Attachment theory

Attachment theory is a psychological, evolutionary, and ethological theory concerning relationships between humans. The most important tenet of attachment theory is that a young child needs to develop a relationship with at least one primary caregiver for social and emotional development to occur normally. The theory was formulated by psychiatrist and psychoanalyst John Bowlby.[1]

Within attachment theory, infant behaviour associated with attachment is primarily the seeking of proximity to an attachment figure in stressful situations; the caregiver. Infants become attached to adults who are sensitive and responsive in social interactions with
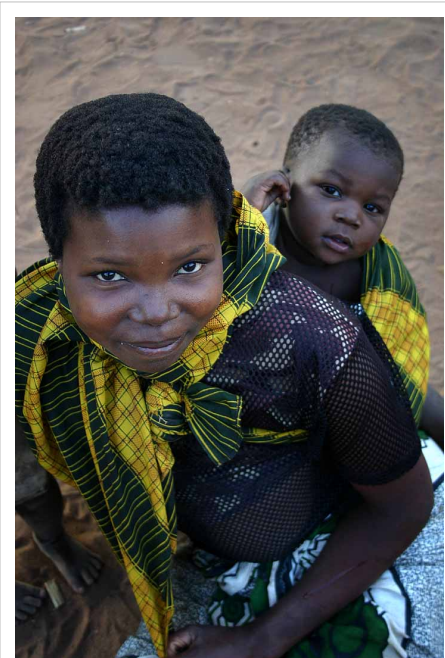

For infants and toddlers, the "set-goal" of the attachment behavioural system is to maintain or achieve proximity to attachment figures, usually the parents.

them, and who remain as consistent caregivers for some months during the period from about six months to two years of age. During the latter part of this period, children begin to use attachment figures (familiar people) as a secure base to explore from and return to. Parental responses lead to the development of patterns of attachment; these, in turn, lead to internal working models which will guide the individual's feelings, thoughts and expectations in later relationships.[2] Separation anxiety or grief following the loss of an attachment figure is considered to be a normal and adaptive response for an attached infant. These behaviours may have evolved because they increase the probability of survival of the child.[3]

Research by developmental psychologist Mary Ainsworth in the 1960s and 70s underpinned the basic concepts, introduced the concept of the "secure base" and developed a theory of a number of attachment patterns in infants: secure attachment, avoidant attachment and anxious attachment.[4] A fourth pattern, disorganized attachment, was identified later. In the 1980s, the theory was extended to attachment in adults.[5] Other interactions may be construed as including components of attachment behaviour; these include peer relationships at all ages, romantic and sexual attraction and responses to the care needs of infants or the sick and elderly.

To formulate a comprehensive theory of the nature of early attachments, Bowlby explored a range of fields, including evolutionary biology, object relations theory (a branch of psychoanalysis), control systems theory, and the fields of ethology and cognitive psychology.[6] After preliminary papers from 1958 onwards, Bowlby published the full theory in the trilogy *Attachment and Loss* (1969–82). In the early days of the theory, academic psychologists criticized Bowlby, and the psychoanalytic community ostracised him for his departure from psychoanalytical tenets;[7] however, attachment theory has since become "the dominant approach to understanding early social development, and has given rise to a great surge of empirical research into the formation of children's close relationships".[8] Later criticisms of attachment theory relate to temperament, the complexity of social relationships, and the limitations of discrete patterns for classifications. Attachment theory has been significantly modified as a result of empirical research, but the concepts have become generally accepted.[7] Attachment theory has formed the basis of new therapies and informed existing ones, and its concepts have been used in the formulation of social and childcare policies to support the early attachment relationships of children.[9]

Attachment

Within attachment theory, *attachment* means an affectional bond or tie between an individual and an attachment figure (usually a caregiver). Such bonds may be reciprocal between two adults, but between a child and a caregiver these bonds are based on the child's need for safety, security and protection, paramount in infancy and childhood. The theory proposes that children attach to carers instinctively,[10] for the purpose of survival and, ultimately, genetic replication.[11] The biological aim is survival and the psychological aim is security.[8] Attachment theory is not an exhaustive description of human relationships, nor is it synonymous with love and affection, although these may indicate that bonds exist. In child-to-adult relationships, the child's tie is called the "attachment" and the caregiver's reciprocal equivalent is referred to as the "care-giving bond".[11]

Infants form attachments to any consistent caregiver who is sensitive and responsive in social interactions with them. The quality of the social engagement is more influential than the amount of time spent. The biological mother is the usual principal attachment figure, but the role can be taken by anyone who consistently behaves in a "mothering" way over a period of time. In attachment theory, this means a set of behaviours that involves engaging in lively social interaction with the infant and responding readily to signals and approaches.[12] Nothing in the theory suggests that fathers are not equally likely to become principal attachment figures if they provide most of the child care and related social interaction.[13]

Although it is usual for the mother to be the primary attachment figure, infants will form attachments to any caregiver who is sensitive and responsive in social interactions with them.

Some infants direct attachment behaviour (proximity seeking) towards more than one attachment figure almost as soon as they start to show discrimination between caregivers; most come to do so during their second year. These figures are arranged hierarchically, with the principal attachment figure at the top.[14] The set-goal of the attachment behavioural system is to maintain a bond with an accessible and available attachment figure.[15] "Alarm" is the term used for activation of the attachment behavioural system caused by fear of danger. "Anxiety" is the anticipation or fear of being cut off from the attachment figure. If the figure is unavailable or unresponsive, separation distress occurs.[16] In infants, physical separation can cause anxiety and anger, followed by sadness and despair. By age three or four, physical separation is no longer such a threat to the child's bond with the attachment figure. Threats to security in older children and adults arise from prolonged absence, breakdowns in communication, emotional unavailability or signs of rejection or abandonment.[15]

Behaviours

The attachment behavioural system serves to maintain or achieve closer proximity to the attachment figure.[17] Pre-attachment behaviours occur in the first six months of life. During the first phase (the first eight weeks), infants smile, babble and cry to attract the attention of caregivers. Although infants of this age learn to discriminate between caregivers, these behaviours are directed at anyone in the vicinity. During the second phase (two to six months), the infant increasingly discriminates between familiar and unfamiliar adults, becoming more responsive towards the caregiver; following and clinging are added to the range of behaviours. Clear-cut attachment develops in the third phase, between the ages of six months and two years. The infant's behaviour towards the caregiver becomes organised on a goal-directed basis to achieve the conditions that make it feel secure.[18] By the end of the first year, the infant is able to display a range of attachment behaviours designed to maintain proximity. These manifest as protesting the caregiver's departure, greeting the caregiver's

Insecure attachment patterns can compromise exploration and the achievement of self-confidence. A securely attached baby is free to concentrate on his environment.

return, clinging when frightened and following when able.[19] With the development of locomotion, the infant begins to use the caregiver or caregivers as a safe base from which to explore.[18] Infant exploration is greater when the caregiver is present because the infant's attachment system is relaxed and it is free to explore. If the caregiver is inaccessible or unresponsive, attachment behaviour is more strongly exhibited.[20] Anxiety, fear, illness and fatigue will cause a child to increase attachment behaviours.[21] After the second year, as the child begins to see the carer as an independent person, a more complex and goal-corrected partnership is formed.[22] Children begin to notice others' goals and feelings and plan their actions accordingly. For example, whereas babies cry because of pain, two-year-olds cry to summon their caregiver, and if that does not work, cry louder, shout or follow.[8]

Tenets

Common human attachment behaviours and emotions are adaptive. Human evolution has involved selection for social behaviours that make individual or group survival more likely. The commonly observed attachment behaviour of toddlers staying near familiar people would have had safety advantages in the environment of early adaptation, and has such advantages today. Bowlby saw the environment of early adaptation as similar to current hunter-gatherer societies.[23] There is a survival advantage in the capacity to sense possibly dangerous conditions such as unfamiliarity, being alone or rapid approach. According to Bowlby, proximity-seeking to the attachment figure in the face of threat is the "set-goal" of the attachment behavioural system.[16]

The attachment system is very robust and young humans form attachments easily, even in far less than ideal circumstances.[24] In spite of this robustness, significant separation from a familiar caregiver—or frequent changes of caregiver that prevent the development of attachment—may result in psychopathology at some point in later life.[24] Infants in their first months have no preference for their biological parents over strangers. Preferences for certain people, plus behaviours which solicit their attention and care, are developed over a considerable period of time.[24] When an infant is upset by separation from their caregiver, this indicates that the bond no longer depends on the presence of the caregiver, but is of an enduring nature.[8]

Early experiences with caregivers gradually give rise to a system of thoughts, memories, beliefs, expectations, emotions and behaviours about the self and others.

Bowlby's original sensitivity period of between six months and two to three years has been modified to a less "all or nothing" approach. There is a sensitive period during which it is highly desirable that selective attachments develop, but the time frame is broader and the effect less fixed and irreversible than first proposed. With further research, authors discussing attachment theory have come to appreciate that social development is affected by later as well as earlier relationships.[7] Early steps in attachment take place most easily if the infant has one caregiver, or the occasional care of a small number of other people.[24] According to Bowlby, almost from the first many children have more than one figure towards whom they direct attachment behaviour. These figures are not treated alike; there is a strong bias for a child to direct attachment behaviour mainly towards one particular person. Bowlby used the term "monotropy" to describe this bias.[25] Researchers and theorists have abandoned this concept insofar as it may be taken to mean that the relationship with the special figure differs *qualitatively* from that of other figures. Rather, current thinking postulates definite hierarchies of relationships.[7] [26]

Early experiences with caregivers gradually give rise to a system of thoughts, memories, beliefs, expectations, emotions, and behaviours about the self and others. This system, called the "internal working model of social relationships", continues to develop with time and experience.[27] Internal models regulate, interpret and predict attachment-related behaviour in the self and the attachment figure. As they develop in line with environmental and developmental changes, they incorporate the capacity to reflect and communicate about past and future attachment relationships.[2] They enable the child to handle new types of social interactions; knowing, for example, that an infant should be treated differently from an older child, or that interactions with teachers and parents share characteristics. This internal working model continues to develop through adulthood, helping cope with friendships, marriage and parenthood, all of which involve different behaviours and feelings.[27] [28] The development of attachment is a transactional process. Specific attachment behaviours begin with predictable, apparently innate, behaviours in infancy. They change with age in ways that are determined partly by experiences and partly by situational factors.[29] As attachment behaviours change with age, they do so in ways shaped by relationships. A child's behaviour when reunited with a caregiver is determined not only by how the caregiver has treated the child before, but on the history of effects the child has had on the caregiver.[30] [31]

Changes in attachment during childhood and adolescence

Age, cognitive growth and continued social experience advance the development and complexity of the internal working model. Attachment-related behaviours lose some characteristics typical of the infant-toddler period and take on age-related tendencies. The preschool period involves the use of negotiation and bargaining.[32] For example, four-year-olds are not distressed by separation if they and their caregiver have already negotiated a shared plan for the separation and reunion.[33]

Ideally, these social skills become incorporated into the internal working model to be used with other children and later with adult peers. As children move into the school years at about six years old, most develop a goal-corrected partnership with parents, in which each partner is willing to compromise in order to maintain a gratifying relationship.[32] By middle childhood, the goal of the attachment behavioural system has changed from proximity to the attachment figure to availability. Generally, a child is content with longer separations, provided contact—or the possibility of physically reuniting, if needed—is available. Attachment behaviours such as clinging and following decline and self-reliance increases.[34] By middle childhood (ages 7–11), there may be a shift towards mutual co-regulation of secure-base contact in which caregiver and child negotiate methods of maintaining communication and supervision as the child moves towards a greater degree of independence.[32]
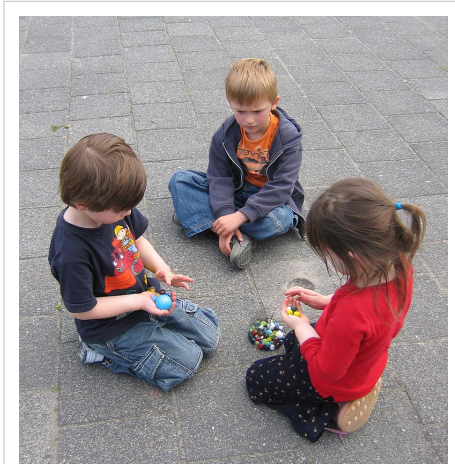
Peers become important in middle childhood and have an influence distinct from that of parents.

In early childhood, parental figures remain the centre of a child's social world, even if they spend substantial periods of time in alternative care. This gradually lessens, particularly during the child's entrance into formal schooling.[34] The attachment models of young children are typically assessed in relation to particular figures, such as parents or other caregivers. There appear to be limitations in their thinking that restrict their ability to integrate relationship experiences into a single general model. Children usually begin to develop a single general model of attachment relationships during adolescence, although this may occur in middle childhood.[34]

Relationships with peers have an influence on the child that is distinct from that of parent-child relationships, though the latter can influence the peer relationships children form.[8] Although peers become important in middle childhood, the evidence suggests peers do not become attachment figures, though children may direct attachment behaviours at peers if parental figures are unavailable. Attachments to peers tend to emerge in adolescence, although parents continue to be attachment figures.[34] With adolescents, the role of the parental figures is to be available when needed while the adolescent makes excursions into the outside world.[35]

Attachment patterns

Much of attachment theory was informed by Mary Ainsworth's innovative methodology and observational studies, particularly those undertaken in Scotland and Uganda. Ainsworth's work expanded the theory's concepts and enabled empirical testing of its tenets.[4] Using Bowlby's early formulation, she conducted observational research on infant-parent pairs (or dyads) during the child's first year, combining extensive home visits with the study of behaviours in particular situations. This early research was published in 1967 in a book titled *Infancy in Uganda*.[4] Ainsworth identified three attachment styles, or patterns, that a child may have with attachment figures: secure, anxious-avoidant (insecure) and anxious-ambivalent or resistant (insecure). She devised a procedure known as the Strange Situation Protocol as the laboratory portion of her larger study, to assess separation and reunion behaviour.[36] This is a standardised research tool used to assess attachment patterns in infants and toddlers. By creating stresses designed to activate attachment behaviour, the procedure reveals how very young children use their caregiver as a source of security.[8] Carer and child are placed in an unfamiliar playroom while a researcher records specific behaviours, observing through a one-way mirror. In eight different episodes, the child experiences separation from/reunion with the carer and the presence of an unfamiliar stranger.[36]

Ainsworth's work in the United States attracted many scholars into the field, inspiring research and challenging the dominance of behaviourism.[37] Further research by Mary Main and colleagues at the University of California, Berkeley identified a fourth attachment pattern, called disorganized/disoriented attachment. The name reflects these

children's lack of a coherent coping strategy.[38]

The type of attachment developed by infants depends on the quality of care they have received.[39] Each of the attachment patterns is associated with certain characteristic patterns of behaviour, as described in the following table:

Child and caregiver behaviour patterns before the age of 18 months[36] [38]

Attachment pattern	Child	Caregiver
Secure	Uses caregiver as a secure base for exploration. Protests caregiver's departure and seeks proximity and is comforted on return, returning to exploration. May be comforted by the stranger but shows clear preference for the caregiver.	Responds appropriately, promptly and consistently to needs.
Avoidant	Little affective sharing in play. Little or no distress on departure, little or no visible response to return, ignoring or turning away with no effort to maintain contact if picked up. Treats the stranger similarly to the caregiver.	Little or no response to distressed child. Discourages crying and encourages independence.
Ambivalent/Resistant	Unable to use caregiver as a secure base, seeking proximity before separation occurs. Distressed on separation with ambivalence, anger, reluctance to warm to caregiver and return to play on return. Preoccupied with caregiver's availability, seeking contact but resisting angrily when it is achieved. Not easily calmed by stranger.	Inconsistent between appropriate and neglectful responses.
Disorganized	Stereotypies on return such as freezing or rocking. Lack of coherent attachment strategy shown by contradictory, disoriented behaviours such as approaching but with the back turned.	Frightened or frightening behaviour, intrusiveness, withdrawal, negativity, role confusion, affective communication errors and maltreatment.

The presence of an attachment is distinct from its quality. Infants form attachments if there is someone to interact with, even if mistreated. Individual differences in the relationships reflect the history of care, as infants begin to predict the behaviour of caregivers through repeated interactions.[40] The focus is the organisation (pattern) rather than quantity of attachment behaviours. Insecure attachment patterns are non-optimal as they can compromise exploration, self-confidence and mastery of the environment. However, insecure patterns are also adaptive, as they are suitable responses to caregiver unresponsiveness. For example, in the avoidant pattern, minimising expressions of attachment even in conditions of mild threat may forestall alienating caregivers who are already rejecting, thus leaving open the possibility of responsiveness should a more serious threat arise.[40]

Around 65% of children in the general population may be classified as having a secure pattern of attachment, with the remaining 35% being divided between the insecure classifications.[41] Recent research has sought to ascertain the extent to which a parent's attachment classification is predictive of their children's classification. Parents' perceptions of their own childhood attachments were found to predict their children's classifications 75% of the time.[42] [43] [44]

Over the short term, the stability of attachment classifications is high, but becomes less so over the long term.[8] It appears that stability of classification is linked to stability in caregiving conditions. Social stressors or negative life events—such as illness, death, abuse or divorce—are associated with instability of attachment patterns from infancy to early adulthood, particularly from secure to insecure.[45] Conversely, these difficulties sometimes reflect particular upheavals in people's lives, which may change. Sometimes, parents' responses change as the child develops, changing classification from insecure to secure. Fundamental changes can and do take place after the critical early period.[46] Physically abused and neglected children are less likely to develop secure attachments, and their insecure classifications tend to persist through the pre-school years. Neglect alone is associated with insecure attachment organisations, and rates of disorganized attachment are markedly elevated in maltreated infants.[39]

This situation is complicated by difficulties in assessing attachment classification in older age groups. The Strange Situation procedure is for ages 12 to 18 months only;[8] adapted versions exist for pre-school children.[47] Techniques have been developed to allow verbal ascertainment of the child's state of mind with respect to attachment. An example is the "stem story", in which a child is given the beginning of a story that raises attachment issues and asked to complete it. For older children, adolescents and adults, semi-structured interviews are used in which the manner of relaying content may be as significant as the content itself.[8] However, there are no substantially validated measures of attachment for middle childhood or early adolescence (approximately 7 to 13 years of age).[47]

Some authors have questioned the idea that a taxonomy of categories representing a qualitative difference in attachment relationships can be developed. Examination of data from 1,139 15-month-olds showed that variation in attachment patterns was continuous rather than grouped.[48] This criticism introduces important questions for attachment typologies and the mechanisms behind apparent types. However, it has relatively little relevance for attachment theory itself, which "neither requires nor predicts discrete patterns of attachment".[49]

Significance of attachment patterns

There is an extensive body of research demonstrating a significant association between attachment organisations and children's functioning across multiple domains.[39] Early insecure attachment does not necessarily predict difficulties, but it is a liability for the child, particularly if similar parental behaviours continue throughout childhood.[46] Compared to that of securely attached children, the adjustment of insecure children in many spheres of life is not as soundly based, putting their future relationships in jeopardy. Although the link is not fully established by research and there are other influences besides attachment, secure infants are more likely to become socially competent than their insecure peers. Relationships formed with peers influence the acquisition of social skills, intellectual development and the formation of social identity. Classification of children's peer status (popular, neglected or rejected) has been found to predict subsequent adjustment.[8] Insecure children, particularly avoidant children, are especially vulnerable to family risk. Their social and behavioural problems increase or decline with deterioration or improvement in parenting. However, an early secure attachment appears to have a lasting protective function.[50] As with attachment to parental figures, subsequent experiences may alter the course of development.[8]

The most concerning pattern is disorganized attachment. About 80% of maltreated infants are likely to be classified as disorganized, as opposed to about 12% found in non-maltreated samples. Only about 15% of maltreated infants are likely to be classified as secure. Children with a disorganized pattern in infancy tend to show markedly disturbed patterns of relationships. Subsequently their relationships with peers can often be characterised by a "fight or flight" pattern of alternate aggression and withdrawal. Affected maltreated children are also more likely to become maltreating parents. A minority of maltreated children do not, instead achieving secure attachments, good relationships with peers and non-abusive parenting styles.[8] The link between insecure attachment, particularly the disorganized classification, and the emergence of childhood psychopathology is well-established, although it is a non-specific risk factor for future problems, not a pathology or a direct cause of pathology in itself.[39] In the classroom, it appears that ambivalent children are at an elevated risk for internalising disorders, and avoidant and disorganized children, for externalising disorders.[50]

One explanation for the effects of early attachment classifications may lie in the internal working model mechanism. Internal models are not just "pictures" but refer to the feelings aroused. They enable a person to anticipate and interpret another's behaviour and plan a response. If an infant experiences their caregiver as a source of security and support, they are more likely to develop a positive self-image and expect positive reactions from others. Conversely, a child from an abusive relationship with the caregiver may internalise a negative self-image and generalise negative expectations into other relationships. The internal working models on which attachment behaviour is based show a degree of continuity and stability. Children are likely to fall into the same categories as their primary caregivers indicating that the caregivers' internal working models affect the way they relate to their child. This effect has been

observed to continue across three generations. Bowlby believed that the earliest models formed were the most likely to persist because they existed in the subconscious. Such models are not, however, impervious to change given further relationship experiences; a minority of children have different attachment classifications with different caregivers.[8]

There is some evidence that gender differences in attachment patterns of adaptive significance begin to emerge in middle childhood. Insecure attachment and early psychosocial stress indicate the presence of environmental risk (for example poverty, mental illness, instability, minority status, violence). This can tend to favour the development of strategies for earlier reproduction. However, different patterns have different adaptive values for males and females. Insecure males tend to adopt avoidant strategies, whereas insecure females tend to adopt anxious/ambivalent strategies, unless they are in a very high risk environment. Adrenarche is proposed as the endocrine mechanism underlying the reorganisation of insecure attachment in middle childhood.[45]

Attachment in adults

Attachment theory was extended to adult romantic relationships in the late 1980s by Cindy Hazan and Phillip Shaver. Four styles of attachment have been identified in adults: secure, anxious-preoccupied, dismissive-avoidant and fearful-avoidant. These roughly correspond to infant classifications: secure, insecure-ambivalent, insecure-avoidant and disorganized/disoriented.

Securely attached adults tend to have positive views of themselves, their partners and their relationships. They feel comfortable with intimacy and independence, balancing the two. Anxious-preoccupied adults seek high levels of intimacy, approval and responsiveness from partners, becoming overly dependent. They tend to be less trusting, have less positive views about themselves and their partners, and may exhibit high levels of emotional expressiveness, worry and impulsiveness in their relationships. Dismissive-avoidant adults desire a high level of independence, often appearing to avoid attachment altogether. They view themselves as self-sufficient, invulnerable to attachment feelings and not needing close relationships. They tend to suppress their feelings, dealing with rejection by distancing themselves from partners of whom they often have a poor opinion. Fearful-avoidant adults have mixed feelings about close relationships, both desiring and feeling uncomfortable with emotional closeness. They tend to mistrust their partners and view themselves as unworthy. Like dismissive-avoidant adults, fearful-avoidant adults tend to seek less intimacy, suppressing their feelings.[5] [51] [52] [53]

Two main aspects of adult attachment have been studied. The organisation and stability of the mental working models that underlie the attachment styles is explored by social psychologists interested in romantic attachment.[54] [55] Developmental psychologists interested in the individual's state of mind with respect to attachment generally explore how attachment functions in relationship dynamics and impacts relationship outcomes. The organisation of mental working models is more stable while the individual's state of mind with respect to attachment fluctuates more. Some authors have suggested that adults do not hold a single set of working models. Instead, on one level they have a set of rules and assumptions about attachment relationships in general. On another level they hold information about specific relationships or relationship events. Information at different levels need not be consistent. Individuals can therefore hold different internal working models for different relationships.[55] [56]
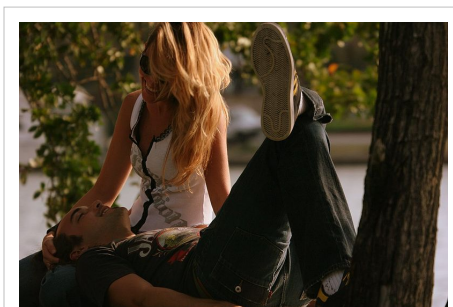
Attachment styles in adult romantic relationships roughly correspond to attachment styles in infants but adults can hold different internal working models for different relationships.

There are a number of different measures of adult attachment, the most common being self report questionnaires and coded interviews based on the Adult Attachment Interview. The various measures were developed primarily as research tools, for different purposes and addressing different domains, for example romantic relationships, parental relationships or peer relationships. Some classify an adult's state of mind with respect to attachment and attachment

patterns by reference to childhood experiences, while others assess relationship behaviours and security regarding parents and peers.[57]

History

Earlier theories

The concept of infants' emotional attachment to caregivers has been known anecdotally for hundreds of years. From the late 19th century onward, psychologists and psychiatrists suggested theories about the existence or nature of early relationships.[58] Early Freudian theory had little to say about a child's relationship with the mother, postulating only that the breast was the love object.[59] Freudians attributed the infant's attempts to stay near the familiar person to motivation learned through feeding and gratification of libidinal drives. In the 1930s, British developmental psychologist Ian Suttie suggested that the child's need for affection was a primary one, not based on hunger or other physical gratifications.[60] William Blatz, a Canadian psychologist and teacher of Mary Ainsworth, also stressed the importance of social relationships for development. Blatz proposed that the need for security was a normal part of personality, as was the use of others as a secure base.[61] Observers from the 1940s onward focused on anxiety displayed by infants and toddlers threatened with separation from a familiar caregiver.[62] [63]

Another theory prevalent at the time of Bowlby's development of attachment theory was "dependency". This proposed that infants were dependent on adult caregivers but outgrew it in the course of early childhood; attachment behaviour in older children would thus be seen as regressive. Attachment theory assumes older children and adults retain attachment behaviour, displaying it in stressful situations. Indeed, a secure attachment is associated with independent exploratory behaviour rather than dependence.[64] Bowlby developed attachment theory as a consequence of his dissatisfaction with existing theories of early relationships.[1]
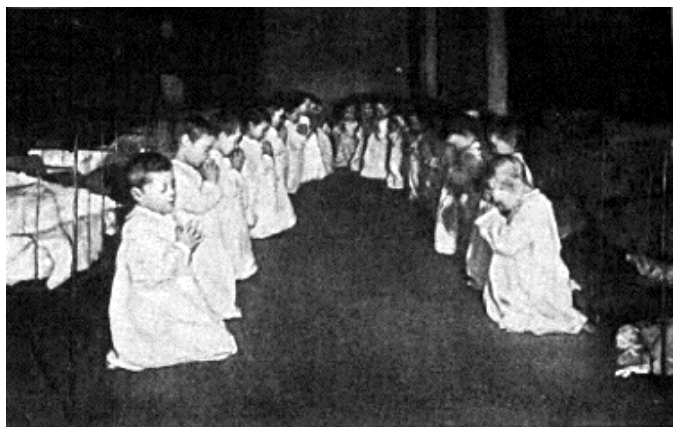
Maternal deprivation

The early thinking of the object relations school of psychoanalysis, particularly Melanie Klein, influenced Bowlby. However, he profoundly disagreed with the prevalent psychoanalytic belief that infants' responses relate to their internal fantasy life rather than real-life events. As Bowlby formulated his concepts, he was influenced by case studies on disturbed and delinquent children, such as those of William Goldfarb published in 1943 and 1945.[65] [66]

Bowlby's contemporary René Spitz observed separated children's grief, proposing that "psychotoxic" results were brought about by inappropriate experiences of early care.[67] [68] A strong influence was the work of social worker and psychoanalyst James Robertson who filmed the effects of separation on children in hospital. He and Bowlby collaborated in making the 1952 documentary film *A Two-Year Old Goes to the Hospital* which was instrumental in a campaign to alter hospital restrictions on visits by parents.[69]

Prayer time in the Five Points House of Industry residential nursery, 1888. The maternal deprivation hypothesis published in 1951 caused a revolution in the use of residential nurseries.

In his 1951 monograph for the World Health Organisation, *Maternal Care and Mental Health*, Bowlby put forward the hypothesis that "the infant and young child should experience a warm, intimate, and continuous relationship with his mother (or permanent mother substitute) in which both find satisfaction and

enjoyment", the lack of which may have significant and irreversible mental health consequences. This was also published as *Child Care and the Growth of Love* for public consumption. The central proposition was influential but highly controversial.[70] At the time there was limited empirical data and no comprehensive theory to account for such a conclusion.[71] Nevertheless, Bowlby's theory sparked considerable interest in the nature of early relationships, giving a strong impetus to, (in the words of Mary Ainsworth), a "great body of research" in an extremely difficult, complex area.[70] Bowlby's work (and Robertson's films) caused a virtual revolution in hospital visiting by parents, hospital provision for children's play, educational and social needs and the use of residential nurseries. Over time, orphanages were abandoned in favour of foster care or family-style homes in most developed countries.[72]

Formulation of the theory

Following the publication of *Maternal Care and Mental Health*, Bowlby sought new understanding from the fields of evolutionary biology, ethology, developmental psychology, cognitive science and control systems theory. He formulated the innovative proposition that mechanisms underlying an infant's emotional tie to the caregiver(s)emerged as a result of evolutionary pressure.[1] He set out to develop a theory of motivation and behaviour control built on science rather than Freud's psychic energy model.[4] Bowlby argued that with attachment theory he had made good the "deficiencies of the data and the lack of theory to link alleged cause and effect" of *Maternal Care and Mental Health*.[73]
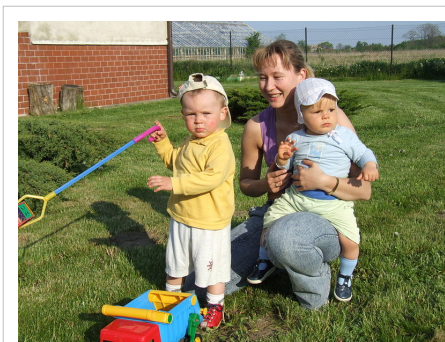
Infant exploration is greater when the caregiver is present; with the caregiver present, the infant's attachment system is relaxed and he is free to explore.

The formal origin of the theory began with the publication of two papers in 1958, the first being Bowlby's "The Nature of the Child's Tie to his Mother", in which the precursory concepts of "attachment" were introduced. The second was Harry Harlow's "The Nature of Love". The latter was based on experiments which showed that infant rhesus monkeys appeared to form an affectional bond with soft, cloth surrogate mothers that offered no food but not with wire surrogate mothers that provided a food source but were less pleasant to touch.[24] [74] [75] Bowlby followed up his first paper with two more; "Separation Anxiety" (1960a), and "Grief and Mourning in Infancy and Early Childhood" (1960b).[76] [77] At the same time, Bowlby's colleague Mary Ainsworth, with Bowlby's ethological theories in mind, was completing her extensive observational studies on the nature of infant attachments in Uganda.[4] Attachment theory was finally presented in 1969 in *Attachment*, the first volume of the *Attachment and Loss* trilogy. The second and third volumes, *Separation: Anxiety and Anger* and *Loss: Sadness and Depression* followed in 1972 and 1980 respectively. *Attachment* was revised in 1982 to incorporate later research.

Attachment theory came at a time when women were asserting their right to equality and independence, giving mothers new cause for anxiety. Attachment theory itself is not gender specific but in Western society it was largely mothers who bore responsibility for early child care. Thus lack of proper nurturing of children was blamed on mothers despite societal organisation that left them overburdened. Opposition to attachment theory coalesced around this issue.[78] Feminists had already criticised the assumption that anatomy is destiny which they saw as implicit in the maternal deprivation hypothesis.[79]

Ethology

Bowlby's attention was first drawn to ethology when he read Konrad Lorenz's 1952 publication in draft form (although Lorenz had published earlier work).[80] Other important influences were ethologists Nikolaas Tinbergen and Robert Hinde.[81] Bowlby subsequently collaborated with Hinde.[82] In 1953 Bowlby stated "the time is ripe for a unification of psychoanalytic concepts with those of ethology, and to pursue the rich vein of research which this union suggests".[83] Konrad Lorenz had examined the phenomenon of "imprinting", a behaviour characteristic of some birds and mammals which involves rapid learning of recognition by the young, of a conspecific or comparable object. After recognition comes a tendency to follow.

The learning is possible only within a limited age range known as a critical period. Bowlby's concepts included the idea that attachment involved learning from experience during a limited age period, influenced by adult behaviour. He did not apply the imprinting concept in its entirety to human attachment. However, he considered that attachment behaviour was best explained as instinctive, combined with the effect of experience, stressing the readiness the child brings to social interactions.[84] Over time it became apparent there were more differences than similarities between attachment theory and imprinting so the analogy was dropped.[7]

This bottle-fed young moose has developed an attachment to its carer.

Ethologists expressed concern about the adequacy of some research on which attachment theory was based, particularly the generalisation to humans from animal studies.[85] [86] Schur, discussing Bowlby's use of ethological concepts (pre-1960) commented that concepts used in attachment theory had not kept up with changes in ethology itself.[87] Ethologists and others writing in the 1960s and 1970s questioned and expanded the types of behaviour used as indications of attachment.[88] Observational studies of young children in natural settings provided other behaviours that might indicate attachment; for example, staying within a predictable distance of the mother without effort on her part and picking up small objects, bringing them to the mother but not to others.[89] Although ethologists tended to be in agreement with Bowlby, they pressed for more data, objecting to psychologists writing as if there was an "entity which is 'attachment', existing over and above the observable measures."[90] Robert Hinde considered "attachment behaviour system" to be an appropriate term which did not offer the same problems "because it refers to postulated control systems that determine the relations between different kinds of behaviour."[91]

Psychoanalysis

Psychoanalytic concepts influenced Bowlby's view of attachment, in particular, the observations by Anna Freud and Dorothy Burlingham of young children separated from familiar caregivers during World War II.[92] However, Bowlby rejected psychoanalytical explanations for early infant bonds including "drive theory" in which the motivation for attachment derives from gratification of hunger and libidinal drives. He called this the "cupboard-love" theory of relationships. In his view it failed to see attachment as a psychological bond in its own right rather than an instinct derived from feeding or sexuality.[93] Based on ideas of primary attachment and neo-Darwinism, Bowlby identified what he saw as fundamental flaws in psychoanalysis. Firstly the overemphasis of internal dangers rather than external threat. Secondly the view of the

Evacuation of smiling Japanese school children in World War II from the book *Road to Catastrophe*

development of personality via linear "phases" with "regression" to fixed points accounting for psychological

distress. Instead he posited that several lines of development were possible, the outcome of which depended on the interaction between the organism and the environment. In attachment this would mean that although a developing child has a propensity to form attachments, the nature of those attachments depends on the environment to which the child is exposed.[94]

From early in the development of attachment theory there was criticism of the theory's lack of congruence with various branches of psychoanalysis. Bowlby's decisions left him open to criticism from well-established thinkers working on similar problems.[95] [96] [97] Bowlby was effectively ostracized from the psychoanalytic community.[7]

Internal working model

Bowlby adopted the important concept of the internal working model of social relationships from the work of the philosopher Kenneth Craik. Craik had noted the adaptiveness of the ability of thought to predict events. He stressed the survival value of and natural selection for this ability. According to Craik, prediction occurs when a "small-scale model" consisting of brain events is used to represent not only the external environment, but the individual's own possible actions. This model allows a person to try out alternatives mentally, using knowledge of the past in responding to the present and future. At about the same time Bowlby was applying Craik's ideas to attachment, other psychologists were applying these concepts to adult perception and cognition.[98]

Cybernetics

The theory of control systems (cybernetics), developing during the 1930s and '40s, influenced Bowlby's thinking.[99] The young child's need for proximity to the attachment figure was seen as balancing homeostatically with the need for exploration. (Bowlby compared this process to physiological homeostasis whereby, for example, blood pressure is kept within limits). The actual distance maintained by the child would vary as the balance of needs changed. For example, the approach of a stranger, or an injury, would cause the child exploring at a distance to seek proximity. The child's goal is not an object (the caregiver) but a state; maintenance of the desired distance from the caregiver depending on circumstances.[1]

Cognitive development

Bowlby's reliance on Piaget's theory of cognitive development gave rise to questions about object permanence (the ability to remember an object that is temporarily absent) in early attachment behaviours. An infant's ability to discriminate strangers and react to the mother's absence seemed to occur months earlier than Piaget suggested would be cognitively possible.[100] More recently, it has been noted that the understanding of mental representation has advanced so much since Bowlby's day that present views can be more specific than those of Bowlby's time.[101]

Behaviourism

In 1969, Gerwitz discussed how mother and child could provide each other with positive reinforcement experiences through their mutual attention, thereby learning to stay close together. This explanation would make it unnecessary to posit innate human characteristics fostering attachment.[102] Learning theory, (behaviorism), saw attachment as a remnant of dependency with the quality of attachment being merely a response to the caregiver's cues. Behaviourists saw behaviours like crying as a random activity meaning nothing until reinforced by a caregiver's response. To behaviourists, frequent responses would result in more crying. To attachment theorists, crying is an inborn attachment behaviour to which the caregiver must respond if the infant is to develop emotional security. Conscientious responses produce security which enhances autonomy and results in less crying. Ainsworth's research in Baltimore supported the attachment theorists' view.[103]

Behaviourists generally disagree with this interpretation. Though they use a different analysis scale, they maintain that behaviours like separation protest in infants result mainly from operant learning experiences. When a mother is instructed to ignore crying and respond only to play behaviour, the baby ceases to protest and engages in play behaviour. The "separation anxiety" resulting from such interactions is seen as learned behaviour, resulting from

misplaced contingencies. Such misplaced contingencies may represent the ambivalence on the part of the parent, which is then is played out in the operant interaction.[104] Behaviourists see attachment more as a systems phenomena then a biological predisposition. Patterson's group has shown that in uncertain environments the lack of contingent relationships can account for problems in attachment and the sensitivity to contingencies.[105] In the last decade, behaviour analysts have constructed models of attachment based on the importance of contingent relationships. These behaviour analytic models have received some support from research,[106] and meta-analytic reviews.[107]

Developments

As the formulation of attachment theory progressed, there was criticism of the empirical support for the theory. Possible alternative explanations for results of empirical research were proposed.[108] Some of Bowlby's interpretations of James Robertson's data were rejected by the researcher when he reported data from 13 young children cared for in ideal rather than institutional circumstances on separation from their mothers.[109] In the second volume of the trilogy, *Separation*, Bowlby acknowledged Robertson's study had caused him to modify his views on the traumatic consequences of separation in which insufficient weight had been given to the influence of skilled care from a familiar substitute.[110] In 1984 Skuse based criticism on the work of Anna Freud with children from Theresienstadt who had apparently developed relatively normally despite serious deprivation in their early years. He concluded there was an excellent prognosis for children with this background, unless there were biological or genetic risk factors.[111]

Bowlby's arguments that even very young babies were social creatures and primary actors in creating relationships with parents took some time to be accepted. So did Ainsworth's emphasis on the importance and primacy of maternal attunement for psychological development (a point also argued by Donald Winnicott). In the 1970s Daniel Stern undertook research on the concept of attunement between very young infants and caregivers, using micro-analysis of video evidence. This added significantly to the understanding of the complexity of infant/caregiver interactions as an integral part of a baby's emotional and social development.[112]

In the 1970s, problems with viewing attachment as a trait (stable characteristic of an individual) rather than as a type of behaviour with organising functions and outcomes, led some authors to the conclusion that attachment behaviours were best understood in terms of their functions in the child's life.[113] This way of thinking saw the secure base concept as central to attachment theory's, logic, coherence and status as an organizational construct.[114] Following this argument, the assumption that attachment is expressed identically in all humans cross-culturally was examined.[115] The research showed that though there were cultural differences, the three basic patterns, secure, avoidant and ambivalent, can be found in every culture in which studies have been undertaken, even where communal sleeping arrangements are the norm.

Selection of the secure pattern is found in the majority of children across cultures studied. This follows logically from the fact that attachment theory provides for infants to adapt to changes in the environment, selecting optimal behavioural strategies.[116] How attachment is expressed shows cultural variations which need to be ascertained before studies can be undertaken; for example Gusii infants are greeted with a handshake rather than a hug. Securely attached Gusii infants anticipate and seek this contact. There are also differences in the distribution of insecure patterns based on cultural differences in child-rearing practices.[116]

Research indicates that attachment pattern distributions are consistent across cultures, although the manner in which attachment is expressed may differ.

The biggest challenge to the notion of the universality of attachment theory came from studies conducted in Japan where the concept of *amae* plays a prominent role in describing family relationships. Arguments revolved around the appropriateness of the use of the Strange Situation procedure where amae is practiced. Ultimately research tended to confirm the universality hypothesis of attachment theory.[116] Most recently a 2007 study conducted in Sapporo in Japan found attachment distributions consistent with global norms using the six-year Main and Cassidy scoring system for attachment classification.[117] [118]

Critics in the 1990s such as J. R. Harris, Steven Pinker and Jerome Kagan were generally concerned with the concept of infant determinism (nature versus nurture), stressing the effects of later experience on personality.[119] [120] [121] Building on the work on temperament of Stella Chess, Kagan rejected almost every assumption on which attachment theory etiology was based. He argued that heredity was far more important than the transient effects of early environment. For example a child with an inherently difficult temperament would not elicit sensitive behavioural responses from a caregiver. The debate spawned considerable research and analysis of data from the growing number of longitudinal studies.[122] Subsequent research has not borne out Kagan's argument, broadly demonstrating that it is the caregiver's behaviours that form the child's attachment style, although how this style is expressed may differ with temperament.[123] Harris and Pinker put forward the notion that the influence of parents had been much exaggerated, arguing that socialisation took place primarily in peer groups. H. Rudolph Schaffer concluded that parents and peers had different functions, fulfilling distinctive roles in children's development.[124]

Recent developments

Whereas Bowlby was inspired by Piaget's insights into children's thinking, current attachment scholars utilise insights from contemporary literature on implicit knowledge, theory of mind, autobiographical memory and social representation.[125] Psychoanalyst/psychologists Peter Fonagy and Mary Target have attempted to bring attachment theory and psychoanalysis into a closer relationship through cognitive science as mentalization.[99] Mentalization, or theory of mind, is the capacity of human beings to guess with some accuracy what thoughts, emotions and intentions lie behind behaviours as subtle as facial expression.[126] This connection between theory of mind and the internal working model may open new areas of study, leading to alterations in attachment theory.[127] Since the late 1980s, there has been a developing rapprochement between attachment theory and psychoanalysis, based on common ground as elaborated by attachment theorists and researchers, and a change in what psychoanalysts consider to be central to psychoanalysis. Object relations models which emphasise the autonomous need for a relationship have become dominant and are linked to a growing recognition within psychoanalysis of the importance of infant development in the context of relationships and internalised representations. Psychoanalysis has recognised the formative nature of a childs early environment including the issue of childhood trauma. A psychoanalytically based exploration of the attachment system and an accompanying clinical approach has emerged together with a recognition of the need for measurement of outcomes of interventions.[128]

Authors considering attachment in non-western cultures have noted the connection of attachment theory with Western family and child care patterns characteristic of Bowlby's time.

One focus of attachment research has been the difficulties of children whose attachment history was poor, including those with extensive non-parental child care experiences. Concern with the effects of child care was intense during the so-called "day care wars" of the late 20th century, during which some authors stressed the deleterious effects of day care.[129] As a result of this controversy, training of child care professionals has come to stress attachment issues, including the need for relationship-building by the assignment of a child to a specific carer. Although only high-quality child care settings are likely to provide this, more infants in child care receive attachment-friendly care than in the past.[130]

Another significant area of research and development has been the connection between problematic attachment patterns, particularly disorganized attachment, and the risk of later psychopathology.[125] A third has been the effect on development of children having little or no opportunity to form attachments at all in their early years. A natural experiment permitted extensive study of attachment issues as researchers followed thousands of Romanian orphans adopted into Western families after the end of the Ceauşescu regime. The English and Romanian Adoptees Study Team, led by Michael Rutter, followed some of the children into their teens, attempting to unravel the effects of poor attachment, adoption, new relationships, physical problems and medical issues associated with their early lives. Studies of these adoptees, whose initial conditions were shocking, yielded reason for optimism as many of the children developed quite well. Researchers noted that separation from familiar people is only one of many factors that help to determine the quality of development.[131] Although higher rates of atypical insecure attachment patterns were found compared to native-born or early-adopted samples, 70% of later-adopted children exhibited no marked or severe attachment disorder behaviours.[39]

Authors considering attachment in non-Western cultures have noted the connection of attachment theory with Western family and child care patterns characteristic of Bowlby's time.[132] As children's experience of care changes, so may attachment-related experiences. For example, changes in attitudes toward female sexuality have greatly increased the numbers of children living with their never-married mothers or being cared for outside the home while the mothers work. This social change has made it more difficult for childless people to adopt infants in their own countries. There has been an increase in the number of older-child adoptions and adoptions from third-world sources in first-world countries. Adoptions and births to same-sex couples have increased in number and gained legal protection, compared to their status in Bowlby's time.[133] Issues have been raised to the effect that the dyadic model characteristic of attachment theory cannot address the complexity of real-life social experiences, as infants often have multiple relationships within the family and in child care settings.[134] It is suggested these multiple relationships influence one another reciprocally, at least within a family.[135]

Principles of attachment theory have been used to explain adult social behaviours, including mating, social dominance and hierarchical power structures, group coalitions, and negotiation of reciprocity and justice.[136] Those explanations have been used to design parental care training, and have been particularly successful in the design of child abuse prevention programmes.[137]

Biology of attachment

Attachment theory proposes that the quality of caregiving from at least the primary carer is key to attachment security or insecurity.[122] In addition to longitudinal studies, there has been psychophysiological research on the biology of attachment.[138] Research has begun to include behaviour genetics and temperament concepts.[123] Generally temperament and attachment constitute separate developmental domains, but aspects of both contribute to a range of interpersonal and intrapersonal developmental outcomes.[123] Some types of temperament may make some individuals susceptible to the stress of unpredictable or hostile relationships with caregivers in the early years.[139] In the absence of available and responsive caregivers it appears that some children are particularly vulnerable to developing attachment disorders.[140]

In psychophysiological research on attachment, the two main areas studied have been autonomic responses, such as heart rate or respiration, and the activity of the hypothalamic-pituitary-adrenal axis. Infants' physiological responses have been measured during the Strange Situation procedure looking at individual differences in infant temperament and the extent to which attachment acts as a moderator. There is some evidence that the quality of caregiving shapes the development of the neurological systems which regulate stress.[138]

Another issue is the role of inherited genetic factors in shaping attachments: for example one type of polymorphism of the *DRD2* dopamine receptor gene has been linked to anxious attachment and another in the 5-HT$_{2A}$ serotonin receptor gene with avoidant attachment.[141] This suggests that the influence of maternal care on attachment security is not the same for all children. One theoretical basis for this is that it makes biological sense for children to vary in their susceptibility to rearing influence.[129]

Practical applications

As a theory of socioemotional development, attachment theory has implications and practical applications in social policy, decisions about the care and welfare of children and mental health.

Child care policies

Social policies concerning the care of children were the driving force in Bowlby's development of attachment theory. The difficulty lies in applying attachment concepts to policy and practice.[142] This is because the theory emphasises the importance of continuity and sensitivity in caregiving relationships rather than a behavioural approach on stimulation or reinforcement of child behaviours.[143] In 2008 C.H. Zeanah and colleagues stated, "Supporting early child-parent relationships is an increasingly prominent goal of mental health practitioners, community based service providers and policy makers ... Attachment theory and research have generated important findings concerning early child development and spurred the creation of programs to support early child-parent relationships".[9]

Historically, attachment theory had significant policy implications for hospitalised or institutionalised children, and those in poor quality daycare.[144] Controversy remains over whether non-maternal care, particularly in group settings, has deleterious effects on social development. It is plain from research that poor quality care carries risks but that those who experience good quality alternative care cope well although it is difficult to provide good quality, individualised care in group settings.[142]

Attachment theory has implications in residence and contact disputes,[144] and applications by foster parents to adopt foster children. In the past, particularly in North America, the main theoretical framework was psychoanalysis. Increasingly attachment theory has replaced it, thus focusing on the quality and continuity of caregiver relationships rather than economic well-being or automatic precedence of any one party, such as the biological mother. However, arguments tend to focus on whether children are "attached" or "bonded" to the disputing adults rather than the quality of attachments. Rutter noted that in the UK, since 1980, family courts have shifted considerably to recognize the complications of attachment relationships.[143] Children tend to have security-providing relationships with both parents and often grandparents or other relatives. Judgements need to take this into account along with the impact of

step-families. Attachment theory has been crucial in highlighting the importance of social relationships in dynamic rather than fixed terms.[142]

Attachment theory can also inform decisions made in social work and court processes about foster care or other placements. Considering the child's attachment needs can help determine the level of risk posed by placement options.[145] Within adoption, the shift from "closed" to "open" adoptions and the importance of the search for biological parents would be expected on the basis of attachment theory. Many researchers in the field were strongly influenced by it.[142]

Clinical practice in children

Although attachment theory has become a major scientific theory of socioemotional development with one of the broadest, deepest research lines in modern psychology, it has, until recently, been less used in clinical practice than theories with far less empirical support.

This may be partly due to lack of attention paid to clinical application by Bowlby himself and partly due to broader meanings of the word 'attachment' used amongst practitioners. It may also be partly due to the mistaken association of attachment theory with the pseudoscientific interventions misleadingly known as "attachment therapy".[146]

In the early months of life, babies will direct attachment behaviours towards anyone in the vicinity. As attachment develops, so does age-appropriate stranger wariness.

Prevention and treatment

In 1988, Bowlby published a series of lectures indicating how attachment theory and research could be used in understanding and treating child and family disorders. His focus for bringing about change was the parents' internal working models, parenting behaviours and the parents' relationship with the therapeutic intervenor.[147] Ongoing research has led to a number of individual treatments and prevention and intervention programmes.[147] They range from individual therapy to public health programmes to interventions designed for foster carers. For infants and younger children, the focus is on increasing the responsiveness and sensitivity of the caregiver, or if that is not possible, placing the child with a different caregiver.[148] [149] An assessment of the attachment status or caregiving responses of the caregiver is invariably included, as attachment is a two-way process involving attachment behaviour and caregiver response. Some programmes are aimed at foster carers because the attachment behaviours of infants or children with attachment difficulties often do not elicit appropriate caregiver responses. Modern prevention and intervention programmes are mostly in the process of being evaluated.[150]

Reactive attachment disorder and attachment disorder

One atypical attachment pattern is considered to be an actual disorder, known as *reactive attachment disorder* or RAD, which is a recognized psychiatric diagnosis (ICD-10 F94.1/2 and DSM-IV-TR 313.89). The essential feature of reactive attachment disorder is markedly disturbed and developmentally inappropriate social relatedness in most contexts that begins before age five years, associated with gross pathological care. There are two subtypes, one reflecting a disinhibited attachment pattern, the other an inhibited pattern. RAD is not a description of insecure attachment styles, however problematic those styles may be; instead, it denotes a lack of age-appropriate attachment behaviours that amounts to a clinical disorder.[151] Although the term "reactive attachment disorder" is now popularly applied to perceived behavioural difficulties that fall outside the DSM or ICD criteria, particularly on the

Web and in connection with the pseudo-scientific attachment therapy, "true" RAD is thought to be rare.[152]

"Attachment disorder" is an ambiguous term, which may be used to refer to reactive attachment disorder or to the more problematical insecure attachment styles (although none of these are clinical disorders). It may also be used to refer to proposed new classification systems put forward by theorists in the field,[153] and is used within attachment therapy as a form of unvalidated diagnosis.[152] One of the proposed new classifications, "secure base distortion" has been found to be associated with caregiver traumatization.[154]

Clinical practice in adults and families

As attachment theory offers a broad, far-reaching view of human functioning, it can enrich a therapist's understanding of patients and the therapeutic relationship rather than dictate a particular form of treatment.[155] Some forms of psychoanalysis-based therapy for adults—within relational psychoanalysis and other approaches—also incorporate attachment theory and patterns.[155] [156] In the 2000s, key concepts of attachment were incorporated into existing models of behavioural couple therapy, multidimensional family therapy and couple and family therapy. Specifically attachment-centred interventions have been developed, such as attachment-based family therapy and emotionally focused therapy.[157] [158]

Attachment theory and research laid the foundation for the development of the understanding of "mentalization" or reflective functioning and its presence, absence or distortion in psychopathology. The dynamics of an individual's attachment organization and their capacity for mentalization can play a crucial role in the capacity to be helped by treatment.[155] [159]

See also

- Attachment parenting
- Cinderella effect
- Family therapy
- Human bonding
- Personality disorder

Notes

[1] Cassidy J (1999). "The Nature of a Child's Ties". In Cassidy J, Shaver PR. *Handbook of Attachment: Theory, Research and Clinical Applications*. New York: Guilford Press. pp. 3−20. ISBN 1572300876.

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[9] Berlin L, Zeanah CH, Lieberman AF (2008). "Prevention and Intervention Programs for Supporting Early Attachment Security". In Cassidy J, Shaver PR. *Handbook of Attachment: Theory, Research and Clinical Applications*. New York and London: Guilford Press. pp. 745−61. ISBN 9781606230282.

[10] Bretherton I (1992). *The Origins of Attachment Theory: John Bowlby and Mary Ainsworth*. "[Bowlby] begins by noting that organisms at different levels of the phylogenetic scale regulate instinctive behavior in distinct ways, ranging from primitive reflex-like "fixed action patterns" to complex plan hierarchies with subgoals and strong learning components. In the most complex organisms, instinctive behaviors may be "goal-corrected" with continual on-course adjustments (such as a bird of prey adjusting its flight to the movements of the prey). The concept of cybernetically controlled behavioral systems organized as plan hierarchies (Miller, Galanter, and Pribram, 1960) thus came to

replace Freud's concept of drive and instinct. Such systems regulate behaviors in ways that need not be rigidly innate, but—depending on the organism—can adapt in greater or lesser degrees to changes in environmental circumstances, provided that these do not deviate too much from the organism's environment of evolutionary adaptedness. Such flexible organisms pay a price, however, because adaptable behavioral systems can more easily be subverted from their optimal path of development. For humans, Bowlby speculates, the environment of evolutionary adaptedness probably resembles that of present-day hunter-gatherer societies.".

[11] Prior and Glaser p. 15.

[12] Bowlby (1969) p. 365.

[13] Holmes p. 69.

[14] Bowlby (1969) 2nd ed. pp. 304–05.

[15] Kobak R, Madsen S (2008). "Disruption in Attachment Bonds". In Cassidy J, Shaver PR. *Handbook of Attachment: Theory, Research and Clinical Applications*. New York and London: Guilford Press. pp. 23–47. ISBN 9781593858742.

[16] Prior and Glaser p. 16.

[17] Prior and Glaser p. 17.

[18] Prior and Glaser p. 19.

[19] Karen pp. 90–92.

[20] Ainsworth M (1967). *Infancy in Uganda: Infant Care and the Growth of Love*. Baltimore: Johns Hopkins University Press. ISBN 0801800102.

[21] Karen p. 97.

[22] Prior and Glaser pp. 19–20.

[23] Bowlby (1969) p. 300.

[24] Bowlby J (1958). "The nature of the child's tie to his mother". *International Journal of Psychoanalysis* **39** (5): 350–73. PMID 13610508.

[25] Bowlby (1969) 2nd ed. p. 309.

[26] Main M (1999). "Epilogue: Attachment Theory: Eighteen Points with Suggestions for Future Studies". In Cassidy J, Shaver PR. *Handbook of Attachment: Theory, Research and Clinical Applications*. New York: Guilford Press. pp. 845–87. ISBN 1572300876. "although there is general agreement that an infant or adult will have only a few attachment figures at most, many attachment theorists and researchers believe that infants form 'attachment hierarchies' in which some figures are primary, others secondary and so on. This position can be presented in a stronger form, in which a particular figure is believed continually to take top place ("monotropy")... questions surrounding monotropy and attachment hierarchies remain unsettled".

[27] Mercer pp.39–40.

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[29] Bowlby (1969) pp. 414–21.

[30] Bowlby (1969) pp. 394–395.

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[35] Bowlby (1988) p. 11.

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[37] Karen pp. 163–73.

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[41] Prior and Glaser pp. 30–31.

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