# HHS Public Access

# Chapter IV: In Search of the Father-Infant Activation Relationship: A Person-Centered Approach

**Brenda L. Volling**,
Department of Psychology, University of Michigan

**Matthew M. Stevenson**,
Center for Human Growth and Development, University of Michigan

**Paige Safyer**,
Joint Program in Social Work and Psychology, University of Michigan

**Richard Gonzalez**, and
Department of Psychology, University of Michigan

**Joyce Y. Lee**
Joint Program in Social Work and Psychology.

## Abstract

The current study explored whether fathers and mothers from 195 two-parent U.S. families engaged in a form of *activation* parenting (i.e., sensitivity, cognitive stimulation, and moderate intrusiveness) with their secondborn, 12-month-old infants during a 15-min challenging teaching task, and to determine if this type of interaction was more common among fathers. Mean comparisons showed that fathers were lower on sensitivity, positive regard, and stimulation of development, and were more detached than mothers. Latent Profile Analyses revealed similar *supportive, disengaged*, and *activation* parenting profile*s* for fathers and mothers, with more fathers in the activation class. Chi-square analyses found significant associations across mothers and fathers; most infants (30%) had activation fathers and mothers, with 26% having supportive mothers and activation fathers, and 11.4% having two supportive parents. Parenting profiles were unrelated to attachment security. Results need to be replicated with children of different ages, with families from different backgrounds, and beyond the challenging teaching paradigm.

Research on father-infant interaction has burgeoned since Lamb (1975) claimed fathers were the forgotten contributors to child development. Fathers are fully capable of engaging in responsive, nurturant, and sensitive caregiving. On one hand, paternal responsiveness, sensitivity, and stimulation predict children's social and cognitive development, even when controlling for maternal behavior (e.g., Malin, Cabrera, & Rowe, 2014; Tamis-LaMonda, Shannon, Cabrera, & Lamb, 2004), but in other cases, relations between fathering and infant development have been less consistent (Lucassen et al., 2011; vanIJzendoorn & DeWolff, 1997). As such, some scholars have started to formulate alternative theoretical models for

Correspondence concerning this article should be addressed to Brenda L. Volling, University of Michigan, Department of Psychology, 530 Church Street, Ann Arbor, MI 48109. volling@umich.edu.

the development and significance of the father-infant relationship, and the procedures that should be used to assess it (Bögels & Phares, 2008; Grossman, Grossman, Fremmer-Bombik, Kindler, Scheuer-Englisch, & Zimmermean,, 2002; Paquette & Bigras, 2010).

## The Father-Infant Activation Relationship

Many of the recent conceptualizations of fathering and its importance to children's development emphasize the role of fathers as playmates and protectors, who engage in active physical play and challenge their children to take risks (Grossman et al., 2002; Majdandži, de Vente, & Bögels, 2016; Paquette, 2004). Paquette (2004) argues from an evolutionary perspective that the emotional bond between mothers and children is primarily an attachment relationship in which mothers provide comfort in times of distress, which creates social harmony and connectedness. In contrast, fathers provide protection, encourage risk-taking in the context of safety, and promote exploration while setting appropriate limits, which ultimately facilitates infant self-regulation, autonomy, and exploratory competence. In the same way that responsive and sensitive caregiving contribute to a secure mother-infant attachment, Paquette (2004) argues that stimulating and challenging behaviors, often during rough-and-tumble play, excite, destabilize, and encourage the child to take risks and in the process promote the development of *the father-infant activation relationship;* the "attachment bond that fosters children's opening to the world" (p. 202). Indeed, there is research showing that fathers are, at times, less sensitive and more intrusive, directive, and parent-centered than mothers in play activities (Hallers-Haalboom et al., 2017; Power, 1985; Tamis-LaMonda et al., 2004; Volling, McElwain, Notaro, & Herrera, 2002), and that fathers' assertions and initiations in social toy play predict preschool children's cognitive and social development (Roggman, Boyce, Cook, Christiansen & Jones, 2004). Therefore, it is certainly possible that fathers engage in a more direct, stimulating, and challenging style of father-infant interaction that promotes children's social competence. The primary goal of the current study was to uncover different profiles of father-infant and mother-infant interaction at the end of the first year and determine if one of those profiles provided support for activation relationship theory. Based on the developmental ecological systems framework presented in Chapter 1 (Volling & Cabrera, this issue), our focus on parent-infant interaction places the current work clearly within the microsystem level.

Several investigators have started to develop measurement instruments (e.g., observational and parent report) that assess different fathering behaviors that are consistent with activation relationship theory, including challenging parental behavior (Majdandži et al., 2016), paternal dominance in rough and tumble play (Flanders et al., 2010), the encouragement of risk-taking (Hagan & Kuebli, 2007; Paquette & Bigras, 2010), sensitive-challenging behavior (Grossman et al., 2002), and the quality of rough-and tumble play (Fletcher, St. George, & Freeman, 2013). Because fathers engage in more rough and tumble play (RTP) than mothers (e.g., Fliek, Daemen, Roelofs, & Muris, 2014; Majdandži et al., 2016; Schoppe-Sullivan, Kotila, Jia, Lang & Bower, 2013), RTP has been a primary focus for father-child activation research, partly because it provides children with the necessary risk-taking in the safe confines of a playful father-child relationship. But, RTP constitutes only a small percentage (8%) of play interactions between parents and young children (Pellegrini & Smith, 1998), so other interactive contexts need to be considered when examining evidence

for the father-infant activation relationship (Majdandžić et al., 2016). In the current study, fathers and mothers were observed in a series of challenging teaching tasks with their one-year-old infants (Volling, et al., 2002; Vondra, Shaw, & Kevenides, 1995) as one means to investigate a pattern of parenting that was stimulating and directive, but also done in a sensitive and responsive manner.

## Evidence for Activation Fathering

Evidence for an active and challenging form of fathering is beginning to emerge. During naturalistic home observations between parents and their 4-year-old children, Stevenson & Crnic (2013) found a latent factor they labeled "activative fathering" that included positive loadings for opportunity for interaction and cognitive stimulation of development, a negative loading for fathers' detachment, and a positive, yet moderate, level of intrusiveness. The fact that *moderate* levels of intrusiveness loaded positively with cognitive stimulation on one factor echoes the sentiments of others that fathers' challenging, stimulating, and directive style of interaction in a positively supportive context allows children to feel safe and protected while exploring new horizons and experiencing novel situations (Grossman et al., 2002; Bögels & Phares, 2008; Paquette, 2004). The idea that paternal intrusiveness may have different implications for children's development depending on what other interaction behaviors are manifest (e.g., positive or negative affect) is also echoed in the work of Karberg et al. (this issue). Further, this latent factor of activative fathering at 48 months predicted children's behavioral regulation in a problem-solving task and children's sociability at 60 months.

Goodman, Crouter, Lanza, Cox, Vernon-Feagans and the Family Life Investigators (2011) found further support for what may be the activation fathering construct. Fathers (N= 492) were observed in a 10 min freeplay interacting with their 6-month-old infants during home visits. Father-infant interactions were coded using the well-established ratings of sensitivity, positive regard, intrusiveness, stimulation of cognitive development, and detachment from the NICHD Early Child Care Research Network (NICHD ECCRN, 1999), which were then subjected to a latent profile analysis that revealed five latent classes for fathers: *sensitive/engaged* (11% of the sample), *detached* (19%), *intrusive/negative* (12%), *average parenting* (42%), and *stimulating/high verbal* (17%). This last class comes closest to the activation profile of fathering because these fathers used high levels of cognitive and verbal stimulation in the context of positive regard and animated father-infant interaction. In the current report, we used exploratory analyses to search for a similar latent profile of activation fathering, a pattern of father-infant interaction that involved moderate levels of intrusive and mistimed, parent-centered behaviors, in combination with fathers' efforts to stimulate cognitive development, while maintaining a sensitive and positively supportive relationship context.

Although evidence is accumulating for a latent construct of activation fathering, both Stevenson and Crnic (2013) and Goodman et al., (2011) focused only on fathers, and did not test whether similar findings applied to mothers. Ryan, Martin, and Brooks-Gunn (2006) also took a person-centered approach (K-means cluster analysis) using 237 fathers and mothers from the Early Head Start Research and Evaluation Project who had participated in a "three box" task with their two-year-old toddlers, and found four groups of fathers *and*

mothers: *highly supportive* (high on sensitivity and positive regard), *negative* (high on intrusiveness), *detached*, and "*somewhat supportive*", which described mothers and fathers who were not as sensitive as highly supportive parents, but still high on cognitive stimulation, and slightly higher on intrusiveness. Could this last group of parents be the activation parenting profile? If so, it emerged for both fathers and mothers.

## Aims and Hypotheses

The first aim of the current study was to take a person-centered statistical approach to ascertain whether there was a latent parenting *profile* of activation that described fathers' and mothers' interactions with their secondborn, 12-month-old infants during a challenging, three-box, teaching task. If an activation parenting profile was uncovered, we hypothesized that it would reflect a pattern fairly high in sensitivity and positive regard, with moderate levels of intrusiveness and cognitive stimulation, and low levels of detachment. In line with prior studies using person-centered approaches, we also hypothesized that additional parenting profiles would emerge: (a) *supportive parenting* (sensitivity, positive regard, cognitive stimulation, and low intrusiveness and detachment); (b) *intrusive, insensitive* (i.e., high intrusiveness, low sensitivity) and/or (c) *disengaged* (e.g., high detachment). Further, we hypothesized that similar groups of parenting profiles would emerge across fathers and mothers (see Ryan et al., 2006), but in line with activation relationship theory, there would be more fathers than mothers in the activation profile. The second aim was to examine whether profiles were related across fathers and mothers to determine if mothers and fathers in the same family interacted similarly or differently with their infants. Because Paquette (2004) argued that the father-child activation relationship is distinct from the mother-infant attachment relationship, and that the strange situation procedure (SSP) is an invalid assessment of father-infant activation, the final aim was to test the relations between our resulting parenting profiles and infant-parent attachment security resulting from the SSP. Throughout the remainder of this chapter, we refer to the hypothesized profile of parenting characterized by sensitivity, positive regard, and stimulation of cognitive development, with moderate levels of intrusiveness and low levels of detachment as *activation parenting*.

## Methods

### Participants

Participants included 241 mothers and fathers who participated in a longitudinal investigation of child and family adjustment after the birth of a second child (see Volling et al., 2017, for details of recruitment, sample characteristics, and study design) conducted during the last trimester of the mother's pregnancy with the second child, and 1, 4, 8 and 12 months after birth. Observational data for the current report are from the 195 families participating in the laboratory visits when the infant was 12 or 13 months old (counterbalanced across mothers and fathers) with complete data from at least one parent (184 families with complete data from both parents). The 195 families were not significantly different on mothers' age, fathers' age, years of marriage, infant gender, mother's ethnicity, or father's ethnicity from the 241 recruited families, but had significantly higher household incomes, $\chi^2 (3) = 18.61$, $p < .001$, higher levels of father education, $\chi^2 (3) = 9.67$, $p = .02$,

and higher levels of mother education, $\chi^2$ (2) = 11.31, $p < .004$. The sample was predominantly European American (85%), college-educated (85%) and middle-class, mean income = $75,000 to 79,999. Mothers were 31.8 years; $SD = 3.9$, on average, with fathers 33.3 years, $SD = 4.6$. One-year-old infants included 83 females and 112 males.

### Procedures and Measures

The counterbalanced laboratory visits conducted at 12 and 13 months started with the Strange Situation procedure (see Ainsworth, Blehar, Waters, & Wall, 1978), which was followed with a 15-min, three-box, teaching task (TT). Parents were presented with three boxes, each with a toy beyond the developmental level of the infant (see Vondra, et al., 1995) and instructed to teach the child to (a) hit each key on a xylophone; (b) use a hammer to pound shapes on the back of a toy turtle; and (c) use each button and lever on a Sesame Street activity box. In prior research, parents were more intrusive and less sensitive in the teaching task compared to a free-play, and direct parental assistance was often necessary for infants to engage the task (Volling et al., 2002). All sessions were video-recorded for subsequent coding of parenting behavior.

**Parenting behaviors.—**Trained coders rated six parenting behaviors using the same rating system as the NICHD Study of Early Child Care Research Network (NICHD ECCRN, 1999), which utilizes 7-point scales from 1 (not at all characteristic) to 7 (very characteristic) for (a) *sensitivity* - ability to perceive and accurately interpret the infant's behavior and respond appropriately (Intraclass Correlation for reliability, ICC = .85); (b) *intrusiveness* – interventions or overstimulation that impinges on the infant's independence (ICC = .89); (c) *detachment* - lack of involvement and disengagement (ICC = .87); (d) *positive regard* – demonstrating positive feelings toward the infant (ICC = .82); (e) *negative regard* - demonstrating negative feelings such as criticisms and harsh tone (ICC = .84); and (f) *stimulation of cognitive development* - scaffolding the infant's cognitive development during the task (ICC = .79). Each of the three, 5-minute intervals received a global rating on each parenting behavior, and these ratings were then averaged.

**Infant-parent attachment.—**During the same laboratory visit, the Strange Situation Paradigm (SSP: Ainsworth et al., 1978) was conducted to assess infant-mother and infant-father attachment relationships, and infants were classified as *secure* (B), *insecure-avoidant* (A), *insecure-resistant* (C), or *disorganized* (D). Attachment distribution for the 191 mothers: A ($n = 12$, 6%), B ($n = 118$, 62%), C ($n = 50$, 26%), D ($n = 11$, 6%) and 189 fathers: A ($n = 22$, 11.6%), B ($n = 117$, 61.9%), C ($n = 32$, 16.9%), D ($n = 18$, 9.5%).

### Plan of Analysis

Person-centered statistical approaches identify sub-groups of people based on their similarities on a set of variables (Bergman & Magnusson, 1997) and are the perfect tool for uncovering parenting profiles. To address the first aim, Latent Profile Analysis (LPA) was conducted for mothers and fathers separately. One-way ANOVAs using class membership as the between-subjects factor with parenting behaviors as the dependent variables were conducted to examine class differences. Chi-square analyses were performed to determine if

resulting parenting profiles were associated across mothers and fathers (Aim 2) and with the security of the infant-parent attachment relationships (Aim 3).

## Results

### Preliminary analyses.

All variables were consistent with a normal distribution, except negative regard for mothers and fathers, which occurred infrequently so both were dropped from analyses. There were no significant relations between demographic characteristics (i.e., income, mothers' and fathers' education, race/ethnicity, and age) and any of the mothering or fathering behaviors. Correlations and descriptive statistics can be found in Table 4.1. Mean comparisons across mothers and fathers using paired samples $t$-tests revealed that mothers were higher on sensitivity, $t(183) = 4.24$, $p < .001$ ($M_m = 4.26$, $SD = 0.78$, $M_f = 3.94$, $SD = 0.83$), positive regard, $t(183) = 5.43$, $p < .001$ ($M_m = 4.15$, $SD = 0.84$, $M_f = 3.65$, $SD = 0.98$), and stimulation of cognitive development than fathers, $t(183) = 5.95$, $p < .001$, ($M_m = 3.87$, $SD = 0. .76$, $M_f = 3.45$, $SD = 0.71$), and fathers were more detached, $t(183) = -3.79$, $p < .001$ ($M_m = 1.60$, $SD = 0.71$, $M_f = 1.91$, $SD = 1.04$) than mothers.

### Person-Centered Analyses for Fathering and Mothering

Latent profile analysis (LPA) was conducted using Mplus Version 7.2 (Muthén & Muthén, 1998-2012) with Full Information Maximum Likelihood estimation (FIML). LPA creates latent classes, or groups, of individuals that have shared characteristics such that individuals in one class are more similar to each other than to individuals in other classes. To determine model fit and the appropriate number of classes, we used the Bayesian Information Criteria (BIC), entropy, as well as the Lo-Mendell-Rubin adjusted likelihood ratio test (LMR-A). Smaller BIC values indicate better fit. Entropy indicates class distinctiveness with values closer to 1 suggesting good class distinction. LMR-A indicates whether there is a significant improvement in model fit of the *k* number of groups tested versus a *k-1* model.

**Latent classes of fathering.**—The four-class model, BIC = 2125.28, entropy .92, LMR-A = 98.71, $p < .01$, was considered the best model fit for fathering because there was a decrease in BIC relative to the three-class model, BIC = 2128.30, and an increase for the five-class model, BIC=2147.96, indicating worse fit. Entropy (.92) was higher for the four-class model than the three-class model (.89) or five-class (.87) models. In addition, the LMR-A indicated no improvement for a five-class model relative to a four-class model, LMR-A = 43.25, $p = .37$. Means for the five classes are presented in Table 4.2. The *Supportive* class ($n = 45$, 24.1%) had the highest sensitivity, positive regard and stimulation of cognitive development, with the lowest scores on detachment. The *Intrusive* class ($n = 9$, 4.8%) was high on intrusiveness, low on positive regard, and was moderately disengaged. The *Disengaged* class ($n = 24$, 12.8 %) had the highest detachment, lowest positive regard, and lowest stimulation of cognitive development of any class. The final and largest class was the *Activation* class ($n = 109$, 58.3%), which reflected the hypothesized pattern of activation parenting. These fathers were moderately high in sensitivity, positive regard, and cognitive stimulation, and low in detachment, but were also moderate in their levels of intrusiveness.

**Latent classes of mothering.**—The three-class model for mothers, BIC = 2034.65, entropy = .86, LMR-A = 81.79, $p$ = .09, was considered the best model fit because the BIC decreased relative to a two-class model, BIC = 2060.02, and the BIC increased for a four-class model, BIC = 2043.85. Entropy for the three-class model increased relative to the two-class model (.84) and decreased for the four-class model (.85). Means for the four classes are presented in Table 4.3. The *Supportive* class ($n$ = 79, 41.1%) was highest on sensitivity, positive regard, and stimulation of cognitive stimulation, and had very low scores on intrusiveness and detachment. The *Disengaged* class ($n$ = 19, 9.9%) had the lowest levels of sensitivity, positive regard, and stimulation of cognitive development, and highest levels of detachment compared to other classes. There was also an *Activation* class ($n$ = 94, 49%), which was high on sensitivity, positive regard and stimulation of cognitive development, low on detachment, and moderate on intrusiveness.

### Family-Level Associations across Mother and Father Profiles.

As shown in Table 4.4, chi-square analyses revealed a significant association between mother and father profiles, $\chi^2$ (6) = 19.534, $p$ <.01. Overall, 30% of infants had fathers and mothers with an activation profile. In families with supportive fathers, nearly half of the infants (48.8%) also had supportive mothers, but another 39.5% had activation mothers. In families in which infants had activation fathers, 50% also had activation mothers during the teaching task, with another 44% with supportive mothers. Finally, in families with supportive mothers, 63% of infants interacted with an activation father whereas only 27.6 % of them had a supportive father. The remaining smaller groups showed dispersion across classes.

For the final aim, we examined the associations between the different parenting profiles for mothers and fathers, and the infant's attachment classifications. Chi-square analyses were nonsignificant for both mothers, $\chi^2$ (6) = 5.89, $p$ = .436, and fathers, $\chi^2$ (9) = 8.35, $p$ = .499, when examining the ABCD classifications, as well as when collapsing to secure (B)/ insecure (ACD) groupings, $\chi^2$ (2) = 4.53, $p$ =.104 for mothers, and $\chi^2$ (3) = 2.46, $p$ = .489, for fathers.

## Discussion

The current research was clearly exploratory, but it was also theory-driven. The analyses were designed to test one of the basic tenets of Paquette's (2004) activation relationship theory; that infants develop a unique relationship with fathers, the father-infant activation relationship, due to the propensity for fathers to engage in more stimulating physical play, and encourage exploration and risk-taking. To date, few studies have tested the premises of activation relationship theory. The initial findings of Stevenson & Crnic (2013) were the first to uncover a latent factor consisting of both cognitive stimulation and moderate levels of intrusiveness that they labeled "activative" fathering. Other studies taking a person-centered approach have also identified groups of fathers who engaged in highly stimulating and moderately intrusive interaction, while also maintaining sensitively responsive interactions. We hypothesized that a similar profile of activation fathering might emerge in the current study using a challenging, three-box, teaching task. Observations of both father-infant and

mother-infant interaction were available to search for the activation profile, and to determine if it was more prevalent and characteristic of fathers' teaching interactions, or whether mothers also engaged in activation parenting.

The current strategy for investigating activation relationship theory involved a combination of the "tried and true" in both procedures and statistical analyses, and a bit of exploration in uncharted territory. As for the "tried and true", we used a well-established interaction task, the three-box task, but modified it to be more challenging by making sure the tasks were all above the developmental level of the infant and telling parents to teach their children; a task we knew from prior research increased intrusive parenting behavior (Volling et al., 2002). Second, mother-infant and father-infant interactions were coded with a well-established and reliable observational coding system used widely in many large-scale studies with diverse groups of parents, and both mothers and fathers from low- and middle-income families (e.g., Tamis-LaMonda et al. 2004). This system was comparable to that used by Stevenson and Crnic (2013) in their initial study of "activative" fathering and was also similar, if not identical, to the behavioral ratings in the many other studies using person-centered analyses (e.g., Goodman et al., 2011; Ryan et al., 2006). Observational methods are a common source of information on fathering and mothering in the field and in other studies in this issue, and may not yield similar results when parent reports are the source of information. For instance, Lee et al., (this issue) utilized home observations of coparenting in the first year, but did not find that observed coparenting correlated strongly with parents' reports of maternal gatekeeping at 3, 6, or 9 months postpartum. Future research may benefit from using multiple methods to investigate the activation parenting construct further (see also Majdandži et al., 2016).

For the unchartered areas of this investigation, we relied on exploratory, person-centered analyses (LPA) to uncover different parenting profiles or sub-groups of parents. Four different classes emerged for fathers, with the largest class (58.3%) characterized by the activation pattern. These fathers engaged in moderate intrusiveness and cognitive stimulation in the context of moderately high levels of sensitivity and positive regard that should provide infants with the feelings of a safe haven while being challenged to explore. A similar behavioral profile, however, was found for mothers, indicating that some mothers, too, engaged in this style of parenting with their infants during the challenging teaching task. Supportive and disengaged profiles also emerged for both fathers and mothers. An additional intrusive class emerged only for fathers, but represented only 4.8% of the fathers. The supportive profile replicated earlier findings (see also Goodman et al., 2011; Ryan et al., 2006) in which parents were high on sensitivity, positive regard, and cognitive stimulation, but low on intrusiveness and detachment; a pattern of sensitively responsive interaction reminiscent of much of the research on mother-infant interaction based on Bowlby's (1969) attachment theory. The fact that similar supportive and activation profiles emerged across the separate LPAs for mothers and fathers is also a replication of the two distinct profiles; found once for fathers, and again for mothers. In general, many of the chapters in this issue are exploring new territory and utilizing new statistical methods to measure and analyze fathering, a recommendation by the working group and part of the core issues presented by Cabrera and Volling (this issue). For instance Piskernik and Ahnert (this issue) used experience sampling to capture the activities fathers engaged in with their children in

naturalistic contexts, and also used a person-centered approach to find different profiles of father-child activities. The implications here are that future research may benefit from using both variable-centered and person-centered statistical approaches to uncover novel parenting constructs that have been overlooked to date.

One might conclude from the LPA that fathers and mothers were more similar than different because of the discovery of similar latent profiles. However, the proportion (49%) of mothers in the activation profile was less than the nearly 60% of fathers. Similarly, 41% of mothers fell into the supportive parenting class, whereas only 24% of fathers did. It appears, then, that there are both similarities and differences in mothers' and fathers' parenting, at least as observed in the current investigation of predominantly white, middle-class two-parent families with one-year-olds using a three-box, laboratory teaching task. Ryan et al. (2006) found surprisingly similar results, reporting that there were more mothers in the highly supportive cluster and more men in the "somewhat supportive" cluster (similar to activation parenting here).

As Feinberg and colleagues (this issue) make clear, a family-level perspective requires that mothers and fathers be included in the same analysis, and analyzing data from both mothers and fathers simultaneously is often preferred. The LPA was conducted separately here for mothers and fathers given that each parent accompanied their infant separately during laboratory sessions that were intentionally separated by one month to minimize the testing effects on the infant of repeated exposures to the stressful SSP paradigm. But, fathers and mothers often occupy the same microsystem space, the family, and ideally, both parents should be included in the same analyses rather than analyzed in separate models (Core Issue 6, Cabrera & Volling, this issue). We did attempt to take the analyses to the family-level by examining the associations between mother and father classes to see if infants had similar or different interactive experiences with their mothers and fathers. Nearly 30% of infants had both activation fathers and mothers, 26% had supportive mothers and activation fathers, 11.4% had both supportive mothers and fathers, and 9% had supportive fathers and activation mothers. Further research is needed to determine what the developmental consequences are for infants when their fathers and mothers are either supportive or engage in activation parenting. Finally, if we have indeed uncovered an activation parenting profile, it was not related to the security of the infant-mother and infant-father attachment assessed concurrently using the SSP during the same laboratory visit.

### Limitations

The exploratory nature of the analyses is certainly a limitation. Inspired by the theoretical formulations of Paquette (2004) on the father-infant activation relationship, as well as an ecological framework situating parents and infants within the microsystem of the family (see Chapter I), the person-centered analyses were conducted to move beyond the maternal template and consider alternative, theory-driven parenting constructs descriptive of fathering. Karberg et al. (this issue) also considered whether intrusive paternal behavior may be experienced differently by children and may have different developmental outcomes depending on whether it occurs within the context of positively affectionate or hostile parent-child interactions, and we recommend that other researchers attend to these

possibilities. The fact that we found evidence of an activation profile of fathering, that was replicated for mothers as well, is an encouraging first step, but there is a need for further investigations to test the robustness of these findings. We acknowledge that the results reported here may very well be limited to the challenging teaching context, the age of the infants studied (1 year), the observational coding system used (NICHD ECCRN), the socioeconomic and racial/ethnic make-up of our sample (middle-class white parents), the family structure (two-parent), or the experiences of the parents (all infants were secondborn). Each of these aspects of the current work may limit the generalization of the findings, and further research is needed to see if the activation profile emerges in other studies, and what the developmental consequences are for children.

### Future Directions

There are several implications of these findings for future research. The first is to simply encourage investigators to move beyond the predominant theories, paradigms, methods, and procedures developed and tested on mothers, and consider examining theoretically-driven parenting constructs that may be descriptive of fathering. In doing so, investigators need to be alert to the fact that mothers may also do these behaviors, and they are not simply unique to fathers. As such, both fathers and mothers need to be included in the same study. Second, the findings underscore a need to consider other social interactive contexts for testing activation relationship theory beyond rough and tumble play; the challenging teaching task described here may be one of them. Majdandži et al. (2016) recently described a risk room and obstacle course that provided different challenges for young children and parents, and have also created both a questionnaire and observational rating system of what they are calling challenging parental behavior. These multi-method means of assessing novel parenting constructs may be more fruitful than simply using one observational context and one assessment system. Finally, developmental scientists need to think creatively about developing new procedures and coding methods that go beyond the current observational paradigms and coding systems used to assess parenting (i.e., mothering). We must be willing to take risks and widen the lens to include additional parenting constructs that will advance our understanding of fathering and mothering (Cabrera, Volling, & Barr, 2018).

## CONCLUSION

The current study examined father-infant and mother-infant interactions to search for a style of activation parenting. Although there was evidence of an activation parenting profile, it was not unique to fathers, but also characterized a fair percentage of mothers. Results supported several recommendations resulting from this monograph advocating for research that includes both parents, an ecological systems perspective, and a need to widen our procedural repertoire of what constitutes parenting, and how we assess it.

### Acknowledgements

# References

Ainsworth MDS, Blehar MC, Waters E, & Wall S (1978). Patterns of attachment: A psychological study of the strange situation. Hillsdale, NJ: Erlbaum.

Bergman LR, & Magnusson D (1997). A person-oriented approach in research on developmental psychopathology. Development and Psychopathology, 9, 291–319. doi:10.1017/S095457949700206X. [PubMed: 9201446]

Bögels S, & Phares V (2008). Fathers' role in the etiology, prevention and treatment of child anxiety: A review and new model. Clinical Psychology Review, 28, 539–558. doi: 10.1016/j.cpr.2007.07.011 [PubMed: 17854963]

Bowlby J (1969). Attachment and loss. New York, NY: Basic Books.

Cabrera NJ, Volling BL, & Barr R (2018). Fathers are parents, too! Widening the lens on parenting for children's development. Child Development Perspectives, doi:10.1111/cdep.12275

Flanders JL, Simard M, Paquette D, Parent S, Vitaro F, Pihl RO, & Séguin JR (2010). Rough-and-tumble play and the development of physical aggression and emotion regulation: A five-year follow-up study. Journal of Family Violence, 25, 357–367. doi: 10.1007/s10896-009-9297-5

Fletcher R, St. George J, & Freeman E (2013). Rough and tumble play quality: Theoretical foundations for a new measure of father–child interaction. Early Child Development and Care, 183, 746–759. doi: 10.1080/03004430.2012.723439

Fliek L, Daemen E, Roelofs J, & Muris P (2015). Rough-and-tumble play and other parental factors as correlates of anxiety symptoms in preschool children. Journal of Child and Family Studies, 24, 2795–2804. doi: 10.1007/s10826-014-0083-5

Goodman WB, Crouter AC, Lanza ST, Cox MJ, Vernon-Feagans L & Family Life Investigators (2011). Paternal work stress and latent profiles of father–infant parenting quality. Journal of Marriage and Family, 73, 588–604. doi:10.1111/j.1741-3737.2011.00826.x [PubMed: 23152644]

Grossmann K, Grossmann KE, Fremmer-Bombik E, Kindler H, Scheuerer-Englisch H, & Zimmermann P (2002). The uniqueness of the child–father attachment relationship: Fathers' sensitive and challenging play as a pivotal variable in a 16-year longitudinal study. Social Development, 11, 301–337. doi:10.1111/1467-9507.00202

Hagan LK, & Kuebli J (2007). Mothers' and fathers' socialization of preschoolers' physical risk taking. Journal of Applied Developmental Psychology, 28, 2–14. doi: 10.1016/j.appdev.2006.10.007.

Hallers-Haalboom ET, Groeneveld MG, van Berkel SR, Endendijk JJ, van der Pol LD, Linting M, Bakermans-Kranenburg 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. [PubMed: 28459275]

Lamb ME (1975). Fathers: Forgotten contributors to child development. Human Development, 18, 245–266. doi:10.1159/000271493 [PubMed: 1213691]

Lucassen N, Tharner A, Van Ijzendoorn MH, Bakermans-Kranenburg MJ, Volling BL, Verhulst FC, Lambregtse-Van den Berg MP, & Tiemeier H (2011). The association between paternal sensitivity and infant–father attachment security: A meta-analysis of three decades of research. Journal of Family Psychology, 25, 986–992. doi:10.1037/a0025855 [PubMed: 22004434]

Majdandži M, de Vente W, & Bögels SM (2016). Challenging parenting behavior from infancy to toddlerhood: Etiology, measurement, and differences between fathers and mothers. Infancy, 21, 423–452. doi:10.1111/infa.12125.

Malin JL, Cabrera NJ, & Rowe ML (2014). Low-income minority mothers' and fathers' reading and children's interest: Longitudinal contributions to children's receptive vocabulary skills. Early Childhood Research Quarterly, 29, 425–432. doi:10.1016/j.ecresq.2014.04.010 [PubMed: 25520542]

Muthén LK and Muthén BO (1998-2012). Mplus User's Guide. Seventh Edition. Los Angeles, CA: Muthén & Muthén

NICHD Early Child Care Research Network. (1999). Child care and mother-child interaction in the first 3 years of life. Developmental Psychology, 35, 1399–1413. doi:10.1037/0012-1649.35.6.1399 [PubMed: 10563730]

Paquette D (2004). Theorizing the father-child relationship: Mechanisms and developmental outcomes. Human Development, 47, 193–219. doi: 10.1159/000078723

Paquette D, & Bigras M (2010). The risky situation: a procedure for assessing the father-child activation relationship. Early Child Development and Care, 180, pp. 33–50. doi: 10.1080/03004430903414687

Pellegrini AD, & Smith PK (1998). Physical activity play: The nature and function of a neglected aspect of play. Child Development, 69, 577–598. doi: 10.1111/j.1467-8624.1998.tb06226.x [PubMed: 9680672]

Power TG (1985). Mother-and father-infant play: A developmental analysis. Child Development, 56, 1514–1524. doi: 10.2307/1130470

Roggman LA, Boyce LK, Cook GA, Christiansen K, & Jones D (2004). Playing with daddy: Social toy play, early Head Start, and developmental outcomes. Fathering, 2, 83. doi: 10.3149/fth.0201.83

Ryan RM, Martin A, & Brooks-Gunn J (2006). Is one good parent good enough? Patterns of mother and father parenting and child cognitive outcomes at 24 and 36 months. Parenting: Science and Practice, 6, 211–228. doi:10.1207/s15327922par0602&3_5

Schoppe-Sullivan SJ, Kotila LE, Jia R, Lang SN, & Bower DJ (2013). Comparisons of levels and predictors of mothers' and fathers' engagement with their preschool-aged children. Early Child Development and Care, 183, 498–514. doi: 10.1080/03004430.2012.711596. [PubMed: 23645966]

Stevenson MM, & Crnic KA (2013). Activative fathering predicts later children's behaviour dysregulation and sociability. Early Child Development and Care, 183, 774–790. doi: 10.1080/03004430.2012.723441 [PubMed: 24039329]

Tamis-LeMonda CS, Shannon JD, Cabrera NJ, & Lamb ME (2004). Fathers and mothers at play with their 2-and 3-year-olds: contributions to language and cognitive development. Child Development, 75, 1806–1820. doi: 10.1111/j.1467-8624.2004.00818.x [PubMed: 15566381]

Van Ijzendoorn MH, & De Wolff MS (1997). In search of the absent father—Meta-analyses of infant–father attachment: A rejoinder to our discussants. Child Development, 68, 604–609. doi:10.1111/j.1467-8624.1997.tb04223.x [PubMed: 9306640]

Volling BL, McElwain NL, Notaro PC, & Herrera C (2002). Parents' emotional availability and infant emotional competence: Predictors of parent-infant attachment and emerging self-regulation. Journal of Family Psychology, 16, 447. doi: 10.1037/0893-3200.16.4.447 [PubMed: 12561291]

Vondra JI, Shaw DS, & Kevenides MC (1995). Predicting infant attachment classification from multiple, contemporaneous measures of maternal care. Infant Behavior and Development, 18, 415–425. doi: 10.1016/0163-6383(95)90031-4

**Table 4.1.**

Intercorrelations, Means and Standard Deviations for Mothers and Fathers

| Parenting Behaviors | 1. | 2. | 3. | 4. | 5. |
|---|---|---|---|---|---|
| 1. Sensitivity | **.20**[**] | −.37[**] | −.61[**] | .77[**] | .51[**] |
| 2. Intrusiveness | −.51[**] | **.22**[**] | −.13 | −.14[*] | −.03 |
| 3. Detachment | −.54[**] | .09 | **.25**[*] | −.57[**] | −.50[**] |
| 4. Positive Regard | .78[**] | −.18[*] | −.58[**] | **.04** | .48[**] |
| 5. Cog. Stimulation | .51[**] | −.22[**] | −.41[**] | .45[**] | **.16**[*] |
| *M* Father | 3.96 | 2.02 | 1.91 | 3.66 | 3.45 |
| *SD* Father | 0.86 | 0.90 | 1.05 | 1.01 | 0.72 |
| *M* Mother | 4.26 | 2.06 | 1.60 | 4.15 | 3.88 |
| *SD* Mother | 0.77 | 0.96 | 0.70 | 0.85 | 0.76 |

*Note.* Correlations for mothers are below the diagonal. Correlations for fathers are above the diagonal. Cross-parent correlations are on the diagonal in bold and underscored. Cog = Cognitive.

[*]
  *p* < .05

[**]
  *p* < .01.

**Table 4.2.**

Mean Differences in Parenting Behaviors for Four-Class Solution for Fathers

| Parenting Behaviors | Supportive (n = 45) | | Intrusive (n = 9) | | Activation (n = 109) | | Disengaged (n = 24) | | F (3, 183) | $\eta_p^2$ | Total Sample (N = 187) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | M | SD | M | SD | | | M | SD |
| Sensitivity | 5.01$_a$ | 0.48 | 2.48$_b$ | 0.44 | 3.88$_c$ | 0.36 | 2.88$_d$ | 0.75 | 157.17** | 0.72 | 3.96 | 0.86 |
| Intrusiveness | 1.47$_a$ | 0.44 | 3.96$_c$ | 0.99 | 2.20$_b$ | 0.80 | 1.47$_a$ | 0.56 | 38.94** | 0.39 | 2.02 | 0.90 |
| Detachment | 1.22$_a$ | 0.25 | 2.00$_b$ | 0.75 | 1.74$_b$ | 0.61 | 3.99$_c$ | 1.12 | 102.62** | 0.63 | 1.91 | 1.05 |
| Positive Regard | 4.81$_a$ | 0.62 | 2.41$_b$ | 0.62 | 3.58$_c$ | 0.67 | 2.32$_b$ | 0.42 | 99.27** | 0.62 | 3.66 | 1.01 |
| Stimulation | 3.97$_a$ | 0.63 | 2.96$_b$ | 0.51 | 3.47$_c$ | 0.63 | 2.60$_b$ | 0.37 | 30.11** | 0.33 | 3.45 | 0.72 |

*Note.* Scores with different subscripts are statistically different across groups based on post-hoc tests using LSD.

*F* values relate to tests of significance of group difference among four groups. $\eta_p^2$ = partial eta squared.

*
*p* < .05

**
*p* < .01.

**Table 4.3.**

Mean Differences for Parenting Behaviors for Three-Class Solution for Mothers

| Parenting Behaviors | Supportive (n = 79) | | Disengaged (n = 19) | | Activation (n = 94) | | $F$ (2, 189) | $\eta_p{}^2$ | Total Sample (N = 192) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | M | SD | | | M | SD |
| Sensitivity | 4.96$_a$ | 0.47 | 3.16$_b$ | 0.36 | 3.90$_c$ | 0.44 | 187.58** | 0.67 | 4.23 | 0.77 |
| Intrusiveness | 1.53$_a$ | 0.53 | 2.12$_b$ | 1.22 | 2.49$_b$ | 0.96 | 27.24** | 0.22 | 2.06 | 0.96 |
| Detachment | 1.16$_a$ | 0.24 | 3.00$_b$ | 0.65 | 1.68$_c$ | 0.56 | 123.62** | 0.57 | 1.60 | 0.70 |
| Positive Regard | 4.84$_a$ | 0.52 | 2.77$_b$ | 0.53 | 3.85$_c$ | 0.58 | 134.87** | 0.59 | 4.15 | 0.85 |
| Stimulation | 4.32$_a$ | 0.72 | 2.91$_b$ | 0.46 | 3.70$_c$ | 0.57 | 46.30** | 0.33 | 3.88 | 0.76 |

*Note.* Scores with different subscripts are statistically different across groups based on post-hoc tests using LSD.

$F$ values relate to tests of significance of group difference among four groups. $\eta_p{}^2$ = partial eta squared.

*
$p < .05$

**
$p < .01$.

**Table 4.4.**

Relations between Latent Classes of Fathering and Mothering

| | Father Classes | | | | |
|---|---|---|---|---|---|
| **Mother Classes** | **Supportive** | **Intrusive** | **Activative** | **Disengaged** | **Total** |
| Supportive | **21** | 4 | 48 | 3 | 76 |
| Activative | 17 | 5 | **55** | 13 | 90 |
| Disengaged | 5 | 0 | 6 | **7** | 18 |
| Total | 43 | 9 | 109 | 23 | N = 184 |

$\chi^2$ (6) = 19.534, $p$ < .01