Early Attachment Network to Multiple Caregivers:
A Brief History of Research and Assessment Models

Or Dagan\textsuperscript{1} & Abraham Sagi-Schwartz\textsuperscript{2}

\textsuperscript{1}Department of Psychology, Stony Brook University
\textsuperscript{2}Center for the Study of Child Development and School of Psychological Sciences, University of Haifa

\textcolor{red}{This paper is under peer review.}

\textbf{Citation:} Dagan, O., & Sagi-Schwartz, A. (2021, September 4). Early Attachment Network to Multiple Caregivers: A Brief History of Research and Assessment Models. 10.31234/osf.io/394u2

Correspondent author:

Or Dagan, Ph.D.

Department of Psychology, Stony Brook University

Stony Brook, NY, 11794

+1- 646-270-1100
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 network to multiple caregivers. We describe 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, network
Early Attachment Network to Multiple Caregivers:

A Brief History of Research and Assessment Models

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


In addition to mothers, children can and often do develop attachment relationships to multiple nonmaternal caregivers (i.e., alloparents) who usually interact with children daily. Anthropologist and primatologist, Sarah Hardy, 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 did not escape attachment theory. As can be inferred from the opening quote, 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 and a few notable exceptions, attachment research has yet to fully catch up with the notion of attachment to multiple caregivers, which we refer to here as “attachment network”.

How can one understand such discrepancy between the acknowledgment by both Bowlby and Ainsworth of the importance of children’s attachment network to multiple caregivers 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?
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 of as 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 their children’s development (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). In addition, 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 (Duschinsky, 2020), 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 suffix “tropo” denotes
“turning to,” and thus 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.

(Separately) Assessing Attachment to Other Caregivers

Interest in other, non-maternal attachment figures has nevertheless been present. Yet,
with a few notable exceptions, research has focused on comparing qualities of children’s
attachment to mothers and to non-maternal caregivers (e.g., care-providers; 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. However, studying nonmaternal caregivers in isolation
from the maternal caregivers fails to incorporate a crucial evolutionary aspect of human
development; that is, that human beings are a product of joint care, which often constitutes an
attachment network.
Mothers and Others: The Integrative Hypothesis

A level of analysis that reflects a closer affiliation with the idea of attachment network to multiple caregivers 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, Sagi, and Lambermon (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 to each other, so that secure attachment predicts more positive outcomes and insecure attachment more negative ones, 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 jointly predict children’s developmental outcomes. They suggested operationalizing the integrative hypothesis as two child attachment patterns (i.e., attachment network), that is, one attachment pattern with each parent, for example, 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., the pivotal role grandmothers play in raising Chinese children; Liang et al., 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 involve multiple caregivers in a variety of family structures, whose influence on children’s development is similar in magnitude (Cabrera et al., 2018; Fagan et al., 2014; Kalil et al., 2014). Taken together, multiple caregiving practices have rendered the integrative hypothesis more ecologically valid than hypotheses that stress the role of only a single caregiver in the child’s developmental trajectories.

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/seccyd). 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 applied the collected mother-child and father-child attachment data to testing the independence, but not the integrative hypothesis. Only recently has the unresolved
issue of early attachment networks to multiple caregivers been revived in a systematic manner, based on research conducted on this topic.

**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 children develop early in life. In a series of in-depth interviews and laboratory observations that evaluated infants’ reactions to separation from their caregivers over a year, 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 that 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). In addition, attachment patterns with professional caregivers were independent of those that the children formed with parental
caregivers in two samples in Israel and the Netherlands (Goossens et al., 1990; Sagi-Schwartz et al., 1985).

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]), have yielded 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 as optimal outcomes as being securely attached to both parents (e.g., when assessing externalizing behavior problems; Bureau et al., 2020). Contrasting findings were also reported by studies that compared the significance of the parent’s identity (mostly mothers and fathers) 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 which assessed attachment networks to date were based on samples of small sizes ranging between 20 and 186 mother-child/father-child triads, and produced mixed findings. The accumulating evidence thus 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. It thus became clear that a systematic approach was needed to testing questions pertaining to the joint effect of attachment relationships with multiple caregivers on developmental outcomes.

**Testable Models of Attachment Network**

The clear need to take stock of past research on attachment networks to multiple caregivers and to create an organizational framework for further research has been addressed recently. By reviewing all studies that assessed the integrative hypothesis, we (Dagan & Sagi-Schwartz, 2018) 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, as it 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, 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 exclusive scenarios may prove accurate. The prediction of the first scenario, which we termed the *Additive Hypothesis*, is that children with two secure attachments will fare better than those with a single secure attachment. The second scenario predicts that children with a single secure attachment will not show significantly different outcomes than those with two secure attachments. Since 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, 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: \textit{Does the quality of attachment pattern to one parent contribute more than the other to predicting developmental outcomes?} (Figure 1, 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 two mutually exclusive scenarios will be corroborated. The first scenario predicts that a secure attachment with one parent will lead 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 \textit{Hierarchical Hypothesis}. The prediction inferred from the second scenario is that children who are securely attached to only one parent will 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 \textit{Horizontal Hypothesis}.

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 insecurely attached to both parents (Table 1). This approach enables a systematic evaluation of the following question: Which integrative model prevails when assessing different developmental outcomes?
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 meta-analyses (Verhage et al., 2020; for applying such a methodology to assess attachment network and behavioral problems outcomes, see Dagan et al., 2021). The second, surely more labor-intensive approach, is launching a longitudinal large birth cohort study (for a proposed methodological approach, see Dagan & Sagi-Schwartz, 2018). Without such a robust prospective study, consisting of a statistically powerful sample that allows forming all the necessary combinations of mother-child and father-child attachment, the field is liable to stagnate.

**Conclusion**

The developmental history of the concept of attachment network to multiple caregivers is not 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 critical misunderstanding of Bowlby’s original terms, research designs with compromising considerations, and possibly premature satisfaction with assessing a single attachment figure. 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 regarding developmental outcomes. Assessing such models is likely to help attachment theory overcome what has long been regarded as one of the main challenges it has faced since its conception.
References


HISTORY AND MODELS OF ATTACHMENT NETWORKS 18


**Figure 1**

Four competing hypotheses ordered according to the issue they address (based on Dagan & Sagi-Schwartz, 2018).

**INTEGRATIVE HYPOTHESIS**

The configuration of infants’ attachment networks with both parents predicts early childhood outcomes better than infants’ attachment relationships with either parent alone.

**QUESTION 1:**

Does the number of secure attachments matter in predicting developmental outcomes?

**ADDITIVE HYPOTHESIS**

*S-S > S-I > I-I*

The more secure attachments the infant forms, the better the developmental outcome.

**BUFFERING HYPOTHESIS**

*S-S = S-I > I-I*

A secure attachment to one parent buffers an insecure attachment to the other.

**QUESTION 2:**

Does the quality of attachment pattern to one parent contribute more than the other to predicting developmental outcomes?

**HIERARCHICAL HYPOTHESIS**

*S_M-I_F > I_M-S_F or I_M-S_F > S_M-I_F*

A secure attachment to either parent leads to better outcomes than a secure attachment to the other.

**HORIZONTAL HYPOTHESIS**

*S_M-I_F = I_M-S_F*

A secure attachment to either parent leads to similar outcomes as a secure attachment to the other.

*Note. S-S = Secure to mother and father; I-I = Insecure to mother and father; S_M = Secure to mother; S_F = Secure to father; I_M = Insecure to mother; I_F = Insecure to father.*
Table 1

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

<table>
<thead>
<tr>
<th>Integrative Model</th>
<th>Prediction*</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Additive-Hierarchical</td>
<td>$S-S &gt; S_M-I_F &gt; I_M-S_F &gt; I-I$</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>or $S-S &gt; I_M-S_F &gt; S_M-I_F &gt; I-I$</td>
<td></td>
</tr>
<tr>
<td>(b) Additive-Horizontal</td>
<td>$S-S &gt; S_M-I_F = I_M-S_F &gt; I-I$</td>
<td>Secure attachment to either parent (but not the other) leads to better outcomes than insecure attachment to both parents, but poorer outcomes than secure attachment to both parents.</td>
</tr>
<tr>
<td>(c) Buffering-Hierarchical</td>
<td>$S-S = S_M-I_F &gt; I_M-S_F &gt; I-I$</td>
<td>Secure attachment to only one parent (but not the other) leads to as good outcomes as secure attachment to both parents.</td>
</tr>
<tr>
<td></td>
<td>or $S-S = I_M-S_F &gt; S_M-I_F &gt; I-I$</td>
<td></td>
</tr>
<tr>
<td>(d) Buffering-Horizontal</td>
<td>$S-S = S_M-I_F = I_M-S_F &gt; I-I$</td>
<td>Secure attachment to either parent (but not the other) leads to as good outcomes as secure attachment to both parents, all better than insecure attachment to both parents.</td>
</tr>
</tbody>
</table>

*Note. Greater than symbols represent better developmental outcomes. $S-S =$ Secure with mother and father; $I-I =$ Insecure with mother and father; $S_M =$ Secure to mother; $S_F =$ Secure to father; $I_M =$ Insecure to mother; $I_F =$ Insecure to father.