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Assistant Secretary for Planning and Evaluation

# **INFANT ATTACHMENT: WHAT WE KNOW NOW**

June 1991

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# **INFANT ATTACHMENT: What We Know Now**

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# FOREWORD

The importance of early infant attachment cannot be overstated. It is at the heart of healthy child development and lays the foundation for relating intimately with others, including spouses and children. It affects parents' abilities to nurture and to be responsive to their children. The effects of infant attachment are long-term, influencing generations of families.

For the vast majority, the experience of the mother's care is the first experience of reality. But the demands of modern life and culture are placing new demands on parents. With these demands comes the need for clarity regarding the basic requirements of the newborn and the young infant: what is needed to nurture appropriately? Because attachment is a fundamental theme of social function, it is a central issue in social policy.

Despite the importance of infant attachment, there has been no recent, comprehensive literature review that incorporates research from the variety of disciplines, including child development, ethology, and the behavioral and psychodynamic literatures. For this reason, the Department of Health and Human Services commissioned a multidisciplinary literature review on infant attachment theory and research, and conducted a seminar of experts to critique the review and propose a research agenda.

At one point in the seminar, the researchers were pushed to articulate -- in lay terms and for the general public -- what they could definitely say about early infant attachment. Their list of conclusions can be found in Part II of this document. In particular, some said that the mother's closeness (in terms of quantity of time with the child) during the first nine months is critical, while others indicated the second nine months as equally critical. The easy consensus was that the quality of care (in terms of caregiver responsiveness) in the first year or two of life influences the quality of the attachment. This does not mean, the researchers added, that the time beyond two years is not critical; it just has not been fully researched.

There was less agreement on the degree to which the quantity (in terms of hours per week) of non-parental care affects the quality of the attachment. Many researchers agreed that more research is needed on the interactive effects of quantity and quality of care on attachment outcomes, as well as on attachment to fathers, successful intervention strategies, and attachment in different cultural contexts.

Virginia L. Colin must be congratulated for a most thorough review of the literature, a review which drew the unanimous praise of the leading researchers in the field who attended the seminar. It is a significant contribution to the field of infant attachment research.

Susan D. Abbott of Nancy Low & Associates Inc., has our sincere thanks for managing the whole contract so well. Mary Lou Rife deserves special recognition for her skillful and diligent editing.

Patrick F. Fagan, Deputy Assistant Secretary  
Family, Community, and Long-Term are Policy

# INTRODUCTION

In February 1991, the Office of the Assistant Secretary for Planning and Evaluation (ASPE) of the U.S. Department of Health and Human Services (DHHS) sponsored a two-day research seminar on **infant attachment**. The participants were invited researchers and clinicians, well-known in their fields, representing developmental, psychodynamic and ethological orientations.

Officials at DHHS recognized that the family structure and child-rearing practices are significantly affected by contemporary social and economic conditions. In this regard, they believe that comprehensive, multi-disciplinary research on infant attachment is critical to inform policy makers involved in such issues as parental leave, child care, family support systems and intervention strategies for high-risk children.

The DHHS seminar had three primary goals: **(1) to critique a prepared literature review of infant attachment; (2) to identify research gaps; and (3) to build a consensus for an interdisciplinary research agenda**. Throughout the seminar, the participants grappled with key questions that the literature poses:

- What factors influence an infant's pattern of attachment to his or her parents?
- What are the consequences of the nature of a child's first attachments?
- How long lasting are the consequences?
- What is the impact of maternal employment and day care on the child's attachment?
- To what extent are infants attached to secondary caregivers, such as fathers and child care providers?
- How do we measure influences, outcomes and other conditions associated with infant attachment?

This final report has three major sections. The first part is a brief summary of an extensive literature review on infant attachment. The complete literature review is available upon request from The Department of Health and Human Services by contacting:

Brenda Veazy, Office of Planning and Evaluation  
Room 410E, HHH Building  
200 Independence Avenue, S.W.  
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The second section summarizes the proceedings of the seminar, which was based on the topics outlined in the literature review.

The Research Agenda, the third part of the report, outlines the areas that the participants identified for future research.

# I. THE LITERATURE REVIEW: A SUMMARY

## Attachment Theory

Psychoanalyst John Bowlby introduced attachment theory in the late 1950's. In the following two decades, numerous other researchers elaborated upon this theory which integrates viewpoints from psychoanalysis, cognitive psychology, systems theory and ethology (study of animal behavior).

Bowlby defines an **attachment** as an enduring emotional bond characterized by a tendency to seek and maintain closeness to a specific figure, particularly during stressful situations.

Attachment theory states that a child's first relationship is a love relationship that will have profound long-lasting effects on an individual's subsequent development. Closeness to the attachment figure provides protection and a psychological sense of security. Attachments should lay a good foundation for being able to form other secure relationships, to seek support when needed, and to draw strengths from the support which is given.

A caregiver who is reliably available and responsive to a baby's needs forms the basis for secure attachment, for competence in exploring the environment and forming other relationships, and for developing self-esteem.

Within attachment theory, "**representational models**" play a significant role. These unconscious structures are mental representations of the self and others, based on early experiences in first relationships. They set the stage for interactions with new social partners and have long-term consequences for shaping personality, organizing behavior and developing close relationships.

Bowlby asserted that it is not uncommon for a person to hold conflicting internal models of an important relationship. One model may develop largely from a child's direct experience with a caregiver, while another may result from cognitive input--for example, statements from the parents that do not support the experience.

Changes in attachment behavior and in one's representational models of attachment relationships can develop from developmental changes and/or changes in experience, especially with another attachment figure. Changes in the child's attachment can also result from changes in the parent's behavior due to family circumstances, such as the birth of a sibling, a death, divorce, or marriage, an economic setback or advance, a relocation to a new neighborhood, a child's entry into child care or school, involvement of a social worker, or psychotherapy.



Attachment theory, is first of all, a theory about the nature of **all** human beings. It touches on several critical elements of an individual's emotional life--the tendency to form attachment bonds; the role of the caregiver; the anxiety and anger which separation and loss provoke; and the nature of grieving for the loss of an attachment. Secondly, this theory categorizes the nature of a child's first attachment as either **secure** or **anxious** and attempts to describe the impact of these patterns on subsequent behavior and relationships.

## Early Research on Infant Attachment

In the 1960's, Mary Ainsworth, one of Bowlby's colleagues, conducted seminal longitudinal studies of 26 pairs of mothers and babies in their natural setting. Trained observers visited the subjects in their homes, in Baltimore, Maryland, for four hours at a time, every three weeks during the first year, making notes on the infants' behaviors and mothers' sensitivity in responding to the infants.

At the time these babies were approaching their first birthday, Ainsworth and her colleague, Barbara Wittig, developed the "**Strange Situation**," a semi-standardized laboratory procedure for observing babies' responses to being in a new place, meeting an adult female stranger, being separated from the mother for a brief period, and being left alone in an unfamiliar place for a brief period. At age one, 23 of the 26 infants in the Baltimore study were among the 106 babies on which Ainsworth reported. This method proved to be a rich source of data about attachment patterns and has been used to assess thousands of infants. In this technique, highly experienced coders use scales to rate the intensity of interactive behavior in four areas: proximity and contact-seeking; contact-maintaining; resistance; and avoidance. Then they categorized the infant's patterns of attachment behavior as either secure or anxious.

Ainsworth described three major categories of attachment: **secure**, **anxious/avoidant**, and **anxious/ambivalent**. After years of additional research by many investigators, Mary Main and Judith Solomon in 1986 identified a fourth pattern: **anxious/disorganized/disoriented**.

These four major patterns of attachment describe unique sets of behavior:

**Secure:** Securely attached babies are able to use the attachment figure as an effective secure base from which to explore the world. When such moderately stressful events as brief (3-minute) separations in an unfamiliar environment occur, these securely attached babies approach or signal to the attachment figure at reunion and achieve a degree of proximity or contact which suffices to terminate attachment behavior. They accomplish this with little or no open or masked anger, and soon return to exploration or play.

**Avoidant:** Babies with avoidant attachments are covertly anxious about the attachment figure's responsiveness and have developed a defensive strategy for

managing their anxiety. Upon the attachment figure's return after the same moderately stressful events, these avoidant babies show mild version of the "detachment" behavior which characterizes many infants after separations of two or three weeks; that is, they fail to greet the mother, ignore her overtures and act as if she is of little importance.

**Ambivalent:** In babies with anxious/ambivalent attachments, both anxiety and mixed feelings about the attachment figure are readily observable. At reunion after brief separations in an unfamiliar environment, they mingle openly angry behavior with their attachment behavior.

**Disorganized/Disoriented:** Babies classified in this group appear to have no consistent strategy for managing separation from and reunion with the attachment figure. Some appear to be clinically depressed; some demonstrate mixtures of avoidant behavior, openly angry behavior and attachment behavior. Other show odd, often uncomfortable and disturbing behaviors. These infant are often seen in studies of high-risk samples of severely maltreated, very disturbed or depressed babies, but also appear in normal middle-class samples.

## **Determinants of Attachment Patterns**

A large body of evidence demonstrates that the mother's sensitivity in responding appropriately to her baby's needs is a principal determinant of the baby's attachment pattern. More positive maternal characteristics, such as autonomy, flexibility, and nurturance, tend to be associated with secure infant attachment. Studies of mothers with personality disorders, such as depression, bipolar disorders, or schizophrenia, support the view that disturbances in caregivers' personalities predict anxious attachments in infants. In addition, the mother's representational model of attachment relationships appears to be a good predictor of her baby's attachment pattern.

Anxious attachments among babies will vary with both the individual mother-infant interaction and the culture. A number of studies in the U.S. and Europe indicate that rejection of the baby, particularly rebuffing the baby's bids for contact, prompts the development of avoidant defenses. Inconsistent, unpredictable responding--ignoring signal at times, being intrusive at other times, responding sensitively on occasion--apparently fosters anxious/ambivalent attachments. Unresolved mourning, serious maternal psychopathology, and child abuse are associated with anxious/disorganized infant attachments. Estimates of the frequency of anxious attachment among abused and/or neglected children have ranged from 70% to 100%.

Research has identified at least two other factors that increase the risk of anxious attachment: infant irritability and low levels of practical and social support for the mother. Poor marital quality and the instability in the family's situation, associated with extreme poverty, may also increase the risk of anxious attachment. Any one of these factors in isolation does not clearly or consistently increase the frequency of anxious attachment. However, when two or more of these factors occur together, the likelihood

of the baby developing an anxious attachment to the mother increases significantly. Each of these variables may be considered a risk factor by making it more difficult for the mother to respond sensitively to her baby.

In most circumstances, boys and girls are equally likely to be securely attached to their mothers. In high-risk samples, boys may be at greater risk than girls for anxious attachment. Poverty, in the absence of other risk factors, does not appear to increase the risk of anxious attachment.

Research on premature infants demonstrates that the infant's initial characteristics have little impact on patterns developed by their first birthday, except when long-term medical risks may complicate the mother-infant interaction and contribute to anxious attachment. In general, the mother's influence on attachment outcomes is greater than the infant's influence.

## **Stability of Attachment Patterns**

In stable middle class families, most studies find at least 80% stability in Strange Situation classifications from 12 to 18 months. Two studies, in fact, have reported high stability of attachment to the mother from infancy to age six. In these Studies, the family circumstances were stable, and the patterns of maternal care were consistent over time. High stability has been noted in middle class families, even when the mother's employment status had changed between Strange Situation interviews. The maternal employment status in these situations had been stable for some months before each Strange Situation.

In low socioeconomic samples, studies indicate less stability in attachments. One recent study demonstrates 60% stability of major categories A, B and C, with secure attachments being more stable than the insecure. It is likely that if the D (anxious/disorganized) category had been available at the time of the study, these attachments may have been more stable since attachments in this category tend to change infrequently.

## **Effects of Attachment Patterns on Later Development**

It is often difficult to differentiate between outcomes resulting from early attachment patterns and those from associated aspects of present experiences. However, it has been widely observed that children interact with both familiar and new people on the basis of their previous adaptations, thereby perpetuating adaptive or maladaptive behavior.

## **Secure Attachments**

Most infants (approximately 65%) are securely attached. Children who are securely attached to their mothers in infancy tend to have advantages in a variety of arenas as toddlers, preschoolers and kindergartners. They do not perform better on cognitive tasks than anxiously attached children in most studies, but they do tend to be more persistent and enthusiastic in the way they pursue a task. Secure children are generally more sociable, cooperative and competent and more ego-resilient. Peers and teachers prefer them to children with anxious attachments. It is difficult to distinguish whether these favorable outcomes are the effects of secure attachment in infancy or of correlated aspects of more recent experience and relationships.

## **Anxious Attachments**

Anxious attachments are common (35% in most U.S. samples, whether middle- or lower-class), and they may not be cause for much concern. Most anxiously attached children do not develop psychopathology, but they appear to be at greater risk for it than secure children. In high-risk samples, anxious attachments are more common especially in the anxious/disorganized (D) category.

About 20% of infants in most American samples are anxious/avoidant and have been the subject of close study. Their behavior is characterized by detachment, restricted emotional awareness, masked feelings and difficulty in expressing negative emotions. Their defensive posture, a reaction to insensitive, rejecting care received in infancy, is carried into later situations where it is maladaptive. An avoidant child does not request practical assistance or emotional support, lacking trust that people around him will respond positively. Children in this category play most often with objects, have limited fantasy play and are unable to admit normal imperfections.

Anxious/Ambivalent infants (10 to 15% of most samples) are often less persistent, less enthusiastic and less compliant as toddlers than those classified as secure, express more anger and frustration. Preschoolers in this category are found to become victims of exploitation in interaction with peers. They are likely to elicit mixed responses from peers that perpetuate ambivalent feelings and expectations about relationships.

It is estimated that approximately 10 to 15% of infants are disorganized. Because this is still a relatively new category, it is possible that more infants fit this category. Some researchers are re-evaluating videotapes to code this category more accurately. One well-executed study found that infants with anxious/disorganized attachments were at risk for showing hostile/aggressive behavior problems at age five.

The fundamental importance of an infant's attachment needs were dramatically illustrated in studies of institutionalized babies who had no regularly present caregiver. A startling percentage of babies waned and died despite good physical care. A high percentage of babies who spent much of their infancy in an institution became either

socially indifferent, or developed "affect hunger," an insatiable need for attention and affection from indiscriminant sources. Neither group was able to form meaningful attachments to caretakers or peers. As adolescents, they tended to be aggressive and impulsive and engage in anti-social behavior.

### **Adolescent and Adult Attachment Patterns**

The frequencies of each of the major patterns of attachment (secure, avoidant and ambivalent) in samples of adolescents and adults are very similar to their frequencies among infants. In the older groups, as in infancy, each category of attachment is about as common among males as among females. The patterns seem to be quite meaningful for describing teenagers and adults as well. Since the anxious/disorganized category has been described only recently, no studies of adolescents and adults, has been undertaken, using this classification.

Secure adolescents and adults describe their most important love experiences as especially happy, friendly and trusting. Their relationships lasted longer than the relationships of their anxiously attached peers. Avoidant adolescents and adults have difficulty building, enjoying and maintaining intimate relationships. They are described as "distant," with few close friends or long-term love relationships. Their relationships are often tinged with fear and jealousy. They tend to idealize their parents and many are compulsive about their work.

Anxious/ambivalent adolescents and adults report love relationships that involved obsession, extreme sexual attraction, desire for union and extreme jealousy. They report self-doubts and feel misunderstood and underappreciated. They get high scores in loneliness and are most likely to report a lack of paternal support.

Studies indicate that patterns of attachment may even help to predict or explain the adult's approach to work and success or failure in the job setting. For example, secure attachments in adulthood may support self-confident, effective involvement in one's work. Avoidant adults might approach their work somewhat compulsively to avoid their difficulties and deficiencies in interpersonal relationships. Anxious/ambivalent adults, preoccupied with unmet attachment needs, might often allow interpersonal involvements to interfere with their work.

Studies which specifically relate the pattern of attachment in infancy to one's pattern of attachment in adolescence or adulthood are not available. No subjects have been followed for that length of time. However, other sorts of evidence support the view that patterns of attachment are frequently transmitted from generation to generation. Parents with autonomous or balanced representational models, for example, are much better able to give sensitive care to their babies, resulting in securely attached children. Other evidence regarding the effects of early attachment on adulthood focuses primarily on long-term effects of loss of an attachment figure in childhood or major disruptions of attachments in childhood.

## Intervention Strategies

Families at high risk for anxious attachments can be identified by trained researchers when an infant is as young as three or four months old. Infant intervention programs can be quite effective with high-risk mother-infant dyads. Successful programs include important key elements:

- The mother's sensitive responsiveness to the baby is the major focus of the program.
- Psychotherapy addresses conflicts from the mother's past which affect her current behavior toward her baby.
- Therapist visits the family once a week for one year.
- Practical supports are considered for the mother (child care, medical care, foodstamps, housing, transportation).
- Intervener establishes trusting relationship with caregiver, especially in multi-cultural, high risk populations.

Studies indicate that short-term parent training sessions or other programs that focus on cognitive learning are rarely effective. It has been proposed that social changes, such as provision of affordable housing, or teaching parents alternatives to physical punishment, would decrease stress and violence within the family thereby creating better opportunities for more positive attachment behavior.

Among families **not** at high risk for anxious attachment due to poverty, deviant parent behavior, or unstable situations, investigators have not yet clarified what kind of intervention may decrease the frequency (about 35%) of anxious attachments. The type of intervention required for these families depends on the specific difficulties identified. For example, long-term psychotherapy is often prescribed for mothers with personality disorders, while brief visits by therapists, teaching mothers how to respond to irritable babies, have been found effective.

## Special Areas of Infant Attachment Research

### Attachment Hierarchies

Recent studies indicate that babies tend to develop clear, stable hierarchies of attachment figures. The duration of each relationship, the proportion of time the baby spent with each caregiver each week, the quality of each attachment, and the intensity of each caregiver's emotional investment in the baby all appeared to influence the baby's attachment hierarchy.

However, most of those factors favor the mother most of the time. Under moderate stress, most, but not all, infants direct attachment behavior more to their mothers than to their fathers or child care providers.

Data on responses to separation from or loss of an attachment figure also suggest that the primary caregiver may be a much more important attachment figure than previously considered. Loss of the mother prior to age 11 predicts much greater vulnerability to depression than loss of the father.

There has been no good test of Bowlby's monotropy hypothesis--that babies are genetically biased to treat one attachment figure, the primary caregiver, as much more important than any other.

### **Maternal Employment**

While there has been much debate regarding a baby's attachments to an employed mother, studies have indicated that most babies with employed mothers are securely attached to them. Several specific findings have been made:

- Approximately 55% of infants, whose mothers return to full-time jobs when the baby is less than six months old, are securely attached to the mother.
- Avoidant attachments are highest among babies who start day care in the first six months of life and spend more than 20 hours per week in non-parental care. Frequency of avoidant or avoidant attachment increases from 20% to 28% in these situations. However, there is not sufficient data to determine causes of very modest statistical associations between maternal employment and infant avoidance.
- Part-time child care does not appear to be a risk factor for anxious attachments.
- Child care which begins after the baby's first birthday does not appear to jeopardize the quality of an infant's attachment to the primary caregiver.
- Marital quality may play a particularly salient role in child development when both parents hold full-time jobs.

Findings about whether the mother's return to a job changes the infant's pattern of attachment to her or to the father have been inconclusive. Researchers need data on how employed mothers, fathers and other caregivers interact with the babies in the course of everyday life. Long-term naturalistic observations of interactions in employed-mother families would be an exceptionally useful methodology for gathering this type of information.

### **Fathers**

The patterns of attachment to two parents are similar, significantly more often than one would expect by chance. Attachment researchers hypothesize that sensitive responsiveness underlies secure attachment to fathers as well as to mothers. However, most fathers interact with babies much less than mothers do, and they usually take a different role in relation to the baby. The factors which underlie secure attachment to the father may, therefore, differ from the factors which relate to secure attachment to the mother.

Despite the fact that hundreds of babies have participated in Strange Situations with the father, researchers cannot say with confidence what the precursors of secure attachment to the father are. They have little data on prior interaction with the fathers in other settings, natural or contrived. It seems likely that models of attachment relationships influence both one's choice of a marriage partner and the quality of care one gives to a baby.

### **Infant Child Care**

One study indicates that in 54% of cultures surveyed, someone besides the mother was also important in providing care for infants, often another female relative. If human babies are genetically biased toward directing most of their attachment behavior to one person, it appears that they are adapting quite successfully to receiving care from a secondary attachment figure.

In our culture, as many as half of the mothers of babies under one year old are now employed, and many require child care services. Yet, we have almost no information about infants' attachments to child care providers. We do not know what proportion of such attachments are secure, whether the pattern of attachment to the mother is a good predictor of the pattern of attachment to the child care provider, or what the impact of the attachment to the child care provider on the child's subsequent development may be. Furthermore, we do not know what the effects of loss of this early attachment figure may be.

We do know that 85% of mothers rely on family child care as opposed to institutional day care. However, there is little research that distinguishes the strengths and weaknesses of the different kinds of child care situations.

### **Gender Differences**

Hundreds of studies of infants, toddlers, and preschoolers have reported no sex differences in frequencies of insecure attachment or in the effect of different attachment patterns in adolescents and adulthood. Secure, ambivalent and avoidant attachments are about equally common in boys and girls in infancy. The new anxious/disorganized category was not used in most studies. A few studies found that boys were more vulnerable than girls to variables which might underlie anxious attachment or to consequences of negative attachment.

### **Cross Cultural Research**

A majority of babies is securely attached to the mother in every culture studied to date. Clearly, different cultures have different infant care practices which underlie their definitions of "secure" attachments. For example, secure attachments in Japanese families and Israeli kibbutzim are characterized by a great deal of physical closeness. In



Northern European countries, however, close physical contact may not be a cultural norm for identifying secure attachments.

Attachment theory would predict an increased risk of avoidance for cultures which stress independence and strive to instill it by pressing babies to behave independently at an early age. This line of thought, however, may not be applicable to specific countries, like Germany, where autonomy is highly valued in personal development.

In the U.S., it appears that the surest way to foster sturdy independence in a child is to lay a secure foundation by responding sensitively to the infant's signals. In the Japanese culture, children are expected to rely on their mothers for help and emotional support throughout childhood. About 30% of babies in Japan are classified as anxious/ambivalent. In this case, however, we do not know whether these attachments are maladaptive, either biologically or socially.

## **Assessment Procedures**

It is not possible to assess patterns of attachment in infants until late in the first year. Researchers have observed interactions of infants for appropriate developmental stages in the early months (i.e., preferring mothers over strangers at five months) that may correlate to assessments made later in a Strange Situation.

Ainsworth's **Strange Situation** has been used as a primary method of assessing the quality of an infant's attachment to a caregiver. The Strange Situation, appropriate for babies from 11 to 20 months old, has impressive levels of validity and usefulness. Some questions have been raised about its validity in other cultures, where the stressfulness and meaning of its events may differ from typical interpretations in the U.S.

Other concerns about the Strange Situation relate to issues of administration and scoring, including the amount of time lapsed between assessments for each infant, adequacy of stress levels, and lack of a security scale. Some variability exists among psychological laboratories in coding Strange Situation behavior. In addition, The D category, "anxious/disorganized/disoriented" needs to be used in all new studies which include Strange Situations.

The **Attachment Behavior Q-set**, which rates security on a scale, is appropriate for children up to three years old. While this test assesses degrees of security, it does not describe patterns of insecurity.

The **MacArthur Attachment Working Group** has been experimenting for several years with modifications of the Strange Situation appropriate for preschoolers, developing guidelines for coding their behavior. Members of the group hope to complete their coding system for 1991 publication.

Mary Main and her colleagues have developed a laboratory procedure and coding system for assessing attachment patterns in six-year-olds based on the Strange Situation.

For adolescents and adults, two tests are widely used: Hazan and Shaver's trichotomous self-report measure describes current experiences in relationships; the **Adult Attachment Interview (AAI)**, a one-hour clinical interview, focuses on early attachment history and current interpersonal relationships.

## II. INFANT ATTACHMENT SEMINAR SUMMARY OF THE PROCEEDINGS

### Introduction

A complete list of the 10 participants and their professional affiliations is attached at the end of this section.

In the first session of the seminar, the participants described their work in infant attachment from their respective disciplines, which ranged from psychoanalysis, family therapy and developmental psychology, to primate research, cross-cultural research and social cognition.

The participants used the major topics from the literature review to guide their discussion.

### Attachment Theory

The participants discussed the roots of attachment theory in **psychoanalysis** and **ethology** (science of animal behavior) and the continuing influences of both traditions. Considerable time was spent on the **role of anger in attachment theory**, more specifically, on its adaptive and destructive functions. While excessive hostility is destructive in the mother-child relationship, participants were reminded of Bowlby's view of anger as serving a biological adaptive function for both the individual and the species. For example, a baby's anger at a mother who disappears, and a parent's anger at a child who wanders off, play a protective function. Bowlby believed that human possibilities for anger implied biological survival mechanisms, although he admits that at times anger is maladaptive.

Attachment theory comments extensively on the instinctive nature of all human beings. The major focus of much theory and research has been the infant's maintenance of proximity to the parent and on the parent's caregiving behavior.

The "representational models" that underlie the theory are defined as unconscious structures which guide the individuals' perceptions and behavior, and include both cognitive and emotional components. Most participants agreed that feelings, thoughts and behaviors need to be viewed as integrated, not isolated, factors within an attachment relationship.

## Determinants of Attachment Patterns

The **major determinant of the infant's pattern of attachment (secure, avoidant, ambivalent, or disorganized) appears to be the quality of care the primary caregiver(s) provides.** Participants agreed with experts who have repeatedly emphasized and demonstrated that the caregiver's sensitive responsiveness is of great importance. A caregiver must be able and willing to notice an infant's cues, to interpret their meaning accurately, and to respond appropriately. A caregiver with too much ambivalence or rigidity or too preoccupied with her own needs cannot respond sensitively, and may cause an anxious attachment for the infant.

In terms of infant temperament, the consensus at the seminar was that the **distinct personalities of babies can influence attachment outcomes.** Despite considerable effort, it was recognized that psychologists have had very little success in defining and measuring temperament variables (negative emotionality, sociability, etc.) in human beings. It is easier to study temperament factors in primates. For example, experiments with rhesus monkeys have demonstrated that temperamental tendencies, such as fear of new events, are highly influenced by hereditary factors. Rhesus babies with these kinds of temperaments are at high risk for attachment difficulties and other social problems, when their mothers are unskilled and rejecting, and when the environment is stressful. Introducing them to more responsive mothering and a calm environment greatly decreases their vulnerability.

The question was raised as to whether infants and mothers are equal partners in terms of accommodating each other. It appears that most of the time, both mothers and babies have great flexibility in behaviors available to them. Mothers, however, have a greater freedom of choice about their behavior. Therefore, the **quality of care the mother provides will probably have more influence than the infant's temperament on the infant's pattern of attachment.**

Issues of attachment versus autonomy develop as the child gets older. A sensitive mother will respect even an infant's growing need for independence. The early childhood years demand that a mother work collaboratively with a child in handling separation and reunion matters. In preschool years, children's attachments move into the phase of "goal-corrected" partnerships, when language becomes important and is used by the child to communicate his needs and thus influence the quality of the relationship.

## Outcomes of Early Attachment Patterns

Participants agreed that while the quality of attachment in infancy does not predict the total behavior of a person, the first attachment does lay the foundation for handling subsequent phases of development. **Children with secure attachments** have more basic trust than those who are anxiously attached. They have more ego resiliency through early and middle childhood, unless they experience significant negative

changes. They can also cope with setbacks, and recover more quickly. Securely attached children have more flexibility in processing current information and in responding appropriately in new situations and relationships.

**Anxious/avoidant children** carry anger and anxiety unconsciously and build defenses against perceiving or communicating certain types of emotional information. They demonstrate more displaced aggression and more non-compliance than other groups. Nevertheless, they perform well on developmental tests and on tasks that measure cognitive skills.

**Anxious/ambivalent children** have difficulty regulating the expression of negative emotions and are preoccupied with attachment concerns to a degree that interferes with constructive functioning.

In high risk samples, **anxious/disorganized children** are most likely to develop behavior problems.

Many anxiously attached children function quite normally. However, securely attached children always look equal to, or better than, anxiously attached children in measure of personality, social behavior and approaches to cognitive challenges. Researchers have identified characteristics such as resilience, persistence and cooperation as principal factors in their success. The consistency with which secure attachment is associated with positive outcomes is striking.

Research has shown that institution-reared children and foster children, who have been shuttled frequently from home to home, lose their capacity to form deep emotional bonds.

## **Intervention Strategies**

The participants reported that it has become easier in the last few years to identify those infants and mothers who are at risk for problems related to attachment. In addition, much has been learned about developing appropriate ways to change maladaptive behavior. **Primate research**, which has provided some illuminating data about intervention techniques, was a topic of great interest at the seminar.

Research with non-human primates, whose early attachment was inadequate, identified simple intervention strategies. One activity was moving the mother and baby from a cage where they lived alone, to a group that included well-adjusted mothers and children. This change resulted in decreased isolation, increased social support and more appropriate models for behavior. The mother in this case was returning to a more "normal" (in evolutionary terms) social environment.

A second intervention which works with rejecting, inadequate monkey mothers is simply to continue returning the infant to physical contact with the mother, usually by

placing the baby on the mother's back. Eventually, the infant's care-eliciting behaviors begin to affect the mother's ability to provide responsive care.

The participants discussed the implications of these interventions in the human realm. Two studies were cited that found that baby carriers, which hold the baby against the mother's chest, improve attachment outcomes for inner-city babies. A third study, which focused on placing mothers in front of their babies during directed play, instead of behind them, resulted in rapid improvements in mother-infant interaction in a high-risk sample.

**For high-risk families**, (involving poverty, abuse, neglect, depression, psychiatric problems) **multi-faceted, long-term strategies are needed** that include psychotherapy for the mother and that offer practical social support for the entire family. There is currently **no evidence that teaching child development principles in a didactic "classroom" situation, to parents in either high-risk or low-risk samples improves attachment outcomes.**

## Special Areas of Infant Attachment Research

### Maternal Employment

Studies show that 50% of mothers have jobs in the baby's first year; perhaps as many as 3/4 of them have full-time jobs. Issues regarding maternal employment and child care needs were considered a high priority by the participants.

Several points were made about employed mothers. **Most babies develop secure attachments. This is true even when the mother returns to a full-time job within the first six months of the baby's life.** Babies of mothers with full-time jobs are more likely than other babies to have avoidant attachments, but there are no good studies explaining why. There are no studies of the later correlates of early avoidance in employed mother families.

**Participants expressed concern about the mother's well-being, in addition to the infant's care.** They commented that large numbers of American families are living in very stressful circumstances, with limited choices available to them in terms of parental leave, child care, or part-time work options. Families, therefore, are making difficult choices between meeting the baby's and mother's needs, whether the mother's employment is an economic necessity or a valuable part of her own development.

### Fathers

Participants noted that, in general, the father's caregiving role with the baby is not the same as the mother's. Father tend to be playmates, often stepping back to let the mother take over when the baby needs comfort. There is no substantial data available

regarding the particular aspects of interaction that underlie infants' attachment to their fathers.

Some studies suggest that good marital relationships are associated with secure infant attachments. While the explanation for the correlation between the two is not known, the father's support for the mother appears especially important.

There is not much research available on single mothers and the potential for their babies to be at risk for anxious attachments. While studies of very small samples indicate that there is no greater risk, larger samples of hundreds of infant-mother dyads are needed to reach any conclusions.

### **Infant Child Care**

Few studies exist concerning the patterns of young children's attachments to their child care provider. The participants voiced the need for research that focuses on the processes involved in a child care relationship and on its consequences for later development.

Some participants expressed concern about extended child care--in which an infant receives more than 20 hours per week care by a provider; they fear that the parent's ability to steer the child's development trajectory is being diminished. In addition, these infants are at greater risk for avoidant attachments; the frequency increases by 8% (from 20% to 28%) for this group.

More professionals are involved in caregiving earlier in a child's life. While they believed that an enduring, supportive relationship with a nanny may be an optimal alternative, they acknowledged that this type of situation is seldom available to most parents. No studies on child care have differentiated between types of family care (e.g., a live-in nanny, family day care group, commercially operated day care center).

Research has demonstrated that having two secure attachments for an infant predicts better outcomes than only one, and that one secure attachment is better than having none. This prediction is true when the second attachment figure is either a father or a non-parental care provider.

### **Attachment Hierarchies**

There is reason to believe that the **primary caregiver or principal attachment figure in infancy is likely to have a more powerful and long-term influence on the child's developmental trajectory than anyone else in childhood. In most cases, this person is the mother.**

Participants noted that in primate species, the mother and child are embedded in a multi-generational, matriarchal kinship network. If a problem arises in the primary relationship, some other person in the system contributes care.

Grandmothers were cited as being very often important attachment figures; but they are rarely included in attachment research.

### **Gender Differences**

**Most studies have not found gender differences in attachment patterns.** Therefore, participants cautioned against drawing confident conclusions from results found in only one or two studies that determine that boys are more at risk on attachment issues.

Among humans and other primates, mothers do not treat boys and girls very differently in infancy. Nevertheless, large sex differences in behavior emerge in the early childhood period and increase in adolescence. Studies with primates indicates that the presence of a male exaggerates sex differences in the infants.

### **Cross-Cultural Research**

Discussion focused on cultural differences in caregiving that affect patterns of secure and anxious attachment. For example, in many parts of the world, face-to-face interactions between infants and adults is very rare; but where caregiving includes breastfeeding and a high degree of responsiveness to mild signs of distress, a majority of secure infants may result.

Likewise, many cultures rely on kinship support networks that play major roles in the early attachment relationship to the mother. Participants observed that isolation of a mother and her young children from others, to the degree that is common in the U.S., puts her in a deprived social environment, compared to the one in which human behavior evolved.

### **Assessment Issues**

Participants agreed that the Strange Situation is a robust assessment procedure. This method reflects differences associated with individual care and with individual cultures, and identifies care associated with maltreatment, maternal depression and maternal alcoholism.

It was agreed that researchers should use the "D" (anxious/disorganized) category in all new studies using Strange Situations. They should also attend to subgroups of D's, since the history and prognoses for some subgroups are drastically different. In addition, recommended re-analysis of videotapes of Strange Situations previously participants conducted to include the D category.



Researchers require additional cross-cultural data to determine if precursors, consequences and major implications of Strange Situations are similar or different in each culture.

There is mixed evidence on the usefulness of the **Attachment Q-set** for children up to three-years-old, as well as the reliability of the coding patterns of attachment in modified Strange Situations for preschoolers.

The participants did not discuss other assessment situations such as the AAI or Hazan and Shaver's self-report because of time constraints and other priorities.

## Summary

The participants agreed that it is difficult to make definitive conclusions regarding the complex issue regarding infant attachment. However, there are a few broad areas on which the researchers were able to reach consensus:

- All babies become attached to a primary caregiver, if one is available.
- Being attached to someone is better than being attached to no one.
- Secure attachments are better than insecure attachments for later child development outcomes.
- "Ego resiliency" -- or flexible, adaptive behavior -- is a clear outcome of a secure attachment.
- Attachment occurs within a family context and social community. Consequently, directly or indirectly, attachment outcomes may be affected by interaction among many individuals as well as by environmental characteristics.
- A secure attachment is not necessary nor sufficient to achieve positive cognitive outcomes.
- The quality of care (in terms of caregiver responsiveness) in the first year or two of life influences the quality of the attachment.

There was less agreement about the degree to which the quantity of parental vs. non-parental care (in terms of hours per week) affects the quality of the attachment. Many researchers agreed that more research is needed on the combined effects of quantity and quality of care on attachment outcomes.

The participants concluded by recommending that naturalistic, longitudinal evaluations with larger sample sizes are needed to disentangle the mediating effects of environmental and individual characteristics on attachment outcomes.

### III. RESEARCH AGENDA

Seminar participants were especially supportive of several key areas for future research that they believe are critical to understanding more about infant attachment and its consequences on later development.

The participants identified as a top priority **extensive naturalistic observations of infants, toddlers, and preschoolers in which researchers visit families in their homes, over a long period of time, to observe normal variations in interaction.**

This type of study, while very time-consuming and costly, is the only type of research that can clarify issues of major importance in the area of infant attachment -- from infant temperament and representational models, to specific patterns that underlie anxious/disorganized attachment in both high- and low-risk samples. This is the only kind of research that overcomes subjects' tendencies to withhold information from observers or to demonstrate select behavior.

Participants identified several research areas that focuses on viewing the infant in the context of the entire family and with childcare providers. Questions most frequently raised throughout the session included:

- **How do infants and toddlers of employed mothers interact with their fathers?**
- **How do young children (three to six years old) relate to their fathers?**
- **What kind of attachment do infants and toddlers establish with their day care providers?**
- **What kind of relationship do three and four-year olds have with their mothers and fathers?**

The long-term naturalistic studies provide general information about the family regarding infant temperament variables, social support for the mother, marital quality, and sibling attachments. Samples from both the lower class and upper class, with subsamples from specific racial and ethnic groups would be valuable. This type of study, in which families are visited often, over a long enough period of time, can begin to answer many questions about types of families, including those with **employed mothers**: How are they different from families in which one parent stays with the baby almost all the time? Is there more or less maternal intrusiveness? Is there room for father-baby interaction? Is there more irritability because everyone is tired and rushed: What trade-offs must the families make--about the baby's well-being, the mother's well-being, the quality of the marriage--when they have a choice about both parents holding full-time jobs? What are successful families doing that enable them to meet all members' needs well?

Little information exists regarding the kinds of two-person or three-person interactions that influence the patterns of **infants' attachments to their fathers**. In fact, there is almost no data that clarifies how fathers interact with babies.

The third area cited, **infants and toddlers with child care providers**, is important in determining the effects of alternative caregivers on patterns of attachment. A large number of babies are spending most of their time, five days a week, in day care. There are critical questions to be asked about child care providers: Do babies almost always become attached to their hired non-parental caregivers? Are babies in family day care settings more or less likely than babies in institutional day care to form secure attachments to their caregivers? How does the high rate of turnover among child care providers affect babies? Does a young child who has experienced repeated losses of caregivers develop defense mechanisms to guard against forming new attachments? Is there a number of hours per week in a child care situation that appears to be optimum for infants or children at various ages? Most of these questions have yet to be addressed in research.

As children enter new development phases in the **preschool** years, children's attachments enter the phase of goal-corrected partnerships. In response to changes in the child's needs and abilities, mothers change the way they themselves interact. The variables that influence attachment may differ from those which were most relevant in infancy. Fathers may increase their involvement and change the nature of the role they play in relation to the child. Research needs ethological observations from which conclusions could be drawn about both normative changes and individual differences.

The MacArthur Attachment Working Group has been working on interpreting laboratory measures of preschooler attachment patterns for years, and continues to have difficulty defining subgroups and finding meaningful associations with prior experience. Information is needed about the children in their everyday environments. Researchers would then have a better chance of developing useful laboratory measures and coding systems and would be able to make more informative use of existing ones.

In terms of **research methodology**, the participants also noted that more studies of convergent and discriminant validity are needed to clarify more effectively what attachment does and does not include, what outcomes it should and should not predict. This information would enable researchers to speak more precisely about those aspects of parent-child interaction which influence attachment outcomes and those variables that influence other outcomes (cognitive development, mastery motivation, relationships with peers, etc.).

The participants identified specific **topics** for further study for which a variety of research methods would be appropriate, including the long-term studies of families in their home or child care environments.

## **Babies' Attachment Hierarchies**

Studies in this area would help to answer significant questions: When two or more people are extensively involved in caring for and protecting a baby, does the baby nevertheless become much more attached to one than to the other(s)? If so, how is that figure selected? Will the first primary attachment figure have the most impact on the child's representational models, self-esteem, personality and associated aspects of development? Can a secure attachment to a secondary attachment figure buffer a child from some of the negative effects associated with an anxious attachment to the principal attachment figure? If a child's primary caregiver and principal attachment figure in infancy is a child care provider, will that person later have far more influence than the parents on the child's development than is usual in other families? When a young child loses a hired caregiver who was an important attachment figure, does the child grieve? Do children respond to repeated losses by developing long-lasting defenses against new intimate relationships?

## **Intervention Strategies**

Researchers are becoming increasingly successful in making early identifications of babies who are at risk for very disturbed attachment patterns and other serious problems. They are also increasingly effective in locating and describing intervention strategies for families. More work needs to be done in this area.

## **Siblings**

Researchers need to understand the similar and different pattern of attachments of children with the same mother and make determinations as to why there are such varying patterns.

## **Representational Models**

Many questions need to be answered about these unconscious structures that affect later behavior: How do age-related changes in cognitive abilities and memory systems affect the continuing development of representational models? At what point in life do representational models so influence new perceptions and interactions that they begin to maintain themselves? What factors prompt the change of patterns of attachment and the associated representational models? How does a child integrate information from different sources who may represent conflicting representational models of himself? What representational model most influences his interactions with new social partners?

## **Attachment in Adolescence and Adulthood**

Common questions that are frequently raised regarding the impact of attachment in adolescence and adulthood include: To what degree and in what ways do childhood patterns of attachment influence the formation of intimate relationships in adolescence? In terms of attachment variables, which teenagers are most likely to have babies at an early age? Who usually serves as the primary attachment figure for the baby of a teenage mother? Is the quality of the teenage mother's relationship with her mother a good predictor of the quality of her baby's attachment to her? If so, why? What processes affect the development of attachment in this population? Do they differ from the processes which affect attachment in other populations? Very few data are available in this population.

Mary Main's Adult Attachment Interview appears to be an excellent tool for studying adults' representational models. Other measures are also now available. Research is now able to clarify aspects of marriages and intimate friendships that constitute attachment and explain how patterns of attachment are related to other aspects of marriage and friendship. Study needs to continue on the relationship between the parent's representational models, his or her interaction with the baby, and the baby's pattern of attachment.

It would be of great interest to compare Hazan and Shaver's self-report measure of attachment and classifications with Main's Adult Attachment Interview. Studies of marriages as attachment relationships would also be helpful. Throughout childhood, the usual measures of attachment patterns are based on behavior at reunion with the attachment figure. Developing a system for coding reunion behavior in couples is an obvious next step. It would be interesting to learn whether there are correlations in results from reunion behavior, AAI classifications and self-report classifications of the same individuals and couples.

## **Cross-Cultural Research**

Research efforts must be expanded to cultures where the patterns of childrearing differ noticeably from childrearing in the United States. Again, lengthy naturalistic observations repeated over a long period of time are most valuable. This kind of study would allow researchers to determine whether the Strange Situation procedure is appropriate for assessing patterns of attachment in Japan, for example, and whether Japanese Group B babies are indeed more secure and likely to show more flexible, adaptive behavior as preschoolers than Japanese group C babies. Likewise, it would be easier to determine whether German babies identified as group B show more ego resiliency than children who were in group A, a pattern found in studies of U.S. babies.

An especially valuable arena for attachment research is the kibbutz in Israel where the mother is rarely the principal caregiver in infancy; rather one caregiver, the metapelet, spend the most hours with the baby. Questions here would focus on whether

the baby shows clear, strong, stable preferences among the attachment figures when two or three are available simultaneously. In this situation, what factors most influence the baby's selection of a principal attachment figure?

Within the U.S., opportunities for cross-cultural research are available among black, Hispanic, Native American, Chinese and other subcultural groups to shed light on the commonalities and variability among cultures in the determinants and consequences of the various patterns of infant attachment.

At present, no research has demonstrated whether the consequences of avoidant attachment for inner-city minority children differ from their consequences for white children in middle-class suburbs. Avoidant attachments are fairly common in both groups. Lengthy, repeated, naturalistic observations are needed to discover what patterns of interaction underlie the different patterns of attachment in different cultural groups. Less expensive research designs would suffice to study the sequelae of the different patterns. For example, Strange Situations could be conducted on infants at 12 to 18 months of age, and repeated at three years to see how they are reacting to nursery school. These observations would support the naturalistic studies done at six months and provide "snapshots" of their attachment behavior in later months.

## **Efficient Assessment Procedures**

Long-term naturalistic observations made or reviewed by insightful clinicians would maximize the likelihood of developing valid assessment procedures. Work on assessment procedures at several age levels should continue. Alternatives to the Strange Situation have been proposed, and there is work in progress on assessing attachments in pre-schoolers, 6-year-olds, adolescents and adults. The well-validated Strange Situation warrants further study regarding its coding and overall use. Laboratories differ from each other somewhat in cutoff points for classifying a behavior pattern into some of the subgroups, and there is a need to verify or re-establish cross-lab reliability in coding. One specific recommendation is to collect a set of videotapes for use in training future coders that would include classifications on which coders from several different labs had agreed. A second suggestion is to use the D category (anxious/disorganized/disoriented) in all Strange Situations and to recode all tapes previously done with the D category.

There is certainly reason to believe that early attachments have a long-lasting impact on personality, behavior, and intimate relationships. More information is needed about their determinants and sequelae, and about the experiences which help an individual overcome the effects of a negative attachment history.

## APPENDIX A. SEMINAR PARTICIPANT LIST

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