

Bernier, A., Miljkovitch, R., Tarabulsky, G.M., Sirois, M.-S., & Bailey, H.N. (2018). Reconsidering the links between sibship size, maternal sensitivity, and child attachment: A multidimensional interactive approach. *Journal of Family Psychology*, *32*, 396–405.

Abstract

Despite being a well-documented predictor of children's cognitive and social development, sibship has received remarkably little attention in the attachment and maternal sensitivity literature. The only study that has examined both sensitivity and attachment in relation to sibship found greater maternal sensitivity but no more secure attachment among first-born infants. In the current study, we sought to examine the same links while testing two related hypotheses: that sibship size relates only to some specific aspects of sensitivity, and that sibship size relates to sensitivity only among certain mothers, namely those who are at risk for sub-optimal parenting due to an insecure attachment state of mind. We assessed three dimensions of maternal sensitivity at 12 months and child attachment at 15 and 25 months among 258 mother-infant dyads living in intact bi-parental families. Compared to mothers who had fewer children, those with more children were observed to be less accessible/available, less positive, but not less cooperative/attuned, when interacting with their infant. These links were moderated by maternal attachment state of mind, such that significant relations were observed only among mothers presenting a more insecure state of mind. Finally, sibship size was unrelated to attachment. These findings suggest that failure to consider different dimensions of sensitivity or important parental moderators may result in the erroneous conclusion that birth order and sibship size are inconsequential for parent-child relationships.

Keywords: maternal sensitivity, child attachment, siblings, birth order, sibship size, attachment state of mind

Reconsidering the links between sibship size, maternal sensitivity and child attachment: A multidimensional interactive approach

A long tradition of empirical research including meta-analytic reviews (e.g., Fearon, Bakermans-Kranenburg, Van IJzendoorn, Lapsley, & Roisman, 2010) and experimental studies (Guttentag et al., 2014) shows that parent-infant interactions are fundamental building blocks of child adaptation throughout infancy and childhood. Perhaps the aspect of parenting toward infants that has received the most empirical attention is maternal sensitivity, or mothers' ability to perceive, correctly interpret, and appropriately respond to infant signals and needs (Ainsworth, Blehar, Waters, & Wall, 1978). Meta-analytic data suggest that maternal sensitivity is a robust predictor of child attachment security to mother (Verhage et al., 2016). In addition, maternal sensitivity predicts many other aspects of child adaptation, often in the socio-emotional sphere (e.g., Van der Voort et al., 2014), but also in biological and cognitive domains (Atkinson et al., 2013; Bernier, Carlson, Deschênes, & Matte-Gagné, 2012). In fact, maternal sensitivity over the first three years of life has been found to predict social competence and academic skills through adolescence and adulthood (Raby, Roisman, Fraley, & Simpson, 2015). Overall, there is no doubt that maternal sensitivity is a central aspect of familial influences on young children.

In this context, a crucial question concerns the factors that relate to mothers' capacity to show sensitive caregiving behavior. It is generally accepted that context has a critical impact on behavior; consequently, the family environment, as the most immediate context in which the mother-child relationship unfolds on a daily basis, should exert a potent influence on maternal sensitivity (Tarabulsky et al., 2005). One family factor that can be presumed to impact sensitivity directly is the sheer number of children that a parent needs to care for, or sibship size. The need to divide one's time and attention between more than one child can be expected to tax caregivers'

attentional and emotional resources and thus challenge their capacity to perceive and promptly respond to each individual child's signals. In fact, this has been observed with childcare workers, who were found to be less sensitive while interacting with larger than smaller groups of children (De Schipper, Riksen-Walraven, & Geurts, 2006). Accordingly, children with fewer siblings might benefit from higher levels of maternal availability and sensitivity and consequently be more likely to develop secure attachment, compared with children who have more siblings. Yet, sibship size has received remarkably little attention in the attachment and sensitivity literatures. Addressing this gap was the general aim of the current study.

Sibship, sensitivity and attachment

There are different ways to operationalize sibship factors in family studies. A common approach is to use children's position in the birth order of the siblings. To the best of our knowledge, all studies to date that have investigated sensitivity or attachment have used birth order to approach questions relating to sibship. A first group of cross-sectional studies have assessed sensitivity toward first- and later-born children concurrently, and thus at different ages for the two children (e.g., Browne, Leckie, Prime, Perlman, & Jenkins, 2016; Hallers-Haalboom et al., 2014). Although these studies are well-designed to address their questions pertaining to developmental considerations in the display of sensitivity, their design is such that birth order is inherently confounded with child age (first-borns are always older than second-borns when assessed), which clouds interpretation of the results for our purposes.

A few studies have overcome this age confound by relying on longitudinal designs, observing each mother twice a few years apart, interacting with her first- and second-born at similar ages. These studies have yielded conflicting results when it comes to sensitivity or maternal behavior broadly: three found no or very little difference in maternal behavior toward

first- and second-born (Bornstein, Putnick, & Suwalsky, 2016; Dunn, Plomin, & Nettles, 1985; Hallers-Haalboom et al., 2017), one found an advantage for second-borns (Ward, Vaughn, & Robb, 1988), and another reported greater maternal sensitivity toward first-borns (Van IJzendoorn et al., 2000). Even fewer studies have considered attachment, but the two converge to suggest that first-borns are no more likely to be securely attached than second-borns, as assessed with the Strange Situation Procedure (SSP; Van IJzendoorn et al., 2000; Ward et al., 1988).

It is noteworthy that all relevant studies contrasted first- and second-born infants, although it is reasonable to expect that any effect of stretched maternal resources may be more marked as the number of children in the family increases. In addition, only one study appears to have assessed both sensitivity and attachment (Van IJzendoorn et al., 2000). This considerably constrains the understanding of the developmental process linking birth order (or sibship size), sensitivity, and attachment. Van IJzendoorn et al.'s (2000) results, indicating greater maternal sensitivity but no more secure attachment in first-borns, have been interpreted to suggest that the tendency to treat the first-born more sensitively may be too subtle to affect the security of the attachment relationship (Werner, Zahn, Titze, Walitza, & Logoz, 2015). The current report addresses two different issues that may further inform the interpretation of Van IJzendoorn et al.'s (2000) results: the multidimensional nature of sensitivity that is often overlooked in its assessment, and the presence of important parent-based moderating factors that would make some mothers more vulnerable than others to multi-parity.

Maternal sensitivity as a multidimensional construct

Maternal sensitivity is conceptualized in different ways in the literature, and there is evidence that some aspects of maternal behavior are more strongly related to child attachment than others (Nievar & Becker, 2008). Consequently, it is recommended that researchers consider

different aspects of sensitivity rather than approaching it as a unitary concept (Leerkes, Gedaly, & Su, 2016; Mesman & Emmen, 2013). This suggestion appears relevant for the examination of sibship effects on sensitivity, as some aspects of sensitivity may be more likely than others to be affected by the number of children in the family. Intuitively, the need to divide attention between an infant and his or her sibling(s) seems particularly likely to challenge mothers' capacities to be steadily available and attentive, and thus to monitor the infant closely, responding promptly to his or her cues. However, when a mother does have the opportunity to take time with her infant and devote her full attention to him or her, there is no reason to expect that she would be less skilled at establishing a positive, harmonious exchange, reading infant cues correctly and providing appropriate responses to his or her signals. Failure to consider this possibility may perhaps contribute to the current unclear pattern of results in the literature: if sibship size impacts some but not all aspects of sensitivity, then lumping these dimensions into one assessment of sensitivity would likely lead to relatively weak observed effects on overall sensitivity. In addition, if sibship size affects aspects of sensitivity that are less salient to the development of child attachment (Nievar & Becker, 2008), then sibship size may not affect attachment (Leerkes et al., 2016). Overall, it is critical that measures of sensitivity allow for the assessment of the different aspects of maternal behavior that make up the construct, as these may be differentially associated with sibship size and may differentially relate to the development of child attachment.

With the goal of deriving aspects of maternal behavior that constitute sensitivity, we (Bailey et al., 2016) submitted the items of the Maternal Behavior Q-Sort (Pederson & Moran, 1995) to a factor analysis, which yielded three factors: Cooperation/Attunement (mothers' ability to accurately interpret infants' cues and to adjust the interaction correspondingly); Positivity (maternal positive attitude, describing mothers with positive comments about their infant, and

who show no signs of feeling overwhelmed or critical of the baby); and Accessibility/Availability (consistent attentiveness toward the infant, even when engaged in other tasks). We found that these dimensions differentially predicted child attachment security to mother, assessed in the home with the Attachment Q-Sort. Child attachment was most strongly related to maternal Cooperation/Attunement, then Positivity, and least with Accessibility/Availability. Only Cooperation/Attunement uniquely predicted attachment above the other two dimensions. In the current study, we used the same sample as Bailey et al. (2016) to investigate the hypotheses that sibship size is associated with some but not all aspects of sensitivity, and that sibship size is unrelated to attachment if it does not relate to the Cooperation/Attunement dimension.

Moderation by maternal attachment state of mind

A different issue concerns one of the most often studied predictors of maternal sensitivity, namely maternal state of mind with respect to attachment. Generally assessed with the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996), attachment state of mind refers to the organization of adults' discourse when discussing their childhood relationships with their own parents. Studies consistently suggest that mothers with a secure state of mind (i.e., those with a coherent discourse during the AAI) display higher sensitivity when interacting with their infants (e.g., Leerkes et al., 2015). Importantly, a secure state of mind also appears to act as a protective factor for mother-child relationships in the context of risk factors. McMahon, Barnett, Kowalenko, and Tennant (2006) observed that depressed mothers were more likely than their healthy counterparts to have insecurely attached children, however only when they also presented an insecure state of mind; no effect of depression was observed among mothers with a secure state of mind. Likewise, Coppola, Cassibba, and Costantini (2007) reported that mothers

of premature babies were less sensitive than those of babies born at term, however only when they presented an insecure attachment state of mind. These two studies' findings are consistent with developmental theory, which contends that adaptation is the result of interactions between risk and protective factors that exert divergent effects, with negative outcomes more likely when risk factors accumulate and/or are not counter-balanced by protective factors (e.g., Cicchetti & Cohen, 2006; Evans, Li, & Whipple, 2013). One may thus expect a moderation effect of state of mind on sibship size: mothers will be more vulnerable to the potential negative impact of multiparity on their sensitivity only if they are already at risk for sub-optimal parenting due to their insecure attachment state of mind.

The current study

Overall, only a handful of studies have examined the links between maternal sensitivity, attachment, and sibship size. This is surprising given the abundant research showing that sibship relates to children's cognitive and social development (Howe, Ross, & Recchia, 2011). One of the reasons for the dearth of relevant studies may be that researchers have relied on longitudinal within-family designs to address these questions (Bornstein et al., 2016; Dunn et al., 1985; Hallers-Haalboom et al., 2017; Van IJzendoorn et al., 2000; Ward et al., 1988). This has advantages, most notably the fact that trait-like factors in mothers such as education or attachment state of mind are held constant by design. However, such within-family approaches are challenging to conduct, due to the need to wait for the second-born child to reach the target age at which the first-born was assessed before running the second assessment. This inevitably affects feasibility and consequently, sample size. Given that differences in maternal behavior in relation to sibship size are potentially small, many studies may have been under-powered, and thus have failed to detect modest but meaningful effects. Hence, a file-drawer effect may in part

be responsible for the scarcity of published studies. Also, mothers are evidently older when their second- compared to first-born child reaches a given age. Given evidence from some studies (albeit not all) that age and maturity can favor sensitivity (Bornstein, Putnick, Suwalsky, & Gini, 2006; Camberis, McMahon, Gibson, & Boivin, 2015), what appears to be effects of sibship size may also be linked to maternal age.

We addressed these issues using a between-family design, in which mothers of first- and later-born infants were assessed with their infant aged 12 months. While overcoming the above issues, this procedure does not equalize time-invariant factors (e.g., socio-demographics) that are controlled for in a within-family design; therefore, these factors were controlled statistically. Maternal age varies freely across mothers in a between-family design, and was covaried in analyses. Given that any effect of stretched maternal resources may be more marked as the number of siblings increases, we retained the full range of variability in sibship size. We investigated the following hypotheses: 1) Mothers with more children will be less accessible/available, but not less cooperative/attuned nor less positive when interacting with their infant; 2) Attachment security will be unrelated to sibship size; 3) Maternal attachment state of mind will moderate associations, such that mothers with more children will be less accessible/available only if they present an insecure state of mind.

Method

Participants

The initial sample consisted of 270 mother-infant dyads (132 boys) living in a large metropolitan area. Twelve families were excluded (thus, $N = 258$) because they were not bi-parental throughout the study: 9 parental couples had separated before the study began, and 3 did so over the course of the study. Families were drawn randomly from birth lists of the Ministry of

Health and Social Services. Criteria for participation were full-term pregnancy and the absence of disability in the infant. Mothers were between 19 and 45 years old ($M = 30.9$), averaged 15.6 years of education (8 to 23 years), and their average family income fell in the \$60,000 to \$79,000 bracket (from less than \$20,000 to over \$100,000). Most mothers (89%) were White. At the onset of the study, 112 children were first-borns (none of them had younger siblings yet), whereas 146 had older siblings: 102 had one, 39 had two, 3 had three and 2 had four.

Procedure

We ran three home visits that lasted an average of 75 minutes when children were aged 12 ($M = 12.6$, $SD = 1.0$; T1), 15 ($M = 15.5$, $SD = 0.8$; T2), and 25 months ($M = 25.5$, $SD = 1.5$; T3). Data were collected from 258 mother-infant dyads at T1, 244 dyads at T2, and 212 dyads at T3. Families with complete (across all time points) and incomplete data did not differ significantly on socio-demographic information and maternal sensitivity or attachment ratings (all $ps > .05$). Three children were excluded from analyses of the T3 data (thus, $N = 209$) because although they were first-borns, their mother gave birth to a baby between T2 and T3. All other children's family structure remained the same until T3; hence, birth order was equivalent to sibship size. Most families lost to attrition or excluded had one or two children, such that at T3, 92 of the participating children had no sibling, 80 had one, 32 had two, 3 had three and 2 had four. Hence, although there were only 44 families who had three children or more at the onset of the study, 37 were active throughout, which preserved the higher-end of the distribution of sibship size.

Prior to the T1 visit when children were aged approximately 8 months, mothers completed the Adult Attachment Interview (AAI). Due to interviewer error or equipment malfunction, 25 interviews could not be coded; accordingly, AAI data were available for 233 mothers.

Home visits were modeled after the work of Pederson and Moran (1995), and aimed at challenging mothers' capacity to divide their attention between competing demands, thus reproducing the natural conditions of daily life caring for an infant. The home-visit protocols were designed to create a situation where maternal attention was being solicited by both research tasks and infant demands. Visits included a brief interview with mothers, research tasks with infants, a 10- to 20-minute mother-infant free-play, and questionnaires that mothers completed while infants were not occupied by the research assistants. Observations during these visits informed assessment of either maternal sensitivity (T1) or child attachment security (T2 and T3), as described below. The sensitivity and attachment coders were independent for all families, and they had not administered nor coded the AAI. To maximize reliability of observations, research assistants attended a two-day training workshop to review videotapes of mother–infant interactions and practice coding maternal sensitivity and child attachment. They then attended some home visits with a more experienced colleague, and completed the assessments together. When junior home visitors were considered ready to assess independently, the first two or three visits involved a debriefing session with an experienced graduate student to review the salient elements of the visit before scoring maternal sensitivity or child attachment. Assistants then progressed to rating autonomously. This study received ethics approval from the University of Montreal's Faculty of Arts and Sciences ethics review committee.

Measures

Adult Attachment Interview (AAI; George et al, 1996). The AAI is a semi-structured interview pertaining to participants' childhood attachment experiences, which was administered to assess mothers' state of mind with respect to attachment. Mothers were asked to describe their early relationships with their parents, to recount specific childhood memories, and to reflect upon

the ways in which their childhood attachment experiences influenced their personality. The AAI has been shown to have excellent reliability and validity (Hesse, 2016).

Interviews were rated according to Main and Goldwyn's (1998) classification system by trained coders certified as reliable by Main and Hesse. Approximately 25% of interviews were independently double-coded for inter-rater reliability check. The rating process results in scoring participants' state of mind with regards to attachment on a series of 1-to-9 scales: Idealization, Lack of Recall, Anger, Derogation, Meta-cognitive Monitoring, Passivity, Fear of Loss, Unresolved Loss, Unresolved Trauma, Coherence of Transcript, and Coherence of Mind. Given evidence that individual differences in attachment state of mind are best represented by continuous scales (e.g., Fraley & Roisman, 2014), and that coherence of discourse in the AAI is presumed to reflect the core of an individual's attachment state of mind and is the central index of security (Hesse, 2016; Main, Hesse, & Goldwyn, 2008), we operationalized the security of maternal state of mind with the Coherence of Mind scale. Intra-class correlation (ICC) between the two coders' scores for this scale was .82.

Maternal sensitivity. Maternal sensitivity was assessed at T1 (infant age: 12 months) using the Maternal Behavior Q-Sort (MBQS; Pederson & Moran, 1995), a 90-item measure that assesses the quality of maternal behavior during mother-infant interactions. A trained research assistant noted maternal behaviors throughout the visit and rated the MBQS immediately afterward, based on the entire observation period. Items describing maternal behaviors were sorted into nine piles, ranging from very unlike to very similar to the observed mother's behaviors. Thus, each item was assigned a score varying between 1 and 9, indicating the extent to which it resembled the mother's observed behavior. In the current study, we used the three MBQS dimensions derived by Bailey et al. (2016), namely: Cooperation/Attunement ($\alpha = .90$; 9

items, e.g., *Interactions revolve around baby's tempo and current state*), Positivity ($\alpha = .89$; 11 items, e.g., *Is animated in social interactions with baby*), and Accessibility/Availability ($\alpha = .90$; 7 items, e.g., *Monitors and responds to baby even when engaged in some other activity such as cooking or having a conversation with visitor*). We also used the overall sensitivity score, which consists of a correlation between the observed sort and a criterion sort of the prototypically sensitive mother. Overall sensitivity scores can thus vary from -1 to +1. Inter-correlations among the three dimensions ranged from .28 to .47, and their correlations with the global score from .55 to .88.

The MBQS is associated with other measures of maternal behavior, such as the HOME Inventory and the Ainsworth scales (Pederson & Moran, 1995) and shows satisfactory temporal stability (Behrens, Parker, & Kulkofsky, 2014; Tarabulsky et al., 2005). Its construct validity is demonstrated by meta-analytic data showing its capacity to predict child attachment security (Van IJzendoorn, Vereijken, Bakermans-Kranenburg, & Riksen-Walraven, 2004). Almost thirty percent (29.8%) of visits were conducted by two research assistants who completed the MBQS independently. Agreement between the two raters was very good, $ICC = .87$.

Attachment security. At T2 (15 months) and T3 (25 months), the security of the mother-child attachment relationship was measured using the Attachment Behavior Q-Sort (AQS; Waters, 1995). The AQS consists of 90 items describing potential infant behaviors. The procedure parallels that of the MBQS, except that observations target infant rather than maternal behavior. The attachment security score is obtained by correlating the observed sort with the criterion sort of security (Waters, 1995). Attachment security can thus vary from -1 (most insecure) to +1 (most secure). Inter-rater reliability was good, $ICC = .88$ at T2 and $.72$ at T3 (26.7% and 28.5% double-coded visits). Meta-analytic data suggest that the observer-completed

AQS shows excellent construct validity: attachment scores converge with maternal sensitivity, attachment security assessed with the SSP, and child adaptation (Van IJzendoorn et al., 2004).

Results

Preliminary analyses

Table 1 presents the descriptive statistics for the study's main variables. They all showed satisfactory variability, although mean levels of all three aspects of sensitivity as well as global sensitivity were fairly high, as expected when using the MBQS with low-risk community samples (e.g., Park, 2001; Pederson, Moran, Sitko, & Campbell, 1990).

We next examined whether child sex and age, maternal age and education, paternal education, and family income were related to study variables. All indicators of socio-economic status (SES; maternal education, paternal education, and family income) were positively and significantly associated with Cooperation/Attunement and Accessibility/Availability (r s between .14 and .31, all p s < .05), and income was also related to Positivity ($r = .12, p = .05$). None, however, was related to sibship size or attachment security at either time point (r s between .01 and .08, all p s > .21). Maternal education, paternal education and family income were standardized and averaged into a composite index of family SES, which was covaried in subsequent analyses. Table 2 shows the zero-order correlations between this SES index and all main study variables. In contrast to SES, maternal age was unrelated to any aspect of sensitivity or to attachment security (r s between -.05 and .10, all p s > .20), but was, as expected, related to sibship size ($r = .31, p < .001$). Maternal age was therefore also covaried in the analyses, in order to distinguish it from sibship size. Child sex and age were unrelated to any study variables (r s between -.04 and .06, all p s > .31) and consequently not considered further nor displayed in Table 2.

Main analyses

Table 2 also presents the zero-order correlations between sibship size and the dependent variables, namely the three aspects of sensitivity, global sensitivity, and attachment security at both time points. Partial correlations controlling for maternal age and family SES are shown in parentheses. Sibship size was negatively associated with Accessibility/Availability and Positivity at the bivariate level; this latter link, however, became statistically non-significant after accounting for maternal age and family SES. In contrast, the relation between sibship size and Accessibility/Availability was robust to these controls. Sibship size was unrelated to the Cooperation/Attunement dimension. Given this pattern of results, it is unsurprising that we found a significant but small association between sibship size and global sensitivity, which consists of the three dimensions. Overall, these results suggest that aggregating different aspects of sensitivity into one global score may mask a pattern of differential associations between sibship size and distinct facets of maternal sensitivity. As in previous studies, sibship size was unrelated to attachment, showing near-zero correlations with attachment at both time points.

Given that all prior studies contrasted first- and later-born infants, we examined whether the full range of sibship sizes was informative, or could be reduced to a dichotomy. We first collapsed all infants with siblings into one group ($n = 146$) irrespective of the exact sibship size, and contrasted them with the group of only children ($n = 112$). As can be seen in Table 3, only Accessibility/Availability showed a significant but weak link to this binary variable (corresponding to $r = .12$, $p = .045$). In a second set of analyses, we contrasted infants who had no siblings to those who had only one ($n = 102$), excluding infants who had more than one sibling. Results were even less compelling; no group differences were significant (all $ps \geq .08$). These essentially non-significant findings, combined with the significant correlations presented

above, tentatively suggest that one reason for the weak links found in previous studies between sensitivity and birth order may be failure to consider the full range of sibship sizes.

Next, we used regression analyses to formally test the hypotheses. Each aspect of sensitivity (global sensitivity as well as its three specific dimensions) or assessment time point of attachment was regressed on family SES and maternal age (Block 1), followed by maternal attachment state of mind (AAI coherence) and sibship size (Block 2), and finally by their multiplicative interaction term (Block 3). Sibship size was indexed continuously, namely by the number of children in the family.

Results pertaining to the three dimensions of sensitivity are presented in Table 4. Results were inconclusive with Cooperation/Attunement: only coherence of mind made a significant unique contribution in the final model. In contrast, sibship size uniquely predicted less Positivity ($\beta = -.19, p = .009$) and less Accessibility/Availability ($\beta = -.15, p = .032$) in the final models. In both cases, this main effect was qualified by an interaction effect with AAI coherence ($\beta = .15, p = .042$ and $\beta = .17, p = .031$ respectively for Positivity and Accessibility/Availability). No main or interactive effect of sibship size approached significance when predicting attachment or the global score of sensitivity (all $ps > .11$). Consequently, these results are not displayed in tables.

The two significant interactions (with Positivity and Accessibility/Availability) were broken down following Preacher, Curran, and Bauer's (2006) guidelines, plotting fitted regression lines at high (+ 1 SD) and low (- 1 SD) values of coherence of mind. Both interactions revealed the same phenomenon, illustrated in Figure 1. A simple slope analysis revealed that a larger sibship size was related to less Positivity ($\beta = -.20, p = .048$) and less Accessibility/Availability ($\beta = -.24, p = .027$) among mothers presenting a more insecure state of

mind. In contrast, sibship size was unrelated to Positivity ($\beta = .08, ns$) or Accessibility/Availability ($\beta = .04, ns$) among mothers presenting a more secure state of mind.

To describe these moderating effects more precisely, we used the Johnson-Neyman technique to calculate the exact regions of significance. This analysis revealed that the link between sibship size and Positivity was significant when mothers had a coherence score of 3.62 or lower, and that the link between sibship size and Accessibility/Availability became significant when mothers had a coherence score of 3.77 or lower. Note that 19% of the mothers in this sample had coherence scores below these levels. We also considered the reverse moderation, namely how many children were necessary for maternal state of mind to relate to sensitivity. This analysis revealed that mothers with a more insecure state of mind were significantly less positive when they had 2.18 children or more, and were significantly less accessible/available when they had 2.09 children or more.

Exploratory analyses

A possible concern with the main findings reported above is that only five children had three or more siblings, which raises the possibility that findings could be driven by a few families with a large sibship and very low sensitivity scores. To examine this, we re-ran the analyses while excluding the five children who had more than two siblings. The main findings remained, that is, only the Accessibility/Availability dimension was significantly associated with sibship size after accounting for maternal age and family SES (partial $r = -.20, p = .008$), and this association was more pronounced ($\beta = -.26, p = .025$) among mothers presenting a more insecure state of mind, whereas it was non-significant among mothers with a more secure state of mind ($\beta = -.07, ns$). Likewise, Positivity was significantly associated with sibship size ($\beta = -.21, p = .049$) among mothers presenting a more insecure state of mind, but this association was non-significant

for mothers with a more secure state of mind ($\beta = .01$, *ns*). These findings indicate that study results were not driven by extreme cases.

Discussion

This study aimed to shed light on previous mixed findings on the relations between sibship size, maternal sensitivity, and child attachment by 1) considering different facets of sensitivity, 2) investigating the modulating role of maternal attachment state of mind, 3) considering the full range of sibship sizes, and 4) using a between-family design to disentangle sibship size and maternal age and obtain a sample size allowing for well-powered analyses.

The results indicated that overall, mothers who had more children were less positive and less accessible/available, but not less cooperative/attuned, when interacting with their youngest infant. As mentioned in the introduction, the need to divide one's attention between the infant and his or her sibling(s) may be particularly likely to challenge mothers' capacity to be steadily available, and thus to monitor the infant closely and consistently, which is tapped by the accessibility/availability dimension. However, when a mother has the opportunity to devote her attention to her infant, there is no reason to expect that she would be less skilled at establishing a harmonious exchange, responding appropriately to infant signals, which represents the core of the cooperation/attunement dimension. With respect to positivity, one may speculate that fatigue is at play, such that the physical and emotional resources of mothers with more children are more taxed, challenging their capacity to retain positive mood and attitude toward their infant (recall, however, that the correlation between sibship size and positivity became non-significant after controlling for maternal age and family SES). Relations were weaker and generally non-significant when reducing parity to binary variables. Thus, considering the full range of sibship sizes may be necessary to comprehensively appraise the impact of family size on caregiving

behavior, including a potential effect of fatigue due to stretched resources, which may grow linearly with the number of children in the family. It is noteworthy that all relations, including those that were statistically significant, were small in magnitude, and thus may have gone unnoticed in under-powered studies.

Of note, mothers who had more children were less accessible/available *when only the focal child was in the room* (as per our observation procedure). This result cannot be attributed to a need to divide attention between children in the moment, and must relate to more complex processes. As children grow older, looking after them requires less immediate vigilance to the child's whereabouts in the physical environment and increasingly involves monitoring processes that help track the child's emerging autonomy, for instance, wondering what the child is doing or worrying about his or her well-being. The parenting role does not end when the child exits the room, and the multiparous mothers in this study may have been preoccupied with their older children even while alone with their infant and the research assistant, thus being less accessible/available cognitively. Furthermore, we assessed relationships that had a 12-month history. The multiparous mothers and their infants had been relating in the context of the presence of at least one other child in the family for a full year; these circumstances may have given rise to a style of relating involving less frequent undivided orientation to each other, and thus less constant maternal accessibility and availability. Once established, such a pattern of relatedness may tend toward stability even in the temporary absence of its usual trigger (the other children). When caregivers find themselves alone with a single child, they may well maintain the interactive patterns that characterize their relationship with that child in the context of other children. Admittedly, these interpretations are speculative and need empirical investigation.

As would be expected based on the varying pattern of results across dimensions of

sensitivity, there was a significant yet weak relation between sibship size and the overall score of maternal sensitivity, which is comprised of the three specific dimensions. These results highlight once again the potential importance of deconstructing maternal sensitivity (Bailey et al., 2016) and approaching it as a multidimensional construct that can be fruitfully described by focusing on its different dimensions (Leerkes et al., 2016; Mesman & Emmen, 2013). Collapsing these different aspects into an average score may obscure meaningful associations.

This study's deconstruction of maternal sensitivity also provided some clarity to intriguing previous findings that indicated greater maternal sensitivity but no more secure attachment in first-borns (Van IJzendoorn et al., 2000). Given that only the cooperation/attunement aspect of sensitivity was found to be uniquely predictive of child attachment in this sample (Bailey et al., 2016), and that cooperation/attunement was unrelated to sibship size as presented above, it comes as no surprise that we found sibship size to have no bearing on attachment. Only factors that influence those aspects of sensitivity that are linked to attachment should relate to attachment. One of the proposals that emerges from this study is that systematically considering diverse aspects of sensitivity may help unpack its role in mediating the impact of different family factors on different child outcomes.

A last set of central findings was that when predicting Positivity and Accessibility/Availability, the main effects of sibship size were moderated by attachment state of mind, such that the negative links between sensitivity and sibship size were more pronounced among mothers with a more insecure attachment state of mind. In contrast, the associations between sensitivity and sibship size were non-significant, and in fact almost null, among mothers with a more secure state of mind. This is consistent with developmental theory, which proposes that child development is the result of interactions between risk and protective factors (e.g,

Cicchetti & Cohen, 2006). The current results suggest that multi-parity is a mild risk factor for the display of low maternal sensitivity, a risk that is actualized only when one is already at risk for sub-optimal parenting due to an insecure attachment state of mind. In contrast, this risk is offset when mothers possess a more secure state of mind.

Although the mechanisms by which mothers who maintain a coherent discourse in the AAI are more able than others to show sensitive caregiving behavior remain speculative, the theory is that their discourse reflects an ability to maintain a coherent line of thought while discussing emotionally-laden experiences (Hesse, 2016; Main et al., 2008). This ability to remain level-headed in the face of emotional material is presumed to be at play during challenging mother-infant interactions as well, helping mothers regulate their own emotional and physiological arousal, which would support their capacity to respond appropriately to infant emotions (Ablow, Marks, Feldman, & Huffman, 2013; De Oliveira, Moran, & Pederson, 2005; Leerkes et al., 2015). One may speculate that mothers who possess this capacity to remain even-tempered in the face of caregiving challenges are less likely to become overwhelmed by the demands of rearing several children, and therefore have resources available to display positivity and accessibility/availability when interacting with their later-born infant. Approximately 54% of mothers in the population show a secure state of mind (Verhage et al., 2016 – 50.6% did in this sample); accordingly, not considering the moderating effect of this variable when examining the links between sibship size and sensitivity would effectively yield very weak effect sizes, and thus the type of inconclusive pattern of results that is indeed observed in the literature.

While the focus on empirically-derived dimensions of sensitivity, the two assessment time points of attachment, the consideration of the full range of sibship sizes, and the sample size are strong features of this study, some limitations are also worth mentioning. First, although we

considered the full range of sibship sizes that was observed in the sample, only five of our families had more than three children, and thus this is certainly not a proper investigation of maternal sensitivity in large families. Also, factor structures tend to be unstable across samples; hence, replicating the current MBQS factors in independent samples, as well as their differential associations with attachment and sibship size, is an important endeavor for future research. As stated earlier, the use of a between-family design allows one to disentangle maternal age and parity, however it does not control for socio-demographic characteristics like a within-family study does to an extent by design. These factors were instead controlled statistically. Given the design, sibship size was equivalent to birth order in this study; accordingly, the results could just as well speak to effects of birth order rather than sibship size. For instance, we cannot speak to the meaning of our results for a child who, for example, is the first of two children relative to another who is the first of three or more. This has little bearing on parent-child processes among young infants, for whom birth order is almost always equivalent to sibship size except for twins (i.e., very few infants already have a younger sibling during their first year of life). However, as children grow older and start having younger siblings, birth order is increasingly disentangled from sibship size, and only longitudinal studies assessing at least two children per family at several ages (see e.g., Hallers-Haalboom et al., 2017) can effectively tease apart age, birth order and sibship size. We also did not consider siblings' age, a factor that certainly can impact the extent to which parents need to stretch their resources.

The sample was drawn from a low-risk community population. In samples at higher risk for caregiving difficulties (due to economic hardship or mental health difficulties for instance), it is conceivable that multi-parity in and of itself, regardless of mothers' attachment state of mind, may be sufficient to cause caregiving difficulties, as it interacts with these other risk factors.

Note, however, that exploratory analyses (not presented here) showed that in this relatively homogeneous low-risk sample, family SES did not interact with sibship size to predict sensitivity. Also, although sensitivity was assessed in a divided-attention paradigm in the home, it was observed in a context where the mother had only one child to look after. An exciting direction for future research would be to assess sensitivity in an even more naturalistic context, namely while multiparous mothers have to care for all their children at the same time. Finally, we have focused on mothers, but there is no theoretical reason to expect that paternal sensitivity would show different relations to sibship size. This is an important area of study, considering that the quality of father-child interactions plays an important role in children's social and cognitive development (Cabrera & Tamis-LeMonda, 2013). In addition, paternal support and co-parenting are important aspects of family dynamics that can conceivably buffer the risk associated with multi-parity on maternal sensitivity, which were not assessed here.

This study suggested that mothers who had more children were less accessible/available and less positive, but not less cooperatively attuned, when interacting with their youngest infant. These results were mostly due to mothers who had at least three children, and sibship size did not relate to child attachment. In addition, associations with accessibility/availability and positivity were moderated by maternal attachment state of mind, and were apparent only among mothers with a more insecure state of mind. These findings shed light on previous inconclusive results by suggesting that multi-parity is a mild risk factor that relates to some aspects of sensitivity (not all of which are central to the development of attachment) and that is manifested only in conjunction with an insecure state of mind and when considering the full range of sibship sizes. Failing to consider these factors could lead to the invalid conclusion that multi-parity is neutral and that multiparous parents do not need attention. At the same time, it is important to underscore the

positive aspects of the results: the findings suggest that for mothers who possess a secure state of mind (i.e., at least half of the population; Verhage et al., 2016), *and* those who have two children or less (who are in the majority in the Western world), negative effects of multi-parity on their sensitivity are likely to be very small. Hence, for the vast majority of couples with one child only, the addition of a second child to the family is unlikely to have sizeable negative effects on maternal sensitivity.

Parental sensitivity forecasts not only attachment security but also a host of other aspects of child functioning in socio-emotional (Van der Voort et al., 2014), biological (Atkinson et al., 2013), and cognitive domains (Bernier et al., 2012). Thus, negligible effects of sibship size on attachment, or on dimensions of sensitivity that do not bear on attachment, do not imply that sibship is inconsequential for child development. Also, the results were observed in a low-risk sample with high mean levels of sensitivity and attachment security. Following a cumulative risk perspective (Evans et al., 2013), one may expect multi-parity to represent a greater risk among more vulnerable populations, for instance parents struggling with economic or psychological challenges. Given that small early influences can snowball into profound and lasting effects on child development as they form developmental cascades (Masten & Cicchetti, 2010), we submit that sibships of more than two children deserve attention, especially among risk samples. Evidence-based interventions are now available to support optimal caregiving (Steele & Steele, in press). The results of this study suggest that some aspects of caregiving are more likely than others to be challenged by different family circumstances such as multi-parity. Accordingly, a fruitful approach may be to tailor existing sensitivity interventions and target the aspects of parental behavior that are most in need of attention for each individual parent and family.

References

- Ablow, J. C., Marks, A. K., Feldman, S. S., & Huffman, L. C. (2013). Associations between first-time expectant women's representations of attachment and their physiological reactivity to infant cry. *Child Development, 84*, 1373–1391. doi:10.1111/cdev.12135
- Ainsworth, M.D.S., Blehar, M.C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. New York, NY: Taylor & Francis.
- Atkinson, L., Gonzalez, A., Kashy, D. A., Santo Basile, V., Masellis, M., Pereira, J., ... & Levitan, R. (2013). Maternal sensitivity and infant and mother adrenocortical function across challenges. *Psychoneuroendocrinology, 38*, 2943–2951. doi:10.1016/j.psyneuen.2013.08.001
- Bailey, H.N., Bernier, A., Bouvette-Turcot, A.-A., Tarabulsy, G.M., Pederson, D.R., & Becker-Stoll, F. (2016). Deconstructing maternal sensitivity: Predictive relations to mother-child attachment in home and laboratory settings. *Social Development*. Advanced online publication, DOI 10.1111/sode.12220.
- Behrens, K.Y., Parker, A.C., & Kulkofsky, S. (2014). Stability of maternal sensitivity across time and contexts with q-sort measures. *Infant and Child Development, 23*, 532–541. doi:10.1002/icd.1835
- Belsky, J., Crnic, K., & Woodworth, S. (1995). Personality and parenting: Exploring the mediating role of transient mood and daily hassles. *Journal of Personality, 63*, 905–929. doi:10.1111/j.1467-6494.1995.tb00320.x
- Bernier, A., Carlson, S. M., Deschênes, M., & Matte-Gagné, C. (2012). Social factors in the development of early executive functioning: A closer look at the caregiving environment. *Developmental Science, 15*, 12–24. doi:10.1111/j.1467-7687.2011.01093.x

- Bornstein, M. H., Hendricks, C., Haynes, O. M., & Painter, K. M. (2007). Maternal sensitivity and child responsiveness: Associations with social context, maternal characteristics, and child characteristics in a multivariate analysis. *Infancy, 12*, 189–223. doi:10.1111/j.1532-7078.2007.tb00240.x
- Bornstein, M. H., Putnick, D. L., & Suwalsky, J. T. (2016). Emotional interactions in European American mother–infant firstborn and secondborn dyads: A within-family study. *Developmental Psychology, 52*, 1363–1369. doi:10.1037/dev0000158
- Bornstein, M. H., Putnick, D. L., Suwalsky, J. T., & Gini, M. (2006). Maternal chronological age, prenatal and perinatal history, social support, and parenting of infants. *Child Development, 77*, 875–892. doi:10.1111/j.1467-8624.2006.00908.x
- Browne, D. T., Leckie, G., Prime, H., Perlman, M., & Jenkins, J. M. (2016). Observed sensitivity during family interactions and cumulative risk: A study of multiple dyads per family. *Developmental Psychology, 52*, 1128–1138. doi:10.1037/dev0000143
- Cabrera, N.J. & Tamis-LeMonda, C.S. (2013). *Handbook of father involvement: Multidisciplinary perspectives*. New York, NY: Routledge.
- Camberis, A. L., McMahon, C. A., Gibson, F. L., & Boivin, J. (2015). Maternal age, psychological maturity, parenting cognitions, and mother–infant interaction. *Infancy, 21*, 396–422. doi:10.1111/infa.12116
- Cicchetti, D., & Cohen, D. (2006). *Developmental psychopathology: Vol. 3. Risk, disorder, and adaptation*. New York, NY: John Wiley & Sons.
- Coppola, G., Cassibba, R., & Costantini, A. (2007). What can make the difference? *Infant Behavior and Development, 30*, 679–684.
doi:<http://dx.doi.org/10.1016/j.infbeh.2007.03.004>

- De Oliveira, C. A., Moran, G., & Pederson, D. R. (2005). Understanding the link between maternal adult attachment classifications and thoughts and feelings about emotions. *Attachment & Human Development, 7*, 153–170. doi:10.1080/14616730500135032
- De Schipper, E. J., Riksen-Walraven, J. M., & Geurts, S. A. (2006). Effects of child–caregiver ratio on the interactions between caregivers and children in child-care centers: An experimental study. *Child Development, 77*, 861–874. doi:10.1111/j.1467-8624.2006.00907.x
- Dunn, J. F., Plomin, R., & Nettles, M. (1985). Consistency of mothers' behavior toward infant siblings. *Developmental Psychology, 21*, 1188–1195. doi:10.1037//0012-1649.21.6.1188
- Evans, G. W., Li, D., & Whipple, S. S. (2013). Cumulative risk and child development. *Psychological Bulletin, 139*, 1342–1396. doi:10.1037/a0031808
- Fearon, R.P., Bakermans-Kranenburg, M.J., Van IJzendoorn, M.H., Lapsley, A.M., & Roisman, G.I. (2010). The significance of insecure attachment and disorganization in the development of children's externalizing behavior: A meta-analytic study. *Child Development, 81*, 435–456. doi: 10.1111/j.1467-8624.2009.01405.x
- Fraley, R. C. & Roisman, G. I. (2014). Categories or dimensions? A taxometric analysis of the Adult Attachment Interview. *Monographs of the Society for Research in Child Development, 79*, 36–50. doi:10.1111/mono.12112
- George, C., Kaplan, N., & Main, M. (1996). *Adult Attachment Interview Protocol* (3rd Ed.). Unpublished manuscript, University of California at Berkeley.
- Guttentag, C.L., Landry, S.H., Williams, J.M., Baggett, K.M., Noria, C.W., Borkowski, J.G., . . . Ramey, S.L. (2014). "My Baby & Me": Effects of an early, comprehensive parenting

intervention on at-risk mothers and their children. *Developmental Psychology*, *50*, 1482–1496. doi:10.1037/a0035682

Hallers-Haalboom, E. T., Groeneveld, M. G., van Berkel, S. R., Endendijk, J. J., van der Pol, L. D., Linting, M., . . . Mesman, J. (2017). Mothers' and fathers' sensitivity with their two children: A longitudinal study from infancy to early childhood. *Developmental Psychology*, *53*, 860-872. doi:10.1037/dev0000293

Hallers-Haalboom, E. T., Mesman, J., Groeneveld, M. G., Endendijk, J. J., Van Berkel, S. R., Van der Pol, L. D., & Bakermans-Kranenburg, M. J. (2014). Mothers, fathers, sons and daughters: Parental sensitivity in families with two children. *Journal of Family Psychology*, *28*, 138–147. doi:10.1037/a0036004

Hesse, E. (2016). The Adult Attachment Interview: Protocol, method of analysis, and empirical studies: 1985-2015. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd Ed., pp. 553–597). New York, NY: Guilford Press.

Howe, N., Ross, H. S., & Recchia, H. (2010). Sibling relations in early and middle childhood. In P. K. Smith & C. H. Hart (Eds.), *The Wiley-Blackwell Handbook of Childhood Social Development* (2nd Ed.). Oxford, UK: Wiley-Blackwell.

Leerkes, E. M., Gedaly, L., & Su, J. (2016). Parental sensitivity and infant attachment. In L. Balter & C.S. Tamis-LeMonda (Eds.), *Child Psychology: A Handbook of Contemporary Issues* (3rd Ed., pp. 21-41). New York: Psychology Press.

Leerkes, E. M., Supple, A. J., O'Brien, M., Calkins, S. D., Haltigan, J. D., Wong, M. S., & Fortuna, K. (2015). Antecedents of maternal sensitivity during distressing tasks: Integrating attachment, social information processing, and psychobiological perspectives. *Child Development*, *86*, 94–111. doi:10.1111/cdev.12288

- Main, M., & Goldwyn, R. (1998). *Adult Attachment Rating and Classification Systems (version 6.0)*. Unpublished manuscript, University of California, Berkeley.
- Main, M., Hesse, E., & Goldwyn, R. (2008). Studying differences in language usage in recounting attachment history: An introduction to the AAI. In H. Steele & M. Steele (Eds.), *Clinical applications of the Adult Attachment Interview* (pp. 31–68). New York, NY: Guilford Press.
- Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and Psychopathology*, *22*, 491–495. doi:10.1017/S0954579410000222
- McAlister, A. R., & Peterson, C. C. (2013). Siblings, theory of mind, and executive functioning in children aged 3–6 years: New longitudinal evidence. *Child Development*, *84*, 1442–1458. doi:10.1111/cdev.12043
- McMahon, C. A., Barnett, B., Kowalenko, N. M., & Tennant, C. C. (2006). Maternal attachment state of mind moderates the impact of postnatal depression on infant attachment. *Journal of Child Psychology and Psychiatry*, *47*, 660–669. doi:10.1111/j.1469-7610.2005.01547.x
- Mertesacker, B., Bade, U., Haverkock, A., & Pauli-Pott, U. (2004). Predicting maternal reactivity/sensitivity: The role of infant emotionality, maternal depressiveness/anxiety, and social support. *Infant Mental Health Journal*, *25*, 47–61. doi:10.1002/imhj.10085
- Mesman, J., & Emmen, R.A.G. (2013). Mary Ainsworth's legacy: A systematic review of observational instruments measuring parental sensitivity. *Attachment and Human Development*, *15*, 485–506. doi: 10.1080/14616734.2013.820900
- Nievar, M.A. & Becker, B.J. (2008). Sensitivity as a privileged predictor of attachment: A second perspective on De Wolff and Van IJzendoorn's meta-analysis. *Social Development*, *17*, 102–114. doi:10.1111/j.1467-9507.2007.00417.x

- Park, K. J. (2001). Attachment security of 12 month old Korean infants: Relations with maternal sensitivity and infants' temperament. *Early Child Development and Care, 167*, 27–38.
doi:10.1080/0300443011670103
- Pederson, D. R., & Moran, G. (1995). A categorical description of infant-mother relationships in the home and its relation to Q-sort measures of infant-mother interaction. *Monographs of the Society for Research in Child Development, 60*, 111-132. doi:10.2307/1166174
- Pederson, D. R., Moran, G., Sitko, C., & Campbell, K. (1990). Maternal sensitivity and the security of infant–mother attachment: A Q-sort study. *Child Development, 61*, 1974–1983.
doi:10.2307/1130851
- Pianta, R. C., Sroufe, L. A., & Egeland, B. (1989). Continuity and discontinuity in maternal sensitivity at 6, 24, and 42 months in a high-risk sample. *Child Development, 60*, 481–487.
doi:10.2307/1130992
- Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics, 31*, 437–448. doi:10.3102/10769986031004437
- Raby, K.L., Roisman, G.I., Fraley, R.C., & Simpson, J.A. (2015). The enduring predictive significance of early maternal sensitivity: Social and academic competence through age 32 years. *Child Development, 86*, 695–708. doi: 10.1111/cdev.12325
- Steele, H. & Steele, M. (in press). *Handbook of Attachment-Based Interventions*. New York, NY: Guilford Press.
- Tarabulsy, G. M., Bernier, A., Provost, M. A., Maranda, J., Larose, S., Moss, E., ... & Tessier, R. (2005). Another look inside the gap: Ecological contributions to the transmission of attachment in a sample of adolescent mother-infant dyads. *Developmental Psychology, 41*,

212–224. doi:10.1037/0012-1649.41.1.212

Teti, D. M., Sakin, J. W., Kucera, E., Corns, K. M., & Eiden, R. D. (1996). And baby makes four: Predictors of attachment security among preschool-age firstborns during the transition to siblinghood. *Child Development, 67*, 579–596. doi:10.2307/1131833

Van der Voort, A., Linting, M., Juffer, F., Bakermans-Kranenburg, M. J., Schoenmaker, C., & Van IJzendoorn, M. H. (2014). The development of adolescents' internalizing behavior: Longitudinal effects of maternal sensitivity and child inhibition. *Journal of Youth and Adolescence, 43*, 528–540. doi:10.1007/s10964-013-9976-7

Van IJzendoorn, M. H., Moran, G., Belsky, J., Pederson, D., Bakermans-Kranenburg, M. J., & Kneppers, K. (2000). The similarity of siblings' attachments to their mother. *Child Development, 71*, 1086–1098. doi:10.1111/1467-8624.00211

Van IJzendoorn, M.H., Vereijken, C.M.J.L., Bakermans-Kranenburg, M.J., & Riksen-Walraven, J.M. (2004). Assessing attachment security with the Attachment Q-Sort: Meta-analytic evidence for the validity of the observer AQS. *Child Development, 75*, 1188–1213. doi:10.1111/j.1467-8624.2004.00733.x

Verhage, M. L., Schuengel, C., Madigan, S., Fearon, R. M., Oosterman, M., Cassibba, R., ... & Van IJzendoorn, M. H. (2016). Narrowing the transmission gap: A synthesis of three decades of research on intergenerational transmission of attachment. *Psychological Bulletin, 142*, 337–366. doi:10.1037/bul0000038

Ward, M. J., Vaughn, B. E., & Robb, M. D. (1988). Social-emotional adaptation and infant-mother attachment in siblings: Role of the mother in cross-sibling consistency. *Child Development, 59*, 643–651. doi:10.2307/1130564

Waters, E. (1995). Appendix A: The Attachment Q-SET (version 3.0). *Monographs of the Society for Research in Child Development*, 60, 234–246. doi: 10.2307/1166181

Werner, H., Zahn, S., Titze, K., Walitza, S., & Logoz, M. Z. (2015). Concordance of attachment representations in preschool siblings assessed by the Attachment Story Completion Task. *Journal of Child and Family Studies*, 24, 576–590. doi:10.1007/s10826-013-9869-0