

Parental Behaviors and Beliefs, Child Temperament, and Attachment Disorganization

By: Feihong Wang, Martha J. Cox, [Roger Mills-Koonce](#), Patricia Snyder

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Abstract:

This research examined alternative mechanisms in the etiology of attachment disorganization. The authors hypothesized that negative intrusive parenting would significantly predict children's attachment disorganization at age 12 months within a diverse community sample. Of more substantial interest, the authors tested moderational mechanisms in the association between negative intrusive parenting, parental strong belief in discipline and control, child difficult temperament, and children's attachment disorganization. Using a multiple regression analytic approach, this research found that negative intrusive parenting significantly predicted children's attachment disorganization. This prediction was more significantly related to children's levels of attachment disorganization when it was paired with stronger rather than weaker parental beliefs in discipline and control. In contrast, when children had difficult temperament at 6 months, it was only when parents held very weak beliefs in discipline and control that children were at higher risk for attachment disorganization. Implications of the findings were discussed accordingly.

Keywords: attachment disorganization | difficult temperament | parental factors

Article:

Attachment is an infant's primary affectional relationship with a caregiver (Bowlby, 1969/1982). A critical aspect of children's attachment behaviors involves the organization and coordination of their behavior with significant others in social contexts (Sroufe, 1979; Sroufe, Egeland, Carlson, & Collins, 2005). Individual differences in children's attachment relationships were identified by Ainsworth, Blehar, Waters, and Wall (1978) in their pioneering Strange Situation Procedure (SSP), which measures the balance between the proximity maintaining and exploratory behaviors of a child.

Most infants demonstrate organized consistent attachment relationships (i.e., secure, insecure-avoidant, and insecure-resistant types of attachment) with caregivers as assessed by the SSP at 12 months (Ainsworth et al., 1978). A small number of children do not demonstrate organized attachment relationships. Instead, their attachment relationship with caregivers by age 12 months is evaluated as disorganized (Main & Solomon, 1990), characterized by a temporary breakdown of organized behavioral and attentional strategies under attachment-related stress (Main & Hesse, 1990). In the SSP, these children show freezing, vigilant body posture, and apprehensive affect at the sight of the parent (Main & Hesse, 1990). Given children with attachment disorganization are found to be at elevated risk for psychosocial problems of adaptation (Lyons-Ruth & Jacobvitz, 2008), it is important to understand the etiology of attachment disorganization.

Main and Hesse (1990) theorized that mothers who unconsciously bring into their interactions with the child an unresolved history of loss or childhood trauma often enter a dissociative state of mind and may display parenting behaviors that are discrete and alarming to the infants. These types of behaviors can appear frightening/frightened, dissociated, spousal, deferential, or disorganized in interaction with the infants and were labeled by Main and Hesse (1998) as FR parenting (i.e., parenting that appears frightening to infants or in which the parents seem to be frightened by the infant). It also includes the situation where the parent seems to be disconnected and dissociated with the infant or show behaviors that seem to treat the infant as if the infant is an adult partner, behaviors that defer to the infant, or behaviors that are disoriented or disorganized in interaction with the infant. These discrete and alarming parenting behaviors may interfere with children's formation of consistent attachment strategies in using parents for comfort and protection, prompting children toward attachment disorganization. With a focus on mother-infant interaction processes rather than discrete parental behaviors, Lyons-Ruth, Bronfman, and Parsons (1999) proposed a supplementary pathway that highlights the link between parental hostile/helpless state of mind and attachment disorganization with maternal communication errors as the mediator while interacting with the child (Lyons-Ruth, Yellin, Meinick, & Atwood, 2005).

Both of these mediational theoretical frameworks explicating attachment disorganization have been tested with relative support. That is, parents' atypical mental state may lead to their atypical parenting behavior which may then lead to a breakdown in children's attachment systems and hence the display of attachment disorganization (see review in Bernier & Meins, 2008). Still, many variations in attachment disorganization cannot be explained by these mediational models with the mediated path smaller in magnitude than the residual path (e.g., .05 vs. .14, Goldberg, Benoit, Blokland, & Madigan, 2003; .12 vs. .19, Madigan, Moran, & Pederson, 2006; .15 vs. .26, Lyons-Ruth et al., 2005). There is also controversy about child attributes in infant attachment disorganization and researchers have advocated to understand the interactions between parent and child factors in the development of attachment disorganization (Bernier & Meins, 2008). Additional hypotheses and moderational models are needed to understand the etiology of attachment disorganization.

The purpose of this study was to examine the extent to which negative intrusive parenting at age 6 months was associated with attachment disorganization at age 12 months and if this association was moderated by parental strong or weak belief in discipline and control. We further examined if a child's difficult temperament interacted with either negative intrusive parenting or parental strong belief in discipline and control in the prediction of attachment disorganization.

Negative Intrusive Parenting

Parental intrusiveness is defined as noncontingent, verbal directives or physical behaviors in parents that constrain children's behaviors and activities (Egeland, Pianta, & O'Brien, 1993). Socialization research has shown that parental intrusiveness, especially when combined with negative affect, uniquely predicts disruptions in the child's acquisition of basic self-regulatory skills (i.e., the ability to intentionally control one's own behaviors, attentions, and emotions). For example, coercive, hostile parenting has been associated with low self-regulatory behaviors, autonomy, and social competencies in preschool-age children (Karreman, van Tuijl, van Aken, & Dekovic, 2006). Furthermore, children who had intrusive mothers at age 6 months experienced poor outcomes in social, emotional, behavioral, and academic domains in the first and second grades (Egeland et al., 1993).

Basic self-regulatory capacities, normally established during childhood, are typically lacking among school-age children who were categorized as disorganized in attachment at age 12 months in the SSP procedure (Lyons-Ruth & Jacobvitz, 2008). In this context, and in light of the fact that 15% to 20% of 12-month-old children in community samples (i.e., largely a normative sample in which the participants were recruited from the community in general rather than from some particular subset of families and individuals that share some common characteristics) show attachment disorganization (Van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999), research is needed to address whether negative intrusiveness by itself or in combination with other parental or child dispositions predicts attachment disorganization in normative samples.

Lyons-Ruth, Repacholi, McLeod, and Silva (1991) initially reported that mothers of disorganized-insecure infants had an interactive style uniquely characterized by a combination of negative affect, hostility, and intrusiveness. When the Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE; Lyons-Ruth et al., 2005) was developed for coding atypical parenting behaviors, negative intrusiveness was included as one of the five subscales, named intrusiveness/negativity. Other subscales included affective communication errors, frightened and disoriented behavior, role/boundary confusion, and withdrawal.

To date, few studies have revisited the unique role of maternal negative intrusiveness in detail and with community-based samples. A number of studies have used the overall maternal communication errors ratings from AMBIANCE with high-risk samples (e.g., Madigan et al., 2006; Moran, Forbes, Evans, Tarabulsky, & Madigan, 2008) or, to a lesser extent, with middle-class samples (e.g., Goldberg et al., 2003). These studies included the

intrusiveness/negativity subscale in the prediction of attachment disorganization. However, it is not clear how prevalent maternal negative intrusiveness is in diverse community samples and whether its relation to infants' attachment disorganization holds for those populations.

The FR parenting and maternal communication errors based on AMBIANCE are both assessed during the SSP where children's attachment behaviors are observable. There is also a need to assess parental behaviors outside of and preceding the SSP in which children's attachment behaviors are measured (Lyons-Ruth et al., 1999). In this study, we revisited the unique role of negative intrusive parenting as assessed at age 6 months during free play and examined the extent to which early negative intrusive parenting was related to infant disorganization at age 12 months.

Parental Belief in Discipline and Control

Parental beliefs are a set of knowledge structures or schemas that organize incoming information, guide attention, and partially determine behavioral and affective responses (Bugental & Goodnow, 1998). Although the construct of parental beliefs in discipline and control is not explicitly referenced in the attachment disorganization literature, two components of parental child-rearing beliefs might be relevant. First, in socialization research, parental beliefs have been a significant predictor of child outcomes. For example, mothers who support children's self-directed behaviors are more likely to have children with high competency and low problem behavior (NICHD Early Child Care Research Network [NICHD ECCRN], 2004), whereas mothers' child-rearing beliefs that do not support child autonomy undermine their children's self-efficacy (Flouri, 2004). In attachment research, the precursors of infant attachment disorganization could hinge around the effect of fear (Main & Hesse, 1990). Caregivers' strong belief in discipline and control when children are infants might strengthen behaviors that evoke fear in young infants who rely on caregivers to meet their basic needs.

Second, though no research has examined whether parenting beliefs have origins in parents' mental representation of their own attachment history (Main, Kaplan, & Cassidy, 1985) or that of their own caregiving (George & Solomon, 1996), it is possible that one's own experience of parental care in the early years may be internalized as a template for one's own caregiving principles and beliefs later in life. For example, a study of intergenerational transmission of negative harsh parenting found that parents who experienced aggressive harsh discipline tended to develop a child-rearing philosophy that emphasized strict physical discipline (Simons, Whitbeck, Conger, & Chyi-In, 1991). Therefore, we examined the role of parental belief in discipline and control in children's attachment disorganization.

Researchers have theorized that parenting beliefs often reinforce and encourage the use of parenting behaviors aligned with specific beliefs (Sigel & McGillicuddy-De Lisi, 2002). Therefore, it might be hypothesized that the relationships between parental beliefs and child behaviors are mediated by the specific parenting behavior that aligns with such parental belief.

For example, negative intrusive parenting behaviors might align with parent child-rearing beliefs related to harsh discipline and control. Empirical studies, however, lend more support for a moderational hypothesis given that parental belief and behavior actually do not correlate at high levels, and nonalignment between parental belief and behavior is fairly commonly reported (e.g., Goodnow, 1988). In this study, we examined the moderating role of parenting beliefs on parenting behaviors in predicting attachment disorganization.

Child Difficult Temperament

Besides the caregiving context, researchers have examined whether differences in children's constitutional qualities may account for disorganized attachment in some children, albeit with mixed findings. On the one hand, it was found that infants who are disorganized with one caregiver are not necessarily disorganized in relation to another caregiver (Main & Solomon, 1990). A meta-analysis of 13 samples ($N = 2,028$) also did not find a significant association between child temperament and disorganized attachment in infancy (van IJzendoorn et al., 1999). These findings suggest that child factors, such as temperament, may not play a major role in disorganized attachment. On the other hand, 12-month-old infants characterized as disorganized were found to experience much higher stress reactivity as indexed by cortisol concentration 10 to 15 minutes after the end of the SSP in comparison to their nondisorganized counterparts (Hertsgaard, Gunnar, Erickson, & Nachmias, 1995). Spangler and Grossmann (1999) also reported that attachment disorganization was related to neonatal irritability and high temperamental emotionality, a finding that suggests the need to examine origins of attachment disorganization in predispositional aspects, in addition to the relational aspects.

Bernier and Meins (2008) proposed that child temperament may be differentially related to a child's disorganization level with different levels of parental behavior or beliefs. To illustrate, children with difficult temperament, when experiencing negative and intrusive parenting or a strong parental belief in discipline and control, may develop higher levels of attachment disorganization than those who do not experience such parental proclivities.

Study Overview

Given the literature discussed here, we advanced four major hypotheses. First, negative intrusive parenting is significantly and positively associated with attachment disorganization. Second, strong maternal beliefs in discipline and control interact with maternal negative intrusiveness, creating a parenting environment that children experience as highly alarming and dysregulating, thus interfering with their formation of organized attachment. Specifically, we expect the co-occurrence of high levels of maternal negative intrusive behavior and high levels of parental belief in discipline and control to be associated with the formation of attachment disorganization. Third, children's difficult temperament interacts with negative intrusive parenting in predicting children's attachment disorganization. We expect that the difficult child, when experiencing high levels of negative intrusive parenting, may be highly alarmed but may lack the constitutionally-

based regulation to resolve the alarm, resulting in attachment disorganization. Fourth, child difficult temperament interacts with parental strong belief in discipline and control such that a difficult child may be more easily alarmed and frightened facing a parent who strongly believes in discipline and control and is more likely to experience high levels of attachment disorganization.

METHOD

Sample

Participants of this study were 148 mother-child pairs for whom child attachment disorganization data were available from a larger longitudinal study ($N = 206$) conducted in a southeastern U.S. city of more than 200,000 people. A portion of the sample was not included in the analysis ($n = 58$) because they either dropped out of the study after the initial recruitment or the quality of the video clips of their SSP session was insufficient for coding attachment classifications. Participating families from varied sociodemographic backgrounds were recruited when the children were age 3 months through parenting classes, phone invitations based on the child's birth record, and fliers in the hospital. Efforts were made to have roughly equal representation of African American and White families in the longitudinal study based on maternal self-report of race/ethnicity.

In this subsample of 148 children, 51% were males and 15.5% (23) scored at 5 or above for attachment disorganization. The mean of disorganization level was 2.3 with a range of 1 to 8. The mean maternal education reported at child age 6 months was 14.5 years, ranging from 8 to 20 years of education. When the child was age 6 months, 15 (10%) maternal participants had missing reports of maternal education level, 27 (18%) were missing the composite measure of difficult temperament, 18 (12%) were missing the negative intrusive parenting composite, and 24 (16%) were missing the parental belief in discipline and control subscale. The missing data were due to three reasons: (a) failure to attend the laboratory free-play session at age 6 months, (b) coding difficulties due to problems with video recordings for 6-month home free-play session, and (c) partial completion of the questionnaire on child temperament that led to their exclusion in the creation of child difficult temperament composite. No significant mean differences were found in the covariates and main predictors between the original sample and the study sample and between the study sample and the sample excluded from the analysis ($n = 58$).

Procedures

When children were age 6 months, mothers responded to the demographics questionnaire, the Revised Infant Behavior Questionnaire (IBQ-R; Rothbart, 1981), and the Parents' Beliefs Survey (PBS; Luster, Rhoades, & Haas, 1989) during a home visit. Also during the visit, mothers and children were filmed in a semistructured free-play interaction for 10 minutes, in which mothers were asked to play with their children as they normally would. A set of toys including a plastic

phone, musical stacking rings, and an electronic board was provided to the mothers to use if they wished. At age 12 months, infants and mothers were filmed in the SSP in the lab.

Measures

Demographic Questionnaire

Child gender and maternal education were reported by mothers in the demographic questionnaire. These variables were used as covariates in all analyses given their potential association with attachment disorganization (Carlson, Cicchetti, Barnett, & Braunwald, 1989).

Child Difficult Temperament

This construct was assessed using mothers' responses at age 6 months to four subscales (distress to limitations, fear, reflected soothability, and rate of recovery from distress) of the IBQ-R (Rothbart, 1981). Mothers were asked to rate on a 7-point Likert-type scale the extent to which their infants acted in specific ways in routine situations such as feeding, bathing, and exposure to new places or people. Given the individual differences in reactivity and regulation that are constitutionally based and differentially expressed as early as infancy (Rothbart & Derryberry, 1981), difficult temperament was created as a mean composite of all four subscales with soothability and rate of recovery scores reversed. Distress to limitations and fear reflected the reactivity aspect of temperament, whereas soothability and rate of recovery from distress reflected the regulation aspects of temperament. High composite scores on difficult temperament indicate a combination of high reactivity and low regulation in child temperament. Alpha based on this sample is 0.65.

Maternal Negative Intrusiveness

At age 6 months, a 10-minute mother-child free-play interaction was filmed in which toys were available but not required to be used. Mothers' behaviors were coded using seven constructs based on a manual adapted by Cox and Crnic (2003) from the parent-child interaction coding system used in the National Institute of Child Health and Development Study of Early Childcare and Youth Development (NICHD ECCRN, 1999). The rating of the parent for each subscale ranged from 1 (*not characteristic at all*) to 5 (*highly characteristic*).

The negative intrusiveness composite was an average of scores on the subscales of negative regard and intrusiveness and alpha was 0.87 according to the previous studies (Mills-Koonce et al., 2007). Intrusiveness indicated the extent to which a parent imposed her own agenda on a child's behavior, such that the interaction was adult centered. Negative regard for the child indicated the extent to which a parent showed negative affect to the child and was dismissive and harsh to the child. High composite scores on negative intrusiveness indicated parenting behaviors featured by harshness, negativity, control, and a strong focus on the parents' agenda. Coders were trained by one of the authors and were blind to the participants. Every construct was coded by

two trained coders (Intraclass Correlation Coefficient [ICC] at or above .80). Coding differences were resolved through conferencing and the consensus codes were used for analysis.

Parental Belief in Discipline and Control

This variable was based on mothers' responses on the PBS (Luster et al., 1989) at age 6 months. The PBS measures the attitudes and beliefs that parents hold about parenting practices that are desirable and effective. Parental belief in discipline and control is a mean composite of four items that assess the extent to which a parent believes that the use of high discipline and control will serve her child well. For example, one item asks how strongly the parent agrees with the statement that “parents should be strict with their one-year-old babies or they will be difficult to manage later on.” The rating for the items ranges from 1 (*strongly disagree*) to 6 (*strongly agree*), with the higher scores indicating a stronger belief in discipline and control. Alpha based on this sample is 0.64.

Attachment Disorganization

This construct was based on a continuous 9-point scale of attachment disorganization (Main & Solomon, 1990) reflecting the extent of disorganization in children's behaviors in the SSP at age 12 months. Ratings ranged from 1 (*no signs of attachment disorganization*) to 9 (*severe, extreme, and frequent signs of disorganization or disorientation*). A child was classified as showing attachment disorganization when the child received a score of 5 or above on this scale. Videotapes of SSP were coded by two coders trained and certified by Alan Sroufe and Elizabeth Carlson of the University of Minnesota and were blind to all other study information. These two coders overlapped independent coding on 20% of the sample (ICC = .90 for the continuous scores of attachment disorganization and Cohen's kappa = .85 for the classification of attachment disorganization). We used the continuous variable of attachment disorganization for analysis in this study.

Data Analyses

Descriptive statistics (Means, standard deviations [SDs], and correlations) were first produced for each of the variables of interest in this study. Diagnostic analyses were run to check if the data met the assumptions of regression analysis. Three sets of multiple regression models (control, main effects, and interaction effect models) were conducted in Mplus 5.2 (Muthén & Muthén, 1998-2007), with Missing at Random (MAR) assumption and the estimator of maximum likelihood parameter estimates with standard errors and chi-squared test statistics that are robust to non-normality (multiple linear regression [MLR]) to accommodate for missing data (Arbuckle, 1996) and the non-normality in the data (Muthén & Muthén, 1998-2007, p. 484).

RESULTS

Descriptive Statistics

Descriptive statistics and bivariate correlations of the study variables are shown in Table 1. Observed negative intrusive parenting was significantly and positively correlated with mother-reported belief in discipline and control ($r = .19, p < .05$) and attachment disorganization ($r = .25, p < .01$). Parental belief in discipline and control and child difficult temperament were not significantly correlated, nor were these variables significantly correlated with attachment disorganization.

Table 1. Descriptive Statistics and Bivariate Correlations

Variable	1	2	3	4	5	6	7
1 Child gender	1						
2 Child race	-.04	1					
3 Maternal education	.03	.32**	1				
4 Child difficult temperament	.09	-.27**	-.31**	1			
5 Negative intrusive parenting	.02	-.33***	-.38***	.15	1		
6 Parental caregiving belief	-.02	-.11	-.39***	.03	.19*	1	
7 Attachment disorganization	-.18*	.04	-.06	-.01	.25**	.14	1
<i>M</i>			14.6	2.9	2.5	3.1	2.31
<i>SD</i>			2.8	.64	.8	1.1	2
Minimum	0	0	8	1.3	1	1	1
Maximum	1	1	20	4.8	5	5.8	8

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Multiple Linear Regression Analyses

Three regression models were run separately in Mplus with MLR estimator and MAR assumption. In the control model, only child gender, race, and maternal education at age 6 months were used to predict children's levels of attachment disorganization at age 12 months. Child gender was a statistically significant predictor of this outcome variable ($\beta = -.18, p < .05$), which suggested that boys were significantly more likely to have higher disorganization scores than girls. This model explained 4% ($p = .207$) of the variation in children's levels of attachment disorganization at age 12 months.

In the main effects model, three predictor variables were added to the control model: negative intrusive parenting at age 6 months, parental belief in discipline and control at age 6 months, and child difficult temperament at age 6 months. As hypothesized, after controlling for the demographic variables, negative intrusive parenting at age 6 months significantly and uniquely predicted children's levels of attachment disorganization ($\beta = .26, p < .01$), whereas the other two predictor variables were not statistically significant in the main effects model. This suggested that higher negative intrusive parenting was significantly associated with higher levels of attachment disorganization in children. Eleven percent of the variance in children's levels of attachment disorganization at age 12 months was explained by this model ($p < .05$).

In the moderation model, three interaction terms were added to the main effect model: interaction between harsh negative parenting and parental belief in discipline and control at 6 months, harsh negative parenting and child difficult temperament at 6 months, and parental belief in discipline and control and child difficult temperament at 6 months. As hypothesized, there were statistically significant interactions between harsh negative parenting and parental belief in discipline and control at 6 months ($\beta = .30, p < .05$), as well as between child difficult temperament at age 6 months and parental belief in discipline and control ($\beta = -.25, p = .01$). However, the hypothesized interaction between negative intrusive parenting and child difficult temperament was not statistically significant ($\beta = -.08, p > .05$). The moderation model explained 22.3% of the variation in children's attachment disorganization levels ($p = .001$). See Table 2 for a summary of the regression analysis results.

Table 2. Predicting Attachment Disorganization 12 Months

Parameter	Control Model			Main Effect Model			Interaction Model		
	<i>b</i>	<i>SE b</i>	β	<i>b</i>	<i>SE b</i>	β	<i>b</i>	<i>SE b</i>	β
Intercept	2.65	.24	1.33***	2.68	.25	1.34***	2.58	.24	1.29***
Child gender	-0.71	-.32	-.18*	-0.77	.32	-.19*	-0.79	.30	-.20*
Maternal education	-0.04	.07	-.06	0.07	.07	.10	0.12	.07	.16 ⁺
Difficult temperament (DT)				0.06	.28	.02	0.28	.28	.09
Negative intrusiveness (NI)				0.61	.22	.26**	0.49	.23	.21*
Parental belief (PB)				0.22	.19	.12	0.16	.18	.09
NI \times PB							0.65	.26	.30*
NI \times DT							-.39	.36	-.08
DT \times PB							-0.66	.24	-.25**
R^2		.04			.11*			.22***	
ΔR^2					.07*			.11*	

Note. The covariates and predictors were centered at their means. ⁺ $p < .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Interaction plots were graphed based on the regression coefficients and covariance matrixes estimated in Mplus for the interaction model. Regarding the moderated relationship between harsh negative parenting and attachment disorganization, the two-way interaction graph indicated that when parental belief in discipline and control was at a low level (1 *SD* below the mean of this variable), higher harsh negative parenting did not lead to higher attachment disorganization levels. However, when mothers held a mean level or a high level (1*SD* above the mean) of belief in discipline and control, higher harsh negative parenting was related to significantly higher attachment disorganization levels. See the first interaction plot in Figure 1.

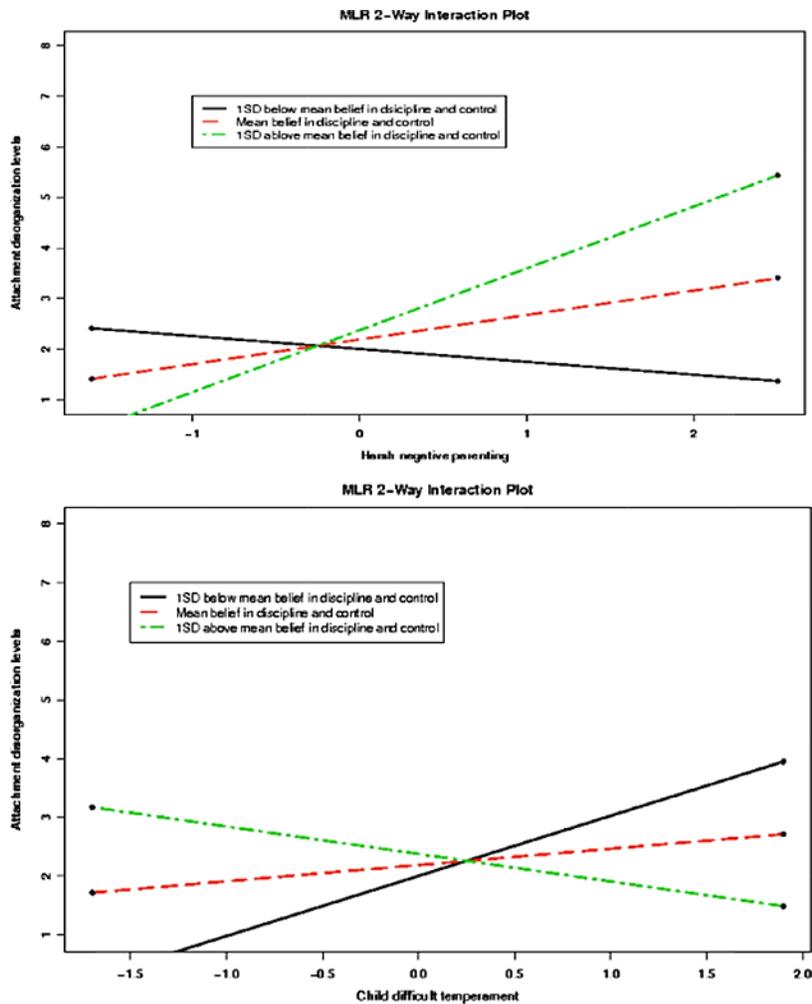


Figure 1. Interaction Plots of Harsh Negative Parenting with Parental Belief in Discipline and Control and Child Difficult Temperament With Parental Belief in Discipline and Control.

MLR = multiple linear regression estimates with standard errors and chi-squared test statistics that are robust to non-normality.

Regarding the moderated relationship between child difficult temperament and attachment disorganization levels at age 12 months, the two-way interaction probing indicated that when mothers held low belief (1 *SD* below the mean) in discipline and control, higher difficult temperament was related to higher attachment disorganization levels. When mothers held mean level of belief in discipline and control, higher difficult temperament was related to a marginal increase in attachment disorganization levels that was not statistically significant. When mothers held a high and strong belief in discipline and control (1 *SD* above the mean), higher difficult temperament was related to lower attachment disorganization levels. See the second interaction plot in Figure 1.

DISCUSSION

The purpose of this study was to investigate the parental and child factors related to the etiology of attachment disorganization. As hypothesized, negative intrusive parenting at child age 6 months was significantly associated with attachment disorganization at age 12 months after controlling for child gender, race, maternal education, parental belief in discipline and control, and child temperament. In addition, statistically significant interaction effects were found between negative intrusive parenting and parental belief in discipline and control and between child difficult temperament and parental belief in discipline and control in predicting attachment disorganization at age 12 months. The hypothesis related to the interaction between child difficult temperament and negative intrusive parenting was not supported.

The finding that negative intrusive parenting predicts attachment disorganization in a community-based sample is consistent with research originally reported with high-risk samples of children (Carlson et al., 1989; Lyons-Ruth et al., 1991). According to Main and Hesse's (1990) original formulation, parenting behaviors that elicit fear in children and conflicting approach-avoidance behaviors toward the parent may precede the development of attachment disorganization. Negative intrusive parenting may be sufficient to provoke fear in young children and increase their susceptibility for disorganized attachment as early as age 6 months. Different from the previous research that assesses atypical parenting behaviors during the SSP to predict children's attachment disorganization, we examined negative intrusive parenting during a free-play session when the child was age 6 months as related to attachment disorganization when the child was age 12 months. The significant association between the two variables suggests that negative intrusive parenting may be an early risk factor for children's attachment disorganization, although this kind of parenting may not be extreme and may be fairly common in normative community samples. This might help explain why, within community samples, 15% to 20% of children formed disorganized attachments at age 12 months (Van IJzendoorn et al., 1999).

Given the important role of parental belief systems in parents' behavioral and affective responses to children (Bugental & Goodnow, 1998), we tested whether parental strong belief in discipline and control would moderate the association between parenting behaviors and attachment disorganization. As hypothesized, the association between negative intrusive parenting and attachment disorganization was stronger when the caregiver endorsed a stronger versus weaker belief in the value of discipline and control. It is possible that a mother who endorses the need for high discipline and control may more readily behave in negative and intrusive ways when she sees the need for discipline and control. But such behaviors may appear unexpected and sudden to the child and perhaps disconnected to ongoing parent-child interactions.

Alternatively, parental strong belief in discipline and control may in the long-term consolidate and stabilize negative intrusive parenting practices, such that the developing child may experience incrementally more sustained levels of negativity and intrusiveness from a parent over time, even when the child is distressed. These parents may be those who, in the face of child distress, continue to behave negatively and intrusively rather than to adjust their responses to help regulate the child's arousal.

The finding of an interaction between parenting behavior and belief contributes to the current attachment literature in two unique ways. First, this interaction finding supports the call for moderational analyses in understanding the etiology of attachment disorganization (Bernier & Meins, 2008; Madigan, Bakermans-Kranenburgh, et al., 2006). Second, our interaction analysis provided a rigorous test, for the first time as far as we are aware, of the alternative possibilities in the etiology of attachment disorganization as postulated in Solomon and George's (1999) "failure to terminate" hypothesis and Lyons-Ruth, Bronfman, and Atwood's (1999) "relationship diathesis model." Both groups specified that it might be the parents' failure to terminate the chronic or strong activation of children's attachment systems that is especially fear inducing for a child. In this situation, the child may come to the frightening realization that the caregiver may not be able or willing to protect him or her and thus may experience difficulty in forming an organized attachment strategy. But neither group went beyond consideration of behavioral indices of the parent-child interactive processes to test their hypotheses.

By taking into account parental belief systems regarding parenting, this study attempts to model a scenario in which mothers may not only induce fear, but also fail to address their child's fear due to their own parenting beliefs and so fail to terminate the attachment needs or repair their anomalous interaction with the child. This is the scenario in which parents not only behave in negative intrusive ways, but also strongly believe in the value of negative discipline and control.

Following Bernier and Meins' (2008) threshold framework, we had also anticipated that child temperament would interact with parental negative intrusive behavior or belief in discipline and control in predicting children's attachment disorganization at age 12 months. This study did suggest an interaction with parental belief in strong discipline and control at age 6 months, albeit in a different direction than hypothesized originally. To illustrate, we found that more difficult temperament was associated with higher attachment disorganization only when mothers did not hold a strong belief in discipline and control. When mothers held stronger as opposed to weaker beliefs in discipline and control, temperamental difficulty was associated with lower levels of attachment disorganization. The direction of this interaction suggests that within the dynamic of parent-child interactions, a "goodness-of-fit" approach (Thomas & Chess, 1977) might best explain the origin of attachment disorganization. Previous studies have yielded findings in support of this approach. Bates, Pettit, Dodge, and Ridge (1998), for instance, reported that children with temperamental resistance to control are at higher risk for externalizing behaviors when their mothers exert lower rather than higher levels of control.

It is possible that for temperamentally difficult children, parents who hold strong beliefs in discipline and control are more likely to impose structure and organization that may compensate for the lack of modulation and organization often displayed among these children. In turn, this imposition may buffer these children from developing higher levels of disorganized attachment by age 12 months. Consistent with this explanation, the socialization literature has considered control as a necessary part of parenting that facilitates harmonious interactions by defining and sanctioning deviance and modifying actions that would not be otherwise inhibited

(Grusec, 2011). Thus, strong parental belief in discipline and control may facilitate parents' supply of external management to children who are highly reactive and weak in regulation.

However, when parents see little value in discipline and control, their reaction to temperamental difficulty could be withdrawal or detachment, when, in fact, regulation and structure might be needed. With prolonged absence of maternal regulation and modulation, a temperamentally difficult child may be more prone to attachment disorganization by missing the opportunity to learn how to regulate and organize interactions. This would be in keeping with Lyons-Ruth et al. (2005), who included severe withdrawal and detachment on the list of atypical parenting behaviors suspected to lead to attachment disorganization. Although it remains to be determined whether parents with very low beliefs in discipline and control are indeed withdrawn and detached in their interaction with a highly difficult child, it is possible that an unconditional lack of belief in the need for discipline and control in parents signals a lack of contingency in the parent-child interaction that may contribute to children's attachment disorganization.

This study did not support the hypothesized interaction between child difficult temperament and harsh negative parenting. We suspect that parents with negative intrusive parenting may tend to view their children as more difficult than they actually are. This bias in maternal report of child temperament may have prevented us from detecting a possible significant interaction effect between parenting and child temperament. Further work should be done using more objective measures of child temperament for testing its interaction with parenting.

Implication for Intervention

Infant attachment disorganization places children at heightened risk for psychosocial problems and maladaptation in later years. Our findings have significant implications for targeted interventions with parents to prevent the development of attachment disorganization in their children. First, our finding about the significant interaction between negative intrusive parenting and high parental belief in discipline and control helps guide early screening for parents whose children may be more at risk for attachment disorganization. Specifically, at age 6 months, if a mother shows highly negative and intrusive behaviors in interactions with her child during free play, and when this same parent also holds strong beliefs about the need of discipline and control of her child, this mother may qualify for intervention to reduce the chance of her child developing attachment disorganization.

Second, our finding suggests it may be important to provide support to new parents by (a) educating parents about the needs of children in the first year of their life, (b) helping parents construct reasonable child-rearing beliefs, and (c) demonstrating appropriate parenting through parent classes or other intervention avenues. In a meta-analysis, Bakermans-Kranenburg, Van IJzendoorn, and Juffer (2005) synthesized the effect of preventative intervention for attachment disorganization and suggested that focusing on enhancing sensitive parenting is effective in reducing infant attachment disorganization. For new parents who are negative and intrusive

toward their infants, learning how to interact in a more positive and sensitive way may greatly help parents facilitate an organized and secure attachment relationship with their infants.

Also, for parents with unreasonable parenting beliefs, helping them to reflect on the reasons leading to their child-rearing beliefs, to evaluate the appropriateness of their beliefs, and to modify their beliefs may also potentially reduce the risk of their children's attachment disorganization. Although the link between parental belief and maternal mental representation is yet to be established, we suspect that helping parents reflect about their child-rearing beliefs may involve revisiting their own experience as a child and the child-rearing related messages they accumulated in the past. Therefore, a theory-driven implication—although not directly suggested by our findings—points to helping parents through parent classes or workshops to identify unresolved past loss or trauma and to develop resolution strategies to optimize parents' child-rearing capacity.

Limitations, Strengths, and Future Directions

The present study has limitations. First, the relatively small sample of the study was drawn originally with the purpose of maximizing equal representation of ethnicity, socioeconomic status, and convenience of access to its participants. The generalizability of the findings awaits replication using other types of larger samples. Second, child difficult temperament measurement was based on the mother's reports, which are susceptible to bias (e.g., Hayden, Durbin, Klein, & Olino, 2010) and may partially account for the failure to detect an interaction between child temperamental qualities and negative intrusive parenting behaviors. A more objective assessment of child temperamental qualities, including, perhaps, known physiological markers may be needed to conduct a more robust test of children's constitutional contribution to the development of disorganized attachment. It might be the interaction between the child constitutional qualities and the child-rearing context that may predict attachment disorganization rather than the constitutional qualities themselves (Bernier & Meins, 2008).

In summary, our findings contribute to the literature in several ways. First, our findings supported negative and intrusive parenting as an important factor in children's development of attachment disorganization. Second, we identified a significant confluence of parental factors (negative intrusive behavior and strong parental belief in discipline and control) in the development of attachment disorganization. This interaction finding supports the need and possibility of going beyond main effect analysis to consider moderating mechanisms in the etiology of attachment disorganization (Bernier & Meins, 2008; Madigan, Bakermans-Kranenburg, et al., 2006). This finding also suggests it is necessary to consider the belief systems of parenting in the etiology of attachment disorganization with community samples. It remains unclear whether and how parental child-rearing beliefs may be related to maternal representation of the mother's own attachment history or own caregiving, although we speculate about the possibility of a connection that should be explored in future research. In addition, we found that a temperamentally difficult child may be more likely to develop attachment disorganization when

the parent does not endorse the need for strong discipline and control compared to the parent who endorses the belief in strong discipline and control. This finding is reasonable but also unique. Additional studies will be needed to explore or replicate this finding. Lastly, future research may be directed toward examining the three-way interactions across parenting behaviors, parental belief, and child difficult temperament in predicting attachment disorganization and the developmental predications of attachment disorganization on children's later adjustment and maladjustment.

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