Attachment Security in Infancy and its Consequences for Development of the Individual: The origins of Attachment Theory and the varieties of parent-child interaction Ed Loewenton

ABSTRACT: In an effort to understand his observations of psychopathology in young children, John Bowlby developed a theory, strongly influenced by evolutionary concepts, of attachment security as a primary drive. The work of Mary Ainsworth, Beatrice Beebe, and others later demonstrated that the quality of the interaction between the infant and the primary attachment object, usually the mother, predicted the quality of the attachment as well as the ability to deal with novel stimuli and situations in children at ages 12 months to approximately three years. Mary Main, Jude Cassidy, and others, later demonstrated that the mother's report of the nature of her own attachments as a child was strongly correlated with objective ratings of her own child as securely or insecurely attached. During this period, Daniel Stern and others developed detailed models of how infants as young as a few weeks of age begin to develop and retain a representation of the mother-child interactions which they are experiencing. The temperament theorists, notably Jerome Kagan, demonstrated that the infant could bring to the mother-child interaction an influence of its own, and that the very young infant's inherent or genetically given characteristics, reflected largely in its patterns of affective sign and degree of motor activity and autonomic arousal, were factors in later behavior that could be characterized as secure or insecure. Beebe and others showed that the quality of mother-infant "face play" starting at about three months has a profound and durable effect on later measures of security and cognition. This article attempts to integrate these findings, and suggests some of the logical consequences and predictions arising from this integration, notably a reinterpretation of the observations of children in the Mahler clinic. Finally, speculations on additional theoretical connections are offered.

Bowlby's Theory of Attachment: a balance between security and exploration

In the 1940s, John Bowlby (1988; cited in Cassidy, 1999) observed that the nature of the mother-child relationship was of importance not only to the later functioning of the child, but also of immediate importance. He observed that children experience intense distress when separated from their mothers, even if they were primarily fed and physically cared for by others. Bowlby came to wonder why the mother is so important to the child. At the time, the child's ties to the mother were commonly explained either by psychoanalytic or learning theorists as a secondary drive which develops because the mother feeds the infant. Both bodies of theory posited that the pleasure experienced upon having hunger drives satisfied comes to be associated with the mother's presence in positive ways.(Cassidy, 1999) . This notion was called into question by the findings of Lorenz, Harlow (cited in Cassidy, 1999), and others, that animals become attached to adults of their species (or other species) that do not feed them. Harlow observed that infant monkeys in times of stress prefer not an artificial mother providing food, but the more comfortable cloth covered mother that afforded contact comfort. Systematic observation of human infants beginning in the 1960s (Ainsworth, others, in Cassidy, 1999) revealed that babies, too, become attached to people who do not feed them.

Dissatisfied with current explanations of the child's attachments, Bowlby developed a theory of a biologically based desire for proximity to an attachment object that arose in humans and in many other species through the process of natural selection. (Bowlby's lifelong interest in evolutionary theory was reflected, among other things, in his biography of Charles Darwin). Bowlby proposed that during the time when humans were evolving to the species as we observe it presently, genetic selection favored attachment behaviors because they increased the likelihood of child-mother proximity, which in turn increased the likelihood of protection and provided survival advantage. Bowlby noted that advances in evolutionary theory required an understanding that the ultimate outcome to be gained by any evolutionary adaptation is always the survival of the genes an individual is carrying, not necessarily the survival of the individual carrying them. (For a readable explanation of this notion, see Dawkins, 1976). Although benefits from proximity to the parent or other attachment object would include feeding, learning about the environment, and social interaction, the primary advantage thought to give survival advantage to the child in this framework is protection from predators. Infants who were biologically predisposed to stay close to their mothers were less likely to be killed by predators. Thus, a biological drive to seek proximity to the

mother would help assure survival to reproductive age. Within this framework, attachment is considered a normal and healthy characteristic throughout the lifespan, rather than a sign of immaturity that needs to be outgrown.

Bowlby conceived of his hypothesized attachment drive as primary, equal in status to that of nutrition, involving a homeostatic drive mechanism for proximity to the primary attachment object. This mechanism can be activated either by stress or the threat of stress; among these stresses are included such presumably innately programmed stimuli as loud noises, large looming objects, sudden darkness, hunger, illness, novelty, discrepancy, or unexpected stimuli or events, and pain or physical discomfort; or by the perceived loss of or rejection by the attachment object, generally the mother. Activation of the attachment drive causes one or another of a repertoire of attachment behaviors which serve to reduce the child's distance from his mother. The distance from the mother which will serve to inactivate this homeostatic drive various from a distance close enough for the child to perceive the mother and reassure himself in regard to her location, as well as perhaps hear her voice, to intimate physical contact. The distance required is determined by the strength of activation of the drive, which depends in turn on the level of stress or distress experienced by the child.

Bowlby considered the attachment drive system as different from that of hunger, in that it is never turned off completely, but rather functions more like physiological systems such as those regulating blood pressure and body temperature within certain preferred limits. This leaves open the question as why such a drive mechanism would not simply require that the child maintain as close a degree of contact as physically possible as much of the time as possible. According to Bowlby, the attachment behavioral system can be fully understood only in terms of its relation to other biologically based behavioral systems.

Bowlby suggested that the attachment drive existed alongside of and in complex relationship with other drives and innate behavioral systems; relevant to the present question is the drive for exploration and increasing mastery of the environment. Piaget (1954) hypothesized that the child has an inherent motive to explore. This, too, has survival advantage. According to Bowlby, the innate drive to explore confers survival advantage by providing information about the working of the environment. Yet unlimited exploration with no regard to potential hazards can be dangerous. The attachment and exploratory behavioral systems are complementary and mutually inhibiting, ensuring that while the child is protected by maintaining proximity to attachment figures, he or she is also able to learn about the environment and gain mastery and skills through exploration. The dynamic equilibrium between these two behavioral systems is even more significant for development and survival than either in isolation.

Ainsworth (cited in Cassidy, 1999) referred to an "attachment-exploration balance". Most infants respond to a specific situation after assessing both the environment's characteristics according to the degree of threat, novelty, or interest, and the mother's availability and likely behavior. When the infant is distressed, or experiences the environment as dangerous, exploration is unlikely, and the infant is more likely to seek proximity to the caregiver. When the attachment system is activated by such things as separation from or unavailability of the attachment figure, illness, fatigue, unfamiliar surroundings, or any other form of stress, infant exploration and play decline. Conversely, when attachment is not activated (e.g., when a healthy, well-rested infant is in a comfortable setting with an attachment figure nearby), exploration and play are the likely outcome. A substantial body of research has demonstrated compelling evidence of the theoretically predicted associations between maternal availability and infant exploration (Bergmann, 1999; Ainsworth and Wittig, 1969 cited in Cassidy, 1999) This concept of the interaction between the drives for security and exploration, novelty, and mastery, has important explanatory power as an alternative to Mahler's notions underlying the apparent existence of the stages of practicing and rapprochement in her theory of separation and individuation. What appears to be an immutable sequence of stages is really the manifestation of an oscillation in a child's need for proximity to, verification of, and reliance upon the primary attachment, or secure base. Overwhelming dependency in the newborn motivates a need for intimate proximity. Developing perceptual-motor and cognitive abilities impel exploration, which demands that the mother, and later some representation of the mother or of the temporal nature of her availability, be attainably close, thereby providing the required degree of

security. The "practising" phase is unique and discontinuous because it involves a substantially qualitatively different level of efficacy, that is, the child is newly mobile in his environment. The unarguably euphoric result of this new activity overwhelmingly resets for a short while the homeostatic switch governing perceived security and need for proximity. Once the novelty has worn off and reality testing has progressed at the new level of mobility, new insecurities permit a resumption of the child's characteristic (temperamental) ideal proximity needs. It is also likely that the rapprochement crisis, roughly corresponding to the "terrible two's", is a period during which the drives for security and exploration are in an especially unstable equilibrium. If this temporary instability is related to a uniquely rapid period of acquisition of new abilities, in this case probably that of language as well as mobility, then it would make sense that such an instability would again occur if additional biologically new capacities developed at a later age. I would suggest that this is exactly what happens at puberty, and that this explains much of the contradictions of behavior and emotions during the teen years, if we assume that puberty includes a period longer than that required merely to acquire new physiological capacities, but also the extended time required to adjust to them. In addition, during the teen years new cognitive abilities permitting complex abstract reasoning motivate the teenager both to seek reassurance in dealing with these novel experiences and thoughts, and to seek independence from caregivers in order to explore them.

According to Bowlby, behaviors that arise from the attachment drive are organized into an "attachment behavioral system", a concept from ethology that describes a species-specific system of behaviors that lead to certain outcomes that contribute to reproductive fitness. This system does not consist of a set of behaviors that are constantly and uniformly operative over the lifespan. Rather, a variety of behaviors can serve the function of maintaining proximity to the attachment figure. The very young infant who is as yet unable to locomote in the direction of its mother has available such behaviors as reaching, crying, smiling, and vocalizing. As the child matures into an adult, he or she is able to make use of crawling, walking, driving, telephoning, and writing letters.

Bowlby referred to an organization or hierarchy of "attachment bonds", a special type of "affectional bond", within the individual. Throughout the lifespan individuals form a variety of important affectional bonds that are not attachments. An affectional bond is persistent; it involves a specific person not interchangeable with anyone else; the relationship is emotionally significant; it motivates a desire for proximity; and the individual feels distressed at involuntary separation from the affectional object. In addition to these five criteria, an additional criterion exists for an attachment bond: the individual seeks security and comfort in the relationship with the attachment object. The attachment is secure if the feeling of security is achieved, and insecure if not; it is the seeking of security that is the defining feature. The attachment bond exists consistently over time, whether or not attachment behavior is present.

Strength of attachment behaviors does not necessarily reflect strength of the attachment bond. According to Ainsworth (cited in Cassidy, 1999), "...an infant who explores when his mother is present is not necessarily less attached than one who constantly seeks proximity to his mother...his freedom to explore away from her may well reflect the healthy security provided by a secure attachment relationship". Certainly, this is precisely the kind of thing observed in the Strange Situation (see below). Cassidy (1999) suggests that Bowlby did not subscribe to the notion of strength of attachment; yet in his notion of attachment hierarchy, he is clearly doing just that. I would suggest that separating affectional from attachment bonds creates an unparsimonious and superfluous construct, since Bowlby discusses direction of attachment behaviors toward supposedly nonattached figures, and reflection and anecdote suggest that the security drive appears to be operative occasion with respect to those objects that Bowlby would presumably refer to merely as "affectional Objects", thus satisfying his fifth criterion.

What is important to note is that a child is capable of multiple attachments, and these exist in an apparent hierarchy. Most children become attached to more than one familiar person during their first year. According to Bowlby, "responsiveness to crying and readiness to interact socially are the most relevant variables" in determining who will serve as an attachment figure. In most cultures this means that the biological parents, older siblings, grandparents, aunts, and uncles are most likely to serve as attachment figures, in pretty much that order. A child will tolerate separation from subsidiary figures with less distress than separation from the principal attachment

figure. This is usually the mother. The structure of the hierarchy seems to be determined by how much time the infant spends in each figure's care; the quality of care each provides; each adult's emotional investment in the child; social cues; and the consistent presence across time of the figure in the infant's life. Infants have a strong tendency to prefer a principal attachment figure for comfort and security. The existence and presence of one or more subsidiary figures cannot entirely compensate the child for loss of the primary attachment figure.

This leads to the question of why an infant requires a primary attachment figure, even when multiple strong attachments are available. Bowlby believed that this tendency contributes to infant survival and reproductive fitness by establishing a relationship in which the primary attachment figure assumes principal responsibility for the child. This should help ensure that care of the child is not overlooked. An alternative system, in which many caregivers have equal responsibility for many offspring, might leave any individual child falling between the cracks. Further, when faced with danger, the child does not have to make a series of assessments and judgments about who may be the most readily available and most responsive caregiver. Rather, the child has a quick and automatic response to seek the principal attachment figure.

Most importantly, however, is that the mother, with the strongest genetic and metabolic investment in the child's well-being, is generally self-selected as the primary caregiver. It follows that it is most adaptive for the child to use as a primary attachment figure the person who is reciprocally most strongly bonded to the infant, and most heavily invested in the baby's healthy development.

Bowlby described "parental bonds" to children and "child attachments" to parents: parental attempts to seek security from the child are, according to Bowlby, almost always not only a sign of pathology in the parent but also a cause of it in the child. I would suggest that active seeking of security from the child on the part of the parent may be unhealthy, but that in fact the nature of the attachment bond is essentially the same in both directions. I am surprised that Bowlby, as interested in modern evolutionary theory as he was, did not see that the parent derives a sense of security from the child merely in the child's existence and potential for passing on the parent's genes. Thus, the disappearance of the child is as likely to motivate proximity-seeking in the parent as is the disappearance of the parent to motivate it in the child. In fact, Bowlby refers to the parental version of proximity seeking as "retrieval", in which the mother or other primary caregiver has a biological motivation to assure the safety of the infant.

he Quality of Attachment, its Origins, Persistence, and Consequences

A research assistant of Bowlby's, Mary Ainsworth, demonstrated that there are varieties of attachment between the child and its mother. Using a technique known as the "Strange Situation", in which the mother leaves the child in a novel situation, returns after a short absence, and the nature of the child's exploratory behavior and response to the returning parent is evaluated, she identified infants that showed both secure and insecure attachments.

In her original study (Ainsworth, 1977, cited in Bowlby, 1988), Ainsworth observed a small group of infants at 12 months of age in the **Strange Situation**, a standardized scenario consisting in its full version of eight episodes. Briefly, the mother twice leaves her baby alone or with a stranger and returns twice to be reunited with the child. The behavior of the infant or older child while alone, while stranger is attempting to interact with him or her, and upon return of the mother is assessed. She observed variations in behavior that classified the infants into four categories: **secure**, **insecure-avoidant**, **insecure-resistant** or **ambivalent**, and **disorganized** or **disoriented**. Studies of infants using this technique have been replicated hundreds of times, with remarkably consistent results.

On reunion after brief separation from parents, **securely attached** children at 12 months seek physical contact, proximity, and interaction. If upset after the separation, they are readily soothed by parents, and return to exploration and play. At age 6, securely attached children initiate conversation and pleasant interaction with parents and are responsive to parents' overtures. They remain calm throughout. **Insecure-avoidant** infants avoid and ignore parents on reunion,

remaining occupied with toys, and may ignore parents' efforts to communicate. Older children minimized opportunities for interaction with parents on reunion, and made excuses for moving away, such as looking for a toy. **Insecure-resistant** infants alternate between appearing very independent and ignoring mother and then suddenly becoming anxious and trying to find her. Upon reunion, they cling and cry, but also look away and struggle, and their parents are not able to sooth their distress. These children may show signs of anger. At six years of age, these children show an exaggerated desire for intimacy and dependency, but also signs of discomfort and hostility. **Disorganized** infants cry for parents at the door and then run away when door opens, approaching parent with head down; or may seem to freeze or engage in stereotyped behavior. Older children appeared to reverse parent-child role, by embarrassing or humiliating them or showing overly solicitous behavior towards parent.

It has been possible to associate parenting styles with each type of child. Parents of the secure children could be generally characterized as responsive to their infants' needs, permitting the infants to play an active role in determining the onset, pacing, and end of activities, beginning with feeding in early infancy. Mother's of babies with insecure-avoidant type of attachment tend to be unavailable and rejecting. They are generally unresponsive to the infant's signals, maintain little close bodily contact, and often display anger or irritation to their infants. Parents of insecure-resistant infants are distinguished by inconsistency in dealing with their children. They respond to their babies' needs at times, other times not, and are generally unaffectionate and awkward with them. The most seriously disordered parenting is found among parents whose infants are of the insecure-disorganized type. These parents often neglect their babies or abuse them physically. This form of attachment behavior seen in the infant tends also to be correlated with diagnoses of serious psychopathology in the mother.

Bowlby (1988, p. 47), reports that Ainsworth, in assessing the mother's behavior in relation to the types of attachment, demonstrated that the primary determinant of attachment type seemed to be the degree to which the mother seems constantly to be tuned in to receiving her baby's signals, how accurately she interprets them, and how promptly and appropriately she responds to them.

Beebe and Lachmann (1988) report a series of studies detailing the patterns of mother-child interaction which influence attachment in great detail, demonstrating variations in the adequacy with which mothers respond sensitively to their infants. Working with infants ages three to four months, they observed mothers and their infants in face-to-face play, where the only goals are mutual attention and delight. The situation elicits the infant's greatest communicative skill. They observed a range of matching of temporal patterns and affective patterns, in which mothers were more or less sensitive to their infants' needs to regulate the pace of the interaction. Infants were able to control the degree of interaction by maintaining or breaking eye contact and orienting themselves toward or away from mother, and ultimately by becoming passive or engaging in what Beebe refers to as the "head-hang". The researchers recorded the degree to which expressions of pleasure or displeasure were matched by infants and mother, showing that each influences the other. In those interactions where timing of the mother's behavior at the level of one second or less was shown to be highly congruent with and sensitive to that of the infant, infant's affect was also more positive. In the most maladaptive or misattuned mother-infant interactions, while the infant was clearly signaling the need for a break, the mother persisted in trying to maintaining eye contact, moving her face to confront the infant or even pulling the infant around to face her. These episodes usually ended in the passive "head-hang" on the part of the infant. This behavior was sometimes accompanied by facial expressions of displeasure or grim determination on the part of the mother indicating that she experienced this in some way as a personal failure or as inappropriate behavior on the part of the infant that she needed to overcome.

Beebe and Lachmann present evidence that imitating facial expressions can produce physiological responses in the imitator that accurately reflect the same state in the person whom they are imitating. They suggest that mutual matching of affective states through mirroring facial expressions provides to the infant information about the subjective state of the mother which cannot be accessed directly.

In Beebe's discussion of their results, they suggest that these patterns of the earliest social interactions are retained as preverbal representations by the infant, and that the infant learns what to expect from the mother. Further, these representations become part of the infant's representation of the mother herself, and of the responses that are required in dealing with her, whether those responses are open and mutual or require that he regulate his own behavior and own arousal without the help of or in spite of the responses of the mother. They discuss studies which show that in addition to representations of the mother's sensitivity to the infant's timing and level of arousal, these episodes of face-to-face play also include the synchronization of affective states, through the copying of facial expressions. Thus Beebe suggests that the infant establishes a representation of interactions with the mother that include an affective dimension. Beebe and Lachmann (1988) site studies that show that measures of mutual gazing, mutual smiling, and social play in the first four months predict cognitive measures at one and two years, and that infants identified as securely attached at one year showed more looking, smiling, and excitement in social play at two to four months, whereas infants identified as anxiously attached at one year showed more looking away and unresponsiveness at four months. Additionally, maternal ability to reserve stimulation for periods when the infant was attentive during social play is correlated with infant attachment and cognition in the second year. Going back even further in age, maternal sensitivity during feeding at four weeks (rhythmic holding and facilitation of infant activities) predicts secure attachment at one year. [The foregoing studies cited in Beebe and Lachmann, 1988.] In summarizing their work and their review of the literature, Beebe and Lachmann suggest that beginning in early infancy, children construct and retain representations of social interactions as responsive or unresponsive to their needs and intentions, and as essentially positive or negative.

The Role of Temperament Bowlby (1988, p. 49) addresses the question of whether infants can play a significant role in determining the nature of the interaction between mother and child and concludes that they do not, specifically denying the contention that some infants are "born difficult" and elicit some degree of adverse reaction from the mother. He cites findings of Ainsworth's during the first three months of the lives of the infants she was observing, that there was no correlation between the amount of crying a baby did and the way his mother was treating him; whereas by the end of the first year mothers who had attended promptly to their crying babies had babies who cried much less than did the babies of the mothers who had left them to cry. Research in the field of temperament, notably that of Jerome Kagan (1998), does provide evidence that there are children who from birth onward respond atypically to attempts at soothing and nurturance, and that these differences manifest themselves at later ages in predictable ways. Such infants are shown to have greater autonomic reactivity and greater limb motility, and cry more and show less positive affect than average infants. At age 12 months, such infants are more likely to be classed as insecurely attached in the Strange Situation, and at later ages are more likely to be categorized as shy, or, in Kagan's terminology, inhibited. As toddlers and young children they continue to show greater autonomic arousal to stress than uninhibited children. It should be noted that the earliest differences are seen at ages before which any theorist has suggested that children begin to acquire representations of mother-child interaction, and although there may be data demonstrating that the misattuned mothers were behaving insensitively toward their infants from birth onward, it is not presented in the sources offered here. Thus, the possibility is still open that the characteristics of the infant may influence the characteristics of the mother's responsiveness, rather than that the mother's behavior is entirely responsible even from birth for all characteristics displayed by the infant thereafter. However, Kagan's extreme type of inhibited child, who exhibits unequivocal behaviors characteristic of the difficult child from birth, appears to be quite rare, and certainly much less common than the proportion of children who are rated as insecurely attached. In any case, Kagan's (and the obvious) prescription is for the mother to learn to adapt herself to the infant's needs, receiving help in the process if necessary.

Hesse (1999) summarizes evidence that hereditary and stable characteristics are not predominantly operative in attachment security of infants as measured by the Strange Situation. If they were, then secure, avoidant, or resistant infants should behave similarly with each parent. Strange Situation responses are, however, largely independent, with many infants judged secure with one parent and insecure with the other. Also, infants who are i secure with their mothers at 12 months are likely to become secure by 18 months if there are favorable changes in the mother's life circumstances. Finally, if it were presumed that mothers are responding (i.e., sensitively vs.

insensitively) to "easy" versus "difficult" infant temperament, then handicapped, sick, and otherwise "difficult" infants should not be as likely to be judged secure as infants in low risk samples. However, this is not the case.

As the final word on this topic, at least in the present article, I would like to point out that Kagan (1998) has demonstrated a relatively rare type of infant, characterized by broad face, sturdy build, and low autonomic responsivity, who is classed as uninhibited virtually regardless of the mother's behavior, and an opposite type, whom he classes as shy or inhibited, again, regardless of parental style.

Pursuing the consequences of maternal-infant interactions later in the lifespan, Mary Main and a variety of co-workers (1985; also cited in Hesse, 1999) developed a procedure called **The Adult Attachment Interview**, which assessed a parent's memories and representations of attachments and emotions regarding his or her own parents. Replicable and consistent data collected over many years of research has shown that characteristics of the parent's report of perceptions of his or her relationship with his or her own parents was highly and reliably correlated with the classification of the reporting parent's own child in the Strange Situation. Additionally, mother-child and father-child verbal communication patterns at age 6 were found to be closely predicted by strange situation behavior towards the same parent in infancy. The studies were the first to investigate in terms of verbal and symbolic representation attachment security behaviors that had previously been observed only as nonverbal behavior. The Adult Attachment Interview permitted the investigation of representational processes as the likely mediator of differences in parental care-giving behavior, and its influence on the child.

Main and Goldwyn's (cited in Hesse, 1999) initial work showed that rating scales reflecting a parent's current state of mind with respect to his or her own attachment experiences were strongly correlated to aspects of the infant's behavior toward that parent in the Strange Situation five years previously. In the Adult Attachment Interview, parents are asked to produce and reflect upon memories related to attachment in a coherent discourse with the interviewer. This is not as easy as it at first seems, since the interview moves rapidly, requiring the speaker to reflect upon and answer a multitude of complex questions regarding life history. Ample opportunities are provided for speakers to contradict themselves, find themselves unable to answer questions clearly, and/or to be stimulated into excessively lengthy or digressive discussions on particular topics. Respondents are classified "secure/autonomous" when they speak coherently and interactively with the interviewer about their experiences, whether experiences themselves are reported as having been favorable or unfavorable. They answer questions with sufficient but not excessive elaboration, and then return the conversational turn to the interviewer. By this system, an individual providing a coherent narrative that includes descriptions of physical or sexual abuse by parents will still be judged secure/autonomous. **The children of coherent speakers are consistently classified as secure.**

Respondents are classified as "dismissing" when the responses appear to minimize the discussion or importance of attachment-related experiences. Responses are typically internally inconsistent, and often excessively short. Relationships with parents are usually described as highly favorable, but without supporting evidence, and such evidence as is given tends to contradict the global evaluation. **Children of speakers in this category are consistently classified as insecure-avoidant.**

Respondents classified as "preoccupied" are often unable to maintain a focus on or direct responses to a given question. Instead, memories aroused by the question, rather than the intent of the question itself, seem to draw the subject's attention and guide the subject's speech. This can result in lengthy, angry recounting of childhood interactions with parents, which may inappropriately move into the present tense or into discussions of a present relationship. The speaker may also digress to remote topics, use vague language, and describ a parent negatively and positively in the same sentence. **Infants of these speakers are typically judged insecure-resistant/ambivalent.**

Respondents classified as "unresolved/disorganized" frequently demonstrated substantial lapses

in reasoning or discourse. For example, the individual may briefly indicated belief that the dead person is still alive in the physical sense, or that this person was killed by a childhood thought. The respondent may lapse into prolonged silence or eulogistic speech. **Infants of speakers in this category are typically classified as disorganized/disoriented.**

Note that none of these categories of interview response has any relation to the actual content of the responses, but rather to the matter in which the subject's memories and experiences are described in response to the interview questions. It is thus not the experiences of the parent per se that predicts care giving behavior, but rather the manner in which the parent represents these experiences in his or her own mind and talks about them when asked. Of especial interest are the parents, classified as "earned secure", who seem to have had highly unfavorable attachment-related experiences, yet even while portraying their own parents negatively, produce descriptions that are reflective, thoughtful, and often forgiving. These respondents tend to mention the need to depend on others, setting parents in a relevant context when criticizing them, and retaining a sense of humor in the description. Such parents tend to be no less sensitive and responsive to their children than those with apparently more favorable early attachment-related experiences, even when parenting under stressful conditions.

To rule out the possibility that Adult Attachment Interview - Strange Situation correlations might be the result of the influence of the infant upon the parent's state of mind, later studies administered the interview prior to the birth of the subject's first child. Again, a high correlation between the two measures resulted.

A relatively new area of investigation (Hesse, 1999) which I find particularly fascinating and relevant to several of the topics covered in the present paper, involves the relationship among unresolved parental attachment status as measured by the Adult Attachment Interview, frightened or frightening parental behavior, and disorganized infant attachment as measured in the Strange Situation. Most studies investigating care-giving behavior as related to adult attachment status have focused upon differences in "sensitive responsiveness" in secure vs. insecure parents. (See section on the work of Beebe et al., above.) Main and Hesse (1999, 1990, cited in Hesse, 1999) have suggested that lapses of reasoning during discussion of traumatic events produced by the insecure-unresolved parents may stem from alterations in normal consciousness caused by intrusion of dissociated, frightening ideas or memories. Since the interview appears sufficient to produce these disturbances in consciousness, it is not unreasonable to presume that frightened, frightening, and occasionally dissociated behavior may occur during interactions with the infants of these parents. Behavior of this kind will likely place the infant in a paradox, in which he can neither flee from nor approach the attachment figure, and would be expected on theoretical grounds to produce disorganized behavior in the Strange Situation. Frightened or frightening maternal behavior has been found predictive of disorganized Strange Situation attachment status in several different countries and settings. Since disorganized infant attachment status has been found predictive of vulnerability to psychopathology, these foregoing relationships are of strong clinical interest.

In this discussion of attachment behavior, it is important to make the distinction between infant attachment, which is assessed in regard to attachment to a particular parent, and adult attachment attitudes and states of mind with respect to attachment, assessed by the Adult Attachment Interview, and not related to whether or not the adult is insecurely attached to another person at the time of interview.

The Child's Representation and Internalization of Self and the Mother

In order for the infant to develop representations of himself, his mother or other primary caregiver, and the expected nature of their interactions, it is obviously necessary that infants be capable of constructing and retaining these representations in some form of nonverbal or preverbal memory. Self and object representation and constancy has been an area of theorizing for the psychoanalysts, whose general view has been that an infant emerges from a fusion or symbiosis with the mother only toward the latter part of the first year of life, and that for the first couple of months after birth the infant is generally unresponsive and unaware of the physical and social

environment, but rather lives in a sort of autistic fantasy. Over the past 25 years, the notion that even a very young infant does not distinguish itself as separate from its environment nor develops representations of objects and events has been systematically refuted by experimental observations of infants by a large number of researchers. Stern (1985; also cited in Bowlby, 1988, and Beebe and Lachmann, 1988) presents his own work and that of many other researchers demonstrating that infants virtually from birth are able to perceive and begin to store representations of perceptual constancies and inconstancies in their environment, including those representing spatial shape and patterning, temporal sequence, intensity of stimuli, intensity of their own arousal, and the degree to which events are contingent upon their own behavior. These capacities are seen as necessary in the process of developing secure or insecure attachments. The configurations of events as defined in time and space and rhythms of affect and arousal that the infant experiences in interactions with the mother are retained by the infant as preverbal representations, and if their adaptive or maladaptive nature are maintained consistently through the second year, these representations come to form a significant component of the growing child's sense of core self.

"In Winnicott's, Mahler's, and many other theoretical renditions, the various important experiences of being with mother are founded on the assumption that the infant cannot adequately differentiate self from other. Self/other fusion is the background state to which the infant constantly returns. This undifferentiated state is the equilibrium condition from which is separate self and other gradually emerge. In one sense, the infant is seen as totally social in this view. Subjectively, the "I" is a "we". The infant achieves total sociability by not differentiating self from other. In contrast to these views, the present account has stressed the very early formation of a sense of core self and core other during the [earliest months of life]. " (Stern, 1985, p. 101)

Bowlby (1988, chapter 6) provides a detailed discussion of the consequences for the individual of the acquisition of maladaptive representations of interactions with parents. According to Bowlby, children of especially insensitive parents have stopped communicating their distress to the parents by the age of twelve months. Bowlby elucidates the process by which physical, sexual, or psychological abuse leads to particular kinds of psychopathology in children and later in adulthood, by causing paradoxical, contradictory, or impossible representations of the parent and interactions with the parent to be established as part of the child's core sense of self, and sense of himself in relation to others. A typical result of this situation is that much of the child's emotions and early perceptions become unavailable to him, and the ability to form relationships is seriously and perhaps permanently impaired.

Attachment Theory and the Therapeutic Process

Bowlby (1988, chapter 8) discusses the implications of his theory for psychotherapy (he was an analytically oriented psychotherapist before he engaged in behavioral research). According to Bowlby, the therapist applying attachment theory provides the conditions in which the patient can explore and restructure representational models of himself and his attachment figures. To do this he provides five things:

a secure base from which to explore unhappy and painful aspects of life past and present;

assistance in this exploration by encouraging him to consider models of relationship in his current life, and how these reflect unconscious biases;

the relationship between the therapist and patient, which can be examined and worked on in light of the patient's discoveries about himself;

encouragement to consider how his current perceptions, expectations, and feelings, and the actions they give rise to may be the products of events of his childhood and adolescence, especially involving his parents, or else the products of what he may repeatedly have been told by them;

the ability to recognize that his models of self and others may be inappropriate to the present and

future, or may never have been justified at all.

Annie Bergmann (1999) presents in detail the clinical and case study data accumulated in decades of work at the Mahler clinic and nursery in New York. She describes anecdotally the degrees of sensitivity or insensitivity observed in interactions between attending mothers and their infants. This is reflected in the case studies of seriously disturbed, in fact diagnostically psychotic or autistic children, in which a consistently sensitive attachment figure and secure base is provided by the therapist in the therapeutic situation. This process of reattachment, although occurring only for an hour or so several days a week, proves adequate in its healing capacity, judging by the succesful results of the clinic.

Summary

John Bowlby has formulated a theory of attachment behavior grounded in ethology and modern evolutionary theory. Research by Beebe, Stern, Ainsworth, Main, and many others have elucidated the mechanisms through which variations and types of maternal-infant interaction can affect the infant's models of self, mother or other principal caregiver, and self with other, and the effects of these models on the infant's and the growing child's attachment behaviors, sense of security and the resulting ability or inability to interact with the world, to form healthy attachments through the lifespan, and to provide parenting for his or her own offspring.

Contributions of genetics and heredity to the tendency to form secure attachments remain an open question. It appears that there exist some temperamental types that are particularly vulnerable or invulnerable to the sensitivity of maternal care, but that generally speaking, attunement of the mother's behavior to the infant's needs, beginning at birth, is the prime determinant of the security of the infants attachment to the mother, and sense of security and efficacy throughout life. Especially disordered patterns of infant-maternal interaction are shown to result in disordered self-perception, and to be related to certain classes of psychopathology. The nature of the parent-child interaction is shown to be reflected in the adult's concept of his or her early attachment relationships, and thus to have an intergenerational effect on that adult's adequacy as a parent. Attachment theory, finally, implies that a key feature of successful psychotherapy is its ability to provide a secure, temporary object for reattachment.

Brief Speculations

A few things occurred to me while reading the material for this paper. Bowlby seems to be saying that the attachment to the primary caregiver remains a constant, more or less, throughout the life span. If that is true, it would make it a rarity that an adult would be able to cope effectively with the eventual and inevitable loss of that person. I think that the processes of representation to which he subscribes allow a transfer of the security-providing qualities of the attachment object's representation by the individual to become part of the individual's concept of self. Thus, a fully mature and well-adjusted person becomes his or her own primary security attachment object. This does not hinder, but rather allows fully the intimate relationship of the individual with another, as Kegan (1982) describes in his final stage. Winnicott (Grolnick, 1990, p. 31) believes that a too perfect synchrony and responsiveness of the the mother to the infant does not allow for complete growth and separation of the individual, and refers to a level of "optimal frustration, necessary for ego building". Bowlby does not discuss the emergence of the infant from a state in which expectations of perfect synchrony are confirmed. The locus or source of security, I would suggest, must gradually over the years of maturation be transferred to the growing individual.

Speaking of other sorts of security, Kagan (1994) presents the concept that any *relative* competence or superiority possessed by the individual with respect to his physical and social environment, that is, to the expectation and demands he faces, adds to a sense of security with all its consequences for the freedom to behave. This, I think is exemplified in Mahler's proposed construct of the "practising subphase". Generally speaking, casual observation tells us that physical, intellectual, or other forms of perceived adequacy or superiority provide an individual with some of the security associated to secure attachment situations. Vince Lombardi, legendary (deceased) former coach of the Green Bay Packers, is quoted as saying "Fatigue makes cowards

of us all". The behavioral results of being in shape, being smart enough, being healthy, even being good enough at making money, can be hard to distinguish from being securely attached to a consistently available other person, until you look at behaviors related specifically to the interpersonal. Thus, each capacity within the person results in a more or less persistent self-representation of that capacity which permits effective (secure) behavior in ways related to that capacity.

Attachment Security in Infancy and its Consequences for Development of the Individual Annotated Bibliography

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Reviews findings of a number of researchers egarding the role of the two major neuroendocrine stress-sensitive systems: sympathetic-adrenomedullary, which is fast-acting and produces adrenaline and noradrenaline; and hypothalamic-pituitary-adrenocortical (HPA - cortisol-secreting), which acts more slowly and produces effects over a longer period. Author points out that Kagan's findings of elevated cortisol in inhibited children has not been consistently replicated, although other signs of autonomic stress reactions appear consistent. It appears sympathetic activity may reflect effort, excitement, and vigilance, but HPA activation indicates an added negative emotional component, and is situational. Author argues that inhibited children may actually use withdrawal as coping mechanism to avoid emotionally unpleasant HPA stress response. Outgoing children, as well as dominant males, show higher cortisol levels in group experiences of novelty or stress, because they seek out rather than avoid stressful experience. [This would seem to suggest that inhibited/uninhibited dimension is the expression of a more fundamental construct.]

Data shows that inhibited children in new social settings have lower, not higher cortisol levels than bold children, but this reverses as social group becomes more familiar. Results are reported showing correlation of attachment types and cortisol levels after Strange Situation in inhibited vs uninhibited 18-month infants.

Hesse, Erik (1999) The Adult Attachment Interview. Ch. 19 in Cassidy, J., and Shaver, P. R., ed., *Handbook of Attachment: Theory, research, and Clinical Applications*.

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[Author's Abstract: About 15% of Caucasian children in the second year of life are consistently shy and emotionally subdued in unfamiliar situations, whereas another 15% are consistently sociable

and affectively spontaneous. A majority of the children in these two groups retain these profiles through their eighth year. In addition, the two groups differ in physiological qualities that imply differential thresholds in limbic sites, especially the amygdala and the hypothalamus, suggesting that the two groups are analogous to to closely related strains of mammals. However, the behavioral profiles of the children are influenced in a major way by environmental conditions during the early years of life.]

Presents study which selected 54 consistently inhibited and 53 consistently uninhibited children from a group of 400. Behavioral styles at 21 or 31 months was predictive of behavior at 7 1/2 years. Inhibited children were shy, cautious in situations of moderate risk, and motorically tense. An argument is made for the discontinuity of the observed phenomena, i.e., it is suggested that these are types rather than points on a normal continuum. A physiological index was obtained for each child, comprising heart rate, heart rate variability, morning (salivary) cortisol levels, and other parameters indicative of autononomic arousal. This index correlated highly with the index of behavioral inhibition at all ages. The author presents a discussion of possible neural pathways, and concludes with the suggestion that "eventual display of inhibited behavior in the second year of life requires some form of environmental stress in order to actualize the temperamental disposition".

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