

How Do Infants Form Attachments?

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ABSTRACT: Theories on how infants form bonds with their caregivers have been proposed since the beginning of the late nineteenth century. In this contribution, I explore how infants form bonds with caregivers through John Bowlby's research. John Bowlby who was a British psychologist, was the first to create a theory on how infants form bonds with different people. Bowlby viewed attachment (the bond between an infant and their caregiver) as the result of evolution. He argued that babies are predisposed to form attachments to caregivers to increase their chances of survival and protect them from danger. He adopted these views after looking at studies conducted by ethologists (researchers who study animals). Bowlby believed that a baby's attachment to a single caregiver is significantly more important than attachments to other caregivers and that these attachments serve as a model for future relationships. I also explore the differences in attachment across infants by interpreting Mary Ainsworth's research. Mary Ainsworth is an American psychologist who studied different attachment types in human infants. She found that human infants display different reactions in stressful situations. These different reactions can be used to group infants into different attachment types. Lastly, I explore the impact of certain attachment types on infants by looking at different research. **KEYWORDS:** Behavioral and Social sciences; Psychology; Attachment; Ethology, Infants; Caregivers.

■ Introduction

In 2003, Italian aviator Angelo d'Arrigo led captive-bred birds from the Arctic Circle to the Caspian Sea to shield them from the dangers of the war-torn skies of Pakistan and Afghanistan. He was able to do this since he understood the principle of imprinting where infant animals only learn to identify and comply with objects with similar features as soon as they are born. This keeps the infant animals safe and ensures their survival.¹ However, this same principle doesn't work for human infants. While human infants also have an innate tendency to form attachments with a caregiver to keep them safe, human infants form attachments based on who interacts with them in the first few years of their lives to ensure their survival and development.² But how important is this attachment, and does it look the same in each human infant? It is crucial to study attachment, as the attachment we form with our primary caregiver (the person we have the strongest bond with) is reflected in adult relationships, i.e., how our primary caregiver treats us is how we would expect to be treated by others in the future.³ There is a general relationship between an infant's type of attachment they have to their primary caregiver and their relationships in the future. In the sense that they are similar, a child who grew up with a loving primary caregiver is likely to go on to have a loving and happy relationship.

In this contribution, I address three key questions: (1) How do we form bonds with caregivers? (2) How do you assess or measure attachment type in infants? (3) How does the infant-mother attachment affect the infant in the future?

This paper is split into two sections. First, the paper investigates the most dominant explanation for attachment. British psychologist John Bowlby was the first to develop an explanation for how human infants form attachments through his

attachment theory, which was developed by looking at the work of other researchers and ethologists such as Harlow and Lorenz. The paper will secondarily explore the details of The Strange Situation, a semi-structured laboratory experiment that informs parents what type of attachment their child has and the characteristics of a particular attachment.⁴

■ Bowlby's monotropic theory

Introduction:

There are 4 aspects of Bowlby's theory: (1.1) monotropy, (1.2) social releasers, (1.3) critical period and innate system, (1.4) the internal working model. Bowlby argued that if any infant does not form an attachment to a primary caregiver during the critical period, there can be detrimental cognitive and behavioral consequences for the infant. The idea of a critical period was adapted into his theory after Bowlby looked at the findings of Lorenz's (ethologist) geese study. The idea of an internal working model was adapted into Bowlby's theory after looking at the results of monkeys who had separated from their mother in the Harlow (ethologist) rhesus monkey study.

Monotropy (1.1):

Bowlby believes that the infant's attachment to one specific caregiver is qualitatively different from any subsequent attachments and calls this caregiver the primary caregiver.⁵ Bowlby suggested that the nature of monotropy meant that a failure to initiate maternal attachment would lead to serious negative consequences, such as criminality towards the primary caregiver.⁶

Social Releasers (1.2):

Bowlby suggested that babies are born with a behavioral system consisting of a set of innate behaviors (e.g., crying, smiling, separating) that serve the same function to trigger adult caregiving. For example, babies cry, and parents are motivated to

soothe them; babies move away, and parents follow visually or physically.² Not only do these behaviors trigger adult caregiving and ensure the baby's safety, but they can also signal many wishes with intention (raising their arms to be picked up, crying for caregivers when frightened).⁷ But it is also argued that the interaction while the babies display this behavior enhances the quality of the infant-mother attachment. Bowlby called these behaviors social releasers or attachment behaviors. Bowlby formed this theory after looking at evidence from the animal world where, in all cases, the mother always responds by comforting her child to the infant's cry, call, etc. Therefore, Bowlby believed similar behavior in human infants also evokes maternal behavior that strengthens attachment. Bowlby has specified smiling, looking, vocalizing, following, and clinging as attachment behaviors. These are behaviors directed toward caregivers by all normal members of the species. They are designated attachment behaviors because they are used by the infant in the service of proximity or physical or psychological contact.⁸

Critical Period (1.3)

1.3.1. Procedure:

Lorenz separated the graylag goose's eggs into two separate groups: one group of goslings that hatched in their normal habitat with the mother goose as the first moving object, and the other group of goslings hatched in an incubator, where Lorenz was the first moving thing they saw.

1.3.2. Finding:

The group of goslings that hatched in their natural environment followed their mother (a goose), but the other group that hatched in the absence of their mother saw Lorenz as the first moving object instead, they started to follow Lorenz. Even if Lorenz put the goslings in a box so that both groups were isolated from either Lorenz or their mother, the goslings would still go towards their mother or, toward Lorenz, depending on who they were first exposed to. This idea is called imprinting. Lorenz found that if the newly hatched goslings did not 'imprint' on a moving figure between 12 and 17 hours after hatching, they did not attach to a mother figure, which may be detrimental to their survival, this inference can be made since other animals species like rhesus monkey experienced severe depression and project their brutal and barbaric behavior onto their children once grown like neglect their infants.⁹ This finding led to the idea that "critical periods" exist.¹⁰ Similarly to imprinting on infant animals, human infants also have an innate system that acts because of evolution to give them a survival advantage. Imprinting and attachment evolved to ensure infants were safe. Years ago, the dangers that infants needed protection from could have been wild animals; today, it can be something as simple as other humans. Bowlby also proposed that, like animals, human infants also have a period after birth in which babies are best adapted to form attachments, called the 'sensitive period'.¹¹

1.4. Internal Working Model:

Bowlby created the idea of an internal working model after looking at work done on maternal separation by American psychologist Harry Harlow.

1.4.1. Procedure:

Harlow observed 12 infant Rhesus monkeys in isolation. All monkeys were separated from their mothers within an hour after birth and placed in the feeding box of isolation. (part of the box they were kept in) for weeks. After the removal of the monkeys from isolation. The monkeys were placed in a playroom in groups of four: two isolates and two control monkeys who had been with their mothers in the first few weeks of birth. All groups were tested four days a week for 30 days to observe behavior after isolation.⁹ In a variation of the study, Harlow also observed the behavior of infant monkeys when placed with two surrogate or fake mothers who would feed them milk; one surrogate (fake) mother was made of wire, and the other surrogate (fake) mother was made of hardware cloth, a substance entirely adequate to provide support and nursing capability. The cloth mother and wire mother were placed in different cubicles. Half of the infant monkeys received milk from the wire model, while the other half received milk from the cloth mother.¹²

1.4.2. Findings:

Upon removal from the isolation chamber, the isolates went into a period of severe depression. The severity of this depression was indicated by the fact that one infant monkey died on the sixth day after being removed from the isolation chamber due to starvation.⁹ Infant monkeys frequently adopt compulsive behaviors, such as repeatedly pinching the same piece of skin on their chest. On rare occasions, this behavior can turn severe, and the animal may tear and gnaw at its body until it bleeds. Harlow also found that the rhesus monkey had problems mating and with physical interaction in adult life. Additionally, when these infant monkeys grew to be parents themselves, they would neglect their infants for food.

Based on the findings from Harlow's study, Bowlby believed that relationship patterns formed in early close relationships were expected by the infant in later close relationships.¹³ This idea of having a model that reflects our early close relationships during infancy onto later close relationships is called an 'internal working model'. These internal working models have a substantial influence on future relationships. For example, the patterns of peer relationships that emerge among preschoolers. Children who expect to have their needs met in close relationships and who view themselves as worthy of love and support during infancy and within the relationship with their primary caregiver may engage in social behaviors in preschool that tend to elicit positive responses and friendship from their peers.¹⁴ Contrastingly, a child who has experienced attachment figures as primarily rejecting will have internal working models that represent themselves as unworthy, since they're used to being rejected and will expect this in future relationships.⁹

It is these models that allow an individual to interpret and predict the behavior of their attachment partners and to plan immediate and future responses. These internal working models have a long-lasting effect. It is believed that our internal working models from early childhood with our parents represent how we will be with our kids in the future. A longitudinal study of women from Berkeley Guidance Studies.¹⁵ reported that ineffective parenting was associated with negative and

irritable behavior in girls when these girls became parents. Furthermore, the girls displayed more arbitrary parenting, which in turn was related to more difficult behavior in their daughters; therefore, our internal working model with our parents will also be reflected in our kids when they're parents.¹⁶

While Bowlby argued that all human infants have an innate tendency to form attachments, the attachment can look different for each infant, i.e., each infant can have a different type of attachment. Mary Ainsworth, who was an American Canadian developmental psychologist, developed the strange situation procedure to detect early emotional attachment between a child and their primary caregiver. She is noted for her work in the development of attachment theory.

■ The Strange Situation

The strange situation paradigm is a widely accepted way to assess the types of attachments in infants and the quality of attachment of an infant to a caregiver. The paradigm is a controlled laboratory experiment devised by Mary Ainsworth. It takes place in the playroom, where the observers make observations through a one-way window or mirror, while the infants are in a stressful situation, prompting attachment behavior.¹⁷

The strange situation paradigm tested different attachment behaviors: proximity- and interaction-avoiding behavior; proximity- and contact-seeking behavior; contact- and interaction-resisting behavior; contact-maintaining behavior; and lastly, search behavior.

■ Method

The sample for this experiment consisted of 23 mother-infant pairs who were tested for different attachment behaviors in 3-minute-long episodes (8 episodes). Observations of attachment behaviors were made by two observers behind a one-way mirror.¹⁷

- Episode 1: Mom and infant are shown the room. No attachment behavior was tested.

- Episode 2: infant's contact-maintaining, resisting, and seeking behaviors, proximity-seeking and avoiding behaviors, and interaction-avoiding and resisting behaviors observed with the mother.

- Episode 3: A stranger walks into the playroom. Here we are observing the infant's contact-maintaining, resisting, and seeking behaviors; proximity-seeking and avoiding behaviors; and interaction-avoiding and resisting behaviors with the mother while the stranger is there.

- Episode 4: stranger engages with the infant while mother leaves. Here we are observing the baby's contact-maintaining, resisting, and seeking behaviors; proximity-seeking and avoiding behaviors; and interaction-avoiding and resisting behaviors with the stranger.

- Episode 5: Mother re-enters. Here we are observing the infant's contact-maintaining, resisting, and seeking behaviors; proximity-seeking and avoiding behaviors; and interaction-avoiding and resisting behaviors with the mother.

- Episode 6: Infant left alone for 3 minutes.

- Episode 7: same as episode 4.

- Episode 8: The mother re-enters, the stranger leaves. Here we are observing the infant's contact-maintaining, resisting, and seeking behaviors; proximity-seeking and avoiding behav-

iors; and interaction-avoiding and resisting behaviors with the mother.

■ Results

Contact-maintaining and proximity-seeking behaviors:

The infant's attempts to get in touch with, be close to, or connect with the mother are weak in episodes 2 and 3, and they are significantly increased due to short separation experiences. Contact-maintaining behavior is barely observed in episodes 2 and 3. The first reunion episode (episode 5) saw an increase in it, and the second reunion episode (episode 8) saw an even further increase in it. The increase from episodes 2 through 5 to episode 8 in both cases of behavior is extremely significant. Some babies exhibited these behaviors towards strangers as well. Hence, for instance, in each episode where the stranger was present, a small number of infants approached him or her, but much less than those who approached the mother. In episodes 4 and 7, the stranger tried to console a few infants by picking them up; some of these babies did cling to her and/or fight being put down again. However, compared to the mother, contact-maintaining and proximity-seeking behaviors were much weaker towards the stranger.

Search behavior during separation:

Episode 4 had a moderate strength of search behavior, Episode 6 had significantly more search behavior, and Episode 7 had again a moderate strength of search behavior. Although this might imply that search behavior is increased when left alone and decreased when the stranger is there, this interpretation is not supported by the circumstances surrounding the stranger's actions and her proximity to the door. In episode 6, some infants (37%) screamed very little or not at all but actively searched. Some (20%) wailed inconsolably but barely searched or not at all. Some infants (32%) cried and looked. All infants, except for four, exhibited one or more attachment behaviors in response to being left alone.

Contact and interaction-resisting behavior:

In episode 5, nearly a third of the sample engaged in contact-resisting behavior towards the mother, and almost half did so in episode 8. All infants, except for one who did not resist the mother, also displayed a lot of contact-maintaining behavior. Therefore, contact-resisting behavior seems to be associated with the infant wanting to be held and close while still angrily resisting contact, at least when aimed towards the mother.

Other behaviors:

Other attachment behaviors were also observed, like crying, which infants do when their caregiver they are extremely attached to disappears, and exploratory behavior, which is when infants use their caregiver as a secure base and therefore, knowing that their caregiver is nearby gives them the confidence to explore their surroundings, i.e., the playroom.

Exploratory behavior:

There is a sharp decline in any indicators of exploratory behavior from episode 2 when the baby was with his mother alone to episode 3 while the stranger was also there. Exploration remained repressed in episode 4. Although the stranger's attempts to engage the baby in play in episodes 4 and 7 were unsuccessful, visual, and manipulative exploration dramatically

improved in episode 5, thanks to the mother. In episode 7, while it was only the infant and stranger, exploratory behavior hit its lowest point.

Crying

There is barely any crying in episode 2 by itself, therefore the unusual circumstance does not by itself induce alarm or discomfort. Crying does not substantially increase in episode 3, indicating that most infants did not find the stranger alarming in themselves, at least not when the mother was also present. When the mother leaves the infant alone for the first time in episode 4, the likelihood of crying increases. It then lowers when she returns in episode 5, only to increase again when she leaves the baby alone for the second time in episode 6. In episode 7, when the stranger returns, it doesn't considerably lessen, indicating that the majority of the babies were more distressed by the mother's absence than by being left alone.

Similar findings have been observed in infant monkeys displaying behavioral changes in response to extended separations, such as a week 18 or a month.¹⁹

Ainsworth identified three types of attachment apparent in these interactions:

- secure attachment, where the infant is comfortable exploring in the caregiver's presence and, when upset, seeks comfort in being in close proximity to the caregiver. In this kind of attachment, the caregiver is said to be responsive to the baby's calls and receptive to the baby's demands.

- Insecure resistance: where the infant may exhibit excessive attentiveness toward the caregiver and does not explore with confidence while the caregiver is there. The reunion with the caregiver does not immediately calm the infant, who is disturbed upon separation. It has been said that caregivers with this type of attachment are inconsistent in how they interact with their infants.

- Insecure avoidant: where even if contact is offered, the infant does not need to be close to or in contact with the caregiver upon reunion after being separated; additionally, when exploring, the infant explores confidently in the caregiver's presence. The caregivers in this pattern have been characterized as emotionally distant or chronically rejecting the infant's signals.

One common criticism of the study is that it may not have tested attachment but rather, distress as Bowlby and Ainsworth emphasized the roles of threat, danger, and confidence in the caregiver's protection as the key elements in attachment, so when the mother was out of the room the reunion behavior may have been testing distress and not attachment.²⁰

although important and a classical study I believe it may be better to test infants today in the current years to ensure that attachment patterns have not changed.

Studies of future attachments:

These findings help us understand what type of attachment behavior is desirable, as infants with certain attachments have 'better' future relationships or self-regulation due to a 'positive internal working model'. For example, infants with secure attachments have the strongest friendships in school, whereas infants with insecure attachments have difficulties in their friendships.²¹

Furthermore, securely attached infants grow to be more independent, less prone to peer perusal, and more sociable.²² In an extension of the Strufe study to test the predictive power of early attachment it was found that. Children securely attached as infants were found to be more ego resilient, independent, compliant, empathic, and socially competent; they had greater self-esteem and expressed more positive affect and less negative affect than did children who were insecure resistant as infants. Preschool teachers described children who had been insecure resistant in infancy as impulsive and tense and/ or helpless and fearful, patterns that are hypothesized to be the result of inconsistent or over-involved caregiving. They lacked agency and the confidence and assertiveness necessary to engage the preschool environment effectively, and teachers described children who had exhibited insecure avoidant patterns of attachment in infancy as hostile, socially isolated, and/or disconnected (psychotic-like) in the preschool setting.²³

Further research infants classified as secure were more likely to demonstrate physical affection and secure base behavior toward their mothers and were less likely to show a preference for playing with the visitor over their mother, the infants also tended to have mothers who classified themselves as secure attachment showing evidence that an internal working model has a long-lasting impact on future relationships with our children to come.

However, self-reports methods were used during this study which may cause problems of reliability as the mothers may have lied about their relationships with their mothers to 'put themselves in a better light' this is called social desirability and can lead to a lack of validity.²⁴ Unfortunately there has not been much research into the effects in adulthood, long-lasting effects of attachments have mostly been studied up to school life possibly because of the self-report having to be used.

Psychotherapy:

Beginning with Bowlby (1988), psychotherapy has also been conceptualized in terms of attachment theory. In that case, the empathic, supportive therapist is perceived as a security-providing attachment figure, and the client is viewed as transferring some of his or her prior insecure working models and attachment strategies to the therapist.²⁵ This helps adults change their attachment types to have positive relationships, (with their children, friends, or romantic partners.) Even though this might be helpful it might be hard for patients to accept support and love if they are not used to it, or even open up about their past experiences and relationships with their attachment figure.

■ Discussion

Understanding how human infants form attachments can have beneficial implications for society. This knowledge helps parents understand what type of attachment behavior is desirable and how to achieve a specific attachment in the infant. For example, if the parent wishes for their child to be securely attached in order to attain positive future relationships and good self-regulation, the parents should be sensitive to the infant's cries and responsive to the infant's needs. There is an increasing body of evidence to show that attachment may be compromised in institutionalized children as they have passed

the sensitive period to form an attachment to a primary caregiver like in Romanian orphans.²⁶ This information enables us to educate ourselves on the need for adoption. Furthermore, Children of incarcerated parents are at risk for negative social and academic outcomes, including internalizing and externalizing behavior problems, substance abuse, adult offending and incarceration, truancy, and school failure,²⁷ therefore it may be advisable for prisons to let inmates have more time with their children in a more welcoming surrounding rather than a cell or through a glass and telephone with precautions taken to ensure no escape for the inmates, cognitive or behavioral consequences similar to orphans who are institutionalized, such as low IQ and disorganized attachment.²⁸

■ Conclusion

In the current contribution, the theory that attachment development is a species-wide process that is embedded in the genetic makeup of every infant is accepted and acknowledged. Although infants have an inbuilt predisposition for attachment, this contribution proposes that there are individual variations due to external factors. This paper starts by summarizing Bowlby's monotropic theory and the two studies conducted by ethologists that served as the basis for Bowlby's theory. It also explores the types of interactions and the experiments in strange situations, and the real-world relevance of understanding attachments in infants.

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