

An Ethological Approach to Personality Development

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This is a historical account of the partnership in which Bowlby and Ainsworth participated to develop attachment theory and research. Beginning with their separate approaches to understanding personality development before Ainsworth joined Bowlby's research team at the Tavistock Clinic in London for 4 years, it describes the origins of the ethological approach that they adopted. After Ainsworth left London, her research in Uganda and in Baltimore lent empirical support to Bowlby's theoretical constructions. The article shows how their contributions to attachment theory and research interdigitated in a partnership that endured for 40 years across time and distance.

The distinguishing characteristic of the theory of attachment that we have jointly developed is that it is an ethological approach to personality development. We have had a long and happy partnership in pursuing this approach. In this article we wish to give a brief historical account of the initially separate but compatible approaches that eventually merged in the partnership, and how our contributions have intertwined in the course of developing an ethologically oriented theory of attachment and a body of research that has both stemmed from the theory and served to extend and elaborate it.

Before 1950

Even before beginning graduate training, each of us became keenly interested in personality development and the key role played in it by the early interaction between children and parents. In Bowlby's case this was kindled by volunteer work in a residential school for maladjusted children, which followed his undergraduate studies in medicine at Cambridge University. Two children especially im-

pressed him. One was an isolated, affectionless adolescent who had never experienced a stable relationship with a mother figure, and the other was an anxious child who followed Bowlby around like a shadow. Largely because of these two children, Bowlby resolved to continue his medical studies toward a specialty in child psychiatry and psychotherapy, and was accepted as a student for psychoanalytic training. From early in his training he believed that analysts, in their preoccupation with a child's fantasy life, were paying too little attention to actual events in the child's real life. His experience at the London Child Guidance Clinic convinced him of the significant role played by interaction with parents in the development of a child's personality, and of the ways in which this interaction had been influenced by a parent's early experiences with his or her own parents. His first systematic research was begun also at the London Child Guidance Clinic, where he compared 44 juvenile thieves with a matched control group and found that prolonged experiences of mother-child separation or deprivation of maternal

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care were much more common among the thieves than in the control group, and that such experiences were especially linked to children diagnosed as affectionless (Bowlby, 1944).

The outbreak of war in 1939 interrupted Bowlby's career as a child psychiatrist but brought him useful research experience in connection with officer selection and with a new group of congenial associates, some of whom at the end of the war joined together to reorganize the Tavistock Clinic. Soon afterward the clinic became part of the National Health Service, and Bowlby served as full-time consultant psychiatrist and director of the Department for Children and Parents. There he also picked up the threads of his clinical and research interests.

Unfortunately, the Kleinian orientation of several members of the staff made it difficult to use clinic cases for the kind of research Bowlby wanted to undertake. He established a research unit of his own, which began operations in 1948. Convinced of the significance of real-life events on the course of child development, he chose to focus on the effects of early separation from the mother because separation was an event on record, unlike disturbed family interaction, of which, in those days, there were no adequate records.

Members of the research team began two research projects, one retrospective, the other prospective. The retrospective project was a follow-up study of 66 school-age children who had experienced separation from their families in a tuberculosis sanatorium at some time between the ages of one and four years, and who had subsequently returned home. The prospective project was undertaken single-handedly by James Robertson, then a social worker, who had had experience in Anna Freud's wartime nursery. Robertson observed young children's behavior as they underwent separation in three different institutional settings. Where possible, he observed the children's behavior in interaction with parents at home, both prior to the separation and after they were reunited with them. Bowlby himself undertook a third project, in response to a request by the World Health Organization (WHO) to prepare a report on what was known of the fate of children without families. This request led him to read all the available literature on separation and maternal deprivation, and to travel widely to find out

what was being done elsewhere about the care of motherless children. The report was published both by WHO as a monograph entitled *Maternal Care and Mental Health* (Bowlby, 1951) and subsequently in a popular Penguin edition with the title *Child Care and the Growth of Love* (Bowlby & Ainsworth, 1965).

Let us turn now to the beginnings of Ainsworth's career. She entered the honor course in psychology as an undergraduate at the University of Toronto, hoping (as many do) to understand how she had come to be the person she was, and what her parents had to do with it. She was interested in the whole wide range of courses available to her, but in two particularly. One was run as a class experiment by S. N. F. Chant, in which she learned that research is a fascinating pursuit. The other, taught by William E. Blatz, focused on Blatz's newly formulated theory of security as an approach to understanding personality development. After graduation Ainsworth continued on at the University of Toronto as a graduate student, and was delighted when Blatz proposed that she base her dissertation research on his security theory.

Because she carried some highlights of security theory with her into attachment theory, it is appropriate here to say something about it (Blatz, 1966).¹ *Security*, as its Latin root—*sine cura*—would suggest, means "without care" or "without anxiety." According to Blatz, there are several kinds of security, of which the first to develop is what he called *immature dependent security*. Infants, and to a decreasing extent young children, can feel secure only if they can rely on parent figures to take care of them and take responsibility for the consequences of their behavior. Children's appetite for change leads them to be curious about the world around them and to explore it and learn about it. But learning itself involves insecurity. If and when children become uneasy or frightened while exploring, they are nevertheless secure if they can retreat to a parent figure, confident that they will receive comfort and reassurance. Thus the parent's availability provides the child with a secure base from which to explore and learn.

As children gradually gain knowledge about the world and learn skills to cope with it, they can increasingly rely on themselves and thus acquire a gradually increasing basis for *independent security*. By the time of reaching maturity, according to Blatz,

¹ Blatz's security theory was largely embedded in an oral tradition, from which those who listened drew different meanings. Ainsworth has dwelt on those aspects that particularly influenced her at the time. Blatz's own 1966 account contained much that is at variance with what Ainsworth carried into attachment theory.

a person should be fully emancipated from parents. Blatz viewed any substantial continuation of dependence on them to be undesirable. But one cannot be secure solely on the basis of one's independent knowledge and skills. To be secure, a person needs to supplement with *mature dependent security* whatever degree of independent security he or she has managed to achieve. Blatz thought of this as occurring in a mutually contributing, give-and-take relationship with another of one's own generation—a relationship in which each partner, on the basis of his or her knowledge and skills, can provide a secure base to the other. Blatz also acknowledged that defense mechanisms (he called them *deputy agents*) could provide a temporary kind of security, but did not themselves deal with the source of the insecurity—like treating a toothache with an analgesic.

For her dissertation, Ainsworth (then Salter, 1940) constructed two self-report, paper-pencil scales intended to assess the degree to which a person was secure rather than insecure. The first scale concerned relations with parents, and the second relations with friends. Together these scales were intended to indicate the extent to which the person's security rested on immature dependence on parents, independence, mature dependent relations with age peers, or the pseudosecurity of defense mechanisms. Individual differences were identified in terms of patterns of scores—a classificatory type of assessment for which she found much later use. The subjects were third-year university students, for each of whom an autobiography was available as a validity check.

To anticipate her later evaluation in the light of further experience, Ainsworth came to believe that Blatz's security theory did not deal adequately with defensive processes. Rejecting Freud's theory of unconscious processes, Blatz held that only conscious processes were of any significance in personality development. This was one aspect of his theory that Ainsworth did not carry forward. Furthermore, it became clear to her that with the self-report paper-pencil method of appraisal it is well-nigh impossible to assess accurately how much defensive maneuvers have inflated security scores. However, the general trends in her dissertation findings gave support to security theory as formulated at the time, and sustained her enthusiasm for it.

Upon completing her degree in 1939, Ainsworth hoped to continue security research with Blatz, and sought and obtained an appointment to the faculty. Their research plan was interrupted by the outbreak of war three months later. Blatz and most of the

other faculty of the department soon departed for war-related jobs. Ainsworth continued teaching until 1942, but then joined the newly established Canadian Women's Army Corps, where she was assigned to personnel selection. After V-E Day, she spent a year as Superintendent of Women's Rehabilitation in the Department of Veterans' Affairs. In 1946 she happily returned to the University of Toronto as an assistant professor of psychology.

Through her war work she had developed an interest in clinical assessment, and she chose this as her area of academic specialization. She focused on projective techniques, especially the Rorschach, which she learned through workshops directed by Bruno Klopfer. This led to coauthorship of a book on the Rorschach technique (Klopfer, Ainsworth, Klopfer, & Holt, 1954). She gained practical experience in clinical assessment as a volunteer in a veterans' hospital, and as planned earlier, she codirected research with Blatz into further assessments of security.

In 1950 she left the University of Toronto, having married Leonard Ainsworth, a member of the security research team who had been admitted for PhD training at the University of London. Jobless, she was guided by Edith Mercer, a friend she had met during the war years, to an advertisement in the *Times Educational Supplement*. This sought a developmental researcher, proficient in projective techniques, for a project at the Tavistock Clinic investigating the effect on personality development of separation from the mother in early childhood. She got the job—and it transformed her research career, while at the same time incorporating some of its earlier threads.

1950 to 1954

Bowlby had just completed his report for the WHO when Ainsworth joined his research team. She was put to work reading the literature he had incorporated into the report and, like Bowlby, was impressed by the evidence of the adverse effects on development attributable to the lack of interaction with a mother figure when infants and young children spent prolonged periods in impersonal institutional care. She also joined in the team's analysis of the data yielded by the other two projects. It was clear that the richer yield came from the prospective study. Direct observation in the child's real-life environment showed how a young child passed from initial distressed protest upon being separated from his mother, to despair, and then finally to detachment, especially if the separation exceeded a week

or so. Upon reunion it was clear that the child's tie to its mother had not disappeared, but that it had become anxious. In cases in which detachment lasted beyond separation and initial reunion a continuation of the bond could be inferred, even though it was masked by defensive processes (Bowlby, 1953; Robertson & Bowlby, 1952). A classificatory analysis of the social worker's interviews of the sanatorium follow-up cases confirmed that persistent insecurity of child-mother attachment endured for some years after long, institutional separation, with very few having regained a secure attachment—but indeed few having continued in a condition of affectionless detachment (Bowlby, Ainsworth, Boston, & Rosenbluth, 1956).

During this period Jimmy Robertson (1952) made his film *A Two-Year-Old Goes to Hospital*, as an illustration of the distress caused even by a short separation of several days. This film had immediate impact and Jimmy increasingly turned from research activities toward impressing the public with the urgent need for improvements in the way that young children were cared for while separated from their families. Although Bowlby strongly supported the reforms that followed Jimmy's efforts, he refused to be drawn away from an emphasis on research and theory. He and Ainsworth were both concerned with the multiplicity of the variables that influence the effect of separation, and published a monograph discussing how they need to be considered in planning strategies in separation research (Ainsworth & Bowlby, 1953).

Bowlby, meanwhile, had begun a search for an adequate explanation of the empirical findings, having found none in current psychoanalytic theories to account for young children's responses to separation and reunion, or indeed how the tie to the mother develops. At this point Konrad Lorenz's work on imprinting became available in translation. Sensing its possible relevance to his problem and encouraged by Julian Huxley, Bowlby began delving into the ethological literature. He found the descriptions of separation distress and proximity seeking of precocial birds, who had become imprinted on the mother, strikingly similar to those of young children. He was also struck by the evidence that a strong social bond can be formed that is not based on oral gratification. Furthermore he was impressed with the fact that ethological research began with field observations of the animal in its natural environment, a starting point analogous to that of a clinician. His ethological reading led him to evolutionary biology, and also to systems theory.

During the early 1950s Bowlby was also deeply influenced by his membership in an international and interdisciplinary study group on the psychobiology of the child convened by the World Health Organization, which met annually. Among the members were Piaget, Lorenz, and Margaret Mead, and among guest speakers were Julian Huxley, von Bertalanffy, and Erik Erikson. Bowlby reported on these meetings and the plethora of new ideas he was entertaining at meetings of the research team, but no one took time then to dig into these fields themselves.

In the autumn of 1953 Ainsworth's time at the Tavistock Clinic was drawing to a close, her husband having completed his doctoral work. She had become fascinated with the issues Bowlby's research team had been exploring. She resolved that wherever she went next she would undertake research into what goes on between an infant and its mother that accounts for the formation of its strong bond to her, and the absence or the interruption of which can have such an adverse effect on personality development. She also resolved to base her study on direct observations of infants and mothers in the context of home and family. The first opportunity came at the East African Institute of Social Research in Kampala, Uganda, where her husband obtained a research appointment beginning early in 1954.

Her link with Bowlby and his research team continued for a while after arriving in Kampala. In particular, she remembers a document that he circulated that resulted from his theoretical explorations and foreshadowed a series of publications of his new ethologically based theory of attachment. She read it with great interest, but suggested that his new theory needed to be tested empirically. And, in effect, that is what she has spent the rest of her research career attempting to provide—beginning with a project observing Ganda babies and their mothers in their village homes, with the support of the East African Institute of Social Research.

1954 to 1963

Meanwhile, Bowlby continued his theory-oriented explorations of the relevant literature in ethology, evolution theory, systems theory, and cognitive psychology, as well as rereading psychoanalytic literature pertinent to his theme. His guide to ethology was Robert Hinde, who began to attend seminars at the Tavistock Institute in 1954. They had a profound influence on each other. Bowlby was drawn further into the animal research literature, notably including Harlow's work with infant monkeys, which supported his conviction that it is proximity

to and close bodily contact with a mother figure that cements the infant's attachment rather than the provision of food. On the other hand, the connection with Bowlby led Hinde to study both the interaction of infant rhesus monkeys with their mothers and the effects of mother-infant separation; his findings lent experimental support to Bowlby's position. Although much influenced by the ethologists' observations of other species, Bowlby remained a clinician, continuing to see children and families and to practice individual and family psychotherapy. Moreover, for 20 years he ran a mother's group in a well-baby clinic, learning much from his informal observations of mother-child interaction there, and from the reports of mothers about their children's behavior.

Several classic papers emerged from this theoretical ferment, in each of which his new ethological approach was contrasted with then current psychoanalytic theories: first, "The Nature of the Child's Tie to His Mother" (Bowlby, 1958), then in rapid succession two papers on separation anxiety (Bowlby, 1960b, 1961b), and three on grief and mourning (Bowlby, 1960a, 1961a, 1963). In the first paper he proposed that a baby's attachment came about through a repertoire of genetically based behaviors that matured at various times from birth to several months of age, and became focused on the principal caregiver, usually the mother. This repertoire included crying, sucking, smiling, clinging, and following—of which he considered the latter two the most central. He also discussed how these behaviors were activated and terminated, at first independently before an attachment was formed, but afterward as organized together toward the attachment figure. Finally, he emphasized the active nature of attachment behavior, contrasting it with the passive conception of dependence. Whereas in traditional theory, dependence is considered inevitable in infancy, regressive and undesirable in later years, and having no biological value, he conceived of attachment behavior as a major component of human behavioral equipment, on a par with eating and sexual behavior, and as having protection as its biological function, not only in childhood but throughout life. Its presence in humans, as in many other species, could be understood in terms of evolution theory.

The papers on separation anxiety were based partly on research by a new member of the team, Christoph Heinicke (e. g. , Heinicke, 1956; Heinicke & Westheimer, 1966), but chiefly on Robertson's observations, which were discussed earlier. Bowlby reviewed six psychoanalytic explanations of separation anxiety, but rejected them in favor of his own

hypothesis. He believed that separation anxiety occurs when attachment behavior is activated by the absence of the attachment figure, but cannot be terminated. It differs from fright, which is aroused by some alarming or noxious feature of the environment and activates escape responses. However, fright also activates attachment behavior, so that the baby not only tries to escape from the frightening stimulus but also tries to reach a haven of safety—the attachment figure. Later in infancy, the baby is capable of expectant anxiety in situations that seem likely to be noxious or in which the attachment figure is likely to become unavailable. He emphasized that only a specific figure, usually the mother figure, could terminate attachment behavior completely once it had been intensely activated. He went on to point out that hostility toward the mother is likely to occur when attachment behavior is frustrated, as it is when the child is separated from her, rejected by her, or when she gives major attention to someone else. When such circumstances are frequent or prolonged, primitive defensive processes may be activated, with the result that the child may appear to be indifferent to its mother (as in the detachment attributable to separation) or may be erroneously viewed as healthily independent.

Whereas separation anxiety dominates the protest phase of response to separation, with its heightened but frustrated attachment behavior mingled with anger, grief and mourning dominate the despair phase, as the frustration of separation is prolonged. Bowlby disagreed with the psychoanalytic theorists who held that infants and young children are incapable of mourning and experiencing grief, and also with those who, like Melanie Klein, believed that the loss of the breast at weaning is the greatest loss in infancy. In his papers on grief and mourning he pointed to the similarities between adults and young children in their responses to loss of a loved one: thoughts and behavior expressing longing for the loved one, hostility, appeals for help, despair, and finally reorganization. Many fellow psychoanalysts have vigorously rejected his views on grief and mourning, as indeed they have protested his ethological approach to the child's tie to the mother and his interpretation of separation anxiety. Having been trained in another theoretical paradigm, they have found it difficult to break out of it enough to entertain a new way of viewing old problems.

Meanwhile, in Uganda, Ainsworth had begun her study of Ganda babies. She assembled a sample of 28 unweaned babies and their mothers from several villages near Kampala and, with a splendid in-

terpreter-assistant, visited their homes every two weeks over a period of nine months. They interviewed the mother about her infant-care practices and about the infant's development, and observed their behavior in interaction, and that of the rest of the household. What she saw did not support the Freudian notion of a passive, recipient, narcissistic infant in the oral phase. Rather, she was impressed by the babies' active search for contact with the mother when they were alarmed or hurt, when she moved away or left even briefly, and when they were hungry—and even then she was struck by their initiative in seeking the breast and managing the feeding. There was impressive evidence of the use of the mother as a secure base from which to explore the world and as a haven of safety. She observed the very beginnings of the infant's formation of attachment to the mother in differential termination of crying, and differential smiling and vocalization. Indications that an attachment had clearly been formed were distress and following when separation occurred or threatened, and forms of greeting when mother returned from an absence.

She divided the babies into three groups: securely attached, insecurely attached, and nonattached. Insecurely attached babies cried a lot even when the mother was present, whereas securely attached babies cried little unless mothers were absent or seemed about to leave. Nonattached babies were left alone for long periods by unresponsive mothers but, because they were the youngest in the sample, Ainsworth now believes that they may merely have been delayed in developing attachment. She devised several rather crude scales for rating maternal behavior, of which three significantly differentiated the mothers of secure babies from the others. In retrospect she sees how all three reflected some facet of mother's accessibility and responsiveness to infant behavioral signals. At the time she was pleased that her data meshed with what she had learned about Bowlby's new attachment theory, and also with aspects of Blatz's security theory. However, it was not for some years, after having both begun a second longitudinal study and followed later developments of Bowlby's attachment theory, that the full findings of the Ganda study were published (Ainsworth, 1967).

The Ainsworths left Uganda late in the summer of 1955 and went to Baltimore, where Leonard had found a position. Early in 1956, Mary asked Wendell Garner, then chairman of the Department of Psychology at Johns Hopkins University, about job possibilities in Baltimore. To her surprise and

delight he patched together a job for her there as a clinical psychologist, although there was no official vacancy in the department. She was expected to teach the scheduled courses on personality and assessment in this experimental department, and to give to interested students a taste of clinical experience at the Sheppard and Enoch Pratt Hospital, where a part-time appointment for her had been arranged. To supplement her low salary, she began a part-time private practice in diagnostic assessment, mostly with children, aided enormously by her research experience at the Tavistock Clinic.

Ainsworth's desire to begin another longitudinal study of the development of attachment had to be put on hold, but her subsequent work greatly benefited from the clinical experience she obtained meanwhile. She did, however, publish some review papers on maternal deprivation and separation (e.g., Ainsworth, 1962), coauthor with her husband a book on security measurement (Ainsworth & Ainsworth, 1958), and begin work on the data collected in Uganda. In the spring of 1959 John Bowlby visited Baltimore, and she had an opportunity to fill him in on the details of what she was finding in the Ganda data. This served to revive their association, which had lapsed somewhat, and he included her in the Tavistock Mother-Infant Interaction Study Group that had just begun to meet biennially. At the second meeting she gave a preliminary report of her Ganda study (Ainsworth, 1963). The meetings of this interdisciplinary, international group reignited her eagerness to pursue developmental research, and provided a stimulating scientific support network. In 1961 she sought successfully to be released from her clinical role at Johns Hopkins, and to focus on developmental research and teaching. In 1962 she obtained a grant to begin the second longitudinal study that she had so long wanted to do, and in 1963 she was promoted to full professor with tenure.

1963 to 1980

Having hired Barbara Wittig as a research assistant, Ainsworth located a sample of 15 infant-mother pairs through pediatricians in private practice, usually before the baby's birth. Data collection proceeded during 1963 and 1964. Visits were made to the families every 3 weeks from 3 to 54 weeks after the baby's birth. Each visit lasted for approximately 4 hours, resulting in about 72 hours of observation altogether for each dyad. In 1966-1967, with two new assistants (Robert Marvin and George Allyn), 11 more dyads were added to the sample. Direct observation of behavior was supplemented by information yielded in informal conversations with

the mother. Notes made during the visit were later dictated in a narrative account, and then transcribed; these raw data took up two full drawers in a filing cabinet. (Needless to say the data took years to analyze, even with the help of many valued research associates and student assistants.)

The home visitor had been alerted to note infant behaviors that had been earlier identified as attachment behaviors by both Bowlby and Ainsworth, and to pay particular attention to situations in which they were most likely to occur, and to the mother's response to them. Data reduction procedures included event coding, rating, and classification. The data analysis yielded information about both normative development and how individual differences in the security or insecurity of the infants' attachment to their mothers were related to the mothers' behavior.

At the end of the baby's first year, baby and mother were introduced to a 20-minute laboratory situation—the strange situation—a preliminary report of which was made by Ainsworth and Wittig (1969). Although this situation was originally designed for a normative exploration, it turned out to provide a relatively quick method of assessment of infant-mother attachment. This procedure soon became widely used, if not always wisely and well, and has quite overshadowed the findings of the research project that gave rise to it and on which its validity depended. However, the longitudinal home visit data, (which include information about how mother's behavior is linked to the course of infant development) and the strange situation together have yielded important information about the development of attachment in infancy.

The findings of the data analyses of both the strange situation and the home visits were published in a series of articles beginning in 1969 as each analysis was completed. The original research reports were coauthored by the research associate or assistant who was chiefly involved in each piece of data analysis. Ainsworth is deeply indebted to their dedicated and creative contributions.

Highlights of the findings are as follows. Mothers who fairly consistently responded promptly to infant crying early-on had infants who by the end of the first year cried relatively little and were securely attached. Indeed, mothers who were sensitively and appropriately responsive to infant signals in general, including feeding signals, fostered secure infant-mother attachment (Ainsworth & Bell, 1969; Ainsworth, Blehar, Waters, & Wall, 1978; Bell & Ainsworth, 1972). As Bowlby implied from the begin-

ning, close bodily contact with the mother terminates attachment behavior that has been intensely activated. Full-blown crying indicates such intense activation, and indeed our mothers' most usual response to such crying was to pick the baby up (Bell & Ainsworth, 1972). It was not the total amount of time that the baby was held by the mother that promoted secure attachment so much as the contingency of the pick-up with infant signals of desire for contact, and the manner in which the mother then held and handled the baby. Babies who were securely attached not only responded positively to being picked up, being readily comforted if they had been upset, but also they responded positively to being put down, and were likely to turn toward exploration. Timely and appropriate close bodily contact does not "spoil" babies, making them fussy and clingy (Ainsworth, 1979).

About the middle of the first year the babies had clearly become attached, and one of the signs of this was that they began to show distress when mother left the room (separation anxiety). However, babies whose attachment was secure seemed to build up a working model of mother as being available even though out of sight, and thus came to protest little everyday departures at home less often than did infants who were insecurely attached. On the other hand, they were more likely than insecure babies to greet the mother positively upon reunion, and less likely to greet her grumpily or with a cry (Stayton & Ainsworth, 1973; Stayton, Ainsworth, & Main, 1973). However, if the mother left when the baby was mildly stressed by an unfamiliar situation, as in the strange situation, even a secure child was likely to protest her departure. A useful paradox that emerged was that some infants who were clearly insecure at home, showing frequent separation protest or crying a lot in general, were apparently indifferent to their mothers' departure in the strange situation and avoided them upon reunion. Our interpretation was that under the increased stress of the unfamiliar situation a defensive process is activated, akin to the detachment that develops in young children undergoing major separations (Ainsworth & Bell, 1970; Ainsworth et al. , 1978). Although the avoidant infants had themselves experienced no major separations, their mothers had tended to be rejecting at home during the first year, especially when their babies sought contact, as well as being generally insensitive to infant signals.

In regard to socialization, the findings suggest that infants have a natural behavioral disposition to comply with the wishes of the principal attachment

figure. This disposition emerges most clearly if the attachment figure is sensitively responsive to infant signals, whereas efforts to train and discipline the infant, instead of fostering the wished-for compliance, tend to work against it (Ainsworth, Bell, & Stayton, 1974; Stayton, Hogan, & Ainsworth, 1971).

All of these findings tend to be supportive of attachment theory, but one in particular supports our emphasis on the interaction of behavioral systems. Bretherton and Ainsworth (1974), in an analysis of the responses of 106 one-year-olds to a stranger in a strange situation, showed how such responses involve the interactions between the fear-wariness system and the affiliative (sociable) system activated by the stranger, and also affect attachment behavior directed toward the mother and exploration of the toys. For example, nearly all babies manifested both sociability to the stranger and some degree of fear or wariness—the more of one, the less of the other. Few displayed only fear with no sociability, and very few displayed only sociability and no fear. Publication of these and other findings was interspersed with theoretical expositions (e. g. , Ainsworth, 1969, 1972, 1977, 1979).

Finally, the strange situation procedure highlighted the distinction between secure and insecure infants, and between two groups of insecure infants—avoidant and ambivalent-resistant. Much evidence emerged in our studies relating these differences to maternal caregiving behavior, but these are most comprehensively dealt with by Ainsworth, Bell, and Stayton (1971) and Ainsworth et al. (1978).

In the meantime John Bowlby, whose research group had received generous support from the Ford Foundation, and who from 1963 was himself supported by the United Kingdom Medical Research Council, was working on his *Attachment and Loss* volumes. This trilogy brought to fruition the themes introduced in his earlier papers. It was planned with the whole in mind, and is best viewed as a whole. The first volume, *Attachment*, was published in 1969. From the early 1960s he and Ainsworth were exchanging drafts of all major publications, making comments and suggestions, and were continually taking each other's work into account. Ainsworth's work, including the Ganda study and the early findings of the strange situation, were drawn on in Bowlby's first volume, which included her major contribution of the concept of a secure base and variations in the security of attachment shown by different children. At the same time, this volume had profound influence on her work. In it, Bowlby

elaborated the ethological and evolutionary underpinnings of attachment theory, discarded drive theory, and in its place, developed the concept of behavioral systems as control systems designed to achieve a specified end, activated in certain conditions and terminated in others. Postulating a plurality of behavioral systems, Bowlby described interactions among them, for example the dovetailing of the infant's attachment system and the caregiving system of the adult, and the way the activation of attachment behavior often alternates with that of exploratory behavior. The control systems approach to attachment behavior emphasizes inner organization and the development of working models of attachment figures and the self, which permit the development of the goal-corrected partnership between child and mother during the preschool years.

The second volume of the trilogy dealt with separation (Bowlby, 1973). The first half expanded Bowlby's earlier papers about separation anxiety, and presented a theory of fear that was merely suggested earlier. Of particular interest is the proposal that a child is genetically disposed to respond with fear to certain stimuli, such as sudden movement and sharp changes in the level of light and sound that, although not being dangerous in themselves, are statistically associated with dangerous situations. These natural clues to potential danger, of which one is being alone, activate either escape behavior or attachment behavior, and usually both, and thus promote the individual's survival. In the second half of the volume, Bowlby dealt with anxious attachment, conditions that promote it, and the intimate relationship of anger to attachment-related anxiety. As clinical examples of anxious attachment he considered both "school phobias" of children and the agoraphobia of adults, and stressed cross-generational effects in the etiology of each.

Two very important chapters have too often been overlooked. One dealt with the essential link between secure attachment and the development of healthy self-reliance—of particular interest to Ainsworth because of its roots in the *secure base* concept. The other, entitled "Pathways for the Growth of Personality," based on Waddington's theory of epigenesis, emphasized the constant interaction between genetic and environmental influences in personality development.

The third volume of the trilogy was concerned with loss (Bowlby, 1980). Near the beginning of it he included one of the most basic chapters of the trilogy—entitled "An Information Processing Approach to Defence"—that is as pertinent to the ear-

lier two volumes as it is to the third. Drawing on cognitive psychological concepts and research, he pointed out that much sensory input normally is evaluated quickly and unconsciously in terms of stored knowledge, and then excluded from the highest, conscious level of cognitive processing as a matter of sheer efficiency. Under other circumstances, when accessing stored experience to evaluate current input would occasion significant anxiety, there may be *defensive* exclusion of input before it can proceed to conscious processing. Attachment behavior and associated feelings are especially vulnerable to such exclusion. When the attachment system is intensely activated and is often or for an extended period not terminated, defensive exclusion is likely to occur. This results in the defence manifested by avoidant children and in the detachment attributable to severe separation experiences. Such exclusion may well occur in adults as a response to loss, and accounts for some of the pathological variants of mourning. In addition to defensive processes, this chapter includes a valuable discussion of internal working models of attachment figures and of the self, pointing out that there may be more than one model of each figure and that these may conflict.

In the second section of the volume, which dealt with the mourning of adults, Bowlby drew heavily on the works of Colin Murray Parkes (e. g. , Parkes, 1972), who joined the research team in 1962. It described four phases of mourning: (a) numbing; (b) yearning for the lost figure, and anger; (c) disorganization and despair; and (d) finally, if all goes well, reorganization. Bowlby considered disorders of mourning together with conditions contributing to them. Finally, he examined the connection between loss and depression, with particular attention to the work of Brown and Harris (1978). The last section, which dealt with children's mourning, emphasized both the similarity of the processes involved in children's and adults' responses to loss, and the reasons why children may have particular difficulty in resolving their mourning by successful reorganization of their lives.

1980 to 1990

Bowlby intended his contribution as an up-to-date version of psychoanalytic object-relations theory, compatible with contemporary ethology and evolution theory, supported by research, and helpful to clinicians in understanding and treating child and adult patients. Nevertheless, it was developmental psychologists rather than clinicians who first adopted attachment theory, having found both traditional psychoanalytic and social learning theory to

provide inadequate theoretical and methodological guidelines for research into personality development. Psychotherapists at that time were relatively content with one or another existing version of psychoanalytic theory as a guide, perhaps relying more on technique than theory for their therapeutic successes.

In several articles Bowlby suggested explicit guidelines for treatment that had been implicit in attachment theory (e. g. , Bowlby, 1988b). The therapist begins with an understanding of the patient's current difficulties, especially difficulties in interpersonal relations. He or she then tries to serve as a secure base, helping the patient build up trust enough to be able to explore current relationships, including relations with the therapist. The therapist recognizes that a patient's difficulties are likely to have their origin in real-life experiences, rather than in fantasies. The therapist thus seeks to guide the patient's explorations toward earlier experiences—especially, painful ones with parents—and to expectations about current relationships derived from the internal working models of self and attachment figure that have resulted, and so to consider how these models, perhaps appropriate to the earlier situation, may be giving rise to feelings and actions inappropriate in the present. This review of past experiences is likely to lead to a reevaluation of them, a revision of working models, and gradually, to improved interpersonal relations in the here and now.

A second aspect of Bowlby's effort to draw attachment theory to the attention of clinicians was his acceptance of many invitations to speak at professional meetings throughout the world. A number of the addresses were subsequently published in professional journals or drawn together in collections (e. g. , Bowlby, 1979, 1988a). Now, consequently, the clinical group that he originally wanted to reach undoubtedly outnumbers his devoted group of developmental researchers.

Finally, Bowlby's most recent contribution was a new biography of Charles Darwin (Bowlby, 1990). Long an admirer of Darwin, who esteemed his theory of evolution as a keystone in an ethological approach to personality development, Bowlby turned to applying attachment theory to an understanding of the chronic ill health that plagued Darwin. Darwin's mother had become seriously ill when he was very young, and died when he was eight years old. Bowlby cited evidence to show that Darwin never had been able fully to mourn her death. Bowlby maintained that this left him as an adult sensitized to real or threatened losses of family members, and

accounted for his psychological symptoms in terms of attachment theory (Bowlby, 1990).

Ainsworth in 1975-1976, nearing the completion of the publication of the findings of her Baltimore study, accepted an appointment at the University of Virginia and began work with a new generation of students, and continued her interest (sometimes participation) in the work of former students and colleagues. This subsequent research has substantially extended the field, inspired by the larger vistas opened by the latter two volumes of Bowlby's trilogy. Attachment research, which usually used infant attachment classification as a base line, has been moving increasingly into the preschool years, adolescence, and adulthood. Two sets of researchers should be mentioned especially. Alan Sroufe of the University of Minnesota and his students and colleagues have been undertaking long-term longitudinal follow-ups to ascertain the effect of the security or insecurity of Infant-mother attachment on children's performance of later developmental tasks, and to identify conditions that alter expected performance. Mary Main of the University of California at Berkeley and her students and colleagues have focused on devising new procedures for assessing attachment at later ages—specifically at age six and in adulthood. Her Adult Attachment Interview has proved to be useful with adolescents as well as adults, and promises to be very useful in clinical research. Another extension of attachment research of special interest to clinicians is the application of current techniques to understand the ways in which attachment develops in various at-risk populations.

Thus, current attachment research has made progress in elucidating conditions that affect the extent to which an individual remains on an initial developmental pathway or shifts direction at one or more points in development. It also is yielding support to Bowlby's emphasis on cross-generational effects. Ainsworth's own chief original contribution in recent years has been to extend ethologically oriented attachment theory to cover attachments and affectional bonds other than those between parents and their offspring, in the hope that this can be a theoretical guideline for future research into other interpersonal aspects important in personality development (e. g. , Ainsworth, 1989; in press).

In conclusion, we feel fortunate indeed in the outcome of our partnership in an ethological approach to personality development. At first rejected by theoreticians, clinicians, and researchers alike, the intertwining of an open-ended theory and research both guided by it and enriching it has come to

be viewed by many as fruitful. Focusing on intimate interpersonal relations, attachment theory does not aspire to address all aspects of personality development. However, it is an open-ended theory and, we hope, open enough to be able to comprehend new findings that result from other approaches. From its outset it has been eclectic, drawing on a number of scientific disciplines, including developmental, cognitive, social and personality psychology, systems theory, and various branches of biological science, including genetics. Although, at present, attachment theory leaves open many questions, both theoretical and practical, we are confident that attachment theorists will continue to be alert to new developments, in these and other areas, that will help to provide answers to problems still outstanding.

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