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We’re all born as helpless little creatures who depend on our caregivers for everything. Human infants are vulnerable beings who rely on others to keep them fed, safe, comforted … everything really.Five decades of research show that your earliest emotional bonds with the person most responsible for your well-being — often your birth mother — can directly affect the health of your future romantic relationships. Babies whose caregivers can regularly be relied on for comfort and devoted attention tend to have more stable relationships later on. Infants whose caregivers are less attentive are more likely to have more difficulty forming healthy relationships as adults.It’s called “attachment theory,” and it’s a long-studied concept that’s getting a lot of attention these days. Clinical psychologist Coda Derrig, PhD, says it’s one lens we can use to better understand who we are and why we behave the way we do with the people we love.“Your attachment style from your infancy can influence your relationships with others. But as humans, we’re complex creatures,” Dr. Derrig says. “There are a lot of other factors at play as well. We all have multiple experiences that influence our ability to form healthy relationships over time.“We talked with Dr. Derrig about how attachments are formed, the four attachment styles and how your style can impact your adult relationships.What is attachment theory?There is a long list of scientific literature that categorizes how we form emotional attachments to our primary caregivers in order to ensure our safety and survival.The most famous study comes from a 1969 experiment called the Strange Situation, which gave rise to the four styles of attachment we know today. In the study, babies and their mothers played in a room together. The mother left and then returned a few minutes later. The baby’s reaction was then monitored.From that study, the four attachment styles were identified:Secure attachment: Babies became upset when their parent left and were comforted by their return.Anxious attachment: Babies would become very upset when their parent left and would be difficult to comfort upon their return.Avoidant attachment: Babies would barely react — or not react at all — when their parent left or returned.Disorganized attachment: Babies had more erratic or incoherent reactions to their parent leaving or returning, such as hitting their heads on the ground or “freezing up.”The baby’s reaction to their parent’s departure and return says a lot about how the baby is used to their caregiver attending to their needs, Dr. Derrig notes. And those experiences as youngsters are likely to affect the way they relate to others in their adult lives.Babies who are securely attached understand their parent is someone they rely on, so they become concerned when they go and are comforted by them coming back. On the other hand, babies who learned that their parents aren’t going to be attentive to their needs are less worried about their absence and less comforted by their return. They’ve learned they can’t rely on their caregivers to provide them with what they need, so the parent’s presence (or absence) isn’t as meaningful to them.The 4 attachment stylesThere are four styles that grew out of the Strange Situation experiment. One is secure attachment. The other three — anxious, avoidant and disorganized — are considered insecure attachment styles.Each style exists on a spectrum, so you may not find yourself identifying completely with any one style. Or your style may fall into one category but be more or less extreme in how it affects the quality of your relationships.Dr. Derrig breaks down the four attachment styles and how they can impact your romantic relationships as an adult.Secure attachment styleSecure attachment is what we all strive for. Babies who form secure attachments to their primary caregiver are more likely to become adults who confidently seek out healthy relationships with others and are reliable and loving partners themselves, Dr. Derrig says.How does it form? Babies form secure attachments when their caregivers consistently fulfill a baby’s physical and emotional needs. Babies who are securely attached prefer their primary caregiver over other people and are calmed by their presence.What does it look like in adult relationships? People with a secure attachment style are more readily able to form long-lasting and healthy relationships with others. They’re more likely to trust their partner and be emotionally available to them.How common is it? Studies show that about 58% of adults are securely attached.Tip for people with a secure attachment style: Dr. Derrig says that a secure attachment style doesn’t mean you can take for granted that your relationships will be smooth sailing. “If two securely attached people are in a relationship, they’re starting out from a better position, but relationships take work for everyone, no matter your attachment style,” she says.Anxious attachment styleAlso known as preoccupied attachment or anxious-ambivalent attachment.An anxious attachment style is a form of insecure attachment that forms between a baby and an inconsistent caregiver. From their perspective, the baby can’t be sure when and if their parent is going to be emotionally and physically available to them.How does it form? Babies whose primary caregivers aren’t consistent in meeting a baby’s needs are more likely to form an anxious attachment. Anxiously attached babies learn that they may or may not get the attention they need, so they aren’t easily comforted by their caregivers.What does it look like in adult relationships? A partner with an anxious attachment style may be seen as “clingy,” “needy” or not trusting. People with an anxious attachment style can be consumed with concern that their loved ones will abandon them, and they may seek constant reassurance that they’re safe in their relationship.How common is it? Research indicates that about 19% of adults have an anxious attachment style.Tip for people with an anxious attachment style: Dr. Derrig warns that people who have an anxious attachment can drive away their partner with their neediness. That can create even more feelings of insecurity in future relationships.“People with an anxious attachment can benefit from what we call ‘rituals of separation,’ where the partners agree that before they go out for the day, they give each other a kiss. They say, ‘I’ll see you tonight.’ They send a text during the day to say they’re thinking of each other. Whatever it is, they make a conscious effort to acknowledge that they’re leaving and also that they will be back,” Dr. Derrig explains. “That can help a person with an anxious attachment to feel confident their partner will not abandon them.”Avoidant attachment styleAlso known asdismissive attachment or anxious-avoidant attachment.Avoidant attachment can look like an adult who is a “lone wolf” or overly self-sufficient. People with an avoidant attachment style are likely to not delve much into emotional conversations, either in regard to their own feelings or those of others. An avoidant attachment style often stems from a relationship between a primary caregiver and a baby that’s marked by a lack of emotional support or connection.How does it form? Avoidant attachment is most likely to form when a caregiver doesn’t provide a baby with sufficient emotional support. The caregiver’s responsiveness to the baby most likely ends with caring for their physical needs, like feeding and bathing, but the caregiver doesn’t provide the emotional comfort the baby also needs. In that environment, the baby learns not to rely on others to care for their emotional needs.What does it look like in adult relationships? Adults with an avoidant attachment style can be seen as self-reliant and emotionally guarded. They’re unlikely to seek emotional comfort or understand how to comfort their partner.How common is it? Research shows about 23% of adults have an avoidant attachment style.Tip for people with an avoidant attachment style: Dr. Derrig notes that people with an avoidant attachment style often distance themselves from others and assume others will disappoint them. Actively observing your own emotions and considering how you pull away from others will require a lot of work. But that effort can be an eye-opening way to help understand your style and learn to let others in.Disorganized attachment styleAlso known asfearful-avoidant attachment.Disorganized attachment is the most extreme and least common style. People with disorganized attachment can be seen to act irrationally and be unpredictable or intense in their relationships.How does it form? Disorganized attachment often forms through a particularly tumultuous childhood — often one that may be marked by fear or trauma. It typically stems from an erratic or incoherent relationship with the baby’s primary caregiver.What does it look like in adult relationships? Adults with disorganized attachments are likely to live with mental health disorders or personality disorders that prevent them from developing healthy relationships with others. They’re likely to crave close relationships but push others away when they show them attention.Tip for people with an avoidant attachment style: Dr. Derrig says some people who have a disorganized attachment style can often benefit from dialectical behavior therapy (DBT), a type of talk therapy that’s especially helpful for people who experience very intense emotions.How attachment styles affect adult relationshipsYour attachment style — and how it meshes with your partner’s style — has a hefty impact on your ability to develop a healthy and mutually affectionate relationship.Research has shown that attachment styles can affect:Communication between partners.The risk of relationship violence.Overall marriage quality.Research also shows that your attachment style has a big impact on the attachment you’ll form with your own children.“If you interview a birth mother and determine their attachment style, you’ll have a good sense of how their infant will attach to them,” Dr. Derrig states. “We raise our children the way that we best know to relate to people, so your attachment style can easily be passed down and repeated over generations.”How do I know my attachment style?There’s no shortage of information online that will claim to help you understand your attachment style. There are websites and quizzes galore where you can read up on your style and analyze your upbringing and your relationships.Dr. Derrig suggests treading cautiously, though, as much of the information you’ll find may not be so scientifically based.Reading up on attachment styles and considering patterns in your relationships is a good start. But to really understand yourself and heal any attachment wounds, Dr. Derrig advises therapy as the best route.“If you’re concerned about how your attachment style is affecting you and your relationships with others, the best way to really get to the bottom of it is through psychotherapy,” she states. “Talking with a healthcare provider who is knowledgeable about attachment theory can help you understand your experiences and develop new ways of coping in your relationships. Being aware of your attachment style makes you more likely to be able to do something about it.”Also, labeling yourself or your partner as having a particular attachment style can lead to over-simplifying the complex web of interactions that we experience as humans. There are countless reasons that explain why we are the way we are. If your partner is emotionally walled-off at times, rushing to blame an insecure attachment style isn’t necessarily helpful for either of you.“Who we are and how we relate to others is always more complicated than one variable,” Dr. Derrig says. “Relating to other people is probably the greatest gift and the biggest challenge in our lives.” Attachment styles are characterized by different ways of interacting and behaving in relationships. During early childhood, these attachment styles center on how children and parents interact. In adulthood, attachment styles describe attachment patterns in romantic relationships. The concept of attachment styles grew from attachment theory and the research that emerged throughout the 1960s and 1970s. Today, psychologists typically recognize four main attachment styles: secure, ambivalent, avoidant, and disorganized. Attachment styles are patterns that emerge in our earliest emotional bonds with caregivers. These early attachment styles play an important role in child development and also influence attachment patterns in adult relationships. Knowing more about which style you have (secure, ambivalent, avoidant, or disorganized) can help you better recognize the challenges you might face in your romantic relationships. Illustration by Jessica Olah, Verywell Attachment is a special emotional relationship that involves an exchange of comfort, care, and pleasure. The roots of research on attachment began with Freud's theories about love, but another researcher named John Bowlby is usually credited as the father of attachment theory. John Bowlby devoted extensive research to attachment, describing it as a "lasting psychological connectedness between human beings." Bowlby shared the psychoanalytic view that early experiences in childhood are important for influencing development and behavior later in life. Our early attachment styles are established in childhood through the infant/caregiver relationship. In addition to this, Bowlby believed that attachment had an evolutionary component; it aids in survival. He believed that this propensity to make strong emotional bonds with specific individuals was an essential part of human nature. Bowlby believed that there are four distinguishing characteristics of attachment: Proximity maintenance: The desire to be near the people we are attached to.Safe haven: Returning to the attachment figure for comfort and safety in the face of a fear or threat.Secure base: The attachment figure acts as a base of security from which the child can explore the surrounding environment.Separation distress: Anxiety that occurs in the absence of the attachment figure. Bowlby also made three key propositions about attachment theory: Consistent Care Leads to Trust First, he suggested that when children are raised with confidence that their primary caregiver will be available to them, they are less likely to experience fear than those raised without such conviction. Early Experiences are Critical Secondly, he believed this confidence is forged during a critical development period, infancy, childhood, and adolescence. The expectations formed during that period tend to remain relatively unchanged for the rest of the person's life. Expectations Stem from Experiences Finally, he suggested that these expectations that are formed are directly tied to experience. In other words, children develop expectations that their caregivers will be responsive to their needs because, in their experience, their caregivers have been responsive in the past. During the 1970s, psychologist Mary Ainsworth further expanded upon Bowlby's groundbreaking work in her now-famous "Strange Situation" study. The study involved observing children between the ages of 12 to 18 months responding to a situation in which they were briefly left alone and then reunited with their mother. Ainsworth's Strange Situation Assessment followed this basic sequence:The parent and child are alone in a room.The child explores the room with parental supervision.A stranger enters the room, talks to the parent, and approaches the child.The parent quietly leaves the room.The parent returns and comforts the child. Based on these observations, Ainsworth concluded that there were three major styles of attachment: secure attachment, ambivalent-insecure attachment, and avoidant-insecure attachment. Researchers Main and Solomon added a fourth attachment style known as disorganized-insecure attachment. Numerous studies have supported Ainsworth's conclusions and additional research has revealed that these early attachment styles can help predict behaviors later in life. Before you start blaming relationship problems on your parents, it is important to note that attachment styles formed during early childhood are not necessarily identical to those demonstrated in adult romantic attachments. It's important to remember that a lot of time has elapsed between infancy and adulthood. All of those intervening experiences also play a significant role in shaping adult attachment styles. Those described as ambivalent or avoidant during childhood can become securely attached as adults, while those with a secure attachment in childhood can show insecure attachment patterns in adulthood. Basic temperament is also thought to play a partial role in attachment. So what role might factors such as divorce or parental discord play in forming attachment styles? In one study, researchers found that parental divorce seemed unrelated to attachment style. Instead, their research indicated that the best predictor of adult attachment style was the perceptions that people have about the quality of their relationships with their parents as well as their parent's relationship with each other. However, research in this area indicates that childhood patterns have an important impact on later relationships. The researchers also found varied beliefs about relationships amongst adults with differing attachment styles. Securely attached adults tend to believe that romantic love is enduring.Ambivalently attached adults report falling in love often.Avoidantly attached adults describe love as rare and temporary. While we cannot say that early attachment styles are identical to adult romantic attachment, research has shown that early attachment styles can help predict behavior patterns in adulthood. Subsequent research does suggest that parental divorce or abandonment does have an impact on adult children's attachment styles. Parental divorce or abandonment is linked to more negative feelings about romantic relationships as a higher likelihood of having an anxious and avoidant attachment style. Children who are securely attached generally become visibly upset when their caregivers leave and are happy when their parents return. When frightened, these children will seek comfort from the parent or caregiver. Securely attached children readily accept contact initiated by a parent, and they greet the parent's return with positive behavior. While these children can be comforted to some extent by other people in the absence of a parent or caregiver, they clearly prefer parents to strangers. Parents of securely attached children tend to play more with their children. Additionally, these parents react more quickly to their children's needs and are generally more responsive to their children than the parents of insecurely attached children. Studies have shown that securely attached children are more empathetic during later stages of childhood. These children are also described as less disruptive, less aggressive, and more mature than children with ambivalent or avoidant attachment styles. As Children Separates from parent Seeks comfort from parents when frightened Greets return of parents with positive emotions Prefers parents to strangers As Adults Have trusting, lasting relationships Tend to have good self-esteem Share feelings with partners and friends Seek out social support While forming a secure attachment with caregivers is normal and expected, as Hazan and Shaver have noted, it doesn't always happen. Researchers have found a number of different factors that contribute to the development (or lack thereof) of secure attachment, particularly a mother's responsiveness to her infant's needs during the first year of a child's life. Mothers who respond inconsistently or who interfere with a child's activities tend to produce infants who explore less, cry more, and are more anxious. Mothers who consistently reject or ignore their infant's needs tend to produce children who try to avoid contact. As adults, securely attached people tend to have trusting, long-term relationships. Other key characteristics of securely attached individuals include: Having high self-esteem Enjoying intimate relationships Seeking out social support An ability to share feelings with other people How many people classify themselves as securely attached? In a classic study by Hazan and Shaver, 56% of respondents identified themselves as secure, while 25% identified as avoidant, and 19% as ambivalent/anxious. Children who are ambivalently attached tend to be extremely suspicious of strangers. These children display considerable distress when separated from a parent or caregiver but do not seem reassured or comforted by the parent's return. In some cases, the child might passively reject the parent by refusing comfort or may openly display direct aggression toward the parent. According to some older research, ambivalent attachment is relatively uncommon, with only 7% to 15% of infants in the United States displaying this attachment style. In a review of ambivalent attachment literature, Cassidy and Berlin also found that observational research consistently links ambivalent insecure attachment to low maternal availability. As these children grow older, teachers often describe them as clingy and over-dependent. As Children May be wary of strangers Become greatly distressed when parents leave Do not appear comforted when parents return As Adults Reluctant to become close to others Worry that their partner does not love them Become very distraught when relationships end As adults, those with an ambivalent attachment style often feel reluctant about becoming close to others and worry that their partner does not reciprocate their feelings. This leads to frequent breakups, often because the relationship feels cold and distant. These individuals feel especially distraught after the end of a relationship. Cassidy and Berlin described another pathological pattern where ambivalently attached adults cling to young children as a source of security. Children with avoidant attachment styles tend to avoid parents and caregivers. This avoidance often becomes especially pronounced after a period of absence. These children might not reject attention from a parent, but neither do they seek out comfort or contact. Children with an avoidant attachment show no preference between a parent and a complete stranger. As Children May avoid parents Do not seek much contact or comfort from parents Show little or no preference for parents over strangers As Adults May have problems with intimacy Invest little emotion in social and romantic relationships Unwilling or unable to share thoughts or feelings with others As adults, those with an avoidant attachment tend to have difficulty with intimacy and close relationships. These individuals do not invest much emotion in relationships and experience little distress when a relationship ends. They often avoid intimacy by using excuses (such as long work hours) or may fantasize about other people during sex. Research has also shown that adults with an avoidant attachment style are more accepting and likely to engage in casual sex. Other common characteristics include failure to support partners during stressful times and an inability to share feelings, thoughts, and emotions with partners. Children with a disorganized-insecure attachment style show a lack of clear attachment behavior. Their actions and responses to caregivers are often a mix of behaviors, including avoidance or resistance. These children are described as displaying dazed behavior, sometimes seeming either confused or apprehensive in the presence of a caregiver. At Age 1 Show a mixture of avoidant and resistant behavior May seem dazed, confused, or apprehensive At Age 6 May take on a parental role Some children may act as a caregiver toward the parent Researchers suggest that inconsistent behavior on the part of parents might be a contributing factor in this attachment style. Parents who act as figures of both fear and reassurance to a child contribute to a disorganized attachment style. Because the child feels both comforted and frightened by the parent, confusion results. Adults with a disorganized attachment style also exhibit a confusing mix of anxious and avoidant behaviors in relationships. They have a strong need for a close connection with a romantic partner yet struggle to open up and be vulnerable. People with a disorganized style may seek out a loving relationship and then suddenly push the other person away. They often sabotage their relationships and have a hard time trusting their partners. This style is often associated with unhealthy relationships marked by toxicity, clinginess, poor communication, and even abuse. If you're unsure about your attachment style, this fast and free quiz can help you identify what your thoughts and behaviors may say about your attachment. This attachment styles quiz was reviewed by David Susman, PhD. While adult romantic attachments may not exactly correspond with early childhood attachments, there is no question that our earliest relationships with caregivers play a role in development. By better understanding the role of attachment, you can gain a greater appreciation of how the earliest attachments in your life may impact adult relationships. Psychological ethological theory For infants and toddlers, the "set-goal" of the behavioural system is to maintain or achieve proximity to attachment figures, usually the parents. Attachment theory is a psychological and evolutionary framework, concerning the relationships between humans, particularly the importance of early bonds between infants and their primary caregivers. Developed by psychiatrist and psychoanalyst John Bowlby (1907–90), the theory posits that infants need to form a close relationship with at least one primary caregiver to ensure their survival, and to develop healthy social and emotional functioning.[1][2] Pivotal aspects of attachment theory include the observation that infants seek proximity to attachment figures, especially during stressful situations.[2][3] Secure attachments are formed when caregivers are sensitive and responsive in social interactions, and consistently present, particularly between the ages of six months and two years. As children grow, they use these attachment figures as a secure base from which to explore the world and return to for comfort. The interactions with caregivers form patterns of attachment, which in turn create internal working models that influence future relationships.[4] Separation anxiety or grief following the loss of an attachment figure is considered to be a normal and adaptive response for an attached infant.[5] Research by developmental psychologist Mary Ainsworth in the 1960s and '70s expanded on Bowlby's work, introducing the concept of the "secure base", impact of maternal responsiveness and sensitivity to infant distress, and identified attachment patterns in infants: secure, avoidant, anxious, and disorganized attachment.[6][7] In the 1980s, attachment theory was extended to adult relationships and attachment in adults, making it applicable beyond early childhood.[8] Bowlby's theory integrated concepts from evolutionary biology, object relations theory, control systems theory, ethology, and cognitive psychology, and was fully articulated in his trilogy, Attachment and Loss (1969–82).[9] While initially criticized by academic psychologists and psychoanalysts,[10] attachment theory has become a dominant approach to understanding early social development and has generated extensive research.[11] Despite some criticisms related to temperament, social complexity, and the limitations of discrete attachment patterns, the theory's core concepts have been widely accepted and have influenced therapeutic practices and social and childcare policies.[10][12] Although it is usual for the mother to be the primary attachment figure, infants will form attachments to any carer who is sensitive and responsive in social interactions with them. Within attachment theory, attachment means an affectional bond or tie between an individual and an attachment figure (usually a caregiver/guardian). 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—which is most important in infancy and childhood.[13] 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".[14] The theory proposes that children attach to carers instinctively,[15] for the purpose of survival and, ultimately, genetic replication.[14] The biological aim is survival and the psychological aim is security.[11] The relationship that a child has with their attachment figure is especially important in threatening situations. Having access to a secure figure decreases fear in children when they are presented with threatening situations. Not only is having a decreased level of fear important for general mental stability, but it also implicates how children might react to threatening situations. The presence of a supportive attachment figure is especially important in a child's developmental years.[16] In addition to support, attunement (accurate understanding and emotional connection) is crucial in a caregiver-child relationship. If the caregiver is poorly attuned to the child, the child may grow to feel misunderstood and anxious.[17] Infants form attachments to any consistent caregiver who is sensitive and responsive in social interactions with them. The quality of 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 assumed by anyone who consistently behaves in a "mothering" way over a period of time. Within 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.[18] 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.[19][20] A secure attachment to a father who is a "secondary attachment figure" may also counter the possible negative effects of an unsatisfactory attachment to a mother who is the primary attachment figure.[21] 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.[22] The set-goal of the attachment behavioural system is to maintain a bond with an accessible and available attachment figure.[23] "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.[24] 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.[23] Insecure attachment patterns can compromise exploration and the achievement of self-confidence. A securely attached baby is free to concentrate on their environment. The attachment behavioural system serves to achieve or maintain proximity to the attachment figure.[5] Pre-attachment behaviours occur in the first six months of life. During the first phase (the first two months), infants smile, babble, and cry to attract the attention of potential 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 discriminates between familiar and unfamiliar adults, becoming more responsive toward the caregiver; following and clinging are added to the range of behaviours. The infant's behaviour toward the caregiver becomes organized on a goal-directed basis to achieve the conditions that make it feel secure.[25] 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 return, clinging when frightened, and following when able.[26] With the development of locomotion, the infant begins to use the caregiver or caregivers as a "safe base" from which to explore.[25][27]:71 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.[28] Anxiety, fear, illness, and fatigue will cause a child to increase attachment behaviours.[29] After the second year, as the child begins to see the caregiver as an independent person, a more complex and goal-corrected partnership is formed.[30] Children begin to notice others' goals and feelings and plan their actions accordingly. For coverage of this topic in Wolves, see Attachment behaviour in wolves. Modern attachment theory is based on three principles:[31] Bonding is an intrinsic human need. Regulation of emotion and fear to enhance vitality. Promoting adaptiveness and growth. Common attachment behaviours and emotions, displayed in most social primates including humans, are adaptive. The long-term evolution of these species 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 similar advantages today. Bowlby saw the environment of early adaptation as similar to current hunter-gatherer societies.[32] 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.[33] Bowlby's original account of a sensitivity period during which attachments can form of between six months and two to three years has been modified by later researchers. These researchers have shown there is indeed a sensitive period during which attachments will form if possible, but the time frame is broader and the effect less fixed and irreversible than first proposed.[34] With further research, authors discussing attachment theory have come to appreciate social development is affected by later as well as earlier relationships. 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. According to Bowlby, almost from the beginning, many children have more than one figure toward whom they direct attachment behaviour. These figures are not treated alike; there is a strong bias for a child to direct attachment behaviour mainly toward one particular person. Bowlby used the term "monotropy" to describe this bias.[35] Researchers and theorists have abandoned this concept insofar as it may be taken to mean the relationship with the special figure differs qualitatively from that of other figures. Rather, current thinking postulates definite hierarchies of relationships.[10][36] 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.[37] 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.[4] They enable the child to handle new types of social interactions; knowing, for example, an infant should be treated differently from an older child, or that interactions with teachers and parents share characteristics. Even interaction with coaches share similar characteristics, as athletes who secure attachment relationships with not only their parents but their coaches will play a role in the growth of athletes in their prospective sport.[38] This internal working model continues to develop through adulthood, helping cope with friendships, marriage, and parenthood, all of which involve different behaviours and feelings.[39][37] The development of attachment is a transactional process. Specific attachment behaviours begin with predictable, apparently innate, behaviours in infancy.[40] They change with age in ways determined partly by experiences and partly by situational factors.[41] 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.[42][43] In Western culture child-rearing, there is a focus on single attachment to primarily the mother. This dyadic model is not the only strategy of attachment producing a secure and emotionally adept child. Having a single, dependably responsive and sensitive caregiver (namely the mother) does not guarantee the ultimate success of the child. Results from Israeli, Dutch and east African studies show children with multiple caregivers grow up not only feeling secure, but developed "more enhanced capacities to view the world from multiple perspectives."[44] This evidence can be more readily found in hunter-gatherer communities, like those that exist in rural Tanzania.[45] In hunter-gatherer communities, in the past and present, mothers are the primary caregivers, but share the maternal responsibility of ensuring the child's survival with a variety of different allomothers. So while the mother is important, she is not the only opportunity for relational attachment a child can make. Several group members (with or without blood relation) contribute to the task of bringing up a child, sharing the parenting role and therefore can be sources of multiple attachment. There is evidence of this communal parenting throughout history that "would have significant implications for the evolution of multiple attachment."[46] In "non-metropolis" India (where "dual income nuclear families" are more the norm and dyadic mother relationship is)[clarify], where a family normally consists of 3 generations (and sometimes 4: great-grandparents, grandparents, parents, and child or children), the child or children would have four to six caregivers from whom to select their "attachment figure". A child's "uncles and aunts" (parents' siblings and their spouses) also contribute to the child's psycho-social enrichment.[47] Although it has been debated for years, and there are differences across cultures, research has shown that the three basic aspects of attachment theory are, to some degree, universal.[48] Studies in Israel and Japan resulted in findings which diverge from a number of studies completed in Western Europe and the United States. The prevailing hypotheses are: 1) that secure attachment is the most desirable state, and the most prevalent; 2) maternal sensitivity influences infant attachment patterns; and 3) specific infant attachments predict later social and cognitive competence.[48] John Bowlby initially conceptualized attachment as an evolutionary system that would ensure infant survival. Mary Ainsworth provided empirical testing through observational studies such as the Strange Situation Experiment. During the Strange Situation experiment, four participants partake in a series of eight "episodes" of experiences. These participants are a mother, a baby, a stranger and an observer. The mother, accompanied by the observer, carries the baby into the room and the observer leaves. The mother puts the baby down in a specified location, then sits quietly in her chair until the baby solicites her attention. The stranger enters, sits quietly for one minute, then converses with the mother for one minute, and then gradually approaches the baby. The mother then leaves the room. If the baby is playing with its toys, the stranger merely observes. If the baby is not playing with its toys, the stranger tries to interest the baby in the toys. If the baby is distressed, the stranger tries to comfort the baby. The mother enters, and pauses in the doorway so that the baby can respond to her presence. The stranger then leaves. After the baby begins to play with its toys again, the mother leaves again and says, "bye-bye". the baby is left alone for three minutes, unless the baby is so distressed it has to be comforted. The stranger enters and repeats the same behavior from the fourth episode. The mother returns, the stranger leaves, and the mother reunites with her baby. These eight episodes were observed through an adjoining room, and the baby's responses were categorized into different types of attachment behaviours.[49] Bretherton (1992) then followed this theoretical development, highlighting Bowlby's interdisciplinary framework. He relied on the concepts of ethology, psychoanalysis, and cognitive science. Ainsworth introduced the systematic classification of attachment styles contingent upon infant caregivers' interactive experiences.[50] Building on this foundation, Main and Solomon (1990) extended the original attachment classification to identify a disorganized/disoriented attachment style. They observed infants displaying contradictory or confused behaviors when reunited with a caregiver.[51] This further complicated the understanding of attachment patterning and has informed clinical practice and developmental research. Empirical studies have further classified how early attachment is formed and passed on across generations. Beebe et al. (2010) studied four-month-old mother interactions using microanalytic methods. They determined that coordinated gazes and vocal affect predicted attachment security at twelve months using the Strange Situation Procedure.[52] Similarly, Steele et al. (1996) found intergenerational continuity regarding parents' attachment classifications and those of infants. [53] Another one of the most influential studies supporting the principle of attachment theory was conducted by Harry Harlow. Harlow’s research with rhesus monkeys demonstrated the critical importance of caregiving and emotional comfort in creating attachment. In these experiments, infant monkeys were separated from their biological mothers and given the choice between two inanimate surrogate mothers: one made of wire and wood and one made of foam and cloth. In addition, the monkeys were assigned one of two conditions: one condition where the wire mother provided milk while the cloth mother had no food to offer, and the other condition where the cloth mother provided food while the wire mother did not. In both conditions, the infant monkeys overwhelmingly preferred the cloth mother, clinging to it for comfort and security even though it did not provide nourishment.[54] The infant monkeys' preference highlighted the importance of comfort, warmth, and emotional security over mere sustenance. Harlow’s work provided strong support for Bowlby’s claim that the need for affection and emotional security is a fundamental aspect of earlier development, also influencing later social and emotional outcomes. Clearly, children need more than just food and shelter; they require emotional attunement and a reliable source of comfort to develop a sense of security. This introduces the importance of having a “secure base.” A secure base allows children to confidently explore their environment, knowing that they have a supportive caregiver to return to when distressed. This level of responsiveness, as well as warmth and responsiveness, is critical for successful relationships and attachment.[55] The attachment theory has also been extended into the adult relationship domain. Adult romantic attachment has been reviewed by Fraley and Shaver (2000), who advocated that attachment behaviors are observed in infancy. Seeking proximity and secure base responses were also present in adult romantic relationships[56] This review illustrates how the attachment framework can be applied across the lifespan and highlights ongoing debates about continuity, measurements, and individual differences. Together, both the theoretical advances and empirical studies underscore the importance of early relational experiences. It also supports the broader application of attachment theory in various contexts across developmental stages and relationships. Attachment theory styles The strength of a child's attachment behaviour in a given circumstance does not indicate the "strength" of the attachment bond. Some insecure children will routinely display very pronounced attachment behaviours, while many secure children find that there is no great need to engage in either intense or frequent shows of attachment behaviour.[57] Individuals with different attachment styles have different beliefs about romantic love period, availability, trust capability of love partners and love readiness.[58] Main article: Secure attachment A toddler who is securely attached to his or her parent (or other familiar caregiver) will explore freely while the caregiver is present, typically engages with strangers, is often visibly upset when the caregiver departs, and is generally happy to see the caregiver return. The extent of exploration and of distress are affected, however, by the child's temperamental make-up and by situational factors as well as by attachment status. A child's attachment is largely influenced by their primary caregiver's sensitivity to their needs. Parents who consistently (or almost always) respond to their child's needs will create securely attached children. Such children are certain that their parents will be responsive to their needs and communications.[59] In the traditional Ainsworth et al. (1978) coding of the Strange Situation, secure infants are denoted as "Group B" infants and they are further subclassified as B1, B2, B3, and B4.[60] Although these subgroupings refer to different stylistic responses to the comings and goings of the caregiver, they were not given specific labels by Ainsworth and colleagues, although their descriptive behaviours led others (including students of Ainsworth) to devise a relatively "loose" terminology for these subgroups. B1s have been referred to as "secure-reserved", B2s as "secure-inhibited", B3s as "secure-balanced", and B4s as "secure-reactive". However, in academic publications the classification of infants (if subgroups are denoted) is typically simply "B1" or "B2", although more theoretical and review-oriented papers surrounding attachment theory may use the above terminology. Secure attachment is the most common type of attachment relationship seen throughout societies.[61] Securely attached children are best able to explore when they have the knowledge of a secure base (their caregiver) to return to in times of need. When assistance is given, this bolsters the sense of security and also, assuming the parent's assistance is helpful, educates the child on how to cope with the same problem in the future. Therefore, secure attachment can be seen as the most adaptive attachment style. According to some psychological researchers, a child becomes securely attached when the parent is available and able to meet the needs of the child in a responsive and appropriate manner. At infancy and early childhood, if parents are caring and attentive towards their children, those children will be more prone to secure attachment.[62] Anxious-ambivalent attachment is a form of insecure attachment and is also misnamed as "resistant attachment".[61][63] In general, a child with an anxious-ambivalent pattern of attachment will typically explore little (in the Strange Situation) and is often wary of strangers, even when the parent is present. When the caregiver departs, the child is often highly distressed showing behaviours such as crying or screaming. The child is generally ambivalent when the caregiver returns.[60] The anxious-ambivalent strategy is a response to unpredictably responsive caregiving, and the displays of anger (ambivalent resistant, C1) or helplessness (ambivalent passive, C2) towards the caregiver on reunion can be regarded as a conditional strategy for maintaining the availability of the caregiver by preemptively taking control of the interaction.[64][65] The C1 (ambivalent resistant) subtype is coded when "resistant behavior is particularly conspicuous. The mixture of seeking and yet resisting contact and interaction has an unmistakably angry quality and indeed an angry tone may characterize behavior in the preseparation episodes".[60] Regarding the C2 (ambivalent passive) subtype, Ainsworth et al. wrote: Perhaps the most conspicuous characteristic of C2 infants is their passivity. Their exploratory behavior is limited throughout the SS and their interactive behaviors are relatively lacking in active initiation. Nevertheless, in the reunion episodes they obviously want proximity to and contact with their mothers, even though they tend to use signalling rather than active approach, and protest against being put down rather than actively resisting release ... In general the C2 baby is not as conspicuously angry as the C1 baby.[60] Research done by McCarthy and Taylor (1999) found that children with abusive childhood experiences were more likely to develop ambivalent attachments. The study also found that children with ambivalent attachments were more likely to experience difficulties in maintaining intimate relationships as adults.[66] An infant with a dismissive-avoidant pattern of attachment will avoid or ignore the caregiver—showing little emotion when the caregiver departs or returns. The infant will not explore very much regardless of who is there. Infants classified as dismissive-avoidant (A) represented a puzzle in the early 1970s. They did not exhibit distress on separation, and either ignored the caregiver on their return (A1 subtype) or showed some tendency to approach together with some tendency to ignore or turn away from the caregiver (A2 subtype). Ainsworth and Bell theorized that the apparently unruffled behaviour of the avoidant infants was in fact a mask for distress, a hypothesis later evidenced through studies of the heart-rate of avoidant infants.[67][68] Infants are depicted as dismissive-avoidant when there is: ... conspicuous avoidance of the mother in the reunion episodes which is likely to consist of ignoring her altogether, although there may be some pointed looking away, turning away, or moving away ... If there is a greeting when the mother enters, it tends to be a mere look or a smile ... Either the baby does not approach his mother upon reunion, or they approach in "abortive" fashions with the baby going past the mother, or it tends to only occur after much coaxing ... If picked up, the baby shows little or no contact-maintaining behavior; he tends not to cuddle in; he looks away and he may squirm to get down.[60] Ainsworth's narrative records showed that infants avoided the caregiver in the stressful Strange Situation Procedure when they had a history of experiencing rebuff of attachment behaviour. The infant's needs were frequently not met and the infant had come to believe that communication of emotional needs had no influence on the caregiver. Ainsworth's student Mary Main theorized that avoidant behaviour in the Strange Situation Procedure should be regarded as "a conditional strategy, which paradoxically permits whatever proximity is possible under conditions of maternal rejection" by de-emphasising attachment needs.[69] Main proposed that avoidance has two functions for an infant whose caregiver is consistently unresponsive to their needs. Firstly, avoidant behaviour allows the infant to maintain a conditional proximity with the caregiver: close enough to maintain protection, but distant enough to avoid rebuff. Secondly, the cognitive processes organizing avoidant behaviour could help direct attention away from the unfulfilled desire for closeness with the caregiver—avoiding a situation in which the child is overwhelmed with emotion ("disorganized distress"), and therefore unable to maintain control of themselves and achieve even conditional proximity.[70] Beginning in 1983, Crittenden offered A/C and other new organized classifications (see below). Drawing

indicate the presence of environmental risk (for example poverty, mental illness, instability, minority status, violence). Environmental risk can cause insecure attachment, while also favouring the development of strategies for earlier reproduction. Different reproductive strategies 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 reorganization of insecure attachment in middle childhood.[103] Childhood and adolescence allows the development of an internal working model useful for forming attachments. This internal working model is related to the individual's state of mind which develops with respect to attachment generally and explores how attachment functions in relationship dynamics based on childhood and adolescent experience. The organization of an internal working model is generally seen as leading to more stable attachments in those who develop such a model, rather than those who rely more on the individual's state of mind alone in forming new attachments.[104] 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.[105] 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.[106] 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.[105] 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. By middle childhood (ages 7–11), there may be a shift toward mutual coregulation of secure-base contact in which caregiver and child negotiate methods of maintaining communication and supervision as the child moves toward a greater degree of independence.[105] The attachment system used by adolescents is seen as a "safety regulating system" whose main function is to promote physical and psychological safety. There are 2 different events that can trigger the attachment system. Those triggers include, the presence of a potential danger or stress, internal and external, and a threat of accessibility and/or availability of an attachment figure. The ultimate goal of the attachment system is security, so during a time of danger or inaccessibility the behavioural system accepts felt security in the context of the availability of protection. By adolescence we are able to find security through a variety of things, such as food, exercise, and social media.[107] Felt security can be achieved through a number of ways, and often without the physical presence of the attachment figure. Higher levels of maturity allows adolescent teens to more capably interact with their environment on their own because the environment is perceived as less threatening. Adolescents teens will also see an increase in cognitive, emotional and behavioural maturity that dictates whether or not teens are less likely to experience conditions that activate their need for an attachment figure. For example, when teenagers get sick and stay home from school, surely they want their parents to be home so they can take care of them, but they are also able to stay home by themselves without experiencing serious amounts of distress.[108] Additionally, the social environment that a school fosters impacts adolescents attachment behaviour, even if these same adolescents have not had issues with attachment behaviour previously. High schools that have a permissive environment compared to an authoritative environment promote positive attachment behaviour. For example, when students feel connected to their teachers and peers because of their permissive schooling environment, they are less likely to skip school. Positive-attachment behaviour in high schools have important implications on how a school's environment should be structured.[109] Here are the attachment style differences during adolescence:[110] Secure adolescents are expected to hold their mothers at a higher rate than all other support figures, including father, significant others, and best friends. Insecure adolescents identify more strongly with their peers than their parents as their primary attachment figures. Their friends are seen as a significantly strong source of attachment support. Dismissing adolescents rate their parents as a less significant source of attachment support and would consider themselves as their primary attachment figure. Preoccupied adolescents would rate their parents as their primary source of attachment support and would consider themselves as a much less significant source of attachment support.[110] Main article: Attachment in adultsSee also: Attachment measures Attachment theory was extended to adult romantic relationships in the late 1980s by Cindy Hazan and Phillip Shaver.[111] 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.[112] Securely attached adults have been "linked to a high need for achievement and a low fear of failure (Elliot & Reis, 2003)". They will positively approach a task with the goal of mastering it and have an appetite for exploration in achievement settings (Elliot & Reis, 2003). Research shows that securely attached adults have a "low level of personal distress and high levels of concern for others".[113] Due to their high rates of self-efficacy, securely attached adults typically do not hesitate to remove a person having a negative impact from problematic situations they are facing.[113] This calm response is representative of the securely attached adult's emotionally regulated response to threats that many studies have supported in the face of diverse situations. Adult secure attachment comes from an individual's early connection with their caregiver(s), genes and their romantic experiences.[114] Within romantic relationships, a securely attached adult will appear in the following ways: excellent conflict resolution, mentally flexible, effective communicators, avoidance of manipulation, comfortable with closeness without fearfulness of being enmeshed, quickly forgiving, viewing sex and emotional intimacy as one, believing they can positively impact their relationship, and caring for their partner in the way they want to be cared for. In summation, they are great partners who treat their partners very well, as they are not afraid to give positively and ask for their needs to be met. Securely attached adults believe that there are "many potential partners that would be responsive to their needs", and if they come across an individual who is not meeting their needs, they will typically lose interest quickly.[114] 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 than their partners, and may exhibit high levels of emotional expressiveness, worry and impulsiveness in their relationships. The anxiety that adults feel prevents the establishment of satisfactory defence exclusion. Thus, it is possible that individuals that have been anxiously attached to their attachment figure or figures have not been able to develop sufficient defences against separation anxiety. Because of their lack of preparation these individuals will then overreact to the anticipation of separation or the actual separation from their attachment figure. The anxiety comes from an individual's intense and/or unstable relationship that leaves the anxious or preoccupied individual relatively defenceless.[115] In terms of adult relationships, if an adult experiences this inconsistent behaviour from their romantic partner or acquaintance, they might develop some of the aspects of this attachment type. Besides, insecurity and distress about relationships can be driven by individuals who exhibit inconsistent connection or emotionally abusive behaviours.[116] However, a secure relationship can also reduce anxious behaviour and be a resource for safety and support.[117] Dismissive-avoidant adults desire a high level of independence, often appearing to avoid attachment altogether.[118] They view themselves as self-sufficient, invulnerable to attachment feelings and not needing close relationships.[119] They tend to suppress their feelings, dealing with conflict by distancing themselves from partners of whom they often have a poor opinion.[120] Adults lack the interest of forming close relationships and maintaining emotional closeness with the people around them. They have a great amount of distrust in others, but at the same time possess a positive model of self; they would prefer to invest in their own ego skills. They try to create high levels of self-esteem by investing disproportionately in their abilities or accomplishments. These adults maintain their positive views of self, based on their personal achievements and competence rather than searching for and feeling acceptance from others. These adults will explicitly reject or minimize the importance of emotional attachment and passively avoid relationships when they feel as though they are becoming too close. They strive for self-reliance and independence. When it comes to the opinions of others about themselves, they are very indifferent and are relatively hesitant to internalize positive feedback from their peers. Dismissive avoidance is considered to be the result of defensive deactivation and disconnection to avoid potential rejection, and is in some cases amplified by a genuine disinterest in social connection.[121] Adults with dismissive-avoidant patterns are less likely to seek social support than other attachment styles.[122] They are likely to fear intimacy and lack confidence in others.[123][124] Because of their distrust they cannot be convinced that other people have the ability to deliver emotional support.[121] Under a high cognitive load, however, dismissive-avoidant adults appear to have a lowered ability to suppress difficult attachment-related emotions, as well difficulty maintaining positive self-representations.[125] This suggests that hidden vulnerabilities may underlie an active denial process.[125][126] Fearful-avoidant adults have mixed feelings about close relationships, both desiring and feeling uncomfortable with emotional closeness. The dangerous part about the contrast between wanting to form social relationships while simultaneously fearing the relationship is that it creates mental instability. This mental instability then translates into mistrusting the relationships they do form and also viewing themselves as unworthy. Furthermore, fearful-avoidant adults also have a less pleasant outlook on life compared to anxious-preoccupied and dismissive avoidant groups.[127] Like dismissive-avoidant adults, fearful-avoidant adults tend to seek less intimacy, suppressing their feelings.[8][128][129][130] According to research studies, an individual with a fearful avoidant attachment might have had childhood trauma or persistently negative perceptions and actions from their family members. Apart from these, genetic factors and personality may also have an impact on how an individual behaves with parents as well as how they understand their relationships in their adulthood.[131] Two main aspects of adult attachment have been studied. The organization and stability of the mental working models that underlie the attachment styles is explored by social psychologists interested in romantic attachment.[132][133] 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 organization 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.[133][134] 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, platonic 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.[135] Adult attachment styles are related to individual differences in the ways in which adults experience and manage their emotions. Recent meta-analyses link insecure attachment styles to lower emotional intelligence[136] and lower trait mindfulness.[137] Main article: History of attachment theory Main article: 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.[138][139] Prayer time in the Five Points House of Industry residential nursery, 1888. The maternal deprivation hypothesis published in 1951 spurred a shift away from the use of residential nurseries in favour of foster homes.[140] Bowlby's contemporary René Spitz observed separated children's grief, proposing that "psychotoxic" results were brought about by inappropriate experiences of early care.[141][142] 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.[143] In his 1951 monograph for the World Health Organization, 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 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.[144] At the time there was limited empirical data and no comprehensive theory to account for such a conclusion.[145] 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.[144] Bowlby's work (and Robertson's films) caused a virtual revolution in a 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.[140] Bowlby's work about parental provisions after child birth implicates that maternal deprivation negatively influences the attachment behaviour trajectory of a child's life. If a mother experiences post-partum anxiety, stress, or depression, the attachment they have with their child can be disrupted. It is important for pregnant women to have mental-health support pre and post-partum because mental illness often results in low feelings of attachment to their infant.[146] 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. He set out to develop a theory of motivation and behaviour control built on science rather than Freud's psychic energy model. 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.[147] Bowlby's attention was drawn to ethology in the early 1950s when he read Konrad Lorenz's work.[148] Other important influences were ethologists Nikolaas Tinbergen and Robert Hinde.[149] Bowlby subsequently collaborated with Hinde.[150] 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."[151] 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. This bottle-fed young moose has developed an attachment to its caregiver (at Kostroma Moose Farm). Certain types of learning are possible, respective to each applicable type of learning, 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.[152] Over time it became apparent there were more differences than similarities between attachment theory and imprinting so the analogy was dropped.[10] Ethologists expressed concern about the adequacy of some research on which attachment theory was based, particularly the generalization to humans from animal studies.[153][154] 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.[155] Ethologists and others writing in the 1960s and 1970s questioned and expanded the types of behaviour used as indications of attachment.[156] 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.[157] Although ethologists tended to be in agreement with Bowlby, they pressed for more data, objecting to psychologists writing as if there were an "entity which is 'attachment', existing over and above the observable measures."[158] 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."[159] Evacuation of smiling Japanese school children in World War II from the book Road to Catastrophe 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.[160] 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.[161] Based on ideas of primary attachment and Neo-Darwinism, Bowlby identified what he saw as fundamental flaws in psychoanalysis: the overemphasis of internal dangers rather than external threat, and the view of the development of personality via linear phases with regression to fixed points accounting for psychological distress. Bowlby instead 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.[162] 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.[163][164][165] The philosopher Kenneth Craik had noted the ability of thought to predict events. He stressed the survival value of natural selection for this ability. A key component of attachment theory is the attachment behaviour system where certain behaviours have a predictable outcome (i.e. proximity) and serve as self-preservation method (i.e. protection).[166] All taking place outside of an individual's awareness, This internal working model allows a person to try out alternatives mentally, using knowledge of the past while responding to the present and future. Bowlby applied Craik's ideas to attachment, when other psychologists were applying these concepts to adult perception and cognition.[167] Infants absorb all sorts of complex social-emotional information from the social interactions that they observe. They notice the helpful and hindering behaviours of one person to another. From these observations they develop expectations of how two characters should behave, known as a "secure base script." These scripts provide as a template of how attachment related events should unfold and they are the building blocks of ones internal working models.[166] An infant's internal working model is developed in response to the infant's experience based internal working models of self, and environment, with emphasis on the caregiving environment and the outcomes of his or her proximity-seeking behaviours. Theoretically, secure child and adult script, would allow for an attachment situation where one person successfully utilizes another as a secure base from which to explore and as a safe haven in times of distress. In contrast, insecure individuals would create attachment situations with more complications.[166] For example, If the caregiver is accepting of these proximity-seeking behaviours and grants access, the infant develops a secure organization; if the caregiver consistently denies the infant access, an avoidant organization develops; and if the caregiver inconsistently grants access, an ambivalent organization develops.[168] In retrospect, internal working models are constant with and reflect the primary relationship with our caregivers. Childhood attachment directly influences our adult relationships.[169] A parent's internal working model that is operative in the attachment relationship with her infant can be accessed by examining the parent's mental representations.[170][171] Recent research has demonstrated that the quality of maternal attributions as markers of maternal mental representations can be associated with particular forms of maternal psychopathology and can be altered in a relative short time-period by targeted psychotherapeutic intervention.[172] The theory of control systems (cybernetics), developing during the 1930s and 1940s, influenced Bowlby's thinking.[173] 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] 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.[174] 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.[175] 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.[176] Learning theory, (behaviourism), saw attachment as a remnant of dependency with the quality of attachment being merely a response to the caregiver's cues. The main predictors of attachment quality are parents being sensitive and responsive to their children. When parents interact with their infants in a warm and nurturing manner, their attachment quality increases. The way that parents interact with their children at four months is related to attachment behaviour at 12 months, thus it is important for parents' sensitivity and responsiveness to remain stable. The lack of sensitivity and responsiveness increases the likelihood for attachment disorders to development in children.[177] 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.[178] 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[179] and meta-analytic reviews.[180] In the 1970s, problems with viewing attachment as a trait (stable characteristic of an individual) rather than as a type of behaviour with organizing 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.[181] This way of thinking saw the secure base concept as central to attachment theory's logic, coherence, and status as an organizational construct.[182] Following this argument, the assumption that attachment is expressed identically in all humans cross-culturally was examined.[183] 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. The 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.[184] 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.[184] The scholar Michael Rutter in 1974 studied the importance of distinguishing between the consequences of attachment deprivation upon intellectual retardation in children and lack of development in the emotional growth in children.[185] Rutter's conclusion was that a careful delineation of maternal attributes needed to be identified and differentiated for progress in the field to continue. 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 practised. Ultimately research tended to confirm the universality hypothesis of attachment theory.[184] 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.[186][187] 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.[188][189][190] Building on the work on temperament of Stella Chess, Kagan rejected almost every assumption on which attachment theory's cause was based. Kagan argued that heredity was far more important than the transient developmental 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. Subsequent research has not borne out Kagan's argument, possibly suggesting that it is the caregiver's behaviours that form the child's attachment style, although how this style is expressed may differ with the child's temperament.[191] Harris and Pinker put forward the notion that the influence of parents had been much exaggerated, arguing that socialization took place primarily in peer groups. H. Rudolph Schaffer concluded that parents and peers had different functions, fulfilling distinctive roles in children's development.[192] Psychoanalyst/psychologists Peter Fonagy and Mary Target have attempted to bring attachment theory and psychoanalysis into a closer relationship through cognitive science as mentalization. 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.[193] It has been speculated that this connection between theory of mind and the internal working model may open new areas of study, leading to alterations in attachment theory.[194] 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 in psychoanalysis of the importance of infant development in the context of relationships and internalized representations. Psychoanalysis has recognized the formative nature of a child's 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.[195] 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.[196] 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 care-giver. 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.[197] 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 Nicolae Ceaușescu 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.[198] 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.[96] 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.[199] 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.[200] Regardless of whether parents are genetically related, adoptive parents attachment roles they will still influence and affect their child's attachment behaviours throughout their lifetime.[201] 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.[202] It is suggested these multiple relationships influence one another reciprocally, at least within a family.[203] Principles of attachment theory have been used to explain adult social behaviours, including mating, social dominance and hierarchical power structures, in-group identification,[204] group coalitions, membership in cults and totalitarian systems[205] and negotiation of reciprocity and justice.[206] Those explanations have been used to design parental care training, and have been particularly successful in the design of child abuse prevention programmes.[207] While a wide variety of studies have upheld the basic tenets of attachment theory, research has been inconclusive as to whether self-reported early attachment and later depression are demonstrably related.[208] In addition to longitudinal studies, there has been psychophysiological research on the neurobiology of attachment.[209] Research has begun to include neural development,[210] behaviour genetics and temperament concepts.[191] Generally, temperament and attachment constitute separate developmental domains, but aspects of both contribute to a range of interpersonal and intrapersonal developmental outcomes.[191] Some types of temperament may make some individuals susceptible to the stress of unpredictable or hostile relationships with caregivers in the early years.[211] In the absence of available and responsive caregivers it appears that some children are particularly vulnerable to developing attachment disorders.[212] The quality of caregiving received at infancy and childhood directly affects an individual's neurological systems which controls stress regulation.[209] 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, a system that is responsible for the body's reaction to stress.[213] 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. Recent studies convey that early attachment relationships become molecularly instilled into the being, thus affecting later immune system functioning.[166] Empirical evidence communicates that early negative experiences produce pro inflammatory phenotype cells in the immune system, which is directly related to cardiovascular disease, autoimmune diseases, and certain types of cancer.[214] Recent[when?] improvements involving methods of research have enabled researchers to further investigate the neural correlates of attachment in humans. These advances include identifying key brain structures, neural circuits, neurotransmitter systems, and neuropeptides, and how they are involved in attachment system functioning and can indicate more about a certain individual, even predict their behaviour.[215] There is initial evidence that caregiving and attachment involve both unique and overlapping brain regions.[216] Another issue is the role of inherited genetic factors in shaping attachments: for example one type of polymorphism of the gene coding for the D2 dopamine receptor has been linked to anxious attachment and another in the gene for the 5-HT2A serotonin receptor with avoidant attachment.[217] Studies show that attachment in adulthood is simultaneously related to biomarkers of immunity. For example, individuals with an avoidance attachment style produce higher levels of the pro inflammatory cytokine interleukin-6 (IL-6) when reacting to an interpersonal stressor,[218] while individuals representing an anxious attachment style tend to have elevated cortisol production and lower numbers of T cells.[219] Although children vary genetically and each individual requires different attachment relationships, there is consistent evidence that maternal warmth during infancy and childhood creates a safe haven for individuals resulting in superior immune system functioning.[220] One theoretical basis for this is that it makes biological sense for children to vary in their susceptibility to rearing influence.[221] Attachment theory has often been applied in the discipline of criminology.[222] It has been used in an attempt to identify causal mechanisms in criminal behaviour – with uses ranging from offender profiling, better understanding types of offence and the pursuit of preventative policy. It has been found that disturbances early on in child-caregiver relationships are a risk factor in criminality. Attachment theory in this context has been described as "perhaps the most influential of contemporary psychoanalytically oriented theories of crime".[223] The origins of attachment theory within criminology can be found in the work of August Aichhorn. In applying psychoanalysis to pedagogy, he argued that abnormal child relationships are the underlying problem causing delinquency.[224] The intersection of crime and attachment theory was further researched by John Bowlby. In his first published work, Forty-four Juvenile Thieves, he studied a sample of 88 children (44 juvenile thieves and 44 non-delinquent controls) and determined that child-mother separation caused delinquent character formation, particularly in the development of an "affectionless character" often seen in the persistent offender. 17 of the juvenile thieves had been separated from their mothers for longer than six months during their first five years, and only 2 children from the control group had such a separation. He also found that 14 of the thieves were "affectionless characters" distinguishing them from others by their lack of affection, no emotional ties, no real friendships, and having "no roots in their relationships".[225] Two theories about why the crime peaks around the late teenage years and early twenties are called the developmental theory and life-course theory, and both involve attachment theory. Developmental perspectives argue that individuals who have disrupted childhood attachments will have criminal careers that continue long into adulthood.[226] Life course perspectives argue that relationships at every stage of the life course can influence an individual's likelihood of committing crimes.[227] Disrupted attachment patterns from childhood have been identified as a risk factor for domestic violence.[228] These disruptions in childhood can prevent the formation of a secure attachment relationship, and in turn adversely affecting a healthy way to deal with stress.[229] In adulthood, lack of coping mechanisms can result in violent behaviour.[230] Bowlby's theory of functional anger states that children signal to their caregiver that their attachment needs are not being met by use of angry behaviour. This perception of low support from partner has been identified as a strong predictor of male violence. Other predictors have been named as perceived deficiency in maternal love in childhood, low self-esteem.[229] It has also been found that individuals with a dismissive attachment style, often seen in an antisocial/narcissistic-narcissistic subtype of offender, tend to be emotionally abusive as well as violent. Individuals in the borderline/emotionally dependent subtype have traits which originate from insecure attachment in childhood, and tend to have high levels of anger.[228] It has been found that sexual offenders have significantly less secure maternal and paternal attachments compared with non-offenders which suggests that insecure attachments in infancy persist into adulthood.[231] In a recent study, 57% of sexual offenders were found to be of a preoccupied attachment style.[232] There is also evidence that suggests subtypes of sexual crime can have different attachment styles. Dismissive individuals tend to be hostile towards others, and are more likely to offend violently against adult women. By contrast, child abusers are more likely to have preoccupied attachment styles as the tendency to seek approval from others becomes distorted and attachment relationships become sexualized.[233] Attachment theory has been of special interest within probation settings. When put into practice, probation officers aim to learn their probationer's attachment history because it can give them insight into how the probationer will respond to different scenarios and when they are the most vulnerable to reoffend. One of the primary strategies of implementation is to set up the probation officer as a secure base. This secure base relationship is formed by the probation officer being reliable, safe, and in tune with the probationer, and is intended to help give them a partly representational secure relationship that they have not been able to form.[234] 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. 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.[235] 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."[12] Additionally, practitioners can use the concepts of attachment theory that suggests deep relationships which builds attachment security towards mental health interventions. Attachment security has been found to strengthen one's ability to cope with stress, anxiety, and maintain that, in turn, can contribute to the person's well-being and mental health[236] For example, previous studies have demonstrated that individuals who demonstrate avoidance attachment styles experiences less stress and distress when presented with ostracism.[237] However, finding quality childcare while at work or school is an issue for many families. NIHD recent study convey that top notch day care contributes to secure attachment relationships in children.[238] People have commented on this matter stating that "legislative initiatives reflecting higher standards for credentialing and licensing childcare workers, requiring education in child development and attachment theory, and at least a two-year associate degree course as well as salary increases and increased stature for childcare positions".[239] Corporations should implement more flexible work arrangements that recognize child care as essential for all its employees. This includes re-examination of parental leave policies. Too many parents are forced to return to work too soon post childbirth because of company policy or financial necessity. No matter the reason this inhibits early parent child bonding.[166] In addition to this, there should be increased attention to the training and screening of childcare workers. In his article reviewing attachment theory, Sweeney suggested, among several policy implications, "legislative initiatives reflecting higher standards for credentialing and licensing childcare workers, requiring education in child development and attachment theory, and at least a two-year associate degree course as well as salary increases and increased stature for childcare positions".[239] Historically, attachment theory had significant policy implications for hospitalized or institutionalized children, and those in poor quality daycare.[240] 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, individualized care in group settings.[235] Attachment theory has implications in residence and contact disputes,[240] 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. Rutter noted that in the UK, since 1980, family courts have shifted considerably to recognize the complications of attachment relationships.[241] Children tend to have attachment 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.[235] Attachment theory can also inform decisions made in social work, especially in humanistic social work (Petru Stefaroi),[242][243] 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.[244][245] 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.[235] Although attachment theory has become a major scientific theory of socioemotional development with one of the widest research lines in modern psychology, it has, until recently, been less used in clinical practice.[246] The attachment theory focused on the attention of the child when the mother is there and the responses that the child shows when the mother leaves, which indicated the attachment and bonding of the mother and the child. The attention therapy is done while the child is being restrained by the therapists and the responses displayed were noted. The tests were done to show the responses of the child.[citation needed] 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 among practitioners. It may also be partly due to the mistaken association of attachment theory with the pseudoscientific interventions misleadingly known as attachment therapy or holding therapy.[247] Main article: Attachment-based therapy 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.[248] Ongoing research has led to a number of individual treatments and prevention and intervention programs.[248] In regards to personal development, children from all the age groups were tested to show the effectiveness of the theory that is being theorized by Bowlby. They range from individual therapy to public health programs to interventions designed for foster caregivers. 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.[249][250] 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 programs are aimed at foster cares because the attachment behaviours of infants or children with attachment difficulties often do not elicit appropriate caregiver responses. Modern prevention and intervention programs have proven successful.[251] Main articles: 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). Against common misconception, this is not the same as 'disorganized attachment'. 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 may appear to resemble a clinical disorder.[252] 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.[253] "Attachment disorder" is an ambiguous term, which may refer to reactive attachment disorder or to the more problematic 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,[254] and is used within attachment therapy as a form of unvalidated diagnosis.[253] One of the proposed new classifications, "secure base distortion" has been found to be associated with caregiver traumatization.[255] 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.[256] Some forms of psychoanalysis-based therapy for adults—within relational psychoanalysis and other approaches—also incorporate attachment theory and patterns.[256][257] A 2010 study in the Journal of Personality looked at twins in Italy using the ACE Model and found that their shared environment (including shared aspects of their upbringing) was "completely irrelevant" in explaining their adult attachment styles.[258] Instead, levels of attachment-related anxiety and avoidance in the adult twins were completely explained by their genes and their unshared environment (aspects of the environment that were different for the twins). 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