

[*Handbook of Attachment*]

THEORY, RESEARCH,
AND CLINICAL APPLICATIONS

Edited by

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The Nature of the Child's Ties



JUDE CASSIDY

John Bowlby's work on attachment theory can be viewed as starting shortly after his graduation from Cambridge University, with the observations he made when he worked in a home for maladjusted boys. Two boys, both of whom had suffered disruptions in their relationships with their mothers, made important impressions on him. Bowlby's more systematic retrospective examination, published over a decade later as "Forty-Four Juvenile Thieves: Their Characters and Home Life" (Bowlby, 1944), as well as the observations of others (Bender & Yarnell, 1941; Goldfarb, 1943), convinced him that major disruptions in the mother-child relationship are precursors of later psychopathology. Bowlby's observations led not only to his belief that the relationship with the mother is important for *later* functioning, but also to a belief that this relationship is of critical *immediate* importance to the child. Bowlby, along with his colleague James Robertson, observed that children experienced intense distress when separated from their mothers, even if they were fed and cared for by others. A predictable pattern emerged—one of angry protest followed by despair (Robertson & Bowlby, 1952). Bowlby came to wonder *why* the mother is so important to the child.

At the time, the two widely accepted theories that offered explanations for the child's tie to the mother were both secondary-drive theories. Psychoanalytic and social learning theorists alike proposed that the infant's relationship with the mother emerges because she feeds the infant (e.g., Freud, 1910/1957; Sears, Maccoby, & Levin, 1959), and that the pleasure experienced upon having hunger drives satisfied comes to be

associated with the mother's presence in positive ways. When Bowlby was first developing attachment theory, he became aware of evidence from animal studies that seriously called this perspective into question. Lorenz (1935) noted that infant geese became attached to parents that did not feed them. Harlow (1958) observed that infant rhesus monkeys, in times of stress, preferred not the wire-mesh "mother" that provided food, but the cloth-covered "mother" that afforded contact comfort. Soon systematic observations of human infants were made, and it became evident that babies too became attached to people who did not feed them (Ainsworth, 1967; Schaffer & Emerson, 1964). Years later, Bowlby recalled that

this [secondary-drive] theory did not seem to me to fit the facts. For example, were it true, an infant of a year or two should take readily to whomever feeds him, and this clearly is not the case. But, if the secondary drive dependency theory was inadequate, what was the alternative? (1980b, p. 650)

Because he found himself dissatisfied with traditional theories, Bowlby sought new understanding through discussion with colleagues from such fields as evolutionary biology, ethology, developmental psychology, cognitive science, and control systems theory (Bowlby, 1969/1982). He drew upon all of these fields to formulate the innovative proposition that the mechanisms underlying the infant's tie to the mother originally emerged as a result of evolutionary pressures. For Bowlby, this strikingly strong tie, evident particularly when disrupted, results not from an associational learning process (a sec-

ondary drive), but rather from a biologically based desire for proximity that arose through the process of natural selection. Bowlby (1958, 1960a, 1960b) introduced attachment theory in a series of papers, the first of which was "The Nature of the Child's Tie to His Mother." All of the major points of attachment theory were presented there in at least rudimentary form, providing, as Bretherton (1992) has noted, "the first basic blueprint of attachment theory" (p. 762). These ideas were later elaborated in Bowlby's trilogy, *Attachment and Loss* (1969/1982, 1973, 1980a).

A member of Bowlby's research team during this period of initial theoretical formulation was a developmental psychologist visiting from Canada, Mary Salter Ainsworth. Her serendipitous connection with Bowlby—a friend had shown her a newspaper advertisement for a developmental research position—proved fortunate for the development of attachment theory. Ainsworth conducted two pioneering naturalistic observation studies of mothers and infants in which she applied the ethological principles of attachment theory as a framework. One of these investigations was conducted in the early 1950s in Uganda; the other was carried out in the early 1960s in Baltimore. These inquiries provided the most extensive home observation data to date and laid the foundation for Ainsworth's contributions to attachment theory, as well as for Bowlby's continued formulations. Ainsworth later created an assessment tool, the "strange situation," that triggered the productive flowering of the empirical study of individual differences in attachment quality—the research that is largely responsible for the place of attachment theory in contemporary developmental psychology.

The present chapter summarizes Bowlby's initial ethological approach to understanding the child's tie to the mother, along with elaborations based on more recent research and theorizing. First, I discuss the biological bases of attachment, describing the evolutionary roots of attachment behavior, the attachment behavioral system and its organization, the role of context in the system's operation, the role of emotion; the role of cognition, and individual differences in attachment. Next, I examine the attachment system in relation to other behavioral systems: the exploratory, fear, sociable, and caregiving systems. Third, I consider the nature of the child's attachment bond to his or her attachment figures and how attachments differ from other affectional bonds. Finally, I discuss multiple attachments. Although Bowlby's idea that attach-

ment is a lifespan phenomenon was present in his earliest writings (e.g., Bowlby, 1956), his principal focus was the tie to the mother during childhood, and I maintain that focus in this chapter.

BIOLOGICAL BASES OF ATTACHMENT BEHAVIOR

The most fundamental aspect of attachment theory is its focus on the biological bases of attachment behavior (Bowlby, 1958, 1969/1982). "Attachment behavior" has the predictable outcome of increasing proximity of the child to the attachment figure (usually the mother). Some attachment behaviors (smiling, vocalizing) are signaling behaviors that alert the mother to the child's interest in interaction, and thus serve to bring her to the child. Other behaviors (crying) are aversive, and bring the mother to the child to terminate them. Some (approaching and following) are active behaviors that move the child to the mother.

An Evolutionary Perspective

Bowlby proposed that during the time in which humans were evolving, when humans lived in what he called "the environment of evolutionary adaptedness," 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. In keeping with the evolutionary thinking of his time, Bowlby emphasized survival of the species in his earliest theoretical formulations. By the time he revised *Attachment* (Volume 1 of his trilogy, *Attachment and Loss*; Bowlby, 1969/1982), he noted that advances in evolutionary theory necessitated consideration of a framework within which for all behavioral systems, including attachment, "the ultimate outcome to be attained is always the survival of the genes an individual is carrying" (p. 56). For more extensive discussion of attachment and this notion of "reproductive fitness," see Simpson (Chapter 6, this volume) and Belsky (Chapter 7, this volume).

Many predictable outcomes beneficial to the child are thought to result from the child's proximity to the parent (Bowlby, 1969/1982). These include feeding, learning about the environment, and social interaction, all of which are important. But the predictable outcome of proximity

thought to give particular survival advantage to the child is protection from predators. In the environment of evolutionary adaptedness, infants who were biologically predisposed to stay close to their mothers were less likely to be killed by predators. This is referred to as the "biological function" of attachment behavior: Without protection from predators, feeding is not necessary, and learning cannot take place. Because of this biological function of protection, Bowlby considered infants to be predisposed particularly to seek their parents in times of distress. In a basic Darwinian sense, then, the proclivity to seek proximity is a behavioral adaptation in the same way that a fox's white coat on the tundra is an adaptation. Within this framework, attachment is considered a normal and healthy characteristic of humans throughout the lifespan, rather than a sign of immaturity that needs to be outgrown.

The Attachment Behavioral System

Attachment behaviors are thought to be organized into an "attachment behavioral system." Bowlby (1969/1982) borrowed the concept of the behavioral system from ethology to describe a species-specific system of behaviors that leads to certain predictable outcomes, at least one of which contributes to reproductive fitness. The concept of the behavioral system involves inherent motivation. There is no need to view attachment as the by-product of any more fundamental processes or "drive." Children are thought to become attached whether their parents are meeting their physiological needs or not. This idea is supported by evidence indicating that in contrast to what secondary-drive theories lead one to expect (e.g., Freud, 1910/1957; Sears et al., 1957), attachment is not a result of associations with feeding (Ainsworth, 1967; Harlow, 1962; Schaffer & Emerson, 1964). Furthermore, findings that infants become attached even to abusive mothers (Bowlby, 1956) suggest that the system is not driven by simple pleasurable associations. Bowlby's notion of the inherent motivation of the attachment system is compatible with Piaget's (1954) formulation of the inherent motivation of the child's interest in exploration.

Central to the concept of the attachment behavioral system is that the *organization* of a variety of attachment behaviors within the individual in response to internal and external cues is what is important. Sroufe and Waters (1977) emphasized that the attachment behavioral system is

"not a set of behaviors that are constantly and uniformly operative" (p. 1185). Rather, the "functional equivalence" of behaviors is noted, with a variety of behaviors having similar meanings and serving similar functions. As Bowlby (1969/1982) noted, "whether a child moves toward a mother by running, walking, crawling, shuffling or, in the case of a thalidomide child, by rolling, is thus of very little consequence compared to the set-goal of his locomotion, namely proximity to mother" (p. 373). The behaviors chosen in a specific context are the ones the infant finds most useful at that moment. With development, the child gains access to a greater variety of ways of achieving proximity. Indeed, as Sroufe and Waters (1977) pointed out, this organizational perspective helps to explain stability within the context of both developmental and contextual changes. Thus an infant may maintain a stable internal organization of the attachment behavioral system in relation to the mother over time and across contexts, yet the specific behaviors used in the service of this organization may vary greatly. Thus, whereas a nonmobile infant may be expected to cry and reach out to the mother for contact, a mobile child may achieve the same goal of establishing contact by crawling after her.

This emphasis on the organization of the attachment behavioral system also helps explain its operation in a "goal-corrected" manner. Unlike certain reflexes that, once activated, maintain a fixed course (e.g., sneezing, rooting), the attachment behavioral system enables the individual to respond flexibly to environmental changes while attempting to attain a goal. Bowlby used the analogy of a heat-seeking missile: Once launched, the missile does not remain on a preset course; rather, it incorporates information about changes in the target's location and adjusts its trajectory accordingly. Similarly, the infant is capable of considering changes in the mother's location and behavior (as well as other environmental changes) when attempting to maintain proximity to the mother. And the flexible use of a variety of attachment behaviors, depending on the circumstances, affords the infant greater efficiency in goal-corrected responses. For instance, an infant may see the mother starting to leave in an unfamiliar environment and may desire to increase proximity to her. The infant may begin by reaching for her and then following her (changing course as she moves); if this fails, calling or crying may be initiated.

Bowlby's approach to the organization of at-

tachment behavior involves a control systems perspective. Drawing on observations of ethologists who described instinctive behavior in animals as serving to maintain them in a certain relation with the environment for long periods of time, Bowlby proposed that a control systems approach could also be applied to attachment behavior. He described the workings of a thermostat as an example of a control system. When the room gets too cold, the thermostat activates the heater; when the desired temperature is reached, the thermostat turns the heater off. Bowlby described children as wanting to maintain a certain proximity to their mothers. When a separation becomes too great in distance or time, the attachment system becomes activated, and when sufficient proximity has been achieved, it is terminated. Bowlby (following Bretherton, 1980; see Bowlby, 1969/1982) later described the attachment system as working slightly differently from a thermostat—as being continually activated (with variations of relatively more or less activation), rather than being completely turned off at times. According to Bowlby, the goal of the child is not an object (e.g., the mother), but rather a state—a maintenance of the desired distance from the mother, depending on the circumstances. Bowlby described this idea of behavioral homeostasis as similar to the process of physiological homeostasis, whereby physiological systems (e.g., blood pressure and body temperature) are maintained within set limits. Like physiological control systems, a behavioral control system is thought to be organized within the central nervous system. According to Bowlby (1969/1982), the distinction between the two is that the latter is “one in which the set-limits concern the organism’s relation to features of the environment and in which the limits are maintained by behavioral rather than physiological means” (p. 372).

The Role of Context

The child’s desired degree of proximity to the parent is thought to vary under differing circumstances, and Bowlby (1969/1982) was interested in understanding how these different circumstances contribute to relative increases and decreases in activation of the attachment system. Thus he described two classes of factors that contribute to activation of the attachment system, both of which are conditions indicating danger or stress. One relates to conditions of the child (such as illness, fatigue, hunger, or pain). The

other relates to conditions of the environment (such as the presence of threatening stimuli); particularly important are the location and behavior of the mother (such as her absence, withdrawal, or rejection of the child). Interaction among these causal factors can be quite complex: Sometimes only one needs to be present, and at other times several are necessary. In relation to relative deactivation of the attachment system, Bowlby made it clear that his approach had nothing in common with a model in which a behavior stops when its energy supply is depleted (e.g., Freud, 1940/1964). In Bowlby’s view, attachment behavior stops in the presence of a terminating stimulus. For most distressed infants, contact with the mother is an effective terminating stimulus. Yet the nature of the stimulus that serves to terminate attachment behavior differs according to the degree of activation of the attachment system. If the attachment system is intensively activated, contact with the parent may be necessary to terminate it. If it is moderately activated, the presence or soothing voice of the parent or even of a familiar substitute caregiver may suffice. In either case, the infant is viewed as using the mother as a “safe haven” to return to in times of trouble. In sum, proximity seeking is activated when the infant receives information (from both internal and external sources) that a goal (the desired distance from the mother) is exceeded. It remains activated until the goal is achieved, and then it stops.

The Role of Emotion

According to Bowlby (1979), emotions are strongly associated with attachment:

Many of the most intense emotions arise during the formation, the maintenance, the disruption, and the renewal of attachment relationships. The formation of a bond is described as falling in love, maintaining a bond as loving someone, and losing a partner as grieving over someone. Similarly, threat of loss arouses anxiety and actual loss gives rise to sorrow; whilst each of these situations is likely to arouse anger. The unchallenged maintenance of a bond is experienced as a source of joy. (p. 130)

It is likely that these affective responses originally resulted from evolutionary pressures. An infant predisposed to experience positive emotions in relation to an attachment and sadness with its loss may actively work to maintain attachments, which contribute in turn to the infant’s enhanced reproductive fitness.

The Role of Cognition

Drawing on cognitive information theory, Bowlby (1969/1982) proposed that the organization of the attachment behavioral system involves cognitive components—specifically, mental representations of the attachment figure, the self, and the environment, all of which are largely based on experiences. (This emphasis on the importance of an individual's actual experiences was another way in which Bowlby's theory differed from that of Freud, who emphasized instead the role of internal fantasies.) Bowlby referred to these representations as “representational models” and as “internal working models.” According to Bowlby, these models allow individuals to anticipate the future and make plans, thereby operating most efficiently. (There is in fact evidence that even young children are capable of using representations to make predictions about the future; Heller & Berndt, 1981.) The child is thought to rely on these models, for instance, when making decisions about which specific attachment behavior(s) to use in a specific situation with a specific person. Representational models are considered to work best when they are relatively accurate reflections of reality, and conscious processing is required to check and revise models in order to keep them up to date. Extensive discussion of these cognitive models is provided by Bretherton (1990; Bretherton & Munholland, Chapter 5, this volume) and by Main, Kaplan, and Cassidy (1985); see also Baldwin (1992) for a review of similarities between these models and a variety of constructs within the literatures on developmental, social, clinical, and cognitive psychology. Bowlby also discussed the role within the attachment system of other cognitive processes, such as object permanence, discrimination learning, non-conscious processing, selective attention and memory, and interpretative biases.

Individual Differences

In extending the biological emphasis of Bowlby's initial theorizing, Main (1990) proposed that the biologically based human tendency to become attached is paralleled by a biologically based ability to be flexible to the range of likely caregiving environments. This flexibility is thought to contribute to variations associated with quality of attachment. Whereas nearly all children become attached (even to mothers who abuse them; Bowlby, 1956), not all are *securely* attached.

Striking individual differences exist. Secure attachment occurs when a child has a mental representation of the attachment figure as available and responsive when needed. Infants are considered to be insecurely attached when they lack such a representation. Bowlby's early clinical observations led him to predict that just as feeding does not cause attachment in infants, so individual differences in feeding (e.g., breast vs. bottle feeding) do not contribute to individual differences in attachment quality. In one of his earliest writings, Bowlby (1958) predicted that the important factor is “the extent to which the mother has permitted clinging and following, and all the behavior associated with them, or has refused them” (p. 370). This prediction has since gained empirical support (e.g., Ainsworth, Blehar, Waters, & Wall, 1978; see also DeWolff & van IJzendoorn, 1997). Theoretical issues related to individual differences in attachment security are discussed in detail by Weinfield, Sroufe, Egeland, and Carlson (Chapter 4, this volume).

ATTACHMENT IN RELATION TO OTHER BEHAVIORAL SYSTEMS

The attachment behavioral system can be fully understood only in terms of its complex interplay with other biologically based behavioral systems. Bowlby highlighted two of these as being particularly related to the attachment system in young children: the exploratory behavioral system and the fear behavioral system. The activation of these other systems is related to activation of the attachment system. Activation of the fear system generally heightens activation of the attachment system. In contrast, activation of the exploratory system can, under certain circumstances, reduce activation of the attachment system. As any parent knows, providing a novel set of car keys can at least temporarily distract a baby who wants to be picked up, as long as the infant's attachment system is not intensely activated. These two behavioral systems are discussed in this section, as are the sociable and caregiving behavioral systems.

The Exploratory System

The links between the exploratory behavioral system and the attachment behavioral system are thought to be particularly intricate. According to Bowlby, the exploratory system gives survival advantage to the child by providing important

information about the workings of the environment: how to use tools, build structures, obtain food, and negotiate physical obstacles. Yet unbridled exploration with no attention to potential hazards can be dangerous. The complementary yet mutually inhibiting nature of the exploratory and attachment systems is thought to have evolved to ensure that while the child is protected by maintaining proximity to attachment figures, he or she nonetheless gradually learns about the environment through exploration. According to Ainsworth (1972), "the dynamic equilibrium between these two behavioral systems is even more significant for development (and for survival) than either in isolation" (p. 118).

The framework that best captures the links between the attachment and exploratory systems is that of an infant's use of an attachment figure as a "secure base from which to explore"—a concept first described by Ainsworth (1963) and central to attachment theory (Ainsworth et al., 1978; Bowlby, 1969/1982, 1988). On the basis of her observations during the infant's first year of life, Ainsworth referred to an "attachment-exploration balance" (Ainsworth, Bell, & Stayton, 1971). Most infants balance these two behavioral systems, responding flexibly to a specific situation after assessing both the environment's characteristics and the caregiver's availability and likely behavior. For instance, when the infant experiences the environment as dangerous, exploration is unlikely. Furthermore, when the attachment system is activated (perhaps by separation from the attachment figure, illness, fatigue, or unfamiliar people and surroundings), infant exploration and play decline. Conversely, when the attachment system is not activated (e.g., when a healthy, well-rested infant is in a comfortable setting with an attachment figure nearby), exploration is enhanced. Thus, attachment, far from interfering with exploration, is viewed as fostering exploration. Bowlby (1973) described as important not only the physical presence of an attachment figure, but also the infant's belief that the attachment figure will be available if needed. A converging body of empirical work, in which maternal physical or psychological presence was experimentally manipulated, has provided compelling evidence of the theoretically predicted associations between maternal availability and infant exploration (Ainsworth & Wittig, 1969; Carr, Dabbs, & Carr, 1975; Rheingold, 1969; Sorce & Emde, 1981).

The Fear System

The fear behavioral system is also thought to be closely linked to the attachment system. For Bowlby, the biological function of the fear system, like that of the attachment system, is protection. It is biologically adaptive for children to be frightened of certain stimuli. Without such fear, survival, according to Bowlby, and reproduction, according to a modern evolutionary perspective, would be reduced. Bowlby (1973) described "natural clues to danger"—stimuli that are not *inherently* dangerous but that increase the likelihood of danger. These include darkness, loud noises, aloneness, and sudden looming movements. Because the attachment and fear systems are intertwined, so that frightened infants increase their attachment behavior, infants who find these stimuli frightening are considered more likely to seek protection and thus to survive to pass on their genes. The presence or absence of the attachment figure is thought to play an important role in the activation of an infant's fear system, such that an available and accessible attachment figure makes the infant much less susceptible to fear, and there is evidence that this is so (Morgan & Ricciuti, 1969; Sorce & Emde, 1981). In fact, even photographs of the mother can calm a fearful infant, as can "security blankets" for children who are attached to such objects (Passman & Erck, 1977; Passman & Weisberg, 1975). The fear behavioral system is discussed more extensively by Kobak (Chapter 2, this volume).

The Sociable System

A complete understanding of the attachment behavioral system rests on an understanding of its distinction from the sociable (or "affiliative") behavioral system.¹ Although Bowlby did not discuss this behavioral system as extensively as he did some others, he did point out, as have other theorists, that the sociable system is *distinct* from the attachment behavioral system. Bowlby (1969/1982) wrote,

"Affiliation" was introduced by Murray (1938): "Under this heading are classed all manifestations of friendliness and goodwill, of the desire to do things in company with others." As such it is a much broader concept than attachment and is not intended to cover behavior that is directed towards one or a few particular figures, which is the hallmark of attachment behavior. (p. 229)

According to Ainsworth (1989), it is "reasonable to believe that there is some basic behavioral system that has evolved in social species that leads individuals to seek to maintain proximity to conspecifics, even to those to whom they are not attached or otherwise bonded, and despite the fact that wariness is likely to be evoked by those who are unfamiliar" (p. 713). Harlow and Harlow (1965) described the "peer affectional system through which infants and children interrelate . . . and develop persisting affection for each other" as an "affectional system" distinct from those involving infant and parents (p. 288). Bronson (1972) referred to affiliation as an "adaptive system" present in infancy and separate from attachment. Bretherton and Ainsworth (1974) examined the interplay among several behavioral systems in infants, including the sociable and the attachment systems, and Greenberg and Marvin (1982) examined this interplay in preschool children. Hinde (1974) described non-human primates' play with peers, which he identified as different from mother-child interaction, as "consum[ing] so much time and energy that it must be of crucial adaptive importance" (p. 227).

The sociable system is thus defined as the organization of the biologically based, survival-promoting tendency to be sociable with others. An important predictable outcome of activation of this system is that individuals are likely to spend at least part of their time in the company of others. Given evidence from the primate literature that individuals in the company of others are much less likely to be killed by predators (Eisenberg, 1966), it seems reasonable to assume that humans too would derive the important survival advantage of protection from associating with others. The sociable system is likely to contribute to the individual's survival and reproductive fitness in other important ways: Primates biologically predisposed to be sociable with others increase their ability to gather food, build shelter, and create warmth; they learn about the environment more efficiently; and they gain access to a group of others with whom they may eventually mate (see Huntingford, 1984, for a review). Strong evidence of the importance of the sociable system for the development of young nonhuman primates comes from several studies, most notably those of Harlow and his associates (e.g., Harlow, 1969), in which monkeys reared with their mothers but without peers were seriously hindered in their social development and could not mate or parent effectively (i.e., reproduce; see also Miller, Caul, & Mirsky, 1967).

Observations of both humans and other primates clearly show differences between the attachment and sociable systems in what activates behavior, in what terminates behavior, and in the way behaviors are organized (Bretherton & Ainsworth, 1974; Harlow, 1969; Vandell, 1980). The sociable system is most likely to be activated when the attachment system is not activated. According to Bowlby,

A child seeks his attachment-figure when he is tired, hungry, ill, or alarmed and also when he is uncertain of that figure's whereabouts; when the attachment-figure is found he wants to remain in proximity to him or her and may want also to be held or cuddled. By contrast, a child seeks a playmate when he is in good spirits and confident of the whereabouts of his attachment-figure; when the playmate is found, moreover, the child wants to engage in playful interaction with him or her. If this analysis is right, the roles of attachment-figure and playmate are distinct. (1969/1982, p. 307)

Lewis, Young, Brooks, and Michalson (1975) interpreted their observations of pairs of one-year-olds and their mothers similarly: "Mothers are good for protection, peers for watching and playing with" (p. 56).

The Caregiving System

In one of his earliest writings, Bowlby (1956) pointed out that further understanding of attachment could be gained from examination of the mother's tie to her infant. Bowlby later (1984) wrote briefly about "parenting behavior" from a biological perspective as "like attachment behavior, . . . in some degree preprogrammed" (p. 271). He described the biologically based urge to care for and protect children, yet simultaneously viewed individual differences in the nature of parenting as emerging largely through learning. Although Bowlby wrote little about this topic, his ethological perspective, his ideas about interrelated behavioral systems, and his interest in attachment-related processes across the lifespan lend themselves readily to an elaboration of the parental side of what Bowlby (1969/1982) called the "attachment-caregiving social bond." Solomon and George (1996; George & Solomon, 1996; see also George & Solomon, Chapter 28, this volume) have filled this void, writing in detail about the "caregiving system." As George and Solomon (Chapter 28, this volume, Note 1) state, it is difficult to delineate precisely which aspects of parenting behavior should be consid-

ered part of the caregiving system. I propose that the term "caregiving system" be used to describe a subset of parental behaviors—only those behaviors designed to promote proximity and comfort when the parent perceives that the child is in real or potential danger. The chief behavior within this system is retrieval (Bowlby, 1969/1982); others include calling, reaching, grasping, restraining, following, soothing, and rocking.²

Just as the child's interactions with the parent involve more than the attachment system (e.g., a child may approach the father not for comfort but for play), so other parental systems may be activated during interactions with the child (Bowlby, 1969/1982). These various behavioral systems can all be viewed as enhancing the child's survival and reproductive fitness (e.g., teaching, feeding, playing). A parent may be differentially responsive to a child when each of these different parental behavioral systems is activated (e.g., sensitive when teaching or feeding, yet insensitive when the caregiving system is activated). The predominance of each of these parental behavioral systems varies considerably both across and within cultures. For instance, as Bretherton (1985) pointed out, among Mayan Indians in Mexico, mothers rarely serve as playmates for their infants but are quite available and responsive as caregivers (Brazelton, 1977; see also van IJzendoorn & Sagi, Chapter 31, this volume). Within a particular culture, one mother may be a readily available attachment figure, yet stodgy and inept in the role of playmate; another mother may be comfortable in interaction with her children only in her roles as teacher or coach when attention is focused on a task or skill, and may be uncomfortable with attachment-related interactions.

As is the case with the child's attachment system, the predictable outcome of activation of the caregiving system is parent-child proximity, and the biological function is protection of the child. In most cases, both parent and child work together to maintain a comfortable degree of proximity. If the child moves away, the parent will retrieve him or her; if the parent moves away, the child will follow or signal for the parent to return. Following Bowlby's (1969/1982) thinking, it seems likely that when the caregiving system is relatively activated, the child's attachment system can be relatively deactivated; attachment behaviors are not needed because the parent has assumed responsibility for maintaining proximity. If the caregiving system is not relatively activated, then the child's attachment system be-

comes activated, should the context call for it. This is one reason why the mother's leaving is particularly disturbing to a child and particularly likely to activate attachment behavior. This "dynamic equilibrium" (Bowlby, 1969/1982, p. 236) contributes to understanding the notion of the mother's providing "a secure base from which to explore." The mother's monitoring of infant-mother proximity frees the infant from such monitoring and permits greater attention to exploring. For instance, if, when visiting a new park, a mother actively follows the infant in his or her explorations, the infant is much more likely to cover a wide area than if she sits on a bench talking with friends. Empirical support for this proposition comes from a study in which the simple act of a mother's diverting her attention away from the infant to a magazine in a brief laboratory procedure reduced the quality of infant exploration (Sorce & Emde, 1981).

Yet parent and child do not always agree on what distance between them is acceptable. For example, a mother's fear system may be activated and prompt her to retrieve an infant whose activated exploratory system leads him or her to prefer to move away. Parents and their children may also differ in terms of how their priorities guide activation of their behavioral systems. For instance, when an infant's attachment system is activated in the presence of the mother, the infant's sole wish is for her to respond. Although such infant behavior is usually a powerful activating stimulus for the mother's caregiving system, the mother may choose among several competing needs and may or may not provide care (Trivers, 1974). The child's concern is immediate and focused; the mother's concerns may be more diffuse and long-range. The mother may have to leave the infant to work to support the family (in which case activation of her food-getting behavioral system has taken precedence over her caregiving system). Or she may have several children to whose needs she must attend. Main (1990) has proposed that from an evolutionary perspective, maternal insensitivity to a particular child may be useful to the mother if it maximizes the total number of surviving offspring (see also Simpson, Chapter 6, this volume, and Belsky, Chapter 7, this volume).

As is true for many behavioral systems, activation of the caregiving system results from both internal and external cues. Internal cues include presence of hormones, cultural beliefs, parental state (e.g., whether the parent is tired or sick), and activation of other parental behavioral sys-

tems (e.g., exploration, food-getting, fear). External cues include state of the environment (e.g., whether it is familiar, whether there is danger, whether others are present and who these others are), state of the infant (e.g., whether the infant is sick or tired), and behavior of the infant (e.g., whether he or she is exhibiting attachment behavior). Activation of the caregiving system has crucial implications for the infant, who cannot otherwise survive. Ethologists have suggested that infants therefore have evolved characteristics that serve to activate the caregiving system: their endearing "babyish" features (the large rounded head with the high forehead, the small nose) and their thrashing arm movements. Attachment behaviors, of course, motivate parents to respond; even aversive behaviors, such as crying, typically motivate parents to provide care in order to terminate them. Given that an infant's attachment system is activated by stimuli that indicate an increased risk of danger (e.g., loud noise, looming objects), a parent who increases proximity when a child's attachment behavior is activated increases the likelihood of being able to protect the child, should the danger prove real. Similarly, when the parent perceives or expects danger that the child does not, parental proximity also increases the likelihood of survival. Thus, it is likely that the close link between the child's attachment and fear systems is paralleled by a close link between the parent's caregiving and fear systems, such that when a parent's fear system is activated, so too is his or her caregiving system.

Fear is only one of the powerful emotions likely to be linked to the caregiving system. Just as attachment is associated with powerful emotions (Bowlby, 1979), so is the caregiving system. These emotions may in fact be as strong as any an individual experiences in his or her lifetime. The birth of a first child (which establishes the adult as a parent) is often accompanied by feelings of great joy; threats to the child are accompanied by anxiety; the death of a child brings profound grief. This intertwining of the caregiving system with intense emotions may result from selective pressures of evolution: Enhanced reproductive fitness may result when, for instance, a parent's anxiety about threats to a child prompts the parent to seek effective interventions.

The role of parental soothing as a component of the caregiving system merits consideration. Why would a parent who safely holds a crying child out of reach of a large barking dog continue to comfort the child? Why would a parent pick up a dis-

tressed child whom the parent perceives to be in no danger? What could be the role of such soothing behaviors? I propose that soothing behaviors serve, indirectly, to facilitate the parent's monitoring of potential or real dangers to the child. Parental provision of contact usually comforts a distressed child. If the child continues to be distressed for a substantial time following contact, there may be another threat of which the parent is unaware. *Through continuing attempts to soothe the child, the parent gains information about threat to the child.* The parent may not realize, for instance, that the child has a painful splinter in his or her foot. Furthermore, there are many ways in which inconsolable crying (beyond early infancy) can signal serious health problems. And a parent will not know whether crying is inconsolable unless the parent attempts to console.

Further research is needed in relation to additional aspects of the caregiving system. First, given that there are times when the child's distress does not stem from activation of his or her attachment system, research could examine whether it is best to consider parental behavior in response to such distress as part of the caregiving system. For instance, it seems plausible that a child may get upset because his or her exploratory system is frustrated, and that the child's distress prompts the mother to pick the child up and comfort him or her; it may be that the mother's behavior then contributes to the child's attachment-related expectations about the mother's likely responses to his or her distress, and thus to the formation of the child's representational model of the mother. Second, research is needed to determine how separate the caregiving system is from other parental systems, and whether it is only the caregiving system that affects the child's attachment system. Third, it is unclear whether it is best to think of a single parental caregiving system in humans or of separate maternal and paternal caregiving systems. Harlow has proposed separate maternal and paternal systems in primates (Harlow, Harlow, & Hansen, 1963). If two separate systems exist in humans, there must be considerable overlap, even though genetic, hormonal, and cultural factors may contribute to differences in the specific characteristics of these systems.³

THE ATTACHMENT BOND

Whereas "attachment behavior" is behavior that promotes proximity to the attachment figure, and

the "attachment behavioral system" is the organization of attachment behaviors within the individual, an "attachment bond" refers to an affectional tie. Ainsworth (1989) described an attachment bond not as dyadic, but rather as characteristic of the individual, "entailing representation in the internal organization of the individual" (p. 711). Thus, this bond is not one between two people; it is instead a bond that one individual has to another individual who is perceived as stronger and wiser (e.g., the bond of an infant to the mother). A person can be attached to a person who is not in turn attached to him or her; as described below, this is usually the case with infants and their parents.⁴

The attachment bond is a specific type of a larger class of bonds that Bowlby and Ainsworth have referred to as "affectional bonds." Throughout the lifespan, individuals form a variety of different important affectional bonds that are not attachments. To make it completely clear what an attachment bond is, one needs to delineate what it is not. Ainsworth (1989) described the criteria for affectional bonds, and then the additional criterion for attachment bonds. First, an affectional bond is persistent, not transitory. Second, an affectional bond involves a specific person, a figure who is not interchangeable with anyone else. This bond reflects "the attraction that one *individual* has for another *individual*" (Bowlby, 1979, p. 67, emphasis in original). For instance, the sadness associated with the loss of a close friend is not lessened by the fact that one has other close friends. Bowlby emphasized specificity when he stated: "To complain because a child does not welcome being comforted by a kind but strange woman is as foolish as to complain that a young man deeply in love is not enthusiastic about some other good-looking girl" (1956, p. 58). Third, the relationship is emotionally significant. Fourth, the individual wishes to maintain proximity to or contact with the person. The nature and extent of the proximity/contact desired vary as a function of a variety of factors (e.g., age and state of the individual, environmental conditions). Fifth, the individual feels distress at involuntary separation from the person. Even though the individual may choose separation from the figure, the individual experiences distress when proximity is desired but prevented. 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 person (Ainsworth, 1989). (The attachment is considered "secure" if one achieves secu-

rity and "insecure" if one does not; it is the *seeking* of security that is the defining feature. See also Hinde, 1982, and Weiss, 1982.) It is this final criterion that leads to description of "parental bonds" to children and "child attachments" to parents: Parental attempts to seek security from a child are "almost always not only a sign of pathology in the parent but also a cause of it in the child" (Bowlby, 1969/1982, p. 377).

The existence of an attachment bond cannot be inferred from the presence or absence of attachment behavior. To begin with, it is important to remember that most behaviors can serve more than one behavioral system (Bretherton & Ainsworth, 1974; Sroufe & Waters, 1977). Thus, for instance, every approach does not serve the attachment system; even though approach can be an attachment behavior, it can also be an exploratory or sociable behavior. Yet it is also the case that distressed infants separated from their mothers may seek comfort from strangers (Ainsworth et al., 1978; Bretherton, 1978; Rheingold, 1969), and approach in that context is considered attachment behavior. Nonetheless, an enduring attachment bond of an infant to a stranger cannot be assumed to exist, and it is thus possible for an infant to direct attachment behavior to an individual to whom he or she is not attached. Some babies will stop crying when comforted by a stranger, but observations in the strange situation reveal that this comfort is generally not as satisfying as that provided by the mother (Ainsworth et al., 1978).

Similarly, even during a period when the child is directing no attachment behavior to the parent, the child is still attached. When, for instance, a contented child is in comfortable surroundings with the mother present, the attachment system is not likely to be activated to a level that triggers attachment behavior. Thus activation of attachment behavior is largely situational; it may or may not be present at any given time. The attachment bond, however, is considered to exist consistently over time, whether or not attachment behavior is present. Bowlby (1969/1982) pointed out that even the cessation of behavior during a long separation cannot be considered an indication that the attachment bond has ended.

The strength of attachment behaviors is sometimes mistakenly regarded as reflecting the "strength" of the attachment bond. There are striking variations in strength of activation of attachment behaviors across contexts and across children. Yet no evidence exists that these variations in themselves map onto variations in child-

mother attachment in any meaningful way. According to Ainsworth (1972),

to equate strength of attachment with strength of attachment behavior under ordinary nonstressful circumstances would lead to the conclusion that an infant who explores when his mother is present is necessarily less attached than one who constantly seeks proximity to his mother, whereas, in fact, his freedom to explore away from her may well reflect the healthy security provided by a harmonious attachment relationship. (p. 119)

Ainsworth (1972) has described individual differences in the relationship with the attachment figure as more accurately considered to be variations in quality than in strength. Similarly, it is a mistake to label as "very attached" a young child who clings fearfully to the mother; such attachment behavior may reflect insecure attachment or secure use of the mother as a safe haven, depending on the context.

Given that the strength of attachment behaviors should not be confused with the strength of an attachment bond, is strength nonetheless a useful dimension on which to consider an attachment bond? One might assume that Bowlby's proposition that children develop "attachment hierarchies" (discussed in the following section) implies that some attachments are stronger than others. Although Bowlby himself did occasionally use this terminology—for example, "How do we understand the origin and nature of this extraordinarily strong tie between child and mother?" (Bowlby, 1988, p. 161)—such usage was relatively rare, particularly when he was comparing attachments (when doing so, he referred instead to "secure" and "insecure" attachments). Ainsworth (1982a) suggested that Hinde's (1979) notion of "penetration," as opposed to notions of either strength or intensity, may provide a more useful framework for characterizing an attachment bond. According to Hinde, penetration is a dimension of relationships that describes the centrality of one person to another's life—the extent to which a person penetrates a variety of aspects of the other person's life. Ainsworth pointed out that the concept of penetration is particularly useful when considering the changing nature of a child's attachment to the parent as the child grows older. She proposed that it may be more appropriate not to talk of the bond as becoming "weaker," but rather as characterizing a relationship that penetrates fewer aspects of the growing child's life as he or she comes to spend more time away from the parents and to develop new relationships.

For Bowlby (1969/1982), there are two important propositions about the nature of the attachment bond within the larger context of a relationship. First, the attachment bond reflects only one feature of the child's relationship with the mother: the component that deals with behavior related to the child's protection and security in time of stress. The mother not only serves as an attachment figure, but may also serve as playmate, teacher, or disciplinarian. These various roles are not incompatible, and it is possible that two or more may be filled by the same person. Thus, for example, a child may direct attachment behavior to the mother when he or she is frightened, and yet at other times may interact with her in ways relatively unrelated to attachment (e.g., play). Consequently, it would be a mistake to label as an attachment behavior a child's approach to the mother in order to engage in peekaboo. As Bretherton (1980) has noted, a behavior may serve different behavioral systems at different times, even when directed to the same individual. Yet it is important to note that even though a mother may be a frequent playmate for her 5-year-old, it does not negate the fact that this relationship is essentially characterized as an attachment relationship. Bowlby (1969/1982) summarized his position on this issue as follows:

A parent-child relationship is by no means exclusively that of attachment-caregiving. The only justification, therefore, for referring to the bond between a child and his mother in this way is that the shared dyadic programme given top priority is one of attachment-caregiver. (p. 378)

Second, an attachment bond cannot be presumed to exist even though a relationship may contain an attachment component. As noted earlier, the fact that a 1-year-old distressed about separation from the mother will direct his or her attachment behaviors to a friendly stranger does not mean that the relationship with the stranger involves an attachment bond. This is true even in more ongoing relationships, such as relationships with peers. A child may routinely direct attachment behavior to a close friend and feel comfort in the friend's presence (particularly in a context such as the school, when a parent is not present) without that relationship's constituting an attachment bond. This is evident from the fact that the loss of such a friend usually does not have the devastating effects on the child that loss of a true attachment figure (a parent) has. Thus, even though children may at times turn to friends for comfort

(Hazan & Zeifman, 1994), these friendships need not be essentially attachment relationships.

MULTIPLE ATTACHMENTS

Bowlby stated three principal propositions about multiple attachments in infancy. First, most young infants are thought to form more than one attachment. According to Bowlby (1969/1982), "almost from the first, many children have more than one figure to whom they direct attachment behavior" (p. 304).⁵ Indeed, empirical observations have revealed that the majority of children become attached to more than one familiar person during their first year (Ainsworth, 1967; Schaffer & Emerson, 1964). According to Bowlby (1969/1982), "responsiveness to crying and readiness to interact socially are amongst the most relevant variables" (p. 315) 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. Generally, the mother's role as an attachment figure is clear. The father is also particularly likely to become an additional attachment figure early in the infant's life. Observational studies have revealed that fathers are competent caregivers (Belsky, Gilstrap, & Rovine, 1984) and that children use their fathers as attachment figures (Ainsworth, 1967). Ainsworth (1967) noted the special infant-father relationship that sometimes emerged in Uganda:

It seemed to be especially to the father that these other attachments were formed, even in the cases of babies who saw their fathers relatively infrequently. One can only assume that there was some special quality in the father's interaction with his child—whether of tenderness or intense delight—which evoked in turn a strength of attachment disproportionate to the frequency of his interaction with the baby. (p. 352)

Furthermore, there is evidence that individual differences in quality of infant-father attachment are related to paternal behavior: Infants are more likely to be securely attached to fathers who have been sensitively responsive to them (Cox, Owen, Henderson, & Margand, 1992). Evidence has also emerged that siblings (Stewart & Marvin, 1984; Teti & Ablard, 1989) and day care providers (Howes, Rodning, Galluzzo, & Myers, 1988) can serve as attachment figures. In unusual and stressful situations, infants can even be-

come attached to other infants (see Freud & Dann's [1951] observations of child survivors of a concentration camp). Howes (Chapter 29, this volume) provides an extensive discussion of multiple attachment figures.

Second, although there is usually more than one attachment figure, the potential number of attachment figures is not limitless. Bretherton (1980, p. 195) has described the infant as having a "small hierarchy of major caregivers," which is in contrast to the larger group of individuals with whom the infant has other sorts of relationships (Weinraub, Brooks, & Lewis, 1977). By the end of the first year, most infants are content (and even pleased) to approach and play with an unfamiliar friendly adult; when they are distressed, however, they strongly prefer the mother (Tracy, Lamb, & Ainsworth, 1976).

Third, although most infants have multiple attachment figures, it is important not to assume that an infant treats all attachment figures as equivalent, or that they are interchangeable; rather, an "attachment hierarchy" is thought to exist. According to Bowlby (1969/1982), "it is a mistake to suppose that a young child diffuses his attachment over many figures in such a way that he gets along with no strong attachment to anyone, and consequently without missing any particular person when that person is away" (p. 308). Bowlby proposed that this strong tendency for infants to prefer a principal attachment figure for comfort and security be termed "monotropy" (see also Ainsworth, 1964, 1982b).⁶ Bowlby cited as evidence of this phenomenon the tendency of children in institutions to select, if given the opportunity, one "special" caregiver as their own (see Burlingham & Freud, 1944). Ainsworth (1982b) described responses to major separations from and losses of attachment figures as further support for the idea that a hierarchy exists: "The child would tolerate major separations from subsidiary figures with less distress than comparable separations from the principal attachment figure. Nor could the presence of several attachment figures altogether compensate for the loss of the principal attachment figure" (p. 19).⁷ Also consistent with this hierarchy notion are data from observational studies of both mothers and fathers, which show that most infants prefer to seek comfort from their mothers when distressed; in the mother's absence, however, an infant is likely to seek and derive comfort and security from other attachment figures as well (Kagan, Kearsley, & Zelazo, 1978; Lamb, 1976a, 1976b, 1978; Rutter,

1981; see also Ainsworth, 1967, and Schaffer & Emerson, 1964). For a review of the relatively few experimental studies examining attachment hierarchies, and a discussion of the relevant methodological issues, see Colin (1996).

What determines the structure of an infant's attachment hierarchy? Colin (1996) has listed a likely set of contributing factors: "(1) how much time the infant spends in each figure's care; (2) the quality of care each provides, (3) each adult's emotional investment in the child, and (4) social cues" (p. 194). To this list, I would add that the repeated presence across time of the figure in the infant's life, even if each encounter is relatively brief, is likely to be important.

Why would monotropy have evolved as a tendency of human infants? Neither Bowlby nor Ainsworth addressed this question. I propose three possibilities here, all of which may operate simultaneously. The fact that there may be multiple ways in which the tendency toward monotropy contributes to infant survival and reproductive fitness increases the likelihood of its emerging through genetic selection. First, the infant's tendency to prefer a principal attachment figure may contribute to the establishment of a relationship in which that one attachment figure assumes principal responsibility for the child. Such a relationship should increase the child's likelihood of survival by helping to ensure that care of the child is not overlooked. This system seems more practical than the alternative, wherein a large number of caregivers have equal responsibility for a large number of offspring; this latter system might leave any individual child "falling between the cracks."

Second, monotropy may be most efficient for the child. When faced with danger, the child does not have to make a series of assessments and judgments about who may be most readily available, most responsive, and best suited to help. Rather, the child has a quick, automatic response to seek his or her principal attachment figure.

Third, monotropy may be the child's contribution to a process I term "reciprocal hierarchical bonding," in which the child matches an attachment hierarchy to the hierarchy of the caregiving in his or her environment. Evolutionary biologists writing on parental investment (e.g., Trivers, 1972) have suggested that adults vary in their investment in offspring largely as a function of the extent to which this investment contributes to the transmission of the adults' genes (i.e., their reproductive fitness). Following this reasoning, it should be most adaptive for the

child to use as a principal attachment figure the person who, correspondingly, is most strongly bonded to him or her (i.e., the person who provides the most parental investment and has the most to gain—in terms of reproductive fitness—by the baby's healthy development). In most cases, it is the biological mother who has the greatest biological investment in the child. With the exception of an identical twin, there is no one with whom the child shares more genes than the mother (50%). Although the biological father and siblings also share 50% of their genes with a child, their investments are nonetheless considered to be less because (1) only the mother can be certain of a true (or, in the case of siblings, a truly equal) biological connection; and (2) the mother has less opportunity to produce additional offspring than fathers and siblings do. If this process of reciprocal hierarchical bonding exists, it may help explain not only monotropy, but also, in part, why the biological mother is generally the principal attachment figure.

Given the existence of multiple attachments, what is the course of their development across the lifespan? As noted earlier, two or three attachments usually develop during the infant's first year. These are usually with other family members or other people closely involved in the child's care. By middle childhood, when the child is spending more time with people outside the family, opportunities for new attachments may arise. In adolescence and young adulthood, individuals usually begin to develop attachments to sexual partners. Although attachments to parents remain throughout life, the later attachments may become the most central relationships in the individual's adult life.

When considering multiple attachments, theorists are faced with several sets of questions. One of these has to do with similarities versus differences in quality across different attachments (i.e., concordance rate). To what extent are a child's attachments to different caregivers similar? Studies examining concordance rate yield inconsistent results. Some studies reveal independence of attachment across caregivers (Belsky & Rovine, 1987; Grossmann, Grossmann, Huber, & Wartner, 1981; Main & Weston, 1981); some studies reveal similarity of attachment across caregivers (Goossens & van IJzendoorn, 1990; Steele, Steele, & Fonagy, 1996); and a meta-analysis of 11 studies revealed significant but weak concordance between attachment to mother and attachment to father (Fox, Kimmerly, & Schafer, 1991).

There are two main explanations for attachment concordance across caregivers. The first posits that attachments reveal specific infant-caregiver relationship histories, but that these histories are similar across caregivers for several reasons (e.g., parents may select mates whose capacities to serve as a secure base are similar to their own; parents may learn from each other how to parent). The second explanation is that infant characteristics, rather than a specific infant-caregiver relationship, are what determine attachment quality. In this case, the infant brings into the assessment situation traits that contribute to attachment classification no matter which caregiver is present. (See Vaughn & Bost, Chapter 10, and Berlin & Cassidy, Chapter 30, this volume, for more extensive discussions of concordance rates.)

Another question relates to the integration of multiple attachments. If a child's attachments are similar, he or she may develop a consistent set of internal working models about attachment figures, himself or herself, and relationships. Yet what if the child is faced with attachments that contribute to conflicting models? What if the child's experiences with one parent contribute to a model of the attachment figure as sensitively responsive and of the self as worthy of such care, yet negative experiences with the other parent contribute to very different models? If differing models of attachment figures eventually become integrated, how does this happen? In relation to models of the self, Bretherton (1985) asked over a decade ago: "Is an integrated internal working model of the self built from participation in a number of nonconcordant relationships?" If so, how and when? Or are self models, developed in different relationships, only partially integrated or sometimes not at all?" (p. 30). Researchers have made little progress in answering these questions.

Still another question about multiple attachments relates to the issue of how these different attachments influence children's functioning. It could be that the attachment to the principal attachment figure, usually the mother, is most influential. On the other hand, it could be that one attachment is most influential in some areas and another is most influential in other areas (see van IJzendoorn & Sagi, Chapter 31, this volume). Or perhaps having at least one secure attachment, no matter who the attachment figure is, serves as a protective factor to facilitate the child's functioning across areas. Relatively little empirical work has addressed these possibilities, given that most

research examining the sequelae of attachment focuses only on infant-mother attachment. The research that is available suggests that when a child is securely attached to one individual and insecurely attached to another, the child behaves more competently when the secure relationship is with the mother than when it is with the other attachment figure (Easterbrooks & Goldberg, 1987; Howes et al., 1988; Main et al., 1985; Main & Weston, 1981). These same studies indicate, however, that the most well-functioning individuals have two secure relationships, while the least competent children have none. van IJzendoorn and Sagi (Chapter 31, this volume) review the cross-cultural data and report similar evidence that multiple secure attachments enhance children's functioning; more extensive discussion of models of the influence of multiple attachments can be found in that chapter.

SUMMARY

This chapter addressed the issues that Bowlby presented in his initial ethological approach to understanding the nature of the child's tie to the mother. Bowlby's observations led him to be dissatisfied with the explanations provided by existing theories, and prompted him to consider alternative explanations. Drawing on the thinking of evolutionary biologists, cognitive scientists, control systems theorists, and developmental psychologists, he initiated what proved to be one of the earliest of the neo-Darwinian theories, tackling the problem of the ways humans evolved to master the primary task of genetic transmission: survival through infancy and childhood to reproductive age (see Simpson, Chapter 6, this volume). This chapter began with a description of the biological bases of attachment and how attachment may have evolved. Then the connection of the attachment behavioral system with other behavioral systems was described. Finally, a description of attachment and other affectional bonds was provided, and the issue of multiple attachments was discussed. Other components central to the early formulation of attachment theory are covered elsewhere in this volume: The developmental course of attachment is described by Marvin and Britner (Chapter 3) and by Hazan and Zeifman (Chapter 16); issues related to separation and loss are considered by Kobak (Chapter 2) and by Fraley and Shaver (Chapter 32); theory about individual differences in attachment quality is addressed by Weinfield et al. (Chapter 4);

and attachment-related communication and representation associated with individual differences are discussed by Bretherton and Munholland (Chapter 5).

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NOTES

1. See Greenberg and Marvin (1982; see also Ainsworth, 1989) for discussion of the advantages of the term "sociable system" rather than "affiliative system." For data and more extensive discussion related to the interplay of the sociable system with other behavior systems, see discussions by Ainsworth et al. (1978), Bretherton (1978), Bretherton and Ainsworth (1974), Cassidy and Berlin (in press), and Greenberg and Marvin (1982).

2. This perspective differs somewhat from that of Bowlby. Bowlby (1969/1982, p. 240) described "maternal retrieval behavior" as distinct from other parenting behavior, with the former having the predictable outcome of proximity and the biological function of protection. It is unclear, however, what for Bowlby would constitute a behavioral system. The position taken here is that retrieval is the parental equivalent to child proximity seeking; it is a behavior, not a behavioral system. The relevant behavioral system would be what here is called the "caregiving system," which includes a variety of behaviors, one of which is parental retrieval of the child.

This perspective, along with Solomon and George's perspective, also differs from that proposed by Bretherton and her colleagues (Bretherton, Biringen, & Ridgeway, 1991). Their view incorporates the notion of a "parental side of attachment," in which the parent's bond to the child is considered part of the attachment system, in part because of its great emotional power.

3. Within the modern evolutionary perspective, the existence of separate maternal and paternal caregiving systems is readily understood. Both mothers and fathers are concerned with their own reproductive fitness. Yet, because mothers and fathers may differ substantially in the extent to which the survival of any one child enhances this fitness, their parenting behavior may differ. Compared to fathers, mothers have more to

gain in terms of reproductive fitness from each child for several reasons (e.g., mothers' certainty about parental status, shorter reproductive lifespan, longer interchild intervals, and greater energy expenditure per child [during pregnancy and lactation]; see Trivers, 1972).

4. Consensus is lacking about terminology related to the attachment bond. The description provided here is Ainsworth's (1989) and reflects Bowlby's most common usage. Yet in the second edition of the first volume of his trilogy, *Attachment and Loss*, Bowlby (1969/1982) described a bond as "a property of two parties," and labeled the child-parent bond as the "attachment-caregiving" bond (p. 377). In contrast to the implied notion of an "attachment relationship," Ainsworth (1982) stated:

That there is a "relationship" between mother and child, in Hinde's (1979) sense, from the time of the infant's birth onward, and that the nature of this relationship stems from the interaction between them, is not to be gainsaid, but neither the mother-to-infant bond nor the emergent infant-to-mother attachment seems to me to comprehend all the important aspects of this relationship. (p. 24)

Bretherton (1985) also pointed out the limits of considering an attachment a "property of two parties": "A representational view of relationships . . . underscores that the two partners have, in another sense, two relationships: the relationship as mentally represented by the attached person and by the attachment figure" (p. 34). Ainsworth (personal communication, 1986) suggested that the most appropriate way to consider an "attachment relationship" is as a "shorthand" designation for "a relationship in which the attachment component is central."

5. There has been some confusion over Bowlby's position on this issue. Lamb, Thompson, Gardner, and Charnov (1985), for instance, mistakenly stated, "Bowlby was firmly convinced that infants were initially capable of forming only one attachment bond" (p. 21), when in fact from his earliest writings on (1958, 1969/1982), Bowlby described the role of multiple attachment figures. Furthermore, Bowlby (1969/1982) noted that "it has sometimes been alleged that I have expressed the view . . . that mothering "cannot be safely distributed among several figures" (Mead, 1962). No such views have been expressed by me" (p. 303).

6. Starting with his earliest writings, Bowlby (e.g., 1958) used the term "principal attachment-figure" or "mother-figure" rather than the term "mother." This usage underscored Bowlby's belief that although this figure is usually the biological mother, it is by no means necessarily so. From the beginning, Bowlby recognized that the figure's status (father, adoptive parent, grandmother, aunt, nanny) is less important than the nature of the figure's interactions with the infant.

7. One of the most moving passages of Bowlby's writing illustrates how one attachment figure can be more centrally important to a child's well-being than others:

About four weeks after mother had died, [four-year-old] Wendy complained that no one loved her. In an attempt to reassure her, father named a long list of people who did (naming those who cared for her). On this Wendy commented aptly, "But when my mommy wasn't dead I didn't need so many people—I needed just one." (Bowlby, 1980, p. 280)

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