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Maternal and Paternal Attachment Style and Chaos as Risk Factors for Parenting Behavior.

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Abstract

Household chaos and insecure parental attachment styles are associated with lower quality parenting behaviors. However, there is a paucity of evidence regarding fathers' parenting behaviors, and no studies examine if chaotic home environments moderate the attachment style-parenting behavior relationship. Using data from both mothers and fathers of 742 children (40.5% African American) living in rural, low-resource communities, the current study examined the individual and joint effects of self-reported adult attachment style and two domains of household chaos on observed maternal and paternal parenting behaviors during structured play with their 58-month old child (49.6% female). Multivariate models revealed that, even after controlling for confounders, attachment insecurity predicted lower quality parenting behavior for mothers and fathers. Further, for both mothers and fathers, the disorganized domain of household chaos, representing environments high in noise, clutter and disorder, predicted less sensitive and more intrusive parenting behavior. Finally, for mothers with dismissive attachment styles, high levels of disorganization appeared to exacerbate caregiving difficulties; this moderating relationship was not evident for fathers. These findings suggest that the stress of a chronically disorganized family environment may impact the expression of mothers' insecure tendencies in the context of parenting, thereby intensifying less sensitive and more intrusive parenting behaviors.

Keywords

Adult Attachment; Household Chaos; Parenting Behavior; Mothers; Fathers

There is extensive evidence that early parenting behaviors likely exert an enduring influence on children's adjustment in multiple domains of functioning as well as in the development and maintenance of psychopathology (Zvara, Mills-Koonce, Garrett-Peters, Wagner, Vernon-

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Feagans, & Cox, 2014; Cassidy, 2008). Reviews of the child development literature have identified two key domains of parenting, maternal sensitivity and harsh intrusiveness (Cox & Harter, 2003) as particularly important for long term adjustment. Parental sensitivity refers to the quality with which caregivers recognize and respond both effectively and promptly to their infants' cues and bids for care. In so doing, the parent or caregiver helps the child develop his or her own self-regulation by responding to the child's distress with support and sensitivity (Cassidy, 2008). In contrast, parenting behavior that is emotionally negative (i.e., angry and hostile), behaviorally and verbally controlling, referred to as harsh-intrusiveness (Egeland, Pianta, & O'Brien, 1993), may increase children's risk for adjustment problems independent of parental warmth and sensitivity (Zvara et al., 2014). Whereas maternal sensitivity is related to a range of emotional, affective, and cognitive outcomes for adaptive child development (Bornstein, Tamis-LeMonda, Hahn, & Haynes, 2008; Landry, Smith, & Swank, 2006; Landry, Smith, Miller-Loncar, & Swank, 1997), parental intrusiveness is associated with low self-regulatory behaviors and social competencies in young children (Karreman, van Tuijl, van Aken, & Dekovic, 2006).

Given that parenting plays a critical role in children's developmental outcomes, a large body of research examining variations in caregiving behavior has accumulated over several decades. From an attachment theory perspective, there is consistent evidence that parents' relationships with their children are influenced by experiences from their own families of origin (Belsky & Pensky, 1988). Attachment theorists posit that forming a close, affect-laden bond to a significant figure, typically a parent, is a fundamental mechanism that evolved to increase an infants' chances for survival (Bowlby, 1969). Because of its evolutionary origins, attachment is considered to be biologically hardwired with recent advances in neuroscience positing that brain structures (e. g., the limbic system) are actively involved in attachment functions (Coan, 2010).

In light of the powerful biological instinct for survival, Bowlby hypothesized that all human infants form an attachment to their caregiver, but that children manifest different patterns of attachment "security" depending on the quality of the care they receive (Bowlby, 1973). Infants of caregivers who are responsive, sensitive, and warm in their interactions, tend to exhibit patterns of secure attachment such that they turn to the caregiver as a secure base or safe haven to which the infant or child can return to in times of danger or distress. In contrast, when caregiving behavior is characterized as harsh, rejecting, or chaotic, children tend to evidence patterns of insecure attachment orientations.

Adult Attachment and Parenting

Although Bowlby primarily focused on infant-caregiver attachment, he theorized that early attachment was likely related to subsequent parenting behavior (Bowlby, 1979). The most commonly suggested mechanism explaining this association is that children's repeated experiences with caregivers as consistently available and sensitively responsive lead to the establishment of internal working models (IWMs). Attachment theorists posit that IWM organize children's cognitions, affects, and social experiences in ways that have direct consequences for the quality of subsequent relationships including parenting behavior in adulthood (Biringen, Matheny, Bretherton, Renouf, & Sherman, 2000).

Extending this early work, using both self-report (e.g., Hazan & Shaver, 1987) and Adult Attachment Interviews (AAI, Main & Goldwyn, & Hesse,1998), a considerable body of research identified three patterns of individual differences in adult attachment, including a secure/autonomous style, an anxious/preoccupied style, and an avoidant/dismissing style (Crowell, Fraley, & Shaver, 1999). Generally, secure adult attachment indicates a positive self-view, and a trusting, supportive view of others. Meanwhile, those with a preoccupied style tend to have a negative self-view and experience distress in relationships, while those classified as dismissing tend to fear intimacy and as such minimize emotional needs in relationships (Bartholomew & Horowitz, 1991). Further, studies examining adult attachment and parenting behavior suggest that women with secure-autonomous attachment styles are reported to be more sensitive and responsive in interactions with their child (Biringen et al., 2000), whereas self-reported insecure attachment styles (i.e., high scores on dismissive and/or preoccupied) are related to less sensitive parenting (e.g., Mills-Koonce et al., 2011). Despite advances in the literature on maternal attachment style and parenting behavior, virtually no observational research has been conducted with fathers (Jones, Cassidy, & Shaver, 2015).

Further, although research provides evidence of an association between adult attachment style and parenting, it is not entirely clear under what conditions insecure attachment styles may be related to parenting behaviors. Chaotic home environments have long been associated with a range of adverse outcomes for family functioning including less sensitive and more intrusive parenting (Vernon-Feagans, Garrett-Peters, Willoughby, Mills-Koonce, 2012; Zvara et al., 2014). Existing studies suggest that chaos, particularly when it is persistent over time, may leave caregivers overwhelmed by the demands of parenting, reducing their responsiveness to child needs (Conger, Conger, & Martin, 2010). Given that parents with insecure attachment styles report difficulties appropriately responding to the needs of their children, it is likely that chaotic home environments may exacerbate an already stressed system. The present study examined the moderating role of two domains of cumulative chaos (instability and disorganization) on the relations between maternal and paternal self-reported attachment style and observed parenting behavior (sensitive and harsh intrusive). Instability describes a chronically chaotic and unpredictable family environment, whereas family disorganization is indexed by ambient noise in the home/neighborhood, household crowding, and disorganized family routines (Johnson, Martin, Brooks-Gunn, & Petrill, 2008).

Attachment, Chaos, and Parenting

Theory and research converge on the idea that chaotic homes create stressful situations that can diminish opportunities for positive and sustained interactions between children and adults (Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 1998). Numerous studies examining the association between chaos and parenting posit that stress from noise, crowding, lack of routines, and family instability might disrupt the important proximal processes between parent and child (Zvara et al., 2014). Although evidence supports the premise that chaos is related to distressed caregiving, the mechanisms that explain this association are not well understood.

Several studies have shown that stress from the excessive noise and overcrowding can spill over into parenting processes such that caregivers may be less responsive to their children (Coldwell, Pike, & Dunn, 2006; Wachs & Evans, 2010; Zvara et al., 2014). Existing evidence linking chaotic home environments and parenting suggest that continued exposure to noise and crowding may increase physical and emotional fatigue, thereby lowering the parents' cooperativeness and increasing their hostility and aggression (Conger et al., 2010; Schultz, Izard, & Ackerman, 2000; Corapci & Wachs, 2002). These studies demonstrate that home environments characterized by chaos may deplete emotional and psychological resources that parents might otherwise invest in their children.

Given attachment behaviors are activated in times stress or threat (e.g., Mills-Koonce et al., 2011) it is plausible that adult attachment and parenting might be moderated by chaotic environments. Similar to infancy, when distress makes attachment behaviors more apparent, it is likely that associations between adult attachment and parenting may be amplified by the level of chaos in the home environment. For example, an attachment perspective would suggest that in chaotic environments, adults with secure attachment orientations likely seek supportive relationships as sources of interpersonal support (Pianta, Egeland, & Adam, 1996). However, for parents with insecure attachment styles, the noise, excessive crowding, and clutter from chaos, may heighten the need to for dismissive parents to distance themselves from others, while parents with preoccupied attachment orientations may become overly dependent on others as a coping mechanism (Bartholomew & Horowitz, 1991), thus, making both insecure attachment strategies more vulnerable to the effects of chaos spilling over into caregiving behaviors.

Current Study

Given the aforementioned gaps in the literature, this study examines the influence of household chaos on the relationship between attachment style and parenting behavior for a sample of rural mothers and fathers. We adopted an attachment-diathesis-stress model (Simpson &, Rholes, 2012), which proposes that stress activates a diathesis (e.g., insecure attachment), which manifests in maladaptive responses to stressful/threatening events, depending on a person's attachment orientation. From this perspective, caregivers with different attachment orientations would be expected to respond differently when they encounter stress (i.e. chaos) resulting in less optimal parenting behaviors. The underlying assumption is that a stressor such as chaos can activate the diathesis, or vulnerability factor, and transform it into risk for maladaptive coping and behavioral strategies (Monroe & Simons, 1991). To date, there have been no studies examining the independent and interactive effects of household chaos and adult attachment style on maternal and paternal parenting behaviors.

Given that parents with insecure attachment styles report difficulties appropriately responding to the needs of their children (Adam, Gunnar & Tanaka 2004), it is plausible that chaotic home environments may exacerbate an already stressed system and thus intensify less optimal parenting behaviors for these individuals. This may be particularly important for families living in rural communities given their elevated risk for chaos (Vernon-Feagans, Garrett-Peters, De Marco, & Bratsch-Hines, 2012) and parenting difficulties (Conger et al.,

2010). To this end, the present study investigates the moderating effect of two domains of cumulative chaos *instability*, indexed by physical change in residence and change in household members, and *disorganization*, characterized by ambient noise in the home/neighborhood, household crowding, and disorganized family routines (Lichter & Wethington, 2010; Vernon-Feagans et al., 2012; Johnson et al., 2008) on relationships between maternal and paternal self-reported attachment style and observed parenting behaviors.

Three hypotheses were proposed. First, insecure adult attachment style was expected to be associated with lower sensitivity and greater intrusiveness in parenting for mothers and fathers. Second, independent measures of household chaos defined as disorganization and instability were expected to be negatively associated with parental sensitivity and positively associated with intrusiveness for both mothers and fathers. Third, we hypothesized a significant interaction between adult attachment style and each measure of chaos such that the combination of insecure attachment and household chaos would be associated with the lower levels of sensitivity and greater levels of intrusiveness for both mothers and fathers.

Methods

Sample and Procedure

The sample for this analysis was drawn from the Family Life Project (FLP, Vernon-Feagans & Cox, 2013), a longitudinal study of families from six rural, low-income counties in Eastern North Carolina and Central Pennsylvania. A total of 1,292 families enrolled in the FLP by completing the first home visit when the infant was two months old. For the current study, we limited our analysis to the subsample of 742 families for whom we had self-reported attachment data for both mothers and fathers (N=1484 participants). The sample was balanced with regards to child sex (49.6% female children) and race (40.5% African American). Mean maternal age at the 6-month visit was 26.5 years (SD=6.1) and 74.8%of mothers had earned at least a high school diploma or equivalent, whereas, mean paternal age was 33.8 (SD=9.6) and 63.5% had achieved the same amount of education. Independent sample T-tests revealed that there were no significant differences between the 742 families involved in the analysis and the remaining FLP families (n= 550) with regards to maternal or paternal age, education, or child sex. We did however find a significant difference between the two groups with regards to household income-to-needs, such that the families not involved in the study reported less income (t(1202) = 7.57, p =.000). The current study uses data from parent-report, home visitor, and observational assessments of parenting behavior collected during home visits when the target children were 2-, 6-, 15-, 24-, 36-, 48-, and, 58-months of age.

Measures

Adult Attachment Quality.—Adult attachment style was determined using Hazan and Shaver's (1987) Adult Attachment Style (AAS) measure. The AAS is a self-report instrument that asks respondents to identify which narrative vignette best describes their attachment style in the context of a romantic relationship. The respondent is given three answer options, each of which corresponds to a different adult attachment style (secure,

insecure-preoccupied, and insecure-dismissive). The respondent is asked to reflect on her current or most recent romantic relationship and choose which vignette best described the way that she relates to her romantic partner. The measure has demonstrated high test-retest reliability for a 2-month period (.68 for Secure, .71 for Preoccupied, and .52 for Dismissive) and convergent validity with the Adult Attachment Questionnaire (Kirkpatrick & Hazan, 1994, Bouthillier, Julien, Dube, Belanger, & Hamelin, 2002).

Observed Maternal Parenting Behaviors.—At the 58-month visit, mother-child dyads were digitally recorded in a 15-minute semi-structured play activity involving the mother and child together building towers to match a model provided using wooden blocks; and (2) a card game called ‘slap-jack’. The recorded interactions were coded for the following dimensions of parenting behavior including sensitivity, detachment, intrusiveness, stimulation, positive regard and negative regard (Cox & Crnic, 2002; see also NICHD Early Child Care Research Network, 1999). Coders gave a single rating for each parenting dimension based on the overall quality of the entire interaction using Likert-type scales. Coders rated parenting behaviors on a 7-point scale (1 = not at all characteristic and 7 = very characteristic). Both frequency and intensity of behavior or affect toward the child were considered. Each subscale was double-coded and conferenced by trained and reliable coders. Reliabilities across each pair of coders were determined by maintaining intraclass correlation coefficients of .80 or greater on subscales and composite measures at each time point. Coders were blind to all other information within and across visits.

Informed by an exploratory factor analysis with an oblique rotation (i.e., promax), the individual subscales were aggregated into two distinct, relatively independent composites of parenting behavior which we named maternal sensitivity and harsh intrusiveness. The first composite, maternal sensitivity, was created as the mean of the global sensitivity (level of responsiveness and support offered to the child contingent on the child’s needs), positive regard (positive feelings and warmth directed toward the child), stimulation (developmentally appropriate language use), and detachment (reversed scored; degree to which the mother is disengaged). Factor loadings were .87, .88, .85, and .81, respectively. Accordingly, higher scores on the sensitivity subscale reflect parenting behaviors that are child-centered, engaged, warm, and stimulating. The second composite, harsh intrusiveness, was created as the mean of the intrusiveness (controlling, parent-agenda driven behaviors) and negative regard (hostile verbal and physical treatment of the child) subscales. Factor leading for the harsh intrusive compost were .92 and .77, respectively. Higher scores on the harsh intrusiveness subscale represent parenting behaviors that are parent-focused, harsh, and affectively negative. These measures have been successfully tested in other investigations (Mills-Koonce et al., 2011; Zvara et al., 2014).

Paternal parenting behaviors.—Similar to the mother-child interactions described above, father-child interactions were digitally recorded while the dyad engaged in two structured tasks at the 58-month home visit in order to assess parenting quality. A number of published reports have effectively used these father-child interaction data from the Family Life Project to predict child outcomes (see, for example, Mills-Koonce et al., 2011; Goodman, Crouter, Lanza, & Cox, 2008). The first activity was to build a tower as high as

the child could build using brightly colored blocks. The father was told that this was a task for the child to do, but that he could help in any way that he thought was necessary. The second task was called “hot hands”. For this task, one player held their hands open in front of them with palms facing up. The other player placed his hands palms down, hovering above the other player’s hands, with the two players’ hands barely touching each other. The player whose hands were on the bottom attempted to bring his hands over to slap the backsides of his opponent’s hands. This must be done with sufficient speed given the goal of the player whose hands are above with palms facing down was to pull his hand away and out of the area where the hands overlap in order to avoid the slap. These activities provided a context for observing the father’s support for the child in activities that could be fun and frustrating and provided an opportunity to observe expressions of affect from the father. Inter-rater reliability was greater than .80 across pairs of coders.

As with maternal parenting, factor analysis suggested a two-factor model for the compositing of subscales for father parenting behavior. Father sensitivity composite was comprised of sensitivity/responsiveness, positive regard, and stimulation of cognitive development subscales. Factor loadings were .84, .81, .80, .83, and .81, respectively. Harsh intrusive parenting composite was composed of the subscales of intrusion and negative regard, with factor loadings of .82 and 80, respectively. Inter-rater reliability for the paternal sensitive composite using Interclass Correlation (ICCs) across each pair of coders at the 58-month time point was .84.

Household Chaos.—Ten cumulative indicators of household chaos were derived from data collected at home visits when target children were approximately 2, 6, 15, 24, 36, 48, and 60 months old. The ten indicators included: (1) *the total number of times the child moved* (physically to another residence), (2) *the total number of changes in the primary caregiver* (usually involved change in primary responsibility for child from mother to other adult), (3) *the total number of changes in the secondary caregiver* (either primary caregiver partner or primary caregiver grandmother), (4) *the total number of different people in the household*, (5) *the total number of times household members moved into or out of the household*. (6) *the average number of hours that the TV was on each day*, (7) the average *household density*, (8) home visitor ratings of *home visit preparation by the household*, (9) home visitor ratings of *the cleanliness of the household*, and (10) home visitor ratings of *the neighborhood noise level around the home*.

Principal components analysis (PCA) was performed on the 10 cumulative indicators of household chaos. The PCA indicated that two eigenvalues optimally represented the covariation in these 10 items. Following best practices, scree plots and parallel analyses were evaluated to determine the optimal number of factors to retain (Dinno, 2009; Floyd & Widaman, 1995). Both methods favored a two-factor solution. A follow-up exploratory factor analysis model was examined that forced extraction of two correlated factors. We labeled the first factor *household instability* that included five variables: number of people moving in and out of the household, the total number of people in the household, the number of household moves, the number of changes in the primary caregiver, and the number of changes in the secondary caregiver. The second factor we labeled *household disorganization* and it also included five variables: household density, the numbers of hours of TV watching,

the preparation for home visits, the cleanliness of the home, and the neighborhood noise levels. Interestingly, these factors mapped almost completely onto the constructs identified as central to the definition of chaos (Evans & Wachs, 2010). The household instability and household disorganization factors had reasonable internal consistency (Chronbach's alphas of .76 and .67, respectively).

Covariates.—Poverty status, education, ethnic minority status, and child sex have each been identified as important correlates of parenting (see Conger et al., 2010, for a review), and thus the family's income-to-needs ratio, maternal education, and race and sex of the target child were included as covariates in this model. Because income-to-needs ratios showed stability over time ($r = .68$, $p < .01$), the family's income-to-needs ratios from the 6 – 60 months' timepoints were averaged and used as a covariate in the current analyses.

Analysis Plan

Multivariate regression models were conducted to examine the unique and interactive effects of adult attachment style and household chaos as predictors of caregiving behavior while controlling for maternal and child factors. One model was computed for each caregiver, with both dependent variables, sensitive parenting and harsh intrusive parenting in the same model to protect against Type I errors that might occur if multiple regressions were conducted independently. For both mothers and fathers, attachment style was dummy coded with secure attachment as the reference category. We first entered control variables, followed by attachment variables (i.e., secure, dismissive, and preoccupied), followed by the two chaos variables. Lastly, we entered interaction terms between each of chaos variables and insecure attachment measures (i.e., instability × preoccupied; disorganization × dismissive).

Results

Descriptive statistics for the variables of interest and bivariate correlations are provided in Table 1. Both chaos instability and disorganization were related to maternal and paternal parenting behaviors in the expected direction, such that chaos was related to less sensitive and greater intrusive parenting for both mothers and fathers. In the next step, we ran multivariate models to determine the unique and interactive effects of household chaos and adult attachment on maternal and paternal parenting behavior.

Maternal and paternal secure attachment were positively related to sensitive parenting ($r =$. 33, $p < .01$) and ($r =$. 36, $p < .01$) respectively, whereas in contrast, inversely related to intrusive parenting ($r =$.−.29, $p < .01$) and ($r = -.34$, $p < .01$), respectively. Although we found no significant correlations between maternal preoccupied attachment and parenting behavior, mothers with dismissive attachment quality were observed to be less sensitive and more intrusive in their interactions with their child ($r = -.16$, $p < .05$) and ($r =$. 15, $p < .01$), respectively. Chaos was also significantly related to maternal sensitivity and intrusiveness. In contrast, neither preoccupied nor dismissive attachment styles were related to parenting for fathers.

Multivariate Regression Analyses

Multivariate regression analyses examined the unique and interactive effects of adult attachment and household chaos as predictors of maternal and paternal caregiving behavior while controlling for race, income, child gender, and maternal education. We built our models by first entering the demographic factors, followed by attachment variables, followed by household chaos variables, and lastly, the interaction terms. We ran separate models for mothers and fathers.

In Tables 2 and 3, we report both standardized and unstandardized regression coefficients, however only the standardizes coefficients are discussed below. With regards to mothers (Table 2), both dismissive and preoccupied attachment styles predicted sensitive parenting (β = −.47, SE =.30, p =.001) and (β = −.36, SE =.54, p =.01) respectively, and harsh intrusive parenting (β = .39, SE =.35, p < .007) and (β = .30, SE =.62, p < .04), respectively, suggesting that both forms of insecure attachment are related to less sensitive and more harsh intrusive parenting for mothers. In contrast to chaos instability, we found that chaos disorganization predicted less sensitive parenting (β = −.35, SE =.10, p = .0001and greater intrusive parenting (β = .31, SE =.11, p = .0001. Maternal education and race were significant predictors of maternal sensitive and harsh intrusive parenting. With regards to interactive effects of chaos and attachment orientations, we found that for mothers with dismissive attachment styles, disorganization may exacerbate the stress of parenting making them less sensitive and more intrusive in their interactions with their child. We next examined differences between attachment styles at differing levels of disorganization and found that dismissive mothers were significantly less sensitive and more intrusive than secure mothers when disorganization was greater than .58 SD (range 1.03–4.12) above the sample mean.

With regards to fathers (Table 3), paternal education and race were significant predictors of sensitive and harsh intrusive parenting. Fathers with dismissive attachment styles were found to be less sensitive in their parenting (β = −.15, SE = .13, p =.04). In addition, chaos disorganization was related to less sensitive paternal caregiving, (β = −.17, SE = .13, p =.01) and greater intrusiveness (β = .27, SE = 12, p =.0001). Although chaos was related to fathers' sensitive parenting and harsh intrusive parenting, no significant interactions between chaos and attachment styles emerged.

Discussion

There is growing evidence that chaotic home environments are increasingly common in the lives of children and families (Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005). This trend is troubling considering chaotic home environments have long been associated with a range of adverse outcomes to the context of family functioning, including less sensitive and more intrusive parenting behaviors (Vernon-Feagans et al., 2012). In the current study we sought understand how variation in adult attachment styles interact with chaotic environments to predict parenting behavior. We used an attachment-diathesis-stress model, conceptualizing insecure attachment as a vulnerability that can generate maladaptive parenting behaviors in the context of chaotic environments.

The current findings advance our knowledge about attachment processes, environmental context, and maternal and paternal caregiving behaviors. First, we found partial support for our hypothesis that insecure attachment style is associated with lower sensitivity and higher intrusiveness for both mothers and fathers. Our study findings suggest that mothers with insecure-dismissive and insecure-preoccupied attachment styles displayed parenting behaviors in the expected direction. Our findings further suggest that fathers with dismissive attachment style were observed to be less sensitive in their interactions with their children. These findings are is in line with previous studies on the relations between paternal attachment styles and parenting (e.g., Howard, 2010; Cohn et al., 1992; van IJzendoorn et al., 1991) and underscores the need for additional examinations of paternal attachment style and parenting behavior associations in future studies.

We also found support for our second hypothesis regarding household chaos and parenting-child relationships. Our results suggest that household disorganization was related to caregiving behavior for both mothers and fathers, indicating that parents in chaotic home environments must compete with excessive noise and overcrowding while interacting with their young children and may adopt less sensitive and harsher parenting strategies as prior studies have suggested (Coldwell et al., 2006). That household disorganization, and not instability, was related to parenting behaviors highlights that the proximal effects of daily disorganization outweigh the effects of periodic instability overtime. The excessive noise and crowding create stressful situations that could diminish opportunities for more positive and sustained interactions between parents and children. The stress from the excessive noise and overcrowding can spill over into parenting processes such that mothers may have less energy and attention for their children and may be more irritated and hostile towards them (Evans, Bullinger, & Hygge, 1998).

With regards to the third hypothesis, this study provides evidence that household disorganization may be particularly problematic for mothers with insecure attachment styles even in the presence of important covariates such as child gender, race, and education. Prior research supports the premise that mothers with dismissive attachment styles are more likely to disengage socially and tend to have difficulty with caregiving and maintaining healthy relationships (Bartholomew & Horowitz, 1991). Thus, it may be that a mother with dismissive attachment style must use considerable energy and resources to facilitate any emotional closeness with her child. Upon experiencing stress from a chaotic environment, some of these resources may be directed to coping with this stress, and as such, her parenting behaviors suffer. Although we found that preoccupied attachment style was related to maternal sensitive and harsh intrusive parenting, we did not find a significant interaction with either dimension of chaos. Given their preoccupation with their own emotional needs the stress from household chaos may be less of a threat for mothers with preoccupied attachment who engage in activities that seek to maintain a high level of interaction with their significant others and/or interpersonal distress.

According to Bowlby (1980), the attachment system is activated under threat and distress. In keeping with prior work by Phelps, Belsky, and Crnic (1998) in which poor parenting emerged in insecure parents only when high levels of stress were present, our findings suggest that, for mothers with dismissive attachment strategies, the distress from living in

crowded unpredictable conditions may leave caregivers overwhelmed by the stress of parenting, making them less sensitive and more intrusive in their interactions with their children (Conger et al., 2010; Schultz et al., 2000). The stress from the excessive noise and overcrowding can spill over into parenting processes such that mothers may have less energy and attention for their children and may be more irritated and hostile towards them.

Meanwhile, the lack of interaction between father's attachment style and chaos suggests that attachment insecurity may operate through different mechanisms to influence paternal parenting behaviors than what is observed for mothers. Previous research showed that for men, childrearing practices are closely linked to relationship quality with partners (Krishnakumar & Buehler, 2000; Haak, Gilbert, El-Sheikh, & Keller, 2018). Therefore, one clear direction for future research is to determine if support from partners moderates the relations between attachment insecurity and environmental context for fathers. Further, research is needed to determine which aspects of instability and disorganization may be mechanisms in the link between attachment and parenting, and under what conditions fathers manage to make positive contributions in the face of these challenges. Nevertheless, interventions designed to address mothers and father's attachment representations and maladaptive parenting behaviors may benefit from helping parents to reduce the stressors placed on them by chaotic living conditions.

Our findings provide support that caregivers with a predisposing 'diathesis', namely insecure attachment styles, are vulnerable to environmental stressors such as household disorganization, in line with the attachment-diathesis stress model. However, in considering an alternate explanation, it may be that mothers with insecure attachment strategies may tend to perceive chaotic environments as threatening, thus inhibiting their ability to attend to their children. That is, high levels of noise, lack of routine, and unpredictability can lead to chronic arousal or distress (Evans et al., 2005) among mothers with dismissive attachment strategies. This perspective is supported by Bowlby (1973) who reasoned that the attachment system is activated not only with threats such as impending or actual separation from, or loss of attachment figures but also by "natural clues of danger", stimuli that increase the likelihood of distress (e.g., loud noises, overcrowding).

The strengths of this study include a large sample size, the inclusion of fathers as research participants, and the use of multi-respondent measures that include observational ratings of parent behavior and the level of chaos present in the home across multiple time points. However, this study focused on families living in rural communities, and, as such, warrant additional research and replication in socio-economically diverse samples. Further, though not explored in this study, future research could explore whether socioeconomic status moderates the impact of household chaos on adult attachment and parenting. Household chaos may exacerbate the effects of attachment in low income homes, where unpredictable and stressful living conditions are more likely than in higher income families (Garrett-Peters et al., 2016). In the current study, our assessment of adult attachment did not include disorganized category which is likely a risk factor for less sensitive and more intrusive parenting behavior. Future research may benefit from using other assessments of adult attachment. Finally, we cannot predict causality with these data; for example, it is impossible to know if chaos causes parenting difficulties or if parenting difficulties lead to chaotic

environments. Notwithstanding these limitations, the current research provides an important extension of previous studies about attachment processes, caregiving behaviors and household chaos.

Implications

Researchers and practitioners have long asserted that attachment representations developed in early childhood may be continuous not only within the individual across the life span but also across generations (Bowlby, 1973; van IJzendoorn & Bakermans-Kranenburg, 1997). Less clear has been the process through which attachment has its influence on parenting and thus developmental outcomes of the next generation. The current study points to the importance of taking the broader family context into consideration when examining the relations between adult attachment and parenting behaviors. For both mothers and fathers, the disorganized domain of chaos predicted low-quality parenting. These findings suggest that when parents are faced with stressful conditions within the home, parents are at greater risk for becoming less sensitive and more negative in their interactions with their children. Therefore, prevention and intervention programs that target parenting and parent-child relationship quality may potentially yield greater improvements in caregiving strategies by first addressing chronically disorganized household environments. This may be particularly important for mothers already vulnerable to parenting stress due to dismissive or preoccupied attachment strategies.

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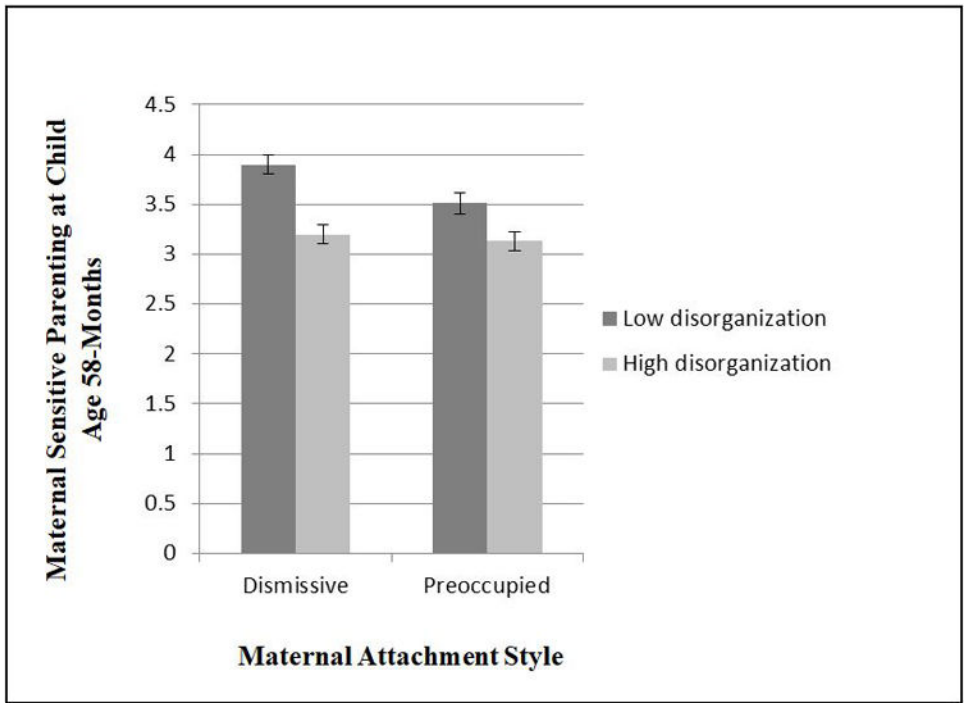

Figure 1.
Adjusted Means for Sensitive Parenting by Attachment Style and Disorganization

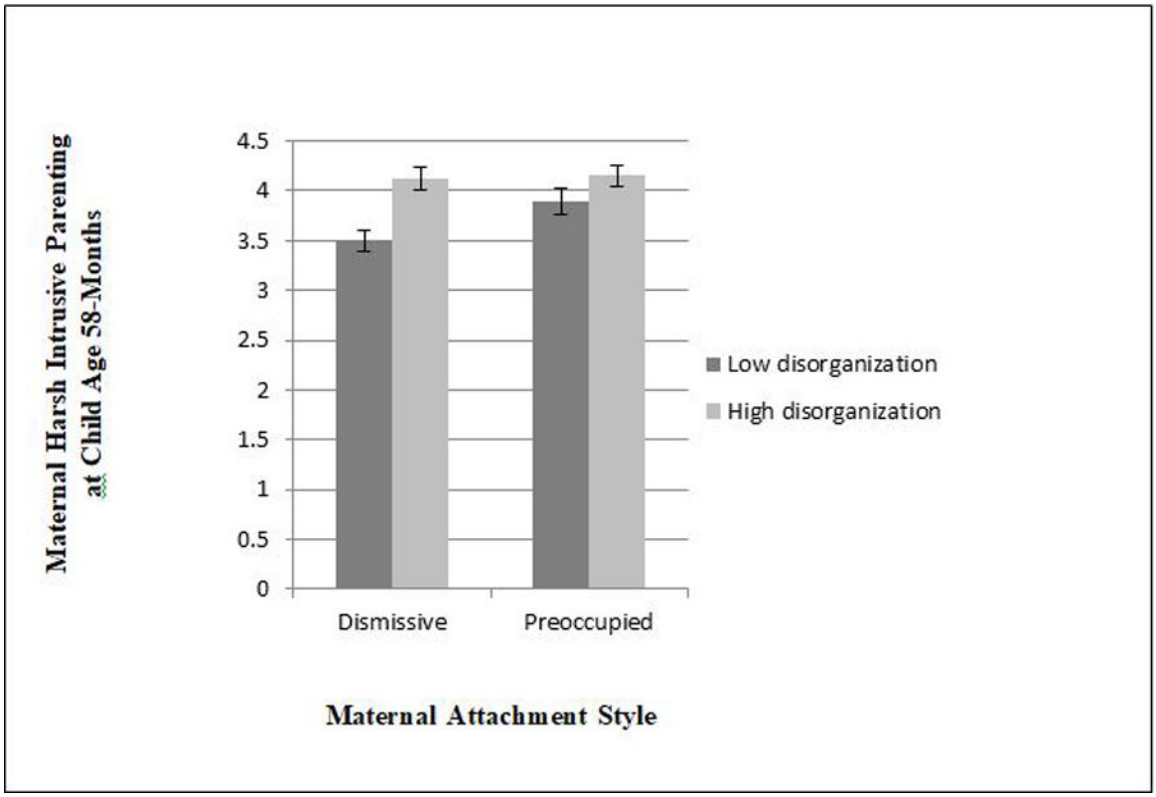

Figure 2.
Adjusted Means for Harsh Intrusive Parenting by Attachment Style and Disorganization

Table 1.

Zero order correlations between study variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Race Black 1=yes 0=no	1														
2. Maternal Education	−.23**	1													
3. Income-to-needs	−.38**	.52**	1												
4. Maternal Sensitivity	−.41**	.49**	.42**	1											
5. Maternal Intrusiveness	.37**	−.41**	−.36**	−.70**	1										
6. Paternal Sensitivity	−.27**	.38**	.24**	.47**	−.45**	1									
7. Paternal intrusiveness	.24**	−.35**	−.21**	−.52**	.48**	−.67**	1								
8. Chaos Disorganization	.27**	−.52**	−.45**	−.46**	.39**	−.34**	.36**	1							
9. Chaos Instability	.24**	−.48**	−.37**	−.32**	.26**	−.23**	.16**	.40**	1						
10. Mothers' Secure attachment	−.32**	.32**	.33**	.33**	−.29**	.29**	−.28**	−.31**	−.24**	1					
11. Mothers' Dismissive attachment	.14**	−.10*	−.11*	−.16**	.15**	−.08	.14	.15**	.05	−.06	1				
12. Mothers' Preoccupied attachment	.08	−.06	−.06	−.06	.07	−.12	.20**	.10*	.07	.09	.60**	1			
13. Fathers' Secure attachment	−.30**	.28*	.24**	.25**	−.27**	.36**	−.34**	−.29**	−.21**	.19**	−.14	−.05	1		
14. Fathers' Dismissive attachment	.07	−.08	−.08	−.10	.09	−.03	−.05	.10*	.08	−.06	.14	.15*	−.09	1	
15. Fathers' Preoccupied attachment	.02	−.09*	−.08	−.08	.06	−.02	−.04	.15**	.12**	−.12	.20**	.14	.13**	.47**	1

Notes:

* p < .05,

** p < .01,

*** p < .001.

Table 2.

Multivariate regression models for maternal parenting behaviors (N= 742)

	Standardized Coefficients	Unstandardized Coefficients				
	β	**B**	**SE**	***P***	**Lower Bound**	**Upper Bound**
Multivariate Models						
Maternal Sensitive Parenting						
Child Gender	−0.003	−0.01	0.07	0.91	−0.14	0.13
Parent Education	−0.13	−0.35	0.10	0.0003	−0.54	−0.16
Race	0.26	0.57	0.07	<0.0001	0.42	0.72
Dismissive	−0.47	−1.05	0.30	0.001	−1.64	−0.46
Preoccupied	−0.36	−1.42	0.54	0.01	−2.47	−0.36
Chaos Disorganization	−0.35	−0.66	0.10	<.0001	−0.85	−0.47
Chaos Instability	−0.07	−0.03	0.03	0.27	−0.09	0.02
Chaos disorg × maternal dismissiveness	0.40	0.36	0.14	0.01	0.09	0.64
Chaos disorg × maternal preoccupy	0.22	0.33	0.23	0.14	−0.11	0.78
Chaos instability × maternal dismissiveness	−0.04	−0.02	0.04	0.62	−0.10	0.06
Chaos instability × maternal preoccupy	0.05	0.04	0.06	0.48	−0.08	0.17
Maternal Harsh Intrusive Parenting						
Child Gender	−0.07	−0.16	0.08	0.0406	−0.32	−0.01
Parent Education	0.12	0.35	0.11	0.0019	−0.78	−0.44
Race	−0.26	−0.61	0.09	<.0001	0.13	0.57
Dismissive	0.39	0.95	0.35	0.006	0.27	1.63
Preoccupied	0.30	1.27	0.62	0.04	0.07	2.48
Chaos Disorganization	0.31	0.61	0.11	<.0001	0.40	0.83
Chaos Instability	0.05	0.03	0.03	0.33	−0.03	0.10
Chaos disorg × maternal dismissiveness	−0.31	−0.31	0.16	.04	−0.62	0.01
Chaos disorg × maternal preoccupy	−0.26	−0.42	0.26	.10	−0.93	0.09
Chaos instability × maternal dismissiveness	−0.04	−0.02	0.05	0.62	−0.12	0.07
Chaos instability × maternal preoccupy	−0.02	−0.02	0.07	0.83	−0.16	0.13

Table 3

Multivariate regression models for paternal parenting behaviors (N=742)

	Standardized Coefficients	Unstandardized Coefficients				
	β	B	SE	*P*	Lower Bound	Upper Bound
Multivariate Models						
Paternal Sensitive Parenting						
Child Gender	0.04	0.09	0.10	0.38	−0.11	0.30
Parent Education	−0.17	−0.58	0.17	.001	−0.92	−0.24
Race	0.21	0.57	0.13	<.0001	0.31	0.83
Dismissive	−0.15	−0.37	0.43	0.04	−1.21	0.48
Preoccupied	0.20	1.03	1.08	0.34	−1.08	3.15
Chaos Disorganization	−0.17	−0.33	0.13	0.01	−0.59	−0.07
Chaos Instability	−0.07	−0.05	0.04	0.29	−0.13	0.04
Chaos disorg × maternal dismissiveness	−0.05	−0.05	0.21	0.81	−0.47	0.37
Chaos disorg × maternal preoccupy	−0.26	−0.56	0.42	0.18	−1.38	0.25
Chaos instability × maternal dismissiveness	0.10	0.07	0.07	0.30	−0.07	0.21
Chaos instability × maternal preoccupy	−0.05	−0.10	0.25	0.68	−0.59	0.39
Paternal Harsh Intrusive Parenting						
Child Gender	−0.08	−0.17	0.10	0.08	−0.36	0.02
Parent Education	0.12	0.38	0.16	0.02	0.06	0.70
Race	−0.18	−0.46	0.12	0.0002	−0.70	−0.22
Dismissive	0.15	0.34	0.40	0.40	−0.45	1.12
Preoccupied	0.17	0.83	1.00	0.41	−1.14	2.79
Chaos Disorganization	0.27	0.48	0.12	0.0001	0.24	0.72
Chaos Instability	−0.01	−0.01	0.04	0.88	−0.08	0.07
Chaos disorg × maternal dismissiveness	0.06	0.05	0.20	0.78	−0.34	0.45
Chaos disorg × maternal preoccupy	−0.03	−0.05	0.39	0.90	−0.81	0.71
Chaos instability × maternal dismissiveness	−0.11	−0.07	0.07	0.29	−0.20	0.06
Chaos instability × maternal preoccupy	−0.10	−0.18	0.23	0.43	−0.64	0.27