

REVIEW

Early attachment networks to multiple caregivers: History, assessment models, and future research recommendations

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Abstract

Early attachment has been commonly hypothesized to predict children's future developmental outcomes, and robust evidence relying on assessments of single caregiver-child attachment patterns has corroborated this hypothesis. Nevertheless, most often children are raised by multiple caregivers, and they tend to form attachment bonds with more than one of them. In this paper, we briefly describe the conceptual and empirical roots underlying the notion of attachment networks to multiple caregivers. We detail potential reasons for research focusing on a single caregiver (most often mothers, but recently also fathers) and the historical attempts to establish a more ecologically valid assessment of attachment to multiple caregivers. Finally, we describe a recently developed organizational framework that includes testable models on which future research may rely for assessing the predictive power of attachment networks to multiple caregivers on children's developmental outcomes.

KEYWORDS

attachment, caregiver, child, father, mother, network

I want to emphasize that, despite voices to the contrary, looking after babies and young children is no job for a single person.

John Bowlby, *A Secure Base*, 1988

1 | INTRODUCTION: ATTACHMENT TO MULTIPLE CAREGIVERS

Children often develop attachment relationships not only to mothers but to multiple non-maternal caregivers (i.e., allomothers) and non-biologically related caregivers (i.e., alloparents) who usually interact with them daily. In fact, anthropologist and primatologist Sarah Hrdy, recently concluded that “[w]ithout alloparenting, there never would have been a human species” (2011, p. 109) because cooperative breeding has been essential in increasing the survival rates of children.

Such an evolutionary emphasis on the importance of multiple caregiving for the survival and development of children naturally extends to attachment theory as well. As can be inferred from the epigraph, Bowlby (1969, 1988) suggested that children are likely to become attached to more than a single caregiver, and Ainsworth (1963, 1967, 1985) fully acknowledged the role of both mothers and fathers in children’s developmental trajectories. Despite this theoretical understanding, with a few notable exceptions, attachment research has yet to fully catch up with the notion of attachment to multiple caregivers, which we refer to as “attachment network.” How can one understand such discrepancy between the acknowledgment of various scholars—including Bowlby and Ainsworth—of the importance of children’s attachment network on one hand, and the scarcity of research on the potential joint effect of attachment to multiple caregivers on children’s developmental outcomes on the other?

1.1 | Mothers, only

It has been argued that the little effort invested in research on attachment networks to multiple caregivers may have to do with historical and cultural values about caregiving roles (Howes & Spieker, 2016). In many Western cultures, in which attachment research has been conducted (e.g., the US and Europe), the primary caregiver was frequently the mother, and attachment quality to mothers was thought to be the main contributor to child development. Non-maternal caregivers, mainly fathers, were researched, if at all, with respect to their *absence* rather than their active role in the children’s development (both within and outside of attachment research; Cowan & Cowan, 2019).

Practical research considerations were also crucial in choosing to focus exclusively on mothers as attachment figures. Mothers were easier for researchers to access, and they more readily consented to participate than did fathers and nonparental caregivers. For example, fathers were unavailable during the daytime, when research procedures with parents and their children were conducted (Duschinsky, 2020). Furthermore, researchers wanted to be sure that their sample of children had sufficient experience of care with a particular parent to form attachment-relevant expectations, and it was not clear that such experience was in place with non-maternal caregivers (Sroufe, 1982).

It has also been suggested that the historical tendency to focus on mothers as the sole attachment figures may be ascribed to a wide misinterpretation of Bowlby’s terminology, specifically, the concept of “monotropy” (Bowlby, 1951, 1988). Bowlby intended the term “monotropy” to denote infants’ inborn tendency to seek proximity to familiar caregivers in general, mothers and others, providing a building block for the formation of attachment relationships (Duschinsky, 2020). This meaning was not well understood, however. Taken literally, the prefix “mono” denotes “one” or “single,” and the word root “tropo” denotes “turning to,” therefore the meaning that was generally inferred from the two components was “turning to one.” In an attachment context, such terminology may easily be interpreted as the inborn tendency to seek proximity to a single caregiver,

usually the mother. Inherently, such interpretation positions other potential caregivers, such as fathers and grandparents, as subsidiary attachment figures, with a marginal influence on the child's development. However, by using the term "monotropy" Bowlby intended to denote a infants' direction of instinctual emotional bonds toward a *group* of individuals, so to be contrasted with promiscuously directing such behavior toward many (Duschinsky, 2020).

1.2 | (Separately) Assessing attachment to other caregivers

Interest in other, non-maternal attachment figures has nevertheless been present. Research has focused on *comparing* qualities of children's attachment to mothers and to non-maternal caregivers (e.g., care providers; for a meta-analytic review, see Ahnert et al., 2006), or identifying their different roles in predicting developmental outcomes (e.g., mothers and fathers; Bretherton, 2010). Recently, there has been a surge in researching father-child attachment (Ahnert & Schoppe-Sullivan, 2020; Cowan & Cowan, 2019), and some have identified aspects of the attachment bond to be uniquely related to fathers (i.e., supporting exploration) as opposed to mothers (i.e., providing a haven of safety when distressed; Grossmann & Grossmann, 2020).

Studies comparing multiple caregivers on the dimension of child attachment qualities and their predictive power on developmental outcome relied on the independence hypothesis (Van IJzendoorn et al., 1992). According to this hypothesis, the quality of attachment relationships a child develops with multiple caregivers may influence *different* developmental outcomes, or affect them uniquely rather than jointly. But studying nonmaternal caregivers in isolation from the maternal caregivers fails to incorporate a crucial evolutionary aspect of human development: human beings are a product of joint care, which often constitutes an attachment network.

1.3 | Mothers and others: The integrative hypothesis

A level of analysis that takes into account attachment networks must integrate children's attachment relationships to multiple caregivers as *jointly* predicting developmental outcomes. The first to formally acknowledge the need for such research were Van IJzendoorn and Tavecchio (1987). Based on empirical evidence indicating that children tend to form attachment relationships with multiple caregivers, they argued that monotropy should be replaced with what they termed the "extension hypothesis." According to this hypothesis, "an optimal caregiving arrangement consists of a network of more or less stable attachment relationships between the child and several different caregivers" (Van IJzendoorn & Tavecchio, 1987, p. 24).

Half a decade later, Van IJzendoorn et al. (1992) followed up on the extension hypothesis with what they termed the *multiple caretaker paradox*: "How can attachment be predictive of socioemotional development if the child is attached in different ways to different caretakers?" (pp. 21–22). Logically, one aspect of such a paradox may be understood as follows. If (a) secure and insecure attachment patterns are qualitatively opposite, so that secure attachment predicts more positive outcomes than does insecure attachment; and (b) attachment to mother and father are equally significant in predicting certain developmental outcomes; then (c) it is impossible to predict outcomes of a certain quality given that children often form secure attachment to one caregiver *and* insecure attachment to another.

To overcome the conceptual and methodological deficiency that the multiple caretaker paradox exposed, a new hypothesis was needed. Rephrasing the extension hypothesis, Van IJzendoorn et al. (1992) proposed the *integrative hypothesis*, suggesting that attachment to either parent may be equally important, and the two together jointly predict children's developmental outcomes. They suggested operationalizing the integrative hypothesis as *two* child attachment patterns (i.e., an attachment network), that is, one attachment pattern with each parent (e.g., secure with both parents, or secure with mother and insecure with father). In many cultures, rearing practices have regarded multiple caregivers to be essential for children's development (e.g., see the pivotal role grandmothers play in raising Chinese children; Liang et al., 2021 [this issue]). Recently, even Westernized cultures that used to have clear expectations that the mother should be the sole caretaker, have gradually shifted toward an expectation about child rearing practices that often involves multiple caregivers in a variety of family structures, whose influences on children's development are similar in magnitude (Cabrera et al., 2018; Fagan et al., 2014; Kalil et al., 2014). These multiple caregiving practices have rendered the integrative hypothesis more ecologically valid than hypotheses that stress the role of a single caregiver in the child's developmental trajectory.

Despite calls to evaluate the combined effect of children's attachment to multiple caregivers, little research has assessed the integrative hypothesis. Most large-scale, attachment-oriented longitudinal studies did not incorporate assessments of attachment patterns to non-maternal caregivers (e.g., the Minnesota Longitudinal Study of Risk and Adaptation; Sroufe et al., 2005; and the NICHD Study of Early Child Care and Youth Development, <https://www.nichd.nih.gov/research/supported/secycd>). The vast majority of the studies that did assess children's attachment to multiple caregivers were either not a priori designed to test the integrative hypothesis, or used the collected mother-child and father-child attachment data to test the independence, but not the integrative hypothesis. Only recently has the unresolved issue of early attachment networks to multiple caregivers been revisited in a systematic manner, based on research conducted on this topic.

2 | RESEARCH ON ATTACHMENT NETWORKS: A BRIEF HISTORY

Schaffer and Emerson (1964) were two of the first scholars to assess the potential presence of multiple attachment relationships that children develop early in life. In a series of in-depth interviews and laboratory observations that over a year evaluated infants' reactions to separation from their caregivers, Schaffer and Emerson found that the vast majority of infants become initially attached to mothers. Nevertheless, they showed that by 18 months most infants established a network of attachments to multiple caregivers, which included, for the most part, mothers and fathers. Schaffer and Emerson's study indicated that infants become attached to multiple caregivers based on quantitative analyses that tested the *strength* of the attachment bond. Later studies assessed the *quality* of infants' attachment patterns to multiple caregivers, using what has become the gold standard observational assessment of such emotional bonds: the Strange Situation Procedure (SSP; Ainsworth et al., 1978).

One of the earliest studies to use the SSP to assess infants' attachment to multiple caregivers was that of Main and Weston (1981), which indicated that infants form attachment patterns with mothers and fathers simultaneously and independently. Other studies reported similar findings, with either weak or no associations between mother-child and father-child attachment patterns (Easterbrooks & Goldberg, 1984; Grossmann et al., 2002; Grossmann et al., 1981; Lamb, 1978; Lamb et al., 1982; Sagi-Schwartz & Aviezer, 2005; Van

IJzendoorn & De Wolff, 1997; but see Fox et al., 1991; Steele et al., 1996). Moreover, in two samples from Israel and the Netherlands (Goossens & Van IJzendoorn, 1990; Sagi-Schwartz et al., 1985), attachment patterns with professional caregivers were found to be independent of those that the children formed with parental caregivers.

An overview of the different outcomes that were assessed in the studies that tested attachment network using the SSP, as well as other common methodologies (e.g., the Attachment Q-Sort [Waters & Deane, 1985] and a modified SSP for older children [Cassidy et al., 1992]), has revealed divergent findings, leading to inconsistent conclusions. Whereas some studies indicated that being securely attached to both parents may lead to more favorable outcomes than being securely attached to only one parent (e.g., when assessing social competence; Suess et al., 1992; Van IJzendoorn et al., 1992), others suggested that being securely attached to only one parent but not to the other predicted equally optimal outcomes to being securely attached to both parents (e.g., when assessing externalizing behavior problems; Bureau et al., 2020).

Contradictory findings were also reported by studies that compared the significance of the parent's identity on the child's developmental outcomes. Some studies showed that secure attachment to mothers only may confer more favorable outcomes than secure attachment to fathers only (e.g., when assessing cortisol output; Kuo et al., 2019). Yet other studies indicated that the difference in the predictive power of having a single secure attachment to mothers as opposed to fathers is immaterial (e.g., when assessing externalizing behavior problems; Kochanska & Kim, 2013).

Taken together, the studies that assessed attachment networks to date were based on samples of small sizes, ranging from 20 to 186 mother-child/father-child triads, and produced mixed findings. The accumulating evidence has led to theoretical inconsistencies and *post hoc* hypotheses regarding whether and how the configuration of children's attachment patterns to multiple caregivers, mostly mothers and fathers, predicts future developmental outcomes. Thus, it has become clear that there was a need for a systematic approach to testing questions pertaining to the joint effect of attachment relationships with multiple caregivers on developmental outcomes.

3 | TESTABLE MODELS OF ATTACHMENT NETWORKS

The need to take stock of past research on attachment networks and to create an organizational framework for further research has been addressed recently (Dagan & Sagi-Schwartz, 2018, 2020). Whereas attachment literature makes it clear that children often develop attachment relationships with non-parental caregivers, the majority of research regarding attachment networks has focused on children's attachment relationships with mothers and fathers. Given such empirical concentration, we (Dagan & Sagi-Schwartz, 2018) reviewed all studies that assessed the integrative hypothesis and formulated two research questions and four attachment network models to describe the potential influence of the attachment network to mother and father (which in principle can be extended to other caregivers as well) on developmental outcomes.

The first research question is quantitative in nature and pertains to the number of secure attachments within an attachment network: *Does the number of secure attachment relationships matter in predicting developmental outcomes?* (Figure 1, Research Question 1). Because virtually all previous research indicated that children who are insecurely attached to both parents tend to show worse outcomes than those who have at least one secure attachment with either parent, we focused on the comparison between children with two secure attachments and those with only one. We hypothesized that one of two mutually

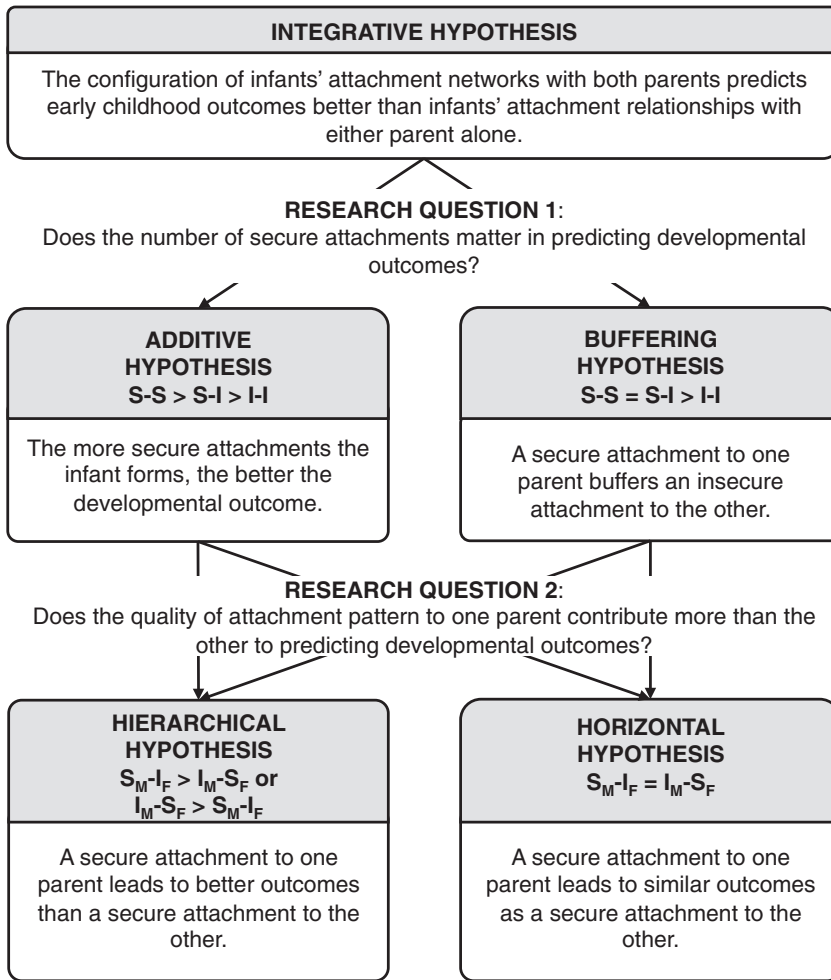


FIGURE 1 Four competing hypotheses ordered according to the issue they address (based on Dagan & Sagi-Schwartz, 2018). *Note.* S-S, secure attachment to mother and father; I-I, insecure attachment to mother and father; S_M , secure attachment to mother; S_F , secure attachment to father; I_M , insecure attachment to mother; I_F , insecure attachment to father

exclusive scenarios proves accurate. The prediction of the first scenario, which we termed the *Additive Hypothesis*, is that children with two secure attachments fare better than those with a single secure attachment. The second scenario predicts that children with a single secure attachment do not show significantly different outcomes than do those with two secure attachments. In a scenario of this type, a secure attachment with one parent may be thought of as offsetting the negative effect of the insecure attachment with the other parent, therefore we termed this scenario the *Buffering Hypothesis*.

The second research question regarding the potential influence of attachment networks on developmental outcomes is qualitative in nature, with a specific focus on children who form one secure attachment to either the mother or the father: *Does the quality of attachment pattern to one parent contribute more than the other to predicting developmental outcomes?* (Figure 1, Research Question 2). This question pertains to the large group of children who form discordant attachment patterns (e.g., secure attachment to one parent and insecure to the other). Similar to the first research question, the hypothesis is that one of

TABLE 1 Model-based outcome predictions (from Dagan & Sagi-Schwartz, 2018)

Integrative model	Prediction	Brief description
(a) Additive-Hierarchical	S-S > S _M -I _F > I _M -S _F > I-I OR S-S > I _M -S _F > S _M -I _F > I-I	Secure attachment to only one parent (but not the other) leads to better outcomes than insecure attachment to both parents, but poorer outcomes than secure attachment to both parents.
(b) Additive-Horizontal	S-S > S _M -I _F = I _M -S _F > I-I	Secure attachment to one parent (but not the other) leads to better outcomes than insecure attachment to both parents, but poorer outcomes than secure attachment to both parents.
(c) Buffering-Hierarchical	S-S = S _M -I _F > I _M -S _F > I-I OR S-S = I _M -S _F > S _M -I _F > I-I	Secure attachment to only one parent (but not the other) leads to as good outcomes as secure attachment to both parents.
(d) Buffering-Horizontal	S-S = S _M -I _F = I _M -S _F > I-I	Secure attachment to one parent (but not the other) leads to as good outcomes as secure attachment to both parents does, all better than insecure attachment to both parents.

Note. Greater than symbols represent better developmental outcomes.

Abbreviations: S-S, secure attachment to mother and father; I-I, insecure attachment to mother and father; S_M, secure attachment to mother; S_F, secure attachment to father; I_M, insecure attachment to mother; I_F, insecure attachment to father.

two mutually exclusive scenarios will be corroborated. The first scenario predicts that a secure attachment with one parent leads to more optimal developmental outcomes than secure attachment with the other parent, reflecting a hierarchy of caregiving significance. Because in such a scenario one caregiver is ranked higher than the other as far as predictive power is concerned, we termed it the *Hierarchical Hypothesis*. Given that mothers were assumed to be (and in many cases indeed have been) more involved in child rearing than other caregivers, children's attachment relationship with their mothers may enhance the effect of these attachment patterns on developmental outcomes. However, the prediction inferred from the second scenario is that children who are securely attached to only one parent show similar quality of developmental outcomes whether the attachment is with the mother or the father. Because this scenario shows a relative equilibrium between the significance of caregiving of each parent, we termed it the *Horizontal Hypothesis*. Conceptually, this hypothesis derives its power from a long-standing assumption in attachment research that parental sensitivity is one of the most important, although by no means the only predictor of attachment security. Thus, it is the quality of parenting, rather than the parent's (or attachment figure's) identity that matters when it comes to determining the quality of attachment. Indeed, the Horizontal Hypothesis has been recently corroborated with respect to behavioral problem outcomes (see this issue, Dagan et al., 2021 [this issue]).

Finally, combining the first (quantitative) and second (qualitative) research questions results in four integrative models. Each model integrates a quantitative hypothesis with a qualitative one to form a unique prediction about the relations between four configuration groups: children who are securely attached to both parents, children who are securely attached only to mothers, children who are securely attached only to fathers, and children who are insecurely attached to both parents (Table 1). This approach enables a systematic evaluation of the following question: Which integrative model empirically prevails when assessing different developmental outcomes?

4 | RECOMMENDATIONS FOR FUTURE RESEARCH

To examine the proposed integrative models with precision, current and future research should use two supplementary methodological paradigms. The first is obtaining, harmonizing, and synthesizing data from studies that evaluated early attachment patterns to multiple caregivers. This can be achieved by using the gold standard method of meta-analysis, that is, individual participant data (IPD) meta-analyses (Verhage et al., 2020). Attachment research lends itself well to IPD meta-analysis because it has long relied on a gold standard in the observational assessment of attachment patterns (i.e., SSP), and on other, well-calibrated observational instruments (e.g., the AQS), which in turn makes the harmonization of the independent variable relatively straightforward. Harmonization of multiple developmental outcomes, however, such as social competence or effortful control, will need to undergo careful conceptual and statistical synthesis because multiple studies used different instruments, which may entail different assumptions about the construct that they measure (Flake & Fried, 2020). A framework for addressing such a problem via an IPD meta-analysis in attachment research has already been created (Verhage et al., under review) and applied (Dagan et al., 2021 [this issue]).

The second, more labor-intensive approach is launching a large longitudinal birth cohort study (for a proposed methodological approach, see Dagan & Sagi-Schwartz, 2018). We recommend that researchers who design such a study consider variables that may moderate the effects for the anticipated links between attachment network and multiple outcomes. For example, given that risk conditions have been found to moderate the association between children's attachment patterns and multiple developmental outcomes (e.g., Groh et al., 2014), family risk status may moderate the effects that the number of secure attachment relationships may have on developmental outcomes. Parental involvement in caregiving may be another important moderating factor, as it is reasonable to expect that in families where one parent interacts with the child significantly more than the other, the Hierarchical hypothesis, rather than the Horizontal Hypothesis, will be supported. Additionally, as in much of attachment research, it is less clear what mediates the expected associations between early attachment patterns and later developmental outcomes. Thus, careful consideration of mediating variables will be useful in assessing attachment networks. For example, evidence suggests that attachment-based parenting interventions, which have been shown to enhance attachment security, affect diurnal cortisol regulation (i.e., higher morning cortisol and steeper morning-to-evening rhythms observed in children who received attachment-based interventions than in controls; Bakermans-Kranenburg et al., 2008; Bernard et al., 2015). Diurnal cortisol regulation, in turn, predicts later socioemotional outcomes (e.g., anger regulation and externalizing behaviors; Bernard et al., 2015; Salis et al., 2016), which supports the hypothesis that physiological stress regulation mediates the anticipated pathways from attachment networks to socioemotional outcomes.

5 | CONCLUSION

The developmental history of the concept of attachment network is by no means linear. As often is the case in other psychological research arenas, assessment of whether and how multiple attachment figures *jointly* influence children's development has been pushed and pulled in different directions. This was the case due to the critical misunderstanding of Bowlby's original terms, research designs with compromising considerations, and possibly premature satisfaction with assessing a children's attachment to a single caregiver. Despite a history of comparatively few and inconsistent empirical findings, the accumulation of

studies that have been conducted to date have laid the groundwork for generating important testable hypotheses about the predictive power of attachment networks to multiple caregivers on developmental outcomes. Assessing the integrative attachment networks models that we present here is likely to help attachment theory overcome what has long been regarded as one of the main challenges it has faced since its conception.

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How to cite this article: Dagan, O., & Sagi-Schwartz, A. (2021). Early attachment networks to multiple caregivers: History, assessment models, and future research recommendations. *New Directions for Child and Adolescent Development*, 2021, 9–19. <https://doi.org/10.1002/cad.20446>