted Group B to non-B changes over the six-month test period, but also that subjects' classification changed in the reverse direction where the level of stress decreased.

The number of differences between the studies may explain the discrepancy. It is probable that those in the Vaughn et al. (1979) study were under more stress as a group than the subjects in the Thompson et al. (1982) study, and were, therefore, less likely to escape its effects. Moreover, because of their greater exposure to stress, members of the Vaughn sample may have already been experiencing the effects of stress at the onset of the study, producing a higher proportion of subjects classified as non-B at the first test. In any event, the discrepancy in the results of the two studies demonstrates the difficulties of accounting for the effects of environmental variables on the character of mother-infant interaction.

Infant-caregiver attachment is the product of interactions over time (Ainsworth et al., 1978). The quality of attachment begins to develop early in life, and the richness of the quality depends on positive nurturing. Unfortunately not all children have positive patterns of interactions. Many caregivers throughout history have found themselves somehow harming their infants. Even though the caregiver may experience remorse, the maltreatment has had some effect on the attachment process and its quality.

The quality of attachment can change whenever maltreatment occurs (Egeland and Sroufe, 1981). Changes in the behaviors by the caregivers not only affect the already existing interaction, but future interactions as well (Ainsworth et al., 1978). The change in the quality of the attachment can be seen in the change of behavior patterns observed in the interactions.

Both Bowlby and Ainsworth's positions state that quality of care determines much of the quality of attachment. If individual differences in quality of attachment are the product of patterns of care as stated earlier, the Strange Situation should differentiate between abusive and nurturing environments. In Ainsworth's research, such early abuse would be associated with patterns of anxious attachment (Group A and Group C). Ainsworth et al. (1978) wrote that emotionally unstable or physically

rejecting parents may have infants that exhibit a pattern of anxious/avoidant attachment (Group A). Egeland and Sroufe (1981) wrote that abuse may be found in the pattern of rejection. George and Main (1979) also reported that if the caregiver's responses are inconsistent or inappropriate to the infant's cries of pain or hunger, the infant may develop an anxious/resistant pattern (Group C). The infant is unable to derive comfort from the caregiver and a non-B attachment develops.

Egeland and Sroufe (1981) wrote that the quality of care may be due to situational factors, infant factors, age, and experience. They stated that inadequate care or extreme maltreatment may be related to poor quality attachment. In 1979, Vaughn et al. had written that with reduction of already low economic stability conditions, stability of the attachment relationship is at risk, and that changes in the quality of attachment are related to changes in the caregiver's life situation. By using subjects from Vaughn's et al. (1979) study, Egeland and Sroufe (1981) developed a longitudinal sample to assess quality of attachment at two points during the development of attachment (at 12 and 18 months).

The original sample consisted of 267 women receiving prenatal care through public assistance at a maternal and infant care clinic. The families were from low socioeconomic backgrounds. The reported base rate for abuse

and neglect in this clinic population was approximately 1 to 2 percent.

There were four home visits at 3, 6, 9, and 12 months. A Child Care Rating Scale (Egeland and Brunnequell, 1970) was given to the mother. The ratings involved evidences of violence to the household, poor physical care, grossly unsanitary conditions, neglect, and failure to thrive. All of the mothers in this study had three or more items checked in the Child Care Rating Scale at the 9- and 12-month visits.

A second group of 33 mothers that gave high-quality care to their children were also identified and placed in this group based on observations and results from the Child Care Rating Scale. These mothers met the needs of their children in terms of feeding, health care, protecting the child, and not leaving the infant alone with an unknown sitter. These were the mothers that were encouraging the children's growth and development (Vaughn et al., 1979).

A final test was given to add support to the selection of mothers. Ainsworth's Cooperation-Interference and Sensitivity Scales (Ainsworth et al., 1978) were administered to both groups. The nine-point ratings made from observation at six months were independent from group selection. Differences were significant for both the cooperation-interference scales. This gave the excellent care group a more favorable report.

Large differences in the number of securely and insecurely attached infants at age 12 months were found between the two groups of mothers. The excellent care group contained a higher percentage of securely attached infants at both the 12- and 18-month assessment (75 percent and 76 percent) than the inadequate care group.

At 12 months four of the seven maltreated infants were anxiously attached and all were in the avoidant group. Egeland and Sroufe (1981) stated that these data supported Ainsworth's position that the avoidant pattern resulted from chronic unavailability and/or rejection by the parent.

In the neglect group, 11 of the 22 infants were classified as anxious/resistant (Group C) category at 12 months. The infants' behaviors reflected the history of interactions which were rated as less attentive and not displaying much social behavior during three- and six-month feedings. In addition, the neglected infants were rated low on the activity and coordination factor derived from a play situation.

In the inadequate care group there were some changes from 12 to 18 months. A decline in the percentage in Group C was evidenced as was an increase in Groups A and B. These changes could not be due to regression to the mean, because the attachment assessments were qualitative, not quantitative (Egeland and Sroufe, 1981). Since coders were trained to agreement at both ages prior to the study, it

should not be due to coder differences. Maturation lag may have caused some of the changes, but this would lend support to the hypothesis since inadequate care may promote the maturational lag.

Lamb (1981) described 14 abused/neglected infants (12 to 21 months of age) who were observed with their mothers. Eleven of the infants exhibited either resistant or avoidant behavior upon reunion. The avoidant patterns were most common. This poorer quality of attachment was described by Ainsworth et al. (1978) as Group A or Group C infants.

Thompson et al. (1982), utilizing a modified version of the Strange Situation, collected data that supported the validity of Ainsworth's 1978 data concerning non-B group infants. Procedures consisting of different sequences to the Strange Situation were presented to the dyads. First, a free play period in which the spontaneous interaction of the mother and her infant was observed. Then a stranger approached, followed by an approach by the mother in a similar manner, allowing a comparison of the infant's affiliative behavior to both the mother and the stranger. The third sequence used a brief maternal separation and reunion episode with a stranger separation and reunion episode following. This provided a comparison of the infant's attachment behavior to a familiar and relatively unfamiliar adult. The infant would be placed in either Ainsworth's Group A or Group C categories. Three of the 14

infants exhibited proximity seeking behaviors to the stranger. They showed disappointment and some form of search behavior after the stranger left and greeting behaviors on the stranger's return.

Also using a modified version of the Strange Situation, Schneider-Rosen, Braunwald, Carlson, and Cicchetti (1985) evaluated a subsample of the Harvard Child Maltreatment Project (Cicchetti and Rizley, 1981). All the infants in the study were from families with lower-class status. They were placed into three groups. The three groups consisted of a 12-month-old group (17 of 35 infants were maltreated), an 18-month-old group (26 of 53 infants were maltreated), and a 24-month-old group (28 out of 60 infants were abused). All the infants who were included in the maltreatment group at the three different ages were maltreated while living with one or both of their natural parents. Inclusion criteria for the subjects were developed by use of a legal record of abuse/neglect filed on the family by the state's Department of Social Services along with an interview with the family's protective service worker. The maltreated infants were abused through physical injury, emotional, living in an inadequate physical environment, or experiencing parental failure to provide. The infants who were maltreated fell in one or more of these groups.

Schneider-Rosen et al. (1985) modified the Strange Situation's scoring criteria since their infants were older

than what the three attachment categories were originally devised for. A framework was developed for characterizing patterns of attachment that would be age appropriate for each group if attachment behaviors (proximity seeking, contact maintenance, avoidance, resistance, search, and distance interaction) were exhibited. Verbal communication skills, autonomous functioning, independent exploration, affiliation with unfamiliar adults, emotional control, and flexibility were also utilized due to the advanced age of the infants. The measurement of the quality of attachment at all three ages brought few surprises.

In the 12-month-old sample 29 percent of the maltreated infants were classified as anxious-avoidant with their caregivers, 29 percent were securely attached and 42 percent were classified as having an anxious-resistant attachment. The maltreated group had 71 percent of insecurely attached infants, whereas the non-maltreated had 33 percent.

In the 18-month-old group of maltreated infants 46 percent were classified as anxious-avoidant, 23 percent were classified as securely attached, and 31 percent were classified as anxious-resistant. The maltreated group had a 77 percentage of insecurely attached infants, whereas the non-maltreated group had 33 percent.

Maltreated infants in the 24-month-old group had a 46.5 percentage that were anxious-avoidant, 21.5 percent that were anxious-resistant, and 32 percent that were classified

as securely attached infants. The non-maltreated group had 66 percent that were securely attached, 25 percent anxious-resistant, and 9 percent that were anxious-avoidant.

The stability of attachment classifications was affected due to the maltreatment experienced over the first two years of life. In the maltreated group, five infants were classified in the same group at both 12 and 18 months, while 13 of the non-maltreated infants obtained the same classification across the same time period. What was found to be consistent was the data from the comparison group. A significant stability in the quality of attachment with the caregiver was found to be 69 percent at 12 months to 18 months-of-age, and 69 percent at 18 and 24 months-of-age. These results were consistent with other research that was presented earlier in this paper. An unexpected finding was that some maltreated infants formed secure attachment relationships with their caregivers. This gave a better understanding concerning the negative effects of early maltreatment. Of the five maltreated infants who had a secure attachment relationship at 12-months-of-age, four moved into insecure attachment classification by 18 months. It seems that as a group, insecurely attached maltreated infants will remain insecurely attached across time while securely attached maltreated infants may move into insecure groups over time. These findings suggested that additional measurements, along with the Strange Situation, are needed

in order to evaluate influences developed by multiple environmental factors. This finding is also consistent with what has been reported in this paper.

Stressful life events, including maltreatment, do not alter the usefulness of the Strange Situation. In fact, they seem to strengthen our perception of the tool's ability to predict future attachment behaviors. It was Lamb (1976) who wrote that since infants under great duress inhibit their attachment interactions with non-attached figures, the Strange Situation is better able to measure the quality of attachment by observing and recording the behaviors. The data presented in this chapter seems to validate both Ainsworth's and Lamb's positions on the usefulness of the Strange Situation.

Chapter v

DISCUSSION AND SUMMARY

This paper has had two purposes: The first was to examine three major attachment theories; the second was to describe and evaluate the Strange Situation assessment tool by presenting research that had made use of the Strange situation. Recent developments in attachment theory and attachment research were also discussed. The final chapter will summarize the key concepts in Ainsworth's theory and then present in brief the author's critique of the Strange Situation and possible future directions in the use of the Strange Situation.

Attachment theories have included research as varied as cognitive, behavioral, and psychoanalysis. Although Bowlby (1961, 1969) was probably the first to offer a theory that is considered a true attachment theory, he based much of his earlier work on the Freudian psychoanalytic theory. Freud's influence remains even to this day, but his "attachment theory" has remained untested. Since the psychoanalytic theory includes concepts that are too abstract to be testable, the Strange Situation is not able to assess Freud's attachment concepts. Bowlby (1969) formalized the psychoanalytic theory using a "goal-corrected" system design that assist the infants in maintaining a state of equilibrium within themselves and the environment. Bowlby's

attachment behaviors are testable and have been utilized in most of the studies presented in this paper. Bowlby (1969) supposed that a poor quality of interactions between caregivers and infants predisposes the infants to develop some form of psychopathology. He wrote that inconsistent, inappropriate caregiver attachment behaviors could affect the infants throughout their lives. This premise continues to influence the research done in populations of maltreated infants.

Both Freud and Bowlby are influential in attachment theory but one of their concepts has proven to be inaccurate. Ainsworth's (1969) research, along with that of others, has demonstrated that secondary caregivers develop attachment relationships with their infants that rival the quality that is found in the mother/infant attachment relationships.

Ainsworth's attachment theory endorsed as well as modified Bowlby's work. Her research in Uganda and Baltimore (Ainsworth et al., 1967; Ainsworth et al., 1970) provided a description of attachment behaviors exhibited by infants and their caregivers. The infants explored the environment using a secure base and the caregivers responded according to their own experiences with the infants. The attachment behaviors that Ainsworth categorized remain testable, but is the Strange Situation a good assessment tool for future attachment research?

The purpose of the Strange Situation is to permit the observation and description of attachment behaviors between infants and caregivers. The Strange Situation has assisted attachment theories in understanding that individual differences in the quality of the attachment relationship do exist. Bretherton (1985) and Waters et al. (1980) both wrote that years of research using the Strange Situation have demonstrated that the behavior of infants seen in the Strange Situation is consistent with many other measures of infant and caregiver behavior.

The research presented in this paper also adds support to Bretherton's and Water's position on the usefulness of the Strange Situation, but does so cautiously. The validity and stability of the A-B-C classifications have mixed findings in the research. Behaviors seen in the Strange Situation are relatively stable over a six-month period but the stability wanes after that period of time. So many life events can occur to alter the attachment relationship that additional measures are required. Another expansion on the classifications may help by including measurement of the life events. As most of the research presented has reported, using additional measures along with the Strange Situation will provide an optimal opportunity to assess attachment quality. That is if they include viewing major life events as major contributors to the development of attachment.

Measuring cumulative stress and maltreatment in the lives of the infants and their caregivers has given us an opportunity to measure altered attachment behaviors. The altered patterns of attachment behaviors are not always considered to be unusable. The behaviors of avoiding or resisting the caregivers on their return suggest that the attachment relationship is not operating optimally (Ainsworth et al., 1978), but such behavior patterns seem to represent the adaptation of the infants to circumstances. This includes the behaviors of the caregivers that do not or cannot provide an optimal quality of comfort or security. Physical maltreatment is an extreme example of such circumstances, but conditions that result from prolonged periods of stress also can result in a poorer quality of the infant-caregiver attachment (Ainsworth et al., 1978). The Strange Situation predicts the emergence of attachment behaviors later seen in childhood as was seen in interactions with peers and teachers (Waters et al., 1979). Possibly these same behaviors may be carried into adulthood. Additional data gathered using the Strange Situation with these adults may allow us to predict if the attachment behaviors remain with the adults and are used with their own infants.

Reports of maltreated infants will continue to increase as our society continues to experience increasing stress due to poverty, poor health and nourishment, crime and drug and

alcohol abuse, our understanding of the usefulness of the strange Situation may also increase. Of course, as stress increases in our society, the Strange Situation may be used for more than assessment of attachment behaviors.

Future Directions for Attachment Research

The Strange Situation assessment tool was developed more than two decades ago and during the last 15 years has become the most frequently used measurement in research concerning attachment. While new assessment tools have been developed, future research will continue to use the Strange Situation in order to predict attachment behaviors.

The research on cognitive factors found in the attachment process is likely to continue drawing attention to and gathering evidence of the cognitive influence. The advances concerning the cognitive influence have already changed attachment research since Bowlby's discussion of the "internal working model." Research on the development of event schemes have had a direct bearing on the present and future view of attachment research (Bretherton, 1985).

Attachment relationships involves the representational process. The acquisition of an internal working model of an attachment figure is a memory task and the connection between the development of attachment and the development of memory remains stronger than ever. Research regarding memory and attachment is creating interesting data. What if research were to observe children with diagnosed

hyperactivity? Possibly a new perspective of how attachment relationships are altered could be formed. Memory may be impaired in some children with hyperactive behaviors. The Strange Situation would measure differences in behaviors found in the attachment relationship formed between these children and their caregivers. One plausible concept would be that if the hyperactivity included memory disruption, an alteration in attachment behaviours would be observed. Schools throughout the state could provide the population for this research.

The application of the Strange Situation in cross-cultural studies is proving to be important to a continuing development of our understanding of attachment relationships in other countries. Questions concerning factors that influence Strange Situation behavior in our culture have not been answered in other cultures. To the extent that the changes in cultures will influence changes in attachment behaviors seen in the Strange Situation is important then. The Strange Situation in its third decade can provide an enormous amount of information concerning attachment development in developing nations.

An early attempt to utilize the Strange Situation in another culture was conducted by Grossmann, Grossmann, Huber, and Wartner (1981) in Northern Germany. They found that the Strange Situation does effectively measure the infants' attachment systems, but there were fewer infants

classified as secure than in comparable U.S. samples. There was no correlation between infant and parent, but this may be due in part on cultural demands placed upon them. The caregivers there expect more autonomy from their infants.

Another study whose data is helping us to develop a better understanding of attachment was conducted by Sagi, Lamb, Lewkowicz, Schoham, Dvir, and Estes (1982) in an Israeli Kibbutz. They found an overall deviation in the distribution across categories accounted for by a group of infants who manifested high degrees of distress. Sagi et al. (1982) suggested this was due to the Kibbutz-reared infants being unusually distressed by strangers. Again, cultural differences are noted to be the cause of the differences in the classification findings. The Kibbutz-reared infants are normally found within close-knit groups of adults. Their stress levels would be considered much higher than those of their American counterparts. As Israel develops into a western society continued research utilizing the Strange Situation may reveal a change in their attachment relationships as well.

As seen in the research, in order for the Strange Situation to accurately measure the quality of attachment the research must incorporate a thorough understanding of that culture along with possible alterations of the classifications. Changes will be needed in order to obtain

a clear picture of a foreign country's attachment classifications versus those of the United States.

Evidence concerning infant temperament have revealed that the findings are inconsistent with the hypotheses concerning direct relationships between aspects of temperament and Strange Situation behavior. Crockenberg (1981) used the ten-day Brazelton Neonatal Behavioral Assessment Scale scores for temperament in relationship to altered Strange Situation behavior. She found no direct relationship in neonatal temperament and later Strange Situation behavior.

Sroufe (1985) attempted to find a correlation between endogenous temperamental variations and differences in the Strange Situation's classifications (anxious and secure patterns of attachment). Sroufe agreed with temperament theorists that both attachment researchers and temperament researchers were looking at the same behaviors (clinging, crying, and soothability); but he also maintained that individual differences in both the infants' and caregivers' interactional organizations were at different levels of analysis than temperament behaviors. Strange Situation classifications showed differences in the dyadic relationship between infants and caregivers and the relationship between responsive care and later quality of attachment (Sroufe, 1985). The temperamental differences were already included in Ainsworth's classifications by the

caregivers' responses to the infants' particular moods, needs, and signals. Sroufe (1985) wrote that temperament interpretation was not supported by earlier and current research. Sroufe's position stated that if a caregiver provided modulated attendance and smooth transitions the infant would develop sufficient arousal tolerance and self-modulating capacity. Thus, interactional organizations between infants and caregivers would help shape temperament change.

The problem with the evidence presented is that it addresses only the most direct effects of temperament on attachment. Future longitudinal studies utilizing in-laboratory and in-the-home setting comparisons could reveal a clearer picture and possibly provide data that would validate Ainsworth's work. Of course, there may not be a direct relationship between temperament and Strange Situation behaviors but only continued research will provide that answer. Research involving caregivers' temperament along with infants' temperament will give an even greater opportunity to conclude if temperament can alter Strange Situation behaviors.

Work concerning attachment between infants and their fathers have been of some interest during the last several decades (Lamb, 1977; Grossman et al., 1981). Attachment between infants and their fathers develops, or can develop, simultaneously with that of the mothers. The father-infant

attachments can be different (more rough and tumble play) or the same as the mothers' depending on the degree of involvement by the fathers. As more fathers take on greater responsibilities as caregivers, research using the Strange situation to measure the quality of the attachment will continue. Opportunity for possible changes in the attachment relationships may also continue.

In the future, attachment research will need to utilize alternative assessment tools along with the Strange situation assessment tool. One new tool is the Q-sort, developed by Waters and Deane (1982). This assessment tool has provided observers a new method to observe and describe individual differences found in the infant-caregiver attachment system. Waters and Deane (1982) reported a high level of agreement between the caregivers and the observers when the Q-sort was used to measure the infants' (or children's) internal working model of the attachment relationship. This tool offers an opportunity to enhance the power of predictions for attachment behaviors.

By making use of the Q-sort and other alternative measures along with the Strange Situation, having a complete knowledge of the dyads' life events and an understanding of different cultural behaviors, attachment research can continue to build on our understanding of attachment relationships.

References

- Ainsworth, M. D. S. (1967). Patterns of attachment by the infant in interaction with his mother. Merrill-Palmer Quarterly, 10, 51-80.
- Ainsworth, M. D. S. (1967). Infancy in Uganda: Infant care and the growth of attachment. Baltimore, MD: John Hopkins Press.
- Ainsworth, M. D. S. (1969). Dependency and attachment: A theoretical review of the infant-mother relationship. Child Development, 40, 969-1025.
- Ainsworth, M. D. S., & Bell, S. M. (1970). Attachment, exploration, and separation illustrated by the behavior of one-year-olds in a Strange Situation. Child Development, 41, 49-67.
- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. (1972). Individual differences in the development of some attachment behaviors. Merrill-Palmer Quarterly, 18, 123-143.
- Ainsworth, M. D. S., Blehar, M. D., Waters, E., & Wall, S. (1978). Patterns of attachment: A psychological study of the Strange Situation. Hillsdale, NJ: Erlbaum.
- Ainsworth, M. D. S., & Wittig, B. A. (1969). Attachment and exploratory behaviors of one-year-olds in a Strange Situation. In B. M. Foss (Ed.), Determinants of infant behavior. London: Methuen, Ivy, Barnes & Noble.

- Arend, R. Gove, F. L., & Sroufe, L. H. (1980). Continuity of individual adaptation from infancy to kindergarten: A predictive study of ego-resiliency and curiosity in preschoolers. Child Development, 50, 950-959.
- Bell, S. M. V. (1970). The development of objects as related to infant-mother attachment. Child Development, 41, 291-311.
- Bell, S. M., & Ainsworth, M. D. S. (1972). Infant crying and maternal responsiveness. Child Development, 43, 1171-1190.
- Blehar, M. C., Lieberman, A. F., & Ainsworth, M. D. S. (1977). Early face-to-face interaction and its relation to later infant-mother attachment. Child Development, 48, 182-194.
- Bowlby, J. (1961). Separation anxiety: A critical review of the literature. Journal of Child Psychology/ Psychiatry, 1, 151-269.
- Bowlby, J. (1969). Attachment and Loss (vol. 1, 2nd ed.) Attachment. New York: Basic.
- Bretherton, I. (1985). Attachment theory: Retrospect and prospect. In I. Bretherton & E. Waters (Eds.), Growing points of attachment theory and research. Monographs of the Society for Research in Child Development, 50 (1-2, Serial No. 209).

- Bretherton, I. (1987). New perspectives on attachment relations: Security, communication, and internal working models. In J. D. Osofsky (Ed.), Handbook of infant development. New York: John Wiley & Son, Inc.
- Cicchetti, D., & Rizley, R. (1981). Developmental perspectives on the etiology, intergenerational transmission, and sequelae of child maltreatment. In R. Rizley & D. Cicchetti (Eds.), Developmental perspectives on child maltreatment. Washington, London: Jossey-Bass, Inc.
- Crockenberg, S. B. (1981). Infant irritability, mother responsiveness, and social support influences on the security of infant-mother attachment. Child Development, 53, 144-148.
- Egeland, B., & Brunquell, D. (1970). An at-risk approach to the study of child abuse: Some preliminary findings. Journal of the American Academy of Child Psychiatry, 18, 219-235.
- Egeland, B., & Farber, E. H. (1984). Infant-mother attachment: Factors related to its development and change over time. Child Development, 55, 753-771.
- Egeland, B., & Sroufe, A.L. (1981). Attachment and early maltreatment. Child Development, 50, 306-318.

Freud, S. (1957). Beyond the pleasure principle. In J. Rickman (Ed.), A general selection from the works of Sigmund Freud. Garden City, NY: Doubleday & Company, Inc.

George, C., & Main, M. (1979). Social interactions of young abused children: Approach, avoidance, and aggression. Child Development, 50, 306-318.

Grossmann, K. E., Grossmann, K., Huber, F., & Wartner, U. (1981). German children's behavior toward their mothers at 12 months and their fathers at 18 months in Ainsworth's Strange Situation. International Journal of Behavioral Development, 4, 157-181.

Lamb, M. (1976). Effects of stress and cohort on mother and father-infant interactions. Child Development, 50, 435-443.

Lamb, M. E. (1977). Father-infant and mother-infant interaction in the first year of life. Child Development, 48, 167-179.

Lamb, M. E. (1981). The development of social expectations in the first year of life. In M. E. Lamb & L. R. Sherrod (Ed.), Infant social cognition. Empirical and theoretical considerations. Hillsdale, NJ: Lawrence Erlbaum.

Levitt, M. J., Antonucci, T. C., & Clark, M. D. (1984). Object-person permanence and attachment: Another look. Merrill-Palmer Quarterly, 30, 1-10.

- Lewis, M., Feiring, C., McGuffog, C., & Taskir, J. (1984). Predicting psychopathology in six-year-olds from early social relations. Child Development, 55, 123-136.
- Main, M. D., Tomasini, L., & Tolan, W. (1979). Differences among mothers of infants judged to differ in security. Developmental Psychology, 15, 472-473.
- Matas, L., Arend, R. H., & Sroufe, L. H. (1978). Continuity of adaptation in the second year: The relationship between quality of attachment and later competence. Child Development, 49, 547-556.
- Parke, R. D., & Collmer, C. W. (1975). Child abuse: An interdisciplinary analysis. In E. M. Hetherington (Ed.), Review of child development research. Chicago, IL: University of Chicago Press.
- Pastor, D. L. (1981). The quality of mother-infant attachment and its relationship to toddler's initial sociability with peers. Developmental Psychology, 17, 326-335.
- Sagi, H., Lamb, M. E., Lewkowicz, K., Shoham, R., Dvir, R., & Estes, D. (1982). Security of infant-mother, -father, and-metapelet attachment among Kibbutz-reared Israeli children. In I. Bretherton & E. Waters (Eds.), Growing points of attachment theory and research. Monographs of the Society for Research in Child Development, 50 (1-2, Serial No. 209).

Schneider-Rosen, K., Braunwald, L. G., Carlson, V., & Cicchetti, D. (1985). Current perspectives in attachment theory: Illustration from the study of maltreated infants. In I. Bretherton & E. Waters (Eds.), Growing points of attachment theory and research. Monographs of the Society for Research in Child Development, 50 (1-2, Serial No. 209).

Sroufe, L. A. (1983). Infant-caregiver and patterns of adaptation in preschool: The roots of maladaptation and competence. In M. Permuter (Ed.), Minnesota Symposium in Child Psychology (Vol. 16). Hillsdale, NJ: Erlbaum.

Sroufe, L. A. (1985). Attachment classifications from the perspective of infant-caregiver relationships and infant temperament. Child Development, 56, 1-14.

Sroufe, L. A., Fox, W. R., & Pancake, U. R. (1983). Attachment and dependency in development perspective. Child Development, 54, 1615-1627.

Thompson, R. H., Lamb, M. E., & Estes, D. (1982). Stability of infant-mother attachment and its relationship to changing life circumstances in unselected middle-class sample. Child Development, 53, 144-148.

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

- Vaughn, B., Egeland, B., Sroufe, L. A., & Waters, E. (1979). Individual differences in infant-mother attachment at 12 and 18 months: Stability and changes in families under stress. Child Development, 50, 961-975.
- Waters, E. (1978). The reliability and stability of individual differences in infant-mother attachment. Child Development, 49, 483-494.
- Waters, E. (1983). The stability of individual differences in infant attachment: Comments on the Thompson, Lamb, and Estes contribution. Child Development, 54, 516-520.
- Waters, E., & Deane, K. E. (1982). Infant-mother attachment: Theories, models, recent data and some tasks for comparative developmental analysis. In L. W. Hoffman & R. J. Gandelman (Eds.), Parenting: Its causes and consequences. Hillsdale, NJ: Erlbaum.
- Waters, E., Vaughn, B., & Egeland, B. (1980). Individual differences in infant-mother attachment relationships at age one: Antecedents in neo-natal behavior in an urban, economically disadvantaged sample. Child Development, 51, 208-216.
- Waters E., Wippman, J., & Sroufe, L. A. (1979). Attachment, positive affect, and competence in the peer group: Two studies in construct validation. Child Development, 50, 821-829.