

Development Through Life

A HANDBOOK FOR CLINICIANS

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16: Attachment: Theory and Evidence

JAY BELSKY AND JUDE CASSIDY

INTRODUCTION

Attachment theory can be viewed, in large part, as a theory of personality development that arose from Bowlby's interest in the nature of human development. While still in medical training, Bowlby's observations at a school for maladjusted children convinced him that early family processes are influential in shaping development. Bowlby therefore viewed contemporary psychoanalytic theory (i.e. Freud) as inappropriately over-emphasizing the role of the individual's inner fantasies at the expense of actual environmental influences. This emphasis on the contribution of the internal world of the individual without considering the external environment was incompatible with Bowlby's biological training which had led him to seek to understand the interaction of the organism with the environment. Bowlby realized that undertaking this task with respect to human development would require a systematic knowledge of the effects of the family on the child.

To this end, there were many possible aspects of family experience that could be examined. Bowlby chose to examine the effects of major separation for two reasons. First, he was convinced that major separations and losses during childhood were particularly crucial. His own observations and those of others (Bender & Yarnell, 1941; Goldfarb, 1943) had revealed that the histories of severely disturbed children were characterized by a relatively high incidence of disruption in the child-mother relationship. Second, given the methodological limitations of the time, it was considerably easier to verify the existence of such a disruption than to establish the validity of assessments of other aspects of family experience. Members of Bowlby's research team therefore began a series of studies, the most

productive of which was a prospective study of separation pioneered by James Robertson. These observations raised many questions: 'Why should a young child be so distressed by the loss of his mother? Why after her return home should he become so apprehensive lest he lose her again? What psychological processes account for his distress and for the phenomenon of detachment?' (Bowlby, 1989).

The need to explain these questions led Bowlby to realize that a new theory was required to understand the nature of a child's tie to his mother.* He was not satisfied with existing explanations which emphasized secondary drive processes. These suggested that because the mother satisfied the infant's primary need for nourishment, she became associated with feelings of satisfaction, and thereby came to be regarded positively by the infant. Interaction with her, according to Freud (e.g. 1910), thus came to be desired in its own right as a secondary, or acquired, drive. The insufficiency of this theory became further evident as a result of studies showing that motherless monkeys preferred contact with a soft cloth surrogate over an equally lifeless, wire-mesh substitute that provided milk through a bottle (Harlow & Harlow, 1965).

Finding himself thus dissatisfied with a variety of features of traditional analytic theory, Bowlby sought new understanding by exposing himself to ideas and colleagues from fields such as evolutionary biology, ethology, cognitive science and control systems theory (Bowlby, 1982). From this mix he crafted the original notion that as a result of evolutionary pressures the human infant evolved, in concert with a maternal care-giving system, to

* This chapter uses the convention of referring to the child as male and the parent as female.

develop an attachment relationship with his mother (or primary care-giving figure). In other words, and most significantly, the child's intense affective tie to his mother, which was dramatically revealed when the child was away from her, was not the result of some associational learning process, but rather was the direct consequence of a biologically based desire for proximity/contact with adults that arose as a direct result of natural selection.

This chapter reviews the basic tenets of attachment theory and surveys the research that it has stimulated, particularly that pertaining to individual differences in attachment security spawned by Mary Ainsworth's theoretical and methodological contributions (Ainsworth *et al.*, 1978). First, the nature of the child's tie to its mother (or primary attachment figure) is examined, and second the issue of individual differences from the perspective of theory, measurement and evidence is considered. The chapter ends with a section addressing some future directions for research and theory. Throughout all sections, questions and concerns are raised that have been directed towards the theory and research derived from it, hoping to illuminate both its strength and its limitations.

THE NATURE OF THE CHILD'S TIE TO THE MOTHER

Biological bases of attachment

The most fundamental aspect of attachment theory is its focus on the biological bases of attachment behaviour (Bowlby, 1973, 1980, 1982). Attachment behaviour is any behaviour that has the predictable outcome of increasing proximity of the child to the attachment figure (usually the mother). Some attachment behaviours (smiling, vocalizing) are signalling behaviours that indicate to the mother the child's interest in social interaction, and thus serve to bring her to the child for such interaction. Some (crying) are aversive, and bring the mother to the child to terminate them. Some (approaching, following) are active behaviours that move the child to the mother. Bowlby proposed that during the period when humans were evolving, the time he called 'the environment of evolutionary adaptedness', genetic selection favoured attachment behaviours because they increased the likelihood of child-mother proximity.

Many predictable outcomes beneficial to the child are thought to result from the child's proximity to the parent (Bowlby, 1982). These include feeding, learning about the environment and social interaction. All of these are important. But the predictable outcome of proximity thought to give survival advantage to the child is protection from predators. Infants who, in the environment of evolutionary adaptedness, 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 behaviour. This is the most basic of predictable outcomes: without protection from predators, feeding is not necessary, and learning cannot take place. Because of this biological function of protection, infants are thought to be biologically predisposed particularly to seek the parent in times of distress.

Attachment behaviours are theorized to be organized into an attachment behavioural system in which the specific attachment behaviours may be less important than the internal organization of these behaviours. Bowlby (1982) borrowed the concept of the behavioural system from the ethologists to describe a species-specific system of behaviours which leads to certain predictable outcomes, at least one of which offers clear survival advantage to the individual. The concept of the behavioural system involves inherent motivation. There is no need to view attachment as the byproduct of any more fundamental process or 'drive'. This idea is supported by evidence that indicates that in contrast to secondary drive theories, attachment is not a result of associations with feeding (Schaffer & Emerson, 1964; Harlow & Harlow, 1965; Ainsworth, 1967). 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.

Bowlby (1982) adopted a control system approach to attachment behaviour. Drawing on observations of ethologists who described instinctive behaviour 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 behaviour. Bowlby described the workings of a thermostat as an example of a control system. When the room gets too cold, the thermo-

stat activates the heater; when the desired temperature is reached, the thermostat turns off the heater. Bowlby described children as wanting to maintain a certain proximity to the mother. 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 (1982; see also Bretherton, 1980) later described the attachment system as working slightly differently from a thermostat, being continually activated (with variations of relatively more or less activation) rather than ever being completely terminated.

The child's desired degree of proximity to the parent is thought to vary at different times and in different settings, and Bowlby (1982) was interested in understanding what leads to these relative increases and decreases in activation of the attachment system. He described three classes of causal factors: condition of the child (whether or not the child is sick, tired or in pain), condition of the environment (whether or not it contains threatening stimuli), and the location and behaviour of the mother (whether or not she is absent, moving away or rejecting). Interaction among the classes of 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 attachment behaviour, Bowlby was clear that his approach has nothing in common with a model in which a behaviour stops when its energy supply is depleted. For Bowlby, attachment behaviour stops in the presence of a terminating stimulus. The nature of the stimulus that serves to terminate attachment behaviour 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 be sufficient.

Interplay of the attachment system with other behavioural systems

The attachment behavioural system can only be fully understood in terms of its complex interplay with other biologically based behavioural systems. Bowlby highlighted several other behavioural systems in relation to young children, and two, the

fear and exploratory systems, will be discussed here. 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. Bowlby (1973) described 'natural clues to danger', stimuli which are not inherently dangerous, but which 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 a frightened infant increases his attachment behaviour, infants who find these stimuli frightening are thought to be more likely to seek protection and thus 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 the infant's fear system such that an available and accessible attachment figure makes the infant much less susceptible to fear.

The exploratory behavioural system is also one which is thought to be closely linked to the attachment behavioural system. The complementary yet mutually inhibiting nature of the two systems is believed to have evolved to ensure that while the child is protected by maintaining proximity to attachment figures, he nonetheless gradually learns about the environment through exploration. The link between these two systems is best captured within the framework 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, 1982).

Noting the complementary activation and inhibition of these two behavioural systems, Ainsworth *et al.* (1971) referred to an 'attachment-exploration balance'. Most infants balance these two behavioural systems, responding flexibly to a specific situation after assessing both the environment's characteristics and the caregiver's availability. For instance, when the attachment system is activated (perhaps by separation from the attachment figure, illness, fatigue or by unfamiliar people and environments), 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. In terms of fostering exploration, Bowlby 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, provides support for the theoretically predicted associations between maternal availability and infant exploration (Ainsworth & Wittig, 1969; Rheingold, 1969; Carr *et al.*, 1975; Sorce & Emde, 1981).

Distinctions among attachment behaviour, the attachment behavioural system and an attachment bond

It is important to clarify the distinctions among attachment behaviour, the attachment behavioural system and an attachment bond (Ainsworth, 1973; Bowlby, 1982; Hinde, 1982a). Attachment behaviour is behaviour that promotes proximity to the attachment figure. The attachment behavioural system is the organization of a variety of attachment behaviours within the individual. An attachment bond refers to a tie, not between two people, but rather a tie which one individual has to another individual who is perceived as stronger and wiser (e.g. the bond of an infant to his mother). Attachment behaviour may or may not be present at any given time; it is situational. The attachment bond is considered to exist consistently over time, whether or not attachment behaviour is present. Furthermore, the presence of attachment behaviour does not necessarily indicate the existence of an attachment bond. The same behaviour can serve more than one behavioural system, and can have different meanings in different contexts or when directed to different people. For instance, just because a baby approaches an unfamiliar person does not mean he is attached to that individual; even though approach can be an attachment behaviour, it can also be an exploratory behaviour.*

* Distressed infants may seek comfort from a stranger (Rheingold, 1969; Ainsworth *et al.*, 1978; Bretherton, 1978) and approach in that context is considered attachment behaviour. Nonetheless, an enduring attachment bond of the infant to the individual cannot be assumed to exist, and it is thus possible for an infant to direct attachment behaviour to an individual to whom he is not attached.

In addition, as Bretherton (1980) has pointed out, the same behaviour, *even when directed to the same individual*, may serve different behavioural systems at different times. It would, for example, be a mistake to label as an attachment behaviour the child's approach to its mother in order to engage in peekaboo.

Beyond attachment: additional relationship components

The fact that not all behaviour directed to an attachment figure is attachment behaviour suggests that there are other components to the child-mother relationship beyond attachment. For Bowlby (1982), the attachment component is only one feature of a child's relationship with his mother: the component that deals with behaviour related to the child's protection and security in time of stress. In addition to serving as attachment figure, the mother may serve also 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 frightened child may direct attachment behaviour to his mother, and yet at other times interact with her in ways relatively unrelated to attachment (e.g. play). Clearly, there are many aspects of parental behaviour not related to attachment and which have important consequences for children's development (Maccoby & Martin, 1983).

The extent to which the various relationship components characterize child-mother relationships varies considerably both across and within cultures. For instance, as Bretherton (1985) has pointed out, among Mayan Indians in Mexico, mothers rarely serve as playmates for their infants, yet are quite available and responsive as caregivers (Brazelton, 1977). Within a particular culture, one mother might be a readily available attachment figure, yet stodgy and inept in the role of playmate, whereas another mother might be dazzling as a playmate yet consistently unavailable in times of trouble. Still another mother might 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 be uncomfortable with attachment-related interactions. Relatively little is known about the connections among the various components of

mother-child relationships, and it is unclear to what extent non-attachment components contribute to security. It is likely that the extent and nature of their contributions vary at different ages (Bretherton, 1980; Hinde, 1982a). Bowlby 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' (1982, p. 378).

Multiple attachment figures

Just as attachment is unlikely to be the sole component of any one relationship, so is any one relationship unlikely to be a child's only relationship containing an attachment component. According to Bowlby (1982), 'almost from the first, many children have more than one figure to whom they direct attachment behaviour' (p. 304). Indeed, empirical observations have revealed that the majority of children direct attachment behaviour towards more than one familiar attachment figure well before their first birthday (Schaffer & Emerson, 1964; Ainsworth, 1967). According to Bowlby (1982), determination of who will serve as attachment figures to an infant hinges on who spends time with the infant. In most cultures this means that the biological parents, the siblings, and in some cases the grandparents, are most likely to serve as attachment figures as well.

Although there is usually more than one attachment figure, the potential number of attachment figures is not limitless. Bretherton (1980) 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 *et al.*, 1977). Although there is some preferential discrimination when choosing an individual for social interaction, it is considerably less than the discrimination when choosing an individual to provide comfort (Tracy *et al.*, 1976).

Although most infants have multiple attachment figures, it is important not to assume that the infant treats all attachment figures as equivalent, or that they are interchangeable. Bowlby (1982) proposed

a strong tendency for infants to prefer a principal attachment figure, and to prefer her as a source of comfort and security if she is present (see also Ainsworth, 1964). However, in her absence the infant is likely to seek and derive comfort and security from other attachment figures as well. The principal figure is the one the infant consistently turns to first in times of stress. Consistent with this hierarchy notion are data from Lamb's (1976a, b) work with fathers and Kagan *et al.*'s (1978) work with child care providers showing that most infants prefer to seek comfort from their mothers when distressed rather than from these other individuals with whom they also have enduring relationships (see also Schaffer & Emerson, 1964; Ainsworth, 1967).*

Additional support for the hierarchy notion, and particularly the idea that not all attachment relationships are equally influential, comes from studies showing that when the child is securely attached to one individual and insecurely attached to another, children behave more competently when the secure relationship is with the mother rather than with the other attachment figure (Main & Weston, 1981; Belsky *et al.*, 1984; Main *et al.*, 1985; Easterbrooks & Goldberg, 1987; Howes *et al.*, 1988). These same studies indicate, however, that the most well-functioning individuals have two secure relationships while the least competent children have none (of those studied).

Attachment across the lifespan

Bowlby (1982; see also Ainsworth, 1967) distinguished four phases in the development of

* Bowlby uses the term 'monotropy' to refer to the special role of a single mother figure to the infant. There has been some confusion over Bowlby's position on this issue. Lamb *et al.* (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 Bowlby's earliest writings (1958, 1982) the role of multiple attachment figures was described. Indeed, Bowlby's position may have shifted somewhat over time (Rutter, 1979); it has at least been clarified. Current thinking emphasizes that infants have multiple attachment figures from early in life; that these are limited in number; and that all attachment figures are not treated equally. The mother figure is generally preferred in times of stress.

attachment in the human species. Three of these phases occur during the infant's first year of life. During the first phase, indiscriminating social responsiveness (birth to 2–3 months), the infant responds to nearly all social stimuli, not just a particular person. During the second phase, discriminating social responsiveness (2–3 to 7 months), not only does the baby begin to distinguish mother and other familiar people from strangers, with attachment behaviours being activated and terminated in response to specific others, but the infant shows a preference for a particular person (or persons). During the third phase, active initiation in seeking proximity and contact (7 months to 3 years), active attachment behaviours (e.g. approaching, following) increasingly emerge. Now that the infant can alter his behaviour as a function of the situation, continually choosing from a repertoire of attachment behaviours, 'goal-corrected' behaviour sequences become evident, and the infant can be said to be 'attached'.

Bowlby (1979) believed that attachment to parents remains important beyond infancy, and indeed throughout the lifespan. At approximately age 3, the child moves into the goal-corrected partnership, phase 4. During this phase, language, among other skills, enables the child to view the world from the mother's perspective and thus consider her plans and wishes in guiding his own behaviour. The term 'partnership' is used because the child can use his new knowledge of both his own and the mother's goals to negotiate a joint plan. Although throughout the school years a child's attachments to his parents continue to have a pervasive influence, increasingly they become less centrally important for the child, penetrating fewer aspects of his life than they did earlier (Hinde, 1976). Many people assume that the attachment of child to parent becomes steadily weaker in the course of development until it eventually disappears altogether, being supplanted by other more mature affectional bonds (Weiss, 1982). However, despite the fact that attachment behaviour directed to the parent becomes less frequent and less intense, there is no reason to believe that the attachment bond to parents altogether disappears, and it seems likely that adolescents and young adults rely on parents as attachment figures (Ainsworth, 1989). As Ainsworth (1989) has pointed out, there is little

research examining changes in behaviour that mediates attachment to parents as the child grows older, or examining the circumstances or ways in which attachment behaviour to parents later manifests itself. Similarly, there is no research evidence about the nature of the attachment of the adult child to parents. Some clinicians believe that the nature of the relationship never really changes – that it is always one of child to parent – whereas other clinicians feel that adult children and their parents can become close friends and interact as peers. Nonetheless, it seems likely that relationship roles may be healthily reversed when an adult child is called upon to provide care to an elderly or ill parent.

Most adult lives are characterized not only by attachments to parents but by additional attachment relationships as well. These typically include relationships with spouses, very close friends, siblings and other close kin. According to Bowlby (1979), it is a mistake to assume, as some psychoanalysts do, that the presence of attachment behaviour in adult life is pathological, regressive or reflects 'fixation'. It is viewed, in contrast, as a biologically based behaviour, and the adult's capacities to turn to a partner for care when needed (as well as to provide care to a partner) are considered signs of health (Bowlby, 1979).

There are both similarities and differences between attachments in childhood and attachments in adulthood. They are similar in that they are characterized by the same defining features: specificity of the attachment figure; duration of the bond over time; the wish for proximity, particularly in times of trouble; distress at involuntary separation; the seeking of security; and emotional significance (Weiss, 1982; Ainsworth, 1989). In both, the attachment component is likely to be only one of several components of the relationship. For instance, in addition to the attachment component within a marriage, there are sexual, care-giving, teaching and recreational components as well (Ainsworth, 1989, 1991). The notion of a secure base from which to explore also characterizes both: 'Evidence is accumulating that human beings of all ages are happiest and able to deploy their talents to best advantage . . . with a secure base from which to operate' (Bowlby, 1979, p. 103). In addition, most adults, as do most infants, have more than

one attachment figure. And finally, for adults as well as for children, not all important relationships are attachments (Ainsworth, 1989). On the other hand, attachments in adulthood are different from those in childhood in that the former typically involve a peer rather than a more powerful individual; are not nearly as powerful in overwhelming other behavioural systems; and often involve a person with whom a sexual relationship also exists (Weiss, 1982). In addition, adults tolerate distance from attachment figures for longer periods of time than can infants (Bowlby, 1989).

INDIVIDUAL DIFFERENCES: THEORY

Central to contemporary thinking about attachment is not only the notion that humans, like many other species, are biologically predisposed to develop attachments to other conspecifics, but that there exist noteworthy individual differences in the nature and quality of these attachment relationships. The current considerable interest in, and research on, the origins and consequences of variation in attachment derive in large part from the seminal theorizing and ground-breaking research of Ainsworth who developed a procedure for assessing individual differences (see below) and carried out the first work testing propositions regarding the origins of these differences. Interest in individual differences is also present in the work of Bowlby, evident in his work on the history of 44 juvenile thieves (1944), and in his notion of internal working models discussed in the first volume of his trilogy (1982), and much further developed in his 1973 volume.

Internal working models

Attachment theory differs importantly from psychoanalytic and object relations theories in terms of the emphasis it places upon the young child's real experience. In studying psychopathology, Freud, Klein and others stressed the fantasies and projections of their patients regarding their childhood experiences. Bowlby, in contrast, emphasized that the child's mental representations of his early relationships were based upon actual experiences which the child has with his caregiver and that it was these lived experiences which provided the

basis for his models of the workings, properties, characteristics and behaviour of attachment figures, of himself, of others and of the world more generally.

Central to Bowlby's theory of the working model of the self and of the attachment figure is the idea that, over time, there is an inextricable intertwining of the working model of the self and of the attachment figure. Thus, a child whose attachment needs are rebuffed not only comes to develop a model of the mother as rejecting, but of himself as unworthy of love and attention. Conversely, a child whose needs for contact and comfort are consistently met comes to represent the mother as available and caring and himself as loveable. It is a presumption of contemporary attachment theory that working models become so deeply ingrained that they influence feelings, thought and behaviour unconsciously and automatically. They do this, according to Bowlby, by directing the child's attention to particular actions and events in his world, by shaping what the child remembers and does not and, thereby, by guiding his behaviour towards others and, thus, theirs towards him.

Secure and insecure attachment

Ainsworth distinguished two general types of attachment relationships — secure and insecure. When a parent is experienced as usually available, responsive and accepting, a secure attachment develops. By serving as a secure base from which to explore, the parent fosters in the child the development of an internal working model of the parent as one on whom he can depend in times of trouble and of the self as one worthy of such care. Basic to the experience of a securely attached child is a fluid attachment–exploration balance (Ainsworth *et al.*, 1971). When the environment appears safe, is interesting and the mother is nearby, the exploration system is activated. But when danger looms or the mother's availability is compromised, the securely attached child readily seeks proximity to the mother (Main, 1990). Rather than being seen as incompatible with self-reliance, this secure attachment is considered to reflect developmentally appropriate dependency and is theorized to foster self-reliance and age-appropriate independence in the post-infancy years. In contrast, a premature attempt to

push the very young child to independence by rebuffing attachment behaviour serves to further activate attachment behaviour and, in so doing, fosters an unwillingness to explore or an inability to do so confidently and competently (Ainsworth, 1984b).

When the attachment figure somehow fails to provide the child with a history of experiences that would foster a secure base, an insecure attachment develops. Insecurity itself can be promoted in a variety of ways. Consistent rejection, lack of availability and extreme forms of pathological parenting (e.g. maltreatment, parental mental illness) foster internal working models of others as unavailable and untrustworthy and complementary models of the self as unworthy of sensitive treatment. The actual strategies that insecure children develop in response to their rearing experiences are thought to involve manipulation of the balance between the attachment and exploratory systems such that either one or the other is emphasized.

In cases where a parent is minimally or inconsistently responsive, it is theorized that the infant develops an understandable strategy of emphasizing and exaggerating his attachment behaviour (e.g. crying, clinging, following) and increasing the bids for attention. This practice of displaying extremely dependent behaviour is seen to be a tactic that the infant uses to obtain the attention of an otherwise inattentive parent (Main & Solomon, 1986; see Cassidy & Berlin, in press for review). In cases where a parent is actively rejecting of the infant's attachment behaviour, the infant develops a strategy of ignoring cues that might activate the attachment system and defensively de-emphasizes his relation with the attachment figure (Bowlby, 1980; Main, 1981; Cassidy & Kobak, 1988). Complementing this tactic is that of emphasizing exploration which allows the infant to remain in proximity to the caregiver without engaging in either angry or clingy behaviour which could evoke still further rejection (Main, 1981).

Stability of attachment

Because of the nature of the internal working model, there is an almost implicit assumption built into attachment theory that individual differences in attachment security will remain stable over time.

After all, a fundamental idea pertaining to internal working models is that they are a conservative force with respect to developmental change, as they direct attention, memory and interpersonal experience to be consistent with prevailing expectations and understanding of the social and affective world. Even though Bowlby did theorize that working models were set largely in infancy and early childhood and thereafter were relatively resistant to change, he clearly acknowledged that under particular conditions they were susceptible to modification at older ages. This would suggest, therefore, that while stability of attachment is the norm, lawful discontinuity could be expected; that is, when circumstances change and affect the nature of the ongoing relationship between attachment figure and child, the security or insecurity of the relationship could also change.

It is interesting in light of such theory that even though the norm seems to be for measurements of attachment security in the early years to remain stable, especially in stable middle-class populations (Waters, 1978; Main & Weston, 1981; Owen *et al.*, 1984; Main *et al.*, 1985), some of the instability that has been chronicled in the research literature has been linked to changing family circumstances presumed to influence the nature of daily interactions between mother and child and, thus, the quality of the relationship (Egeland & Farber, 1984). To date, however, this assumption has not been tested directly, as no studies have chronicled short- or long-term changes in attachment security *per se* and linked them to interactions between mother and child that might mediate these changes. Erickson *et al.* (1985) did show, though, that some children judged insecurely attached to their mothers as toddlers looked more competent than age-mates with comparable insecure attachment histories and that the unexpected competencies of the former seemed to be mediated by differences in mother-child interactions which intervened between the initial assessment of attachment insecurity and the later measurement of socioemotional functioning. Lieberman *et al.* (1991) reported more recently another instance of what appears to be evidence of lawful discontinuity with respect to attachment security: relative to a control group of insecure 12 month olds who received no therapeutic intervention, those whose mothers had a full year of infant-parent psychotherapy were significantly

more likely to look secure (or less insecure) in their attachments when remeasured a year later.

Consequences of attachment security/insecurity

As noted above, Bowlby's interest in attachment grew out of his observations of the dysfunctional development of children with multiple changes of a mother figure or a home (study of 44 thieves) or who grew up without a mother figure (institutionalized children). Thus, it is not surprising that a central tenet of contemporary attachment theory is that the security of the attachment bond will influence subsequent psychological and behavioural development. As Bowlby (1973, p. 322) noted, 'an unthinking confidence in the unfailing accessibility and support of attachment figures is the bedrock on which stable and self-reliant personality is built'. Of course, this notion that the quality of early relationships is important for later personality development was central to Freud's psychoanalytic theory as well.

Distinctive to attachment theory, though, is the notion of what it is that mediates the influence of early relationship experience upon later psychological development — the internal working model. On the basis of their experiences, individuals develop different representational models — that is, different beliefs about themselves, different expectations about others, and different sets of conscious and/or unconscious rules for organizing and accessing information about feelings, experiences, and ideas related to attachment — and these lead to particular kinds of interactions with new social partners and have long-lasting consequences for personality and close relationships. Whereas securely attached children are inclined to become self-confident adults who can effectively vary their behaviour to suit their situations, anxiously attached children are expected to be at risk for interpersonal difficulties, depression, compulsive self-reliance and problems pertaining to anxiety, anger and aggression. Although it is expected that children with anxious attachment histories will be at increased risk of low self-esteem, unhappiness and maladaptive responses in difficult to manage situations, insecurity in and of itself is not to be equated with psychopathology. Conversely, security is not to be equated with invulnerability to

stress, though it is expected to lay a foundation for the formation of other secure relationships, the seeking of support when needed, and the drawing of strength from support when available.

Special issues

Four fundamental theoretical issues regarding individual differences merit special attention: boundaries, mechanisms, processes and notions of adaptation.

Boundaries of attachment

There is no shortage of developmental phenomena to which attachment security has been linked, either longitudinally or concurrently. Developmental correlates of attachment security now include frustration tolerance, developmental quotient, interactions with peers, friends and siblings; relations with strange adults, teachers and parents; language competence, ego resilience, behaviour problems, exploration of a novel environment and play competence. Not unreasonably, one can wonder not merely if there is anything to which attachment security is not related, but what we mean by attachment security if it relates to all of these things. Is it merely a marker of general adjustment or a feature of a close relationship as experienced by the child, or are these one and the same (Sroufe, 1988)?

Reflection on a decade of research on the sequelae of early attachment security leads to the conclusion that Bowlby's and Ainsworth's theorizing has been the spring board for a broad continuum of implicit, if not explicit, theories of attachment. One end of the continuum is characterized by what might be regarded as a 'narrow' view of the attachment system and a theory that early attachment security should be related to a limited set of development phenomena, mostly having to do with interpersonal relations, especially close relationships, and perhaps developmental disorders that are relationship based. The 'broader' view of attachment seems to have involved the assimilation of Bowlby's and Ainsworth's ideas about security into earlier understanding of Erikson's (1950) views about basic trust and the foundation it lays for diverse aspects of development. Only such a reading of the evidence, it seems to us, explains why students of attachment theory came to relate things like sociability with

strange adults and peers, and language and cognitive development more generally to early assessments of infant–mother attachment.

What has been particularly absent from research on both the antecedents and sequelae of attachment security are notions of discriminant validity. An important question is not simply what early attachment predicts and through what mechanisms, but what does it not predict – and why? In Fig. 16.1, three quite different models are depicted of the origins and consequences of attachment security that vary not only in what they would predict about interactional origins and developmental sequelae of attachment, but also in explanations

of why associations obtain. Model I is ‘domain-specific’ (i.e. narrow) in that only ‘within-system’ empirical relations are anticipated. Thus, maternal sensitivity to attachment signals forecasts attachment security, which itself predicts outcomes directly involving the attachment system (e.g. future security; close friendships; intimacy), whereas maternal sensitivity while playing with and teaching the child directly influence infant play and cognitive development, *respectively*, which themselves forecast directly related features of subsequent development.

Quite the opposite of the narrow, domain-specific model is the broad general model (III) that depicts

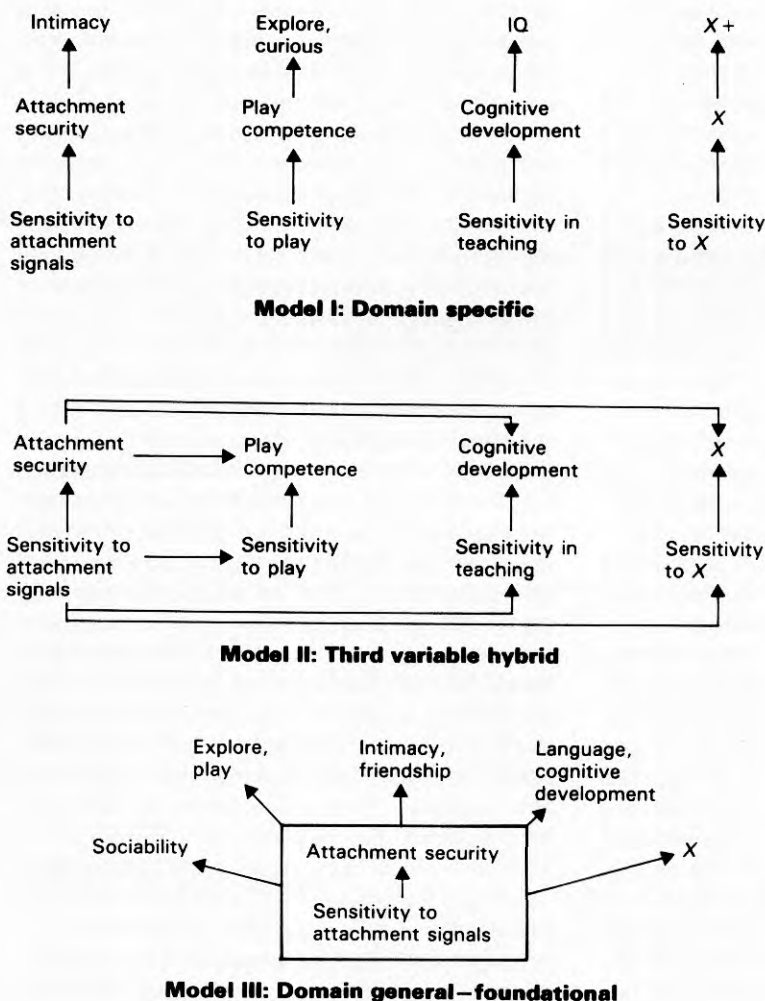


Fig. 16.1 Alternative models of the origins and sequelae of attachment security: (I) domain specific; (II) third variable hybrid; and (III) domain-general – foundational. See text for further details.

attachment security as foundational to a variety of features of development. Thus, sensitivity to attachment signals promotes attachment security, which itself fosters development in a wide variety of domains (e.g. sociability, friendships, language, etc.).

Model II represents an attempt to explain model III findings in terms of model I and is thus something of a methodological hybrid. Basic to this model is the assumption that while attachment security functions narrowly (like model I), findings occur consistent with the broader model (III), but only as a function of 'third variable' processes. Specifically, what this model indicates is that attachment security is related to a variety of domains of development that would seem to lie outside the attachment system (e.g. sociability, language development), but only because the sensitivity which fosters attachment security is correlated with maternal sensitivity in other contexts of interaction (e.g. play, teaching) which themselves directly influence these other features of development. Note, then, that early attachment security comes to be related to later domains of development that do not appear to be directly attachment related because the features of early experience that foster security of attachment are also correlated with features of early experience that foster other aspects of development.

At present, there is no way of determining which of these models best accounts for the available data simply because the findings in the literature could be a function of any one of these models. While the breadth of correlates documented to date could reflect processes outlined in model III, they might also be a function of more domain-specific processes (model I) that masquerade as evidence of model III because of 'third variable' processes (model II). Needless to say, more research is required before these complexities can be teased apart and the derivative conundrums resolved.

Mechanisms of influence: the internal working model

Irrespective of whether one subscribes to a narrow or broad view of attachment and its influence upon development, one is left to ponder the mechanisms that explain the correlational evidence to be reviewed on the sequelae of attachment. Presuming for sake of argument that the findings to be con-

sidered reflect truly causal effects of early attachment security, the question to be asked, even if not fully answered, is 'why do these associations obtain?' Most answers to this question offered by students of attachment theory derive from Bowlby's thinking about 'internal working models'. Actual (as opposed to fantasized) experience in interaction with the mother, it is asserted, leads the child to develop expectations and understandings about how the interpersonal world, or perhaps more narrowly, the world of close relationships, operates. These ideas, impressions, understandings then lead the child selectively to attend to, encode and respond to particular experiences that are consistent with this world view — or to reinterpret as consistent events and experiences that are not — in a way that maintains and sustains that understanding of the interpersonal world. Thus, children who have been rejected or treated insensitively anticipate such treatment from others (or more narrowly, from others with whom they are in close relationships), respond principally to cues consistent with this view (which they selectively attend to) and, thereby, evoke treatment consistent with it. In contrast, a child who has experienced an accepting and responsive mothering figure anticipates and attends to quite different cues and experiences, responds selectively to them in a way that fosters their repetition and, in so doing, contributes to the creation of the more harmonious interpersonal world that he encounters (Bowlby, 1982; Bretherton, 1985; Main *et al.*, 1985).

Although there is some support for attachment-related differences in children's and adults' representations of attachment (Main *et al.*, 1985; Cassidy, 1988; Bretherton *et al.*, 1990), there is as yet little direct evidence that secure or insecure children differentially anticipate interpersonal events, selectively attend to different events, or differentially encode or transform (to be consistent with their internal working models) events and experiences (Main *et al.*, 1985). Therefore, the notion of internal working models as the causal process explaining the associations between attachment security and developmental sequelae remains a useful interpretive heuristic in need of empirical evaluation.

Until such work is carried out and demonstrates, in fact, that affective-cognitive processes do

mediate linkages between attachment security and interpersonal functioning, many will assert, not unreasonably, that the construct of 'internal working model' has become a catch-all, *post-hoc* explanation (Hinde, 1989). Moreover, they will contend that the data might be more parsimoniously accounted for by stable temperamental proclivities or by the development of simple behavioural skills (that do not require complex notions about models and expectations).

Needless to say, understanding of causal processes has important implications for intervention. If it is skills that account for the cross-time associations that have been discerned, then it may simply be a matter of training children to engage in certain behaviours in order to reduce the developmental risks they may face. If, instead, the internal working model is the mechanism of influence, then interventions will be required to modify children's expectations and attentional proclivities. Depending upon whether one views the model as dependent upon experience in close relationships, it may or may not be possible to modify affective-cognitive processes with short-term and specifically targeted procedures. In any event, the point to be made is that the issue of causal processes is very important therapeutically.

Process of influence: the role of early experience

Like psychoanalytic theory before it, attachment theory is a theory of early experience. Even though contemporary attachment theorists and researchers are not adherents of a strong early experience, or critical period model of development, they are of the opinion that what happens early sets the stage for what happens later in development (via internal working model mechanisms). This is evident, as we shall see, in research designs that link attachment security in the first year or two of life to a broad array of developmental phenomena at later periods.

What remains unclear in all such research is not merely whether the postulated mechanism of influence (i.e. internal working model) is in fact responsible for across-time associations, but whether the linkage is a function of early experience or concurrent experiences that are correlated with earlier experiences (Lamb *et al.*, 1984, 1985). In

particular, if it is empirically demonstrated — as it has been — that young children with secure attachment histories are more ego resilient than are age-mates with insecure attachment histories, does this mean that it is *early* attachment history that causes later personality functioning? The alternative that attachment researchers have begun to address only recently is that it is the quality of the concurrent mother-child relationship, or some other feature of the concurrent environment that is correlated with early attachment, that is causally important. Thus, it remains possible that the 'influence' of early attachment in the research to be surveyed is only apparent, not real, and that it is continuity in the environment, rather than early experience/attachment that is causally influential.

In the context of this discussion two recent studies are particularly noteworthy, one dealing with attachment and the other not. In the attachment research, Renken *et al.* (1989) sought to determine whether early attachment history contributed to the prediction of later aggression once experiences subsequent to infancy were controlled. It was. In a study not directly concerned with attachment, Bradley *et al.* (1988) found that the very parameters of early maternal care that are considered central to the development of secure and insecure infant-mother attachments — acceptance and responsivity — predicted social functioning (i.e. considerateness) at age 10 even when these same features of maternal care at age 10 were statistically controlled. Both investigations, then, suggest that attachment or attachment-important features of early experience exert an influence on later development that can not be explained in terms of continuity in environment.

Adaptation

The fact that the evidence pertaining to the development of children judged securely and insecurely attached to their mothers as infants repeatedly indicates that the former look more socially skilled and better adjusted than the latter has resulted in some confusion about the notion that attachment is adaptive. When Bowlby discussed the evolutionary basis of attachment behaviour, he stressed the survival (i.e. adaptive) value of the infant maintaining proximity to his caregiver. Unfortunately,

when attachment researchers have written about the functioning of secure and insecure children, frequently they have spoken in terms of the adaptive functioning of the former and the maladaptive functioning of the latter. By using the same terminology to discuss evolutionary—biological and psychological—mental health phenomena, it is not surprising that some have come to equate the mental health benefits of a secure attachment with evolutionary benefits. Indeed, Ainsworth (1979, p. 45) herself seemed to imply as much when she argued that 'securely attached' babies 'developed normally, i.e. along species-characteristic lines' (Hinde, 1982a, p. 69).

Yet, as Hinde (1982a; Hinde & Stevenson-Hinde, 1991) has made abundantly clear, and as Ainsworth (1984a) has acknowledged, levels of analysis need to be distinguished when terms like 'adaptation' are employed. Although it may be beneficial or adaptive in the mental health sense to develop a secure attachment, it is certainly mistaken to presume from an evolutionary or phylogenetic perspective that a secure attachment is better or more adaptive than an insecure attachment. As Hinde (1982a, pp. 71–72) has noted, 'there is no best mothering (or attachment) style, for different styles are better in different circumstances, and natural selection would act to favor individuals with a range of potential styles from which they select appropriately . . . mothers and babies will be programmed (by evolution) not simply to form one sort of relationship but a range of possible relationships according to circumstances . . . optimal mothering (and attachment) behaviour will differ according to the sex of the infant, its ordinal position in the family, the mother's social status, caregiving contributions from other family members, the state of physical resources, and so on . . . a mother–child relationship which produces successful adults in one situation may not do so in another.' In other words, while it may be the case that securely attached children develop, in contemporary Western society (or perhaps just in middle-class American society), more competently and are more likely to grow up into happy, mentally healthy adults in this ecology, it is completely inaccurate to infer from such evidence or otherwise to presume that, on the basis of natural selection theory, one attachment or mothering style is necessarily best.

INDIVIDUAL DIFFERENCES: METHODS OF ASSESSMENT

Initial efforts to assess attachment security focused upon infants and then young children. As attachment researchers have become more interested in the role of attachment across the lifespan, adult assessments have been developed.

Infant/early childhood assessment

The primary method used for assessing attachment security was developed by Ainsworth and Wittig (1969) for studying 12–18 month olds and is called the 'strange situation'. This procedure entails a series of structured observations of parent, child and an unfamiliar female in a laboratory playroom. The central events include two separations of parent from child (via parental leave taking), during one of which the child remains with the stranger and during the second the child is first alone and then briefly with the stranger prior to the return of the parent. It is the purpose of this 20-minute procedure to activate the attachment system by exposing the child to a series of progressive stressors: an unfamiliar place, an unfamiliar person, a parental separation and the experience of being alone.

The behaviour of the parent in the strange situation is purposefully controlled (via directions to her) and it is only the behaviour of the child that is used to make attachment classifications. Before describing the basis for these classifications, several points should be noted. First, it is the assumption of the classification system that what is being evaluated is the child's attachment to his mother and thus the security/insecurity of the relationship *as experienced by the child*. Thus, the strange situation does not provide an evaluation of the mother's bond to the baby nor of the relationship as an entity in and of itself. Further, the child's behaviour in the laboratory is presumed to reflect the quality of the attachment relationship as experienced by the child at the time of testing and thus, as already noted, is subject to change at later testings.

Infants classified as securely attached (pattern B) use the mother as a secure base from which to explore, reduce their exploration and may be distressed in her absence, but greet her positively on her return, and then return to exploration.

Secure infants classified into subcategories B1 and B2 are less distressed by separation than those subcategorized as B3 and B4, and greet the mother following separation by vocalizing, smiling or waving across a distance rather than by immediately seeking physical contact (Fig. 16.2). These secure patterns characterize 66% of infants in normative samples (Van Ijzendoorn & Kroonenberg, 1988).

Until recently, only two patterns of insecurity had been identified using the strange situation, each corresponding to one of the insecure patterns described above. Infants classified as insecure-avoidant (pattern A) explore with little reference to the mother, are minimally distressed by her departure and seem to ignore or avoid her on return. Infants classified as insecure-ambivalent/resistant (pattern C) fail to move away from the mother and explore minimally. These infants are highly distressed by separations and are difficult to settle on reunions. In normative samples this pattern characterizes 14% of babies, whereas the insecure-avoidant pattern is found about 20% of the time (Van Ijzendoorn & Kroonenberg, 1988).

As a result of recent research on clinical populations, a fourth pattern has been identified, known as insecure-disorganized (pattern D) (Main & Solomon, 1986). The development of this classification was precipitated by findings that a small number of cases could not be classified confidently into the other three categories; that in the three-classification system many children with known histories of abuse and neglect received classifications of B; and in some clinical samples infants were showing features of both avoidant and resistant

attachment (Van Ijzendoorn *et al.*, in press). The salient feature of infants classified as disorganized is that they appear to lack a coherent strategy for managing exploration and attachment. In addition, they engage in odd behaviours (e.g. repetitive rocking, covering face with hands, turning in circles) that are inexplicable except in the context of fear or confusion in the presence of the mother.

It must be noted that the boundaries of the D pattern are still being developed and that there are ongoing attempts to ensure that this category does not become a miscellaneous classification for children not readily fitting into the other groups (Main & Solomon, 1990). Unlike the three original categories, this category has yet to be validated by home observation data, though there is increasing evidence that children placed in this group (or their parents) are likely to have experienced attachment-related trauma (Carlson *et al.*, 1989; Main & Hesse, 1990).

The strange situation has been subject to a variety of criticisms. Above all else, its artificiality and presumed ecological invalidity have been stressed by critics of the methodology. A point often not appreciated, however, is that the method, just like a cardiovascular stress test, is not intended to reflect the everyday experiences of a child, but rather is designed to stress the attachment system and thereby evoke attachment behaviour. It seems to us, then, that the critical issue is not its face validity, but whether differences discerned using it relate to external correlates (i.e. antecedents and sequelae) in ways that are consistent with theoretical expectations (i.e. construct validity).

Questions have also been raised about the cross-

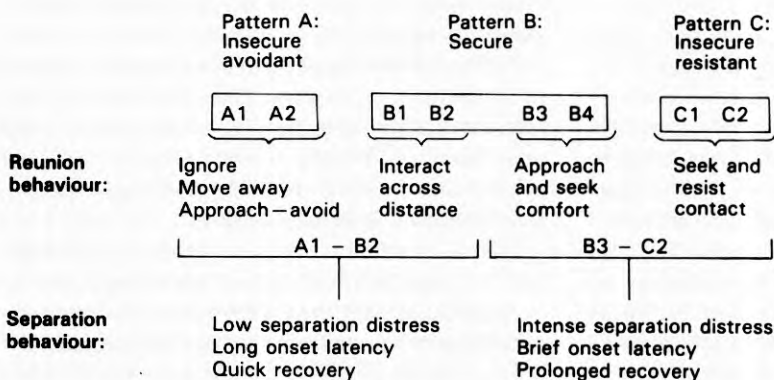


Fig. 16.2 Attachment classification system. See text for details.

cultural validity of the strange situation on the basis of studies showing that, relative to North American comparisons, a disproportionate number of infant-mother attachments are classified as insecure-avoidant in north Germany (Grossmann *et al.*, 1981) and insecure-resistant in Japan (Miyake *et al.*, 1985) and on Israeli kibbutzim (Sagi *et al.*, 1985). Although the Japanese data do seem to be a function of a methodological artefact, specifically, the fact that the strange situation is not experienced as a moderate stressor but rather an extreme one because infants in this culture are so rarely separated from their mothers, the German and Israeli data seem to reflect the theoretically expected effect of rearing regimen on attachment. After all, not only does there seem to be a 'premature' push towards avoidance-provoking independence in the first year of life in north German culture (Grossmann *et al.*, 1981), but Sagi *et al.* (1991) have shown recently that the elevated incidence of insecure-resistant attachments in Israel is restricted to kibbutzim in which children sleep in children's houses apart from their parents; noteworthy, too, is that it is not unusual for night waking and crying to be ignored or responded to only after much delay in such non-family sleeping arrangements.

Questions have also been raised about whether independent behaviour in the strange situation is mistakenly judged to be evidence of avoidance, especially in the case of infants who experience routine non-maternal care. Clarke-Stewart (1989), Thompson (1988) and others have argued that these children's daily separation experiences lead them to behave more independently in the strange situation because they are less stressed by the separations built into it and that it is such a methodological artefact that causes them to be (erroneously) classified as insecure-avoidant more frequently than children without early and extensive infant day care experience. Not only is it the case that a comprehensive review of relevant studies by Clarke-Stewart and Fein (1983) shows that infant day care experience is *not* related to less (or more) stress in the strange situation (as indexed by distress), but a recent study directly addressing this proposition found no support whatsoever for it (Belsky & Braungart, 1991).

All this is not to say that the strange situation is not without its limits. Coder agreement for classifi-

cations is typically greater than 90%, yet boundary issues remain. Even though the classificatory system has distinct advantages in certain ways (Ainsworth, 1989), there can be advantages to a continuous metric of security-insecurity as well (Waters & Deane, 1985). In addition, as with any measurement, two assessments surely provide more reliable data than one, yet repeated participation in the strange situation within a short time period is not likely to produce valid results (Ainsworth *et al.*, 1978). In order to address these and other issues, Waters and Deane (1985) developed an alternative assessment methodology known as the 'attachment Q sort'. This method, which has been used by mothers and observers (after hours of naturalistic home observations), involves sorting a list of 90-100 descriptive statements selected to capture behaviours central to the attachment, fear and exploratory systems (e.g. actively solicits comforting from adult when distressed, remains fearful of moving toys or animals, bouts of exploration and play away from the adult are brief) in terms of how well they characterize the behaviour of the child when observed in a familiar environment. The resulting distribution of items is then correlated with a 'criterion sort' based upon the averaged responses of a set of experts regarding how a prototypically secure infant would behave. A major methodological contribution of this procedure is that it yields a continuous variable measure of attachment security. Although a number of studies document the validity of the measure when completed by trained personnel after several hours of careful observation (e.g. Vaughn & Waters, 1990) some have questioned the validity of the procedure when employed by mothers themselves because of the high correlation with socially desirable responses (Belsky & Rovine, 1990).

Recently, new procedures have been developed for assessing attachment quality in 3 and 4 year olds (Cassidy & Marvin, 1990) and 5-7 year olds (Main & Cassidy, 1988). Based on their reunion behaviour following laboratory separation from the parent, children are classified into one of four attachment groups. Although the discrete attachment behaviours of young children differ from those shown by infants, the underlying organization of these behaviours in young children is thought to be quite similar to that of infants. Age-appropriate

manifestations of proximity seeking, contact maintaining, avoidance and resistance are organized into patterns of secure, avoidant and ambivalent attachment. In addition, some children (called insecure/disorganized—controlling) show disorganized behaviour similar to that seen in some infants (Main & Solomon, 1986) and/or they have taken control of the relationship. Although research validating these classifications with home observations of child—parent interactions has not yet been conducted, evidence of concurrent and predictive validity has emerged from studies indicating that security is associated with higher self-esteem (Cassidy, 1988), less fearfulness (Stevenson-Hinde & Shouldice, 1991), fewer behaviour problems in girls (Turner, 1991), and lower likelihood of clinical referral (DeMulder & Radke-Yarrow, 1991; Cicchetti & Barnett, 1992; Greenberg *et al.*, 1992) than is insecurity (see also Bretherton *et al.*, 1990; Shouldice & Stevenson-Hinde, 1991).

It must be noted that, for the present, all of these tools are research instruments, not clinical ones. After all, they were developed to study normal developmental processes, not to identify clinical cases. In fact, there is no evidence whatsoever that the strange situation or the Q sort are sufficiently precise to diagnose clinical problems or dictate professional intervention (Belsky & Nezworski, 1988).

Adult assessment

Two general approaches have been developed for assessing adolescent/adult internal working models of attachment. One approach involves a lengthy clinical interview, whereas the second was designed for use in survey research and is thus far less time consuming. The adult attachment interview (AAI) developed by Main and co-workers consists of 18 questions and is structured entirely around the topic of attachment, principally the individual's relationship to the mother and father during childhood (Main & Goldwyn, 1984, *in press*; George *et al.*, 1985;). Interviewees are instructed to describe their relationships with their parents and to provide specific biographical episodes to substantiate global evaluations. Subjects are asked directly about childhood experiences of rejection, being upset, ill and hurt as well as loss, abuse and separations. Subjects are also asked to offer explanations for the parent's

behaviour and to describe the current relationships with their parents and the influence they consider their childhood experiences exerted on their development. The interview is considered not so much to evoke the adult's actual, veridical experiences in childhood but, rather, their reconstructions of the meaning of early experiences. On the basis of this information obtained from the AAI, a specially trained evaluator rates the subject on a series of scales (e.g. role reversal, idealization, preoccupied anger, inability to recall) and then classifies the individual's 'state of mind' regarding attachment.

The secure—autonomous state of mind is reflected in an individual's inclination to value attachment relationships and regard attachment-related experiences as developmentally influential. In the course of the AAI, such persons appear self-reliant, objective and non-defensive. It is noteworthy that persons receiving this classification either convincingly describe a history of emotionally supportive relationship experiences or provide evidence that they have come to terms with a childhood lacking in them, thus permitting a balanced view of relationships.

Adults classified as insecure—dismissing have a tendency to deny negative experiences and emotions or to dismiss their developmental significance. These individuals can remember little and seem unable to re-evoke the feelings associated with the experiences they do recall. Often they offer an idealized picture of parent or parents but, in response to probes eliciting evidence to substantiate generalizations, may recall experiences quite inconsistent with their positive, global appraisals. Insecure—dismissing individuals present themselves as strong, independent people for whom closeness and attachment mean little. The defensive flavour of the detached pattern is reminiscent of the anxious—avoidant infant pattern.

Adults classified as insecure—preoccupied demonstrate a continuing involvement or preoccupation with their parents. They appear confused, incoherent and unobjective regarding relationships and their influences upon them. Anger over the past and present seems not to be resolved but, instead, to be a major organizing theme of their relationships with parents. These individuals seem caught up in their early relationships with little ability to move beyond them.

Perhaps the most intriguing work that has been done with this methodology is that showing a correspondence between maternal state of mind regarding attachment and infant strange situation classifications (autonomous—secure, dismissing—avoidant, preoccupied—resistant) (Grossmann *et al.*, 1988; Main & Goldwyn, 1994; van Ijzendoorn *et al.*, in press), even when AAIs are administered prior to the child's birth (Fonagy *et al.*, 1991). Noteworthy, too, are observational data suggesting that such associations are mediated by the quality of care that mothers provide, as mothers classified secure—autonomous have been observed to provide more sensitive care than mothers classified dismissing or preoccupied (Crowell & Feldman, 1988, 1991; Haft & Slade, 1989; Grossmann *et al.*, 1988).

In addition to Main's interview approach for assessing attachment in adults, far less expensive methods, derived from Main's work, have been developed by social psychologists studying romantic relationships. One assessment involves having respondents endorse one of three paragraphs characterizing their manner of relating to others (e.g. seek closeness versus maintain distance) which parallel strategies children use in the strange situation (Hazan & Shaver, 1987). Another involves subjects responding to a series of sentences taken from these paragraphs using a series of Likert-type scales (Collins & Read, 1990). While it is too soon to evaluate the soundness of these techniques, promising results pertaining to processes of dating and mating have been reported recently (Hazan & Shaver, 1987; Levy & Davis, 1988; Collins & Read, 1990).

It is noteworthy that all these adult assessments of attachment derive from ideas regarding individual differences developed on the basis of research on infants and young children. Given the fact that attachments in adulthood and in infancy are likely to be dramatically different, for example, proximity seeking being more important in infants and confiding more central to adults, it is reasonable to question whether this approach to assessment makes a great deal of sense. Reflection upon this issue highlights the need to distinguish between attachment behaviour and the underlying organization of the attachment system. Even though dramatic differences exist at the level of overt

behaviour, organizational similarities can be discerned amongst children and adults. Common to both the strange situation and the AAI approaches to measurement is the notion, after all, that one can deny, limit or repress the expression of attachment feelings and behaviours (avoidance, dismissing), exaggerate them (resistance, preoccupation) or express them in an open and balanced way involving appropriate dependency and confidence in the partner (secure, autonomous).

INDIVIDUAL DIFFERENCES: EMPIRICAL EVIDENCE

Having considered some of the major theoretical and conceptual issues pertaining to attachment theory and research, a survey is now made of some of the empirical evidence that has been gathered by scientists studying attachment. The focus of this survey is exclusively upon individual differences in attachment security, assessed by means of the measurement tools described in the preceding section. The discussion is organized around the themes of the origins and sequelae of attachment security.

Origins of individual differences in attachment security

Central to Ainsworth's contribution to attachment theory is the notion that the quality of maternal care, particularly the mother's sensitive responsiveness, is the major determinant of variation in attachment security. In this section of the chapter research is considered pertaining to observed maternal behaviour, then research focused upon temperament as an alternative explanation of individual differences in attachment security. Then the evidence is considered from studies of clinical populations, before proceeding to summarize evidence pertaining to non-maternal care.

Maternal behaviour

Certainly consistent with Ainsworth's thesis that the nature of maternal care shapes the security of the infant—mother attachment bond is an abundance of correlational evidence showing that attachment security at age 12–18 months is related

to ratings of sensitivity made in the first year in middle-class American (Ainsworth *et al.*, 1978) and German families (Grossmann *et al.*, 1985), as well as in economically disadvantaged, often single-parent ones (Egeland & Farber, 1984), and to frequency- and rate-based indices of responsiveness to distress (Crockenberg, 1981); moderate, appropriate stimulation (Belsky *et al.*, 1984), interactional synchrony (Isabella *et al.*, 1989; Isabella & Belsky, 1990), and warmth, involvement and responsiveness (Bates *et al.*, 1985). Noteworthy, too, is evidence that insecure-avoidant attachment is correlated with intrusive, excessively stimulating interactional styles of mothering, whereas insecure-resistant attachment is related to an unresponsive, underinvolved approach to caregiving (Belsky *et al.*, 1984; Smith & Pedersen, 1988; Isabella *et al.*, 1989; Lewis & Feiring, 1989; Malatesta *et al.*, 1989).

But perhaps the most important evidence concerning the influence of maternal care in the development of attachment security is to be found in a recent experimental manipulation of the caregiving behaviour of lower class Dutch mothers rearing babies who evinced especially high irritability on two separate neonatal evaluations (Van den Boom, 1990). Home-based intervention efforts to foster maternal sensitivity (operationalized as 'contingent, consistent and appropriate responses to both positive and negative infant signals') between 6 and 8 months resulted not only in a sizeable difference in the observed mothering of randomly assigned experimental and control mothers immediately after the intervention, but dramatically different percentages of 12 month olds classified as secure when seen in the strange situation – in favour of the experimental group (68% versus 28%, $n = 50$ in each group). The high rate of insecurity in the control group, approximating that found in abusive samples (see below), is likely to be a result of the synergistic effect of two risk conditions – economic adversity and infant irritability.

Temperament

Not only these data, but others from this same enquiry, would seem to argue against the claim which receives some correlational support in the

literature that it is infant temperament that is the cause of 'insecurity' as measured in the strange situation (Chess & Thomas, 1982; Kagan, 1982). Contrary to the results of a meta-analysis of temperament-attachment studies which showed that neonatal irritability is weakly, though significantly linked to resistant behaviour and insecure-resistant classifications (Goldsmith & Alansky, 1987), Van den Boom (1990) found that the insecure infants in her control group, all with histories of neonatal irritability, were disproportionately classified as insecure-avoidant rather than insecure-resistant.

This is not to say that there is no temperament contribution to the development of attachment security or to strange situation classifications. Upon finding more early temperament correlates of an A1-B2 versus B3-C2 split of strange situation classifications than of an A versus B versus C (or secure versus insecure) split, Belsky and Rovine (1987) proposed that temperament might not so much determine whether a child is classified as secure or insecure, but rather the manner in which security (B1-B2 versus B3-B4) and insecurity (A versus C) are expressed. Thus, sensitive care to an irritable infant may result in a classification of secure and prone to distress (B3-B4) rather than insecure and prone to distress (C), whereas sensitive care to a non-irritable infant may result in a classification of B1-B2 rather than A. Yet to be clearly distinguished in the research literature, however, are the ways in which security-promoting (or insecurity-promoting) care to one type of infant (e.g. irritable) might differ from that to an infant with a distinctly different temperament.

However intriguing the correlational evidence linking quality of mothering to attachment security, and however impressive the results of Van den Boom's (1990) experimental manipulation of maternal behaviour to test Ainsworth's central theoretical proposition, it would be mistaken to conclude that maternal behaviour explains all the variance in attachment security. What remains unclear, in fact, in light of the modest magnitude of statistically significant correlational findings is whether their modesty is a function of limits of measurement (of mothering and of security) or of actual maternal influence. Additional correlational evidence from clinical samples continues, never-

theless, to point to the importance of both the mother and the care she provides.

Clinical samples

Consider, first, in this regard, the results of a recent analysis of almost 1000 cases obtained from eight studies of child maltreatment (Youngblade & Belsky, 1989). Not only were infants and toddlers with histories of parental maltreatment more than twice as likely as non-maltreated children drawn from similar socioeconomic circumstances to be classified as insecure (65 versus 31%), but there appeared to be some specificity between type of maltreatment and type of insecurity which mirrored results from so-called 'normal' samples: whereas abused children were disproportionately likely to develop insecure-avoidant attachments (recall intrusive-avoidance associations), neglected children were disproportionately likely to develop insecure-resistant attachments (recall unresponsiveness, underinvolved-resistance association). Also intriguing was the fact that maltreated children were more likely than controls to combine patterns of avoidance and resistance and be classified as D.

The second set of data to consider highlighting the role of the mother in the development of attachment security comes from studies of maternal depression. Not only do insecurity rates among infants/toddlers whose mothers suffer from unipolar depression hover around 50% (Radke-Yarrow *et al.*, 1985; Teti *et al.*, 1991), but among mothers suffering from bipolar disorder (Radke-Yarrow *et al.*, 1985) or unipolar depression in the context of severe economic disadvantage (Lyons-Ruth, 1988) it is about 80%. What makes these data particularly notable is that depressed mothers are known to provide care that is often hostile and intrusive, as well as detached and unresponsive (Cohn *et al.*, 1986; Cohn & Tronick, 1988; for review, see Gelfand & Teti, 1990). Such evidence clearly suggests that the mother's psychological well-being may affect the care she provides her child and thus the development of attachment security. Notably consistent with such reasoning are Benn's (1986) data indicating that when an index of psychological well-being is controlled (in a non-clinical sample), pre-existing associations between quality of

maternal care and attachment security are substantially attenuated.

Non-maternal care

Because of the role that lengthy child-parent separations played in the original formulations of attachment theory, concern has been raised often about the consequences of more routine, short-term separations of the kind experienced on a daily basis by children cared for by someone other than a parent when the mother is employed. The initial work addressing this issue focused almost exclusively upon children being cared for in very high quality, university-based centres and generally failed to reveal any consistent association between day care and attachment insecurity (for reviews see Belsky & Steinberg, 1978; Rutter, 1981). To be noted, however, is that this first wave of attachment day care research used as an index of security the extent to which the child became upset upon separation from the parent, even though it was never clear conceptually whether greater or lesser distress should be considered a marker of security (or insecurity).

Recent compilations of the results of (many of the same) studies carried out in the USA of infants experiencing a variety of non-maternal care-giving arrangements (e.g. centres, family day care homes, nanny care) reveal a reliable association between more than 20 hours/week of such care in the first year of life and attachment insecurity. The actual strength of the association is open to question, with Belsky and Rovine (1988), Clarke-Stewart (1989) and Lamb *et al.* (1990) indicating, respectively, that the rate of infant-mother attachment insecurity were 65%, 24% and 83% higher amongst infants with more than 20 hours/week of non-parental care in their first year than for infants with less time (including none at all) in such care. Also noteworthy is that the only two investigations that focus upon attachment to father reveal that sons with more than 35 or more hours per week of such non-maternal care (in the USA) are more likely to develop insecure attachments to their fathers and thus two insecure attachments (one to mother and one to father) than are other boys (Chase-Lansdale & Owen, 1987; Belsky & Rovine, 1988).

A variety of explanations have been offered to

account for such findings. The fact that more than half of the children who experience early and extensive infant day care achieve secure classifications clearly indicates that separation *per se* is not the cause of these elevated rates of insecurity. The fact that the quality of child care in the USA is known to be limited; that toddlers are more likely to develop secure attachments to their caregivers when their caregivers are more sensitive, responsive and available to them (Howes *et al.*, 1988; Goossens & van Ijzendoorn, 1990); and that security of attachment to caregiver is itself related to more competent social functioning, especially in concert with secure attachment to mother (Howes *et al.*, 1988), would clearly seem to implicate the quality of non-maternal care which the child receives. Also to be considered is the quality of care that the child experiences at home when with his parents, especially since extensive time away from the parent may make it more difficult for the parent to provide the kind of care that fosters attachment security. Of course, the pressures that working parents experience when at home with the child may also make the provision of such care more difficult. In all likelihood, future work will reveal that the quality of care provided both by parent and by caregiver(s) will determine the security of the infant-parent attachment relationship.

What also remain unclear at present are the developmental implications of the elevated rates of insecurity observed in the case of children with early and extensive day care experience, at least as provided in the USA. This would seem to be especially so in light of evidence from the USA (Howes *et al.*, 1989), The Netherlands (van Ijzendoorn *et al.*, 1991) and Israel (Oppenheim *et al.*, 1988) showing in the case of children with such early day care experience, that it is security of attachment to caregiver, not to parent, which predicts future social functioning. Might it be that when children's non-parental care is initiated on a full-time or near full-time basis during the period when attachment bonds are first forming that the influence that parents might otherwise have exerted upon the child's future development is transferred to the alternative caregiver? Might this, in fact, explain why parents have been found repeatedly to report that their 3–8 year olds with early and extensive day care experience are less

compliant with their demands than children without such child care histories (for review see Belsky, 1990)?

Conclusion

The evidence reviewed provides repeated indication that the quality of care that mothers and day care workers provide, as well as mothers' own psychological well being, importantly influence the development of infant-caregiver attachment relationships in the opening years of life. Indeed, as severity of threats to maternal well-being and quality and quantity of such maternal care increase, so does the apparent risk of an insecure relationship developing. Recall that while the rate of insecurity hovers around 25–30% in low-risk samples, and increases to 40% (on average) when early and extensive non-maternal care is experienced, for children of clinically depressed mothers the rate of insecurity is approximately 50% — and higher still for manic-depressive mothers or depressed mothers who are severely economically disadvantaged — and 65% for children who are subjected to abuse and neglect. It seems safe to conclude, therefore, that as risks of inadequate and insufficient parenting accumulate (e.g. difficult temperament, maternal depression, marital conflict, poor quality maternal and non-maternal care), so does the likelihood of an insecure attachment (Belsky & Isabella, 1988).

Sequelae of attachment security

Central to attachment theory is the notion that early relationship experiences exert an important influence upon development. Having previously drawn attention to some of the weaknesses of the research that addresses this issue, it is now useful to summarize the evidence collected to date on the sequelae of attachment security, restricting the data to research on children's social development, including behaviour problems. Not only should comments made earlier regarding the boundaries of the attachment construct be kept in mind, as should issues of mechanism and process of influence, but attention also has to be called to the strength of the findings discerned. By no means are

we dealing with a literature in which the statistically significant associations that have been discerned could be called overpowering or even strong. Modest, weak, yet consistent are frequently more appropriate adjectives. What remains unclear at present is whether such limits in the strength of the cross-time associations stem from limits in the measurement of attachment or the outcome to which it has been associated; from the fact that early attachments have only limited effects on later development; or from lawful processes of discontinuity that would attenuate predictions based on earlier attachment assessments.

Social development

In view of the fact that attachment theory is a theory about the characteristics, consequences and determinants of close relationships, it is surprising that efforts to conduct or even review research linking attachment history and social development have not attended to distinctions among the partners whose interactions with children are being studied. We deviate from this approach that essentially treats all social partners as equivalent and make distinctions between three classes of individuals — strangers, familiar others (class-mates, teachers) and persons with whom the child can be presumed to have a 'close' relationship (parent, sibling, friend). Fundamentally, we want to distinguish interactions with strangers that probably involve heritable tendencies concerning sociability (Plomin, 1986) from relationships with partners that probably involve processes of intimacy that we suspect to be far less heritable.

Interactions with unfamiliar children and adults. Whether one considers attachment-related research using unfamiliar children or adults as social partners, the conclusion to be drawn is the same: there is no consistent evidence that children with secure attachment histories are more sociable towards strangers than are age-mates with insecure histories. Although a number of studies present contemporaneous or longitudinal evidence indicating that secure children are more sociable (with adults: Main & Weston, 1981; Plunkett *et al.*, 1988; with children: Pastor, 1981), other research repeatedly fails to replicate such findings (with adults: Lamb

et al., 1982; Frodi, 1983; Thompson & Lamb, 1984; with children: Jacobson & Wille, 1986).

Interactions with class-mates and teachers. More consistency is evident when interactions and relationships with more familiar individuals are the focus of enquiry. The only relevant investigation of teacher-child interactions indicates that preschoolers with secure attachment histories were less emotionally dependent upon their teachers than class-mates with insecure histories, but were more likely to call upon the teacher when the child faced a challenge which he could not manage alone (Sroufe *et al.*, 1983). With respect to peer relations, a number of both contemporaneous and longitudinal correlational studies indicate that children with secure histories score higher on a variety of indices of peer relations during the preschool and elementary school years, including empathy towards peers (Sroufe, 1983); popularity with peers (Sroufe *et al.*, 1983); (lack of) victimization by peers (Troy & Sroufe, 1987); inclusion in group activities (Grossmann *et al.*, 1989); and social pretend and (less) conflict during play (Howes *et al.*, 1990). Apparently, a foundation of a secure attachment history appears to be an asset that a child brings into the classroom (for further evidence, see Waters *et al.*, 1979; Pierrehumbert *et al.*, 1989; Strayer *et al.*, 1989; Cohn, 1990).

Relations with parents, friends and siblings. As relations between child and social partner become closer or more intimate, the 'influence' of attachment security becomes more apparent. Consider first evidence pertaining to the mother-child relationship. Consistent with the notion that early security should foster a continuing positive orientation towards the parent, studies show that children with secure histories are more compliant to maternal directives and more cooperative and responsive in interacting with mother (Joffe, 1981; Londerville & Main, 1981; Main, 1983; Pierrehumbert *et al.*, 1985). In all likelihood, such associations are mediated by continuity in the care-giving environment, as it has been shown repeatedly, too, that mothers of secure infants continue to be more sensitive and supportive as their children develop (Londerville & Main, 1981; Pierrehumbert *et al.*, 1985; Bates *et al.*, 1988; Bus & van Ijzendoorn, 1988).

Although the data base is by no means large, the 'effect' of attachment security is also evident in studies of close peer relationships. Best friend dyads of 4 year olds engage in more harmonious, less controlling and more responsive interaction when age-mates are both secure than when only one is secure (Park & Waters, 1989) and this might in part explain why, among 10 year olds, Grossmann *et al.* (1989) found that those with secure histories were more likely than those with insecure histories to report having one or a few good friends who were trustworthy and reliable. Also noteworthy in this context are Hodges and Tizard's (1989) finding that adolescents who spent their first few years in a residential nursery (due to family problems) that did not promote close, enduring relationships generally failed to develop confiding peer relationships.

When we turn attention to another close peer relationship, that between siblings, we find that older siblings with secure attachments to mother are not only more inclined to comfort a distressed younger sibling (Teti & Ablard, 1989), but also engage in less conflict with their younger sibling during joint play (Volling & Belsky, 1992). Importantly, this latter cross-age prediction obtains over a 4-year period even after contemporaneous and intervening measurements of parent-child relations are controlled.

In sum, there is repeated indication that security provides a foundation upon which subsequent harmonious relations with adults and peers are built. This seems to be true principally when the relationship under study is either a close relationship (with mother, friend or sibling), or when it involves a reasonably familiar social partner (teacher, class-mate) and is least likely to be valid when the child's partner is a strange child or adult. In thinking about the sequelae of attachment security, then, there seems to be a clear need to distinguish intimacy or intimacy-like relations from mere sociability.

Behaviour problems

The connection Bowlby (1945) drew between troublesome family experiences in early childhood and later 'affectionless psychopathy' in his retrospective study of 44 thieves, along with Tizard's subsequent, prospective study indicating that good

quality institutional care in which close, enduring caregiver-child relationships were not encouraged was associated with attention seeking, restlessness, disobedience and unpopularity at age 8 (even when children were adopted into good homes after age 4), raised the prospect of a linkage between attachment insecurity and behaviour problems (Tizard & Tizard, 1971; Tizard & Rees, 1974; Tizard & Hodges, 1978). Certainly consistent with such thinking is evidence that children with insecure attachment histories, relative to those with secure attachments, are less compliant (e.g. Joffe, 1981), less able to control impulses (Easterbrooks & Goldberg, 1987), less able to tolerate frustration (Matas *et al.*, 1978) and experience more conflict and disharmony in relations with peers and parents (Maslin & Bates, 1982; Howes *et al.*, 1990).

As the field of developmental psychopathology developed (Cicchetti, 1984; Sroufe & Rutter, 1984), and as the attachment relationship has come to be conceptualized as a protective factor (if secure) or risk factor (if insecure) (Sroufe, 1988), increased attention has been paid to the attachment-behaviour problem linkage. Even though several investigations have discerned across-time associations between insecure attachment during the infant/toddler years and subsequent problematic behaviour (Lewis *et al.*, 1984; Erickson *et al.*, 1985; Renkin *et al.*, 1989), as well as contemporaneous relations (Turner, 1991), the evidence is by no means uniform (Bates *et al.*, 1985; Bates & Bayles, 1988; Fagot & Kavanaugh, 1990). What seems reasonably clear, though, is that attachment insecurity should not be equated with behaviour problems (Belsky & Nezworski, 1988); that whether or not behaviour problems develop is likely to be a function of other factors and processes that maintain or deflect developmental trajectories; and that additional research is required to determine if antecedent or contemporaneous attachment security plays a truly causal role or, instead, simply correlates with indices of developmental psychopathology via yet to be studied, third variable mechanisms.

Conclusion

There can be little doubt that indices of attachment security in infancy and early childhood (classifi-

cations and Q sorts) are related to a wide variety of developmental 'outcomes'. Even though the data do not by any means chronicle causal processes and are open to a variety of interpretations (effects of early attachment, temperament, continuity in environment), it should be abundantly clear that attachment theory and the measurement of individual differences in attachment security has generated a huge literature with many provocative findings. Many issues remain to be explored and these will be considered briefly in the next and closing section of this chapter.

CONCLUSION: FUTURE DIRECTIONS

It is our opinion that the most pressing agenda for attachment research is to respond to Hinde and Stevenson-Hinde's (1988) well-articulated plea to clarify, especially empirically, Bowlby's seminal notion of the internal working model. As was made clear earlier, this theoretical construct is so broad that, on the one hand, it seems to explain almost too much yet, on the other, it has been described in sufficient detail that it presents a clear direction for future research (e.g. Main *et al.*, 1985). In particular, the tendencies of individuals to selectively attend to, encode and recall interpersonal experiences needs to be studied, as does the influence of these hypothesized internal working model processes on relationship processes. Efforts also need to be undertaken to determine whether, as has been theorized, it is such processes which account for lawful discontinuity in development following what might be regarded as 'corrective emotional experiences'. Is it the case, for example, that changes in working model processes help account for why adults with risky child-rearing histories (e.g. maltreatment, institutionalization) who have experienced supportive close relationships (with friends, spouses, therapists) parent more competently than their counterparts with similar rearing histories who have not had the good fortune to experience such supportive close relationships (Quinton *et al.*, 1984; Egeland *et al.*, 1988)?

A question such as this draws attention to more general lifespan issues that also merit attention. To the extent that attachment processes shape relationship functioning, especially close, intimate relationships, one is forced to wonder about the

degree of influence they exert on friendship formation and mate selection. Work by Kobak and Sceery (1988) indicates that a secure-autonomous state of mind is related to friendship processes among college students, whereas work by Davis and Kirkpatrick (1991) shows that heterosexual pairings among dating couples are by no means random from the standpoint of attachment categories (far more A-C and B-B pairings than A-A or C-C), but these studies only begin to scratch the surface. In particular, the fact that these studies rely upon contemporaneous assessments of attachment security leaves us uninformed about the role of early attachment history. In point of fact, a question of central importance that can only be addressed once children seen early in life are followed into adulthood concerns the relation between childhood evaluations of security and those obtained in adulthood.

One of the most pressing social policy issues among those studying the ageing process concerns the care that adult children provide their ageing parents. It is interesting to observe, as child developmentalists, that most work in this area seems totally to neglect the fact that these parent-child relationships have lengthy histories. As students of attachment theory we are led to wonder how the history of the attachment relationship affects the parent-child relationship when roles are reversed and adult children must become the caretakers or guardians of their elderly parents. Is it the case, for example, that a history of a secure relationship makes for both a readiness and an ability to provide sensitive care to an ageing parent, and for that parent to accept the role of dependent, whereas this is not so in the case of relationships characterized by insecure attachments?

This issue becomes complicated when we realize that the child establishes distinct relationships with each parent and thus that one relationship may have a history of insecurity whereas the other is marked by security. In such cases, how does the adult child behave towards his or her elderly parents? Of course, this issue of multiple relationships raises questions about the integration in the individual's internal working model of various relationship experiences. Whether we consider the internal working model of a child, adolescent or adult, it remains unclear how multiple attachments

shape the individual's development. We need to think here in terms of multiple contemporaneous attachments (e.g. mother and father) as well as multiple attachments across the life course (to mother, to best friend, to mate).

A final issue amongst many that could be raised concerns the concordance of attachments to parent by siblings. Although evidence reviewed earlier indicates that maternal state of mind regarding attachment is systematically and reliably related to infant-mother attachment, even research documenting significant concordance across siblings in their attachments to their mothers (Ward *et al.*, 1988) reveals substantial inconsistency. Similarly, evidence from The Netherlands indicates that toddlers often vary in the security of their attachments to the very same caregiver in day care (Goosens & van Ijzendoorn, 1990). Such data clearly indicate that presumably stable features of the caregiver (e.g. state of mind regarding attachment, personality) are not the sole determinants of infant-adult attachment security, yet it remains unclear how to explain such 'inconsistent' relationships.

While space precludes us from raising more issues or discussing in depth even those just raised, it is clear that Bowlby's theory of attachment has spawned a very generative research paradigm. We suspect that as evidence accumulates, as it has over the past decade, showing that attachment relevant measurements relate to a host of antecedent factors and presumed sequelae in theoretically meaningful ways, efforts to apply attachment ideas to new domains of enquiry (e.g. romantic relationships, ageing processes) will grow while efforts to illuminate issues of process, mechanism and boundaries will themselves develop.

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