This comprehensive work is more than just the standard reference on attachment theory and research—it has helped to define and shape this rapidly growing field. The substantially revised and expanded second edition incorporates a decade’s worth of major advances in theory, research, and clinical applications. Chapters from the first edition have been thoroughly updated, and compelling new chapters have been added on neuroscience of attachment, foster care and adoption, attachment in middle childhood, affect regulation, divorce, and attachment issues in later life.

Part I reviews theoretical foundations, from the pioneering work of John Bowlby and Mary Ainsworth to contemporary elaborations and refinements. Part II presents biological and evolutionary perspectives. Authors describe what has been learned about attachment by using psychophysiological measures, brain imaging techniques, and studies of primates and other animals. Parts III and IV probe the impact of attachment processes on development and close relationships across the lifespan, showcasing innovative measures for infants, children, adolescents, and adults. In Part V, connections among attachment processes, psychological adaptation, and psychopathology are examined. This section features important new findings on the origins and outcomes of attachment disorganization. The contributions of attachment theory and research to diverse psychotherapeutic approaches and intervention programs are also discussed. Rounding out the volume, Part VI explores cross-cultural issues and special topics, including the distinct properties of fathers as attachment figures, attachment and religious behavior, and implications for child and family policy.

Unique in the breadth and depth of its coverage, this state-of-the-science handbook will prove indispensable to anyone who studies attachment processes or draws on this vital body of knowledge in mental health practice. Graduate students in developmental, social, and clinical psychology will find it an invaluable text.

ABOUT THE EDITORS
Jude Cassidy, PhD, is Professor of Psychology at the University of Maryland and Director of the Maryland Child and Family Development Laboratory. Her research focuses on attachment, social and emotional development in children and adolescents, social information processing, peer relations, and early intervention. Dr. Cassidy serves as coeditor of the journal Attachment and Human Development. She is a Fellow of the American Psychological Society, and received a Boyd R. McCandless Young Scientist Award from the American Psychological Association.

Phillip R. Shaver, PhD, is Distinguished Professor of Psychology at the University of California, Davis. He has published numerous books and over 200 journal articles and book chapters. Dr. Shaver’s research focuses on attachment, human motivation and emotion, close relationships, personality development, and the effects of meditation on behavior and brain. He is a fellow of both the American Psychological Association and the Association for Psychological Science. He received a Distinguished Career Award from the International Association for Relationship Research and is currently President of that organization.
CHAPTER 1

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 child’s 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 an infant’s relationship with the mother emerges because she feeds the infant (e.g., Freud, 1910/1957; Sears, Maccoby, & Levin, 1957), and that the pleasure experienced upon having hunger drives satisfied comes to be associated with the mother’s presence. 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—even to objects—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 a new explanation 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 secondary 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) 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 formulation of attachment theory 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 describe how attachments differ from other affectional bonds. Finally, I discuss multiple attachments. Although Bowlby's idea that attachment 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 they 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 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 a
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The Attachment Behavioral System

Attachment behaviors are thought to be organized into an "attachment behavioral system." Bowlby (1969/1982) borrowed the behavioral system concept 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 the notion that several different attachment behaviors are organized within the individual in response to a particular history of internal and external cues. 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 particular 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, and learns which ones are most effective in which circumstances. Indeed, as Sroufe and Waters 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, as 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 to 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 her. 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

more extensive discussion of attachment and this notion of "reproductive fitness," see Simpson & Belsky, Chapter 6, this volume.)
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 attachment 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 child's goal 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, 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 regard 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 their mothers 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 intensely 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
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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.

Bowlby also viewed emotions as important regulatory mechanisms within attachment relationships, noting, for instance, that anger and protest, as long as they do not become excessive and destructive, can serve to alert the attachment figure to the child’s interest in maintaining the relationship (Bowlby, 1973; see Kobak & Madsen, Chapter 2, this volume). More recently, attachment theorists have noted the ways in which the regulation of emotions is used in the service of maintaining the relationship with the attachment figure, and they have noted that individual differences in attachment security have much to do with the ways in which emotions are responded to, shared, communicated about, and regulated within the attachment relationship (Cassidy, 1994; Cassidy & Berlin, 1994; Cassidy & Kobak, 1988; Kobak & Duemmler, 1994; Thompson & Meyer, 2007; see also Kobak & Madsen, Chapter 2; Bretherton & Munholland, Chapter 5; and Thompson, Chapter 16, this volume).

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. Bretherton (1991) suggested that repeated attachment-related experiences could become organized as scripts, which would in turn become the building blocks of broader representations (see also Vaughn et al., 2006). (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; see 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 (1969/1982, 1973, 1979, 1980a) also discussed the role within the attachment system of other cognitive processes, such as object permanence, discrimination learning, generalization, nonconscious 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 De Wolff & van IJzendoorn, 1997). (Theoretical issues related to individual differences in attachment security are discussed in detail by Weinfield, Sroufe, Egeland, & 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 advantages 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 and reproduction 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
1. The Nature of the Child’s Ties

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. 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 nonhuman 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 an 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 (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.

Lewis, Young, Brooks, and Michelson (1975) interpreted their observations of pairs of 1-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 he 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 he (Bowlby, 1969/1982) called the “attachment–caregiving social bond.” Solomon and George (1996; George & Solomon, 1996; see also George & Solomon, Chapter 35, this volume) have filled this void, writing in detail about the “caregiving system.” As George and Solomon (Chapter 35, this volume, Note 1) state, it is difficult to delineate precisely which aspects of parenting behavior should be considered 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.

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). Similarly, Ainsworth (1990) noted that “the mothers of Ganda babies who were securely attached to them almost never played with them, even though they were highly sensitive caregivers” (p. 482; see also van Ijzendoorn & Sagi-Schwartz, Chapter 37, this volume). Within-culture variation exists as well: 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. Main, Hesse, and Kaplan (2005) have proposed that such parental discomfort (anxiety) may emerge when infant behavior interferes with parents' ability to preserve “the state of mind that had seemed optimal for maintenance of the relationship to their own parents during childhood” (p. 292). For additional discussion of the ways in which particular parents experience discomfort when faced with particular infant behavior, see Cassidy et al., 2005.)

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 becomes 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
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providing "a

The mother's

infant from such monitoring and permits greater
attention to exploring. For instance, if, when visit-
ing 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 the mother 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 atten-
tion 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 ex-
ample, 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 ac-
tivation 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-
rage. The mother may have to leave the infant
to work to support the family (in which case ac-
tivation 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 insensi-
tivity to a particular child may be useful to the mother
if it maximizes the total number of surviving off-
spring (see also Simpson & Belsky, Chapter 6, this
volume).

As is true for many behavioral systems, activa-
tion 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 systems
(e.g., exploratory, 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). Activa-
tion of the caregiving system has crucial implica-
tions for the infant, who cannot otherwise survive.

Ethologists have suggested that infants therefore
have evolved characteristics that serve to activate
the caregiving system: their enduring "babysih"
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 behav-
sors, 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 emo-
tions (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 anxi-
ety; the death of a child brings profound grief. This
intertwining of the caregiving system with intense
emotions may result from selective pressures dur-
ing evolution: Enhanced reproductive fitness may
result when, for instance, a parent's anxiety about
threats to a child prompts the parent to seek effec-
tive 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 distressed
child whom the parent perceives to be in no dan-
ger? What could be the role of such soothing be-
haviors? 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,