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**Mothers' Depressive Symptoms, Parenting, and Child Withdrawal:**  
**A Dynamic View across Early Development**

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**Mothers' Depressive Symptoms, Parenting, and Child Withdrawal:  
A Dynamic View across Early Development**

**by**

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## **Abstract**

# **Mothers' Depressive Symptoms, Parenting, and Child Withdrawal: A Dynamic View across Early Development**

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Withdrawal in early childhood is a risk factor for the development of many adjustment problems. Mothers' depressive symptoms may affect the development of withdrawal through complex mechanisms. This study examined the relation of mothers' depressive symptoms to children's withdrawal from 24 to 54 months and developmental mechanisms of this relation. Based on data from the NICHD study of Early Child Care, results demonstrate that mothers' cumulative depressive symptoms from 6 to 24 months predicted children's withdrawal at 24 months across dyads. From 24 to 54 months, within-dyad increases in mothers' depressive symptoms predicted within-dyad increases in children's withdrawal. Finally, low competent parenting was partially responsible for the impact of mothers' early depressive symptoms on children's withdrawal. In addition, boys' withdrawal was more strongly associated with mothers' depressive symptoms than girls'.

## Table of Contents

List of Tables .....	vi
Chapter 1: Introduction.....	1
Maternal Depressive symptoms and Child Withdrawal .....	2
Particular Parenting Practices as Mediators .....	3
Insensitive and Unresponsive Parenting.....	4
Negative Parenting .....	5
Intrusive and Overcontrolling Parenting .....	6
A Longitudinal Perspective On the Depression-Parenting-Inhibition Relation .....	7
Control Variables.....	8
Present Study .....	9
Chapter 2: Method.....	12
Participants .....	12
Procedure .....	12
Measurement .....	13
Depressive Symptoms. ....	13
Child Withdrawal. ....	13
Parenting Behavior. ....	14
Inhibitory Temperament. ....	15
Chapter 3: Results.....	16
Analyses Plan .....	16
Descriptive and Correlational Analyses among Major Constructs .....	17
Across-Dyad Effects: Relation of Mothers' Early Depressive Symptoms Before 24 Months To Child Withdrawal and The Mediational Role of Early Parenting.....	17
Chapter 4: Discussion.....	29
Children's Emerging Withdrawal: Vulnerable to Mothers' Depressive symptoms Before 24 Months .....	29

Within-Dyad Changes In Child Withdrawal Correspond With Within-Dyad Changes In Mothers' Depressive Symptoms After 24 Months.....	32
Sex Difference: Boys' Withdrawal Is More Strongly Associated With Maternal Depression .....	34
Limitations.....	35
Conclusion.....	36
References .....	37

## List of Tables

Table 1 Means and Standard Deviations of Major Variables.....	18
Table 2 Correlations between Major Variables.....	19
Table 3 HLM Results from Across-Dyad Model to Examine the Relation of Mothers’ Early Depressive Symptoms Before 24 Months to Child Withdrawal between 24 and 54 Months .....	20
Table 4 Results from HLM Models to Examine the Meditational Effects of Three Types of Parenting in Across-Dyad Models .....	22
Table 5 HLM Results from Within-Dyad Models To Examine the Relations of Within- Dyad Changes in Mothers’ Depressive Symptoms to Changes in Child Withdrawal between 24 and 54 Months .....	25
Table 6 Results from HLM Models and Sobel Test to Examine the Meditational Effects of Three Types of Parenting in Within-Dyad Models.....	27

## **Chapter 1: Introduction**

Withdrawal in childhood is a risk factor for the development of children's adjustment problems (Coplan & Weeks, 2009; Rubin & Coplan, 2004). Withdrawal, along with its related characteristics of inhibition and shyness, refers to the tendency to withdraw or be fearful and wary in the face of social interaction (Coplan & Armer, 2007; Early et al. 2002; Rubin, Coplan, & Bowker, 2009). In contexts that require assertiveness, expressiveness and competitiveness, withdrawal in childhood has been associated with higher risks for peer rejection and exclusion (Nelson, et al. 2005; Rubin, Coplan, & Bowker, 2009). These negative peer experiences, along with the anxiety and fear involved in withdrawal itself, jointly predict children's internalizing problems (e.g., low self-esteem, loneliness, depressed mood; Bohlin, Hagekull, & Andersson, 2005; Boivin, Hymel, & Bukowski, 1995; Gazelle & Ladd, 2003; Hart et al., 2000). Extremely withdrawn children are at increased risk for developing anxiety disorders in later childhood and adolescence (Hayward et al. 1998; Schwartz et al. 1999). They are also likely to have delayed career development and less occupational achievement in adulthood (Caspi, Bern, & Elder, 1988).

One important precursor to children's withdrawal might be mothers' depressive symptoms (Gerhold et al. 2002). Depression is one of the most prevalent mood disorders among mothers (Weissman, 1987). The rate of clinical depression is approximately 12% in mothers who have recently given birth (O'Hara, 1986). Up to 26% of women will experience a major depression in their lifetime (Gotlib & Hammen, 1992). Affective, cognitive and physical characteristics associated with depressive symptoms pose significant

difficulties for parenting. Depressed mothers exhibit more fatigue, more sad and anxious moods, more rumination, more self-focused thoughts, and poorer concentration compared with nondepressed mothers (American Psychiatric Association, 2000). These symptoms make it difficult for depressed mothers to attend and respond to children's needs effectively and maintain high levels of involvement. Irritability among mothers with depressive symptoms is also associated with their negative regard toward their children and over-reliance on coercive parenting techniques (Lovejoy et al., 2000). These insensitive, negative or intrusive parenting practices contribute to withdrawal among children of depressed mothers (Glögger & Pauli-Pott, 2008; Kochanska, 1991; Lee & Gotlib, 1989; Moehler et al. 2007). However, given the inconsistent results yielded from only a handful of previous studies, the assumed association between maternal depression and child inhibition is not well understood. Lack of longitudinal studies also prevents us from understanding this association in a developmentally dynamic perspective. The current study aims to explore the association between maternal depression and child withdrawal from 24-month to 54-month of age, to understand how changes in depressive symptoms among mother may lead to changes in child withdrawal over time, and to understand the role of particular kinds of parenting in these associations.

### **Maternal Depressive symptoms and Child Withdrawal**

A limited amount of research has investigated the association between mothers' depressive symptoms and child withdrawal. In many of these studies, significant associations have been demonstrated. These associations have been found as early as infancy. Mothers' depressive symptoms when children were 4-months old predicted

children's social withdrawal at 12-months in a stranger-approach procedure (Pauli et al., 2004) and toddlers' fear and behavioral inhibition at 14 months (Kagan et al., 2007). Among toddlers, several studies have suggested mothers' depressive symptoms are associated with children's inhibition or inhibition-related behaviors. At 21/2 to 3 years old, children of unipolar depressed mothers showed higher total inhibition than children of normal mothers in unfamiliar nonsocial and social situations (Kochanska, 1991). Observing behaviors related to child inhibition, Dix and his colleagues (Dix, Cheng, & Day, 2009; Dix, Meunier, Lusk, & Perfect, in press; Dix, Stewart, Gershoff, & Day, 2007) found that 14 to 27 months-old children of mothers high in depressive symptoms displayed less facial emotion, lower positive initiation, lower defiance to mothers' control, and higher passive noncompliance than children of mothers low in depressive symptoms. Observing free play, Rubin and his colleagues (Rubin, Both, Zahn-Waxler, Cummings, & Wilkinson, 1991) found that maternal depression predicted social inhibition among 5-year-old. However, the association between maternal depression and child inhibition was not always found in previous studies (Glögler & Pauli-Pott, 2008; Rosenbaum et al. 2008, Hartley et al., 2010). In conclusion, the relation of mothers' depressive symptoms and child withdrawal during early childhood has been demonstrated in only a handful of studies, with measure of withdrawal or withdrawal-related behaviors taken from short observations of interaction with mothers.

### **Particular Parenting Practices as Mediators**

Incompetent parenting has been proposed to be one factor that may account for the association between maternal depression and child adjustment problems (Downey &

Coyne, 1990; Lovejoy et al. 2000). As an indicator of adjustment problems, child withdrawal is associated with a host of parenting behaviors (Rubin, Coplan, & Bowker, 2009; Burgess, Rubin, Cheah, & Nelson, 2001). However, few studies have explored whether the relation of mothers' depressive symptoms to children's withdrawal can be explained by such parenting behaviors. Three patterns of parenting thought to promote child withdrawal may mediate the relation of mothers' depressive symptoms to child withdrawal.

### **Insensitive and Unresponsive Parenting**

Insensitive, unresponsive parenting may lead to children's avoidant or inhibitory behaviors toward their parents, which might lead to their wariness or withdrawal in the presence of other social partners. This perspective is supported by multiple theories of early parent-child relationships. Mutual regulation theory conceptualizes parent-child interaction as a mutual-regulatory social-emotional process (Tronick & Gianino, 1986; Tronick, 1998). According to this theory, when parents fail to respond to children's distress, children reduce their contact with parents, develop a low sense of self-efficacy, and learn to cope with their negative emotions by withdrawing from parents. Similarly, Dix and Buck (in press) propose that, by experiencing aversive interactions with unresponsive parents, children form negative expectations about approaching their parents that lead them to avoid unresponsive parents. These two theories are supported by Still-Face studies (Tronick, Als, Adamson, Wise, & Brazelton, 1978). In this paradigm, when children fail to elicit responses from their unresponsive mothers, they withdraw and initiate self-comforting (Tronick, 1998). Consistent with this analysis, attachment researchers indicate that maternal

insensitivity and unresponsiveness can lead to an ambivalent-insecure attachment. Characterized by a fear of rejection, this attachment style has been associated with behavioral inhibition and social withdrawal (Booth, Rose-Krasnor, McKinnon, & Rubin, 1994; Burgess & Rubin, 2001; Calkins & Fox, 1992; Erickson, Sroufe, & Egeland, 1985; Renken et al. 1989).

Although insensitive parenting is associated with both child withdrawal (Coplan, Arbeau, & Armer, 2008; Rubin, Coplan, & Bowker, 2009) and maternal depression (Field, Healy, Goldstein, & Guthertz, 1990; Lovejoy et al., 2000), only two studies have examined the specific role of unresponsive parenting in mediating the impact of mothers' depressive symptoms on child inhibition. Observing a 20-min interaction, Dix and his colleagues (2007, 2009, in press) found that mothers' unresponsiveness partially mediated the association between mothers' depressive symptoms and children's low initiation, passive responses to maternal control, and low facial expressiveness. These studies provide promising evidence for the mediating role of insensitive and unresponsive parenting. However, they examined relatively brief observations and inhibition only in mother-child interaction. It is unclear whether unresponsive parenting is responsible for the general child withdrawal that children display when exposed to new situations and new people.

### **Negative Parenting**

Negative parenting behaviors (e.g., irritability, hostility, negative facial expression, criticism and punishing behaviors) could serve as a principal cause for the onset and maintenance of behavioral inhibition in children whose mothers have depressive symptoms. Compared with children of positive parents, children of negative parents receive more

negative signals (e.g. distress, anger, upset) from mothers. Their attempts to seek help and express needs are likely to elicit rejection, anger, and other aversive reactions from their mothers compared with children of positive parents. From a social learning perspective, children's tendencies to initiate interaction with mothers will decrease and children will learn to withdraw from mothers if approach behavior elicits no response or an aversive response. These avoidant behaviors are activated and maintained by expectations that approaching parents will lead to aversive outcomes (Bandura, 1977). Clinical researchers also emphasize that one component of inhibition, social anxiety, is associated with expecting aversive outcomes (Hirsch & Clark, 2004; Ly & Roelofs, 2009). Once established, this defensive system may be difficult to eliminate (Bandura, 1977). It might extend to other social situations over time and lead children to withdraw in general. Only one study has examined the impact of negative parenting on child withdrawal. Maternal criticism and dissatisfaction was found to be associated with child behavioral inhibition (Hirshfeld et al., 1997). To our knowledge, no studies have examined the mediating role of negative parenting in the depression-inhibition link.

### **Intrusive and Overcontrolling Parenting**

A third type of parenting that is thought to relate to child withdrawal is overcontrolling, intrusive, or overly protective parenting, that is, parenting that exerts excessive control over children in order to regulate their activities and environments. Intrusive parenting is associated with child withdrawal both contemporaneously and at later points in time (Rubin, Coplan, & Bowker, 2009). According to Rubin's model of child inhibition, parents who are excessively protective and intrusive tend to overregulate

situations for their children, restrict their children's behaviors, discourage independence, and control their children's activities (Burgess, Rubin, Cheah, & Nelson, 2001; Rubin, Coplan, & Bowker, 2009). This restricts opportunities for children to develop coping and problem-solving strategies and promotes a low sense of competence. This in turn maintains or exacerbates children's inhibition.

Data from both self-report and observational studies have documented an association between overprotective parenting and social withdrawal in childhood (Barber, Olsen, & Shagle, 1994; Coplan, Arbeau, & Armer, 2008; Lieb et al. 2000; Mills & Rubin, 1998; Rubin, Burgess, & Hastings, 2002). Examining similar parenting, Hirshfeld et al. (1997) found that child behavioral inhibition was associated with mothers' emotional over-involvement. However, other studies fail to support the overprotective parenting hypothesis (Park et al., 1997). Given that parenting behaviors were assessed before child inhibition, this finding suggests that controlling parenting may be a response designed to help wary and fearful children instead of a precursor to the onset of children's behavioral inhibition. Given that mothers with depressive symptoms are more intrusive (Gordon et al. 1989; Lovejoy et al. 2000) and that intrusiveness is associated with child withdrawal, it is reasonable to extrapolate that overcontrolling parenting might contribute to the association between mothers' depressive symptoms and child withdrawal. This mediational role has not been studied.

### **A Longitudinal Perspective On the Depression-Parenting-Inhibition Relation**

There is a limited body of longitudinal research on the association between mothers' depressive symptoms and child withdrawal. In several investigations (Kochanska, 1991;

Rosenbaum, 1988; Rubin, 1991), data on maternal depression and child inhibition were available at only one point of time and were measured simultaneously. Concurrent relations found in these studies cannot demonstrate that maternal depression is an antecedent of child inhibition. In contrast, Kagan (2007) collected data on mothers' depressive symptoms at 2 weeks and at 2, 4 and 14 months, but children's behavioral inhibition was assessed only at 14 months. Unless children's behavioral inhibition is assessed at multiple time points corresponding to the assessment of mothers' depressive symptoms, it is unknown whether the trajectory of withdrawal fluctuates with changes in mother's depressive symptoms across time. Both Glögler (2008) and Pauli (2004) conducted longitudinal studies that measured both mothers' depressive symptoms and children's inhibition at several time points. However, they also examined relations only between earlier maternal depression and later children's inhibition. They did not examine whether changes over time in mothers' depressive symptoms led to changes over time in child inhibition.

Longitudinal research, especially those with multi-level designs, on children's withdrawal and its association with maternal depression are important. Although a few studies have demonstrated the concurrent associations between mothers' depressive symptoms and child withdrawal (Dix et al, 2007, 2009; Kochanska, 1991; Rosenbaum, 1988; Rubin, 1991), these associations could be accounted for by stable factors in the child, the mother, or the family that promote both depressive symptoms in mothers and withdrawal in children independent of the effect of depressive symptoms themselves. One such set of stable factors is genes or other biological factors. Concurrent associations between mothers' depressive symptoms and child withdrawal may be due to shared genes

or other biological factors in mothers that are associated with depression and children's behavior (e.g., hemisphere activation and EEG patterns; Downey & Coyne, 1990; Jones et al., 1996; Kochanska, 1991; Lovejoy et al., 2000). Second, maternal factors such as mothers' social skills (e.g., self efficacy, negative attributional style, poor perspective taking, etc.) and personality (e.g., neuroticism, low agreeableness) might lead to contemporaneous relations between mothers' depressive symptoms and children's withdrawal. Since poor social skills and personality traits have been demonstrated to be major determinants both of depression in adults and children's social competence, the concurrent relations found between mothers' depressive symptoms and child withdrawal could have nothing to do with depressive symptoms per se. A third set of factors is children's characteristics. Children with difficult temperament are not only more likely to develop internalizing problems, but they are also more likely to lead to depressive symptoms among their mothers. The fourth set of factor is stable characteristics of families. Family factors related to maternal depression, such as marital conflict or father's low involvement in childcare, might promote children's withdrawal regardless of mothers' depressive symptoms. Any of these factors could contribute to the child withdrawal independent of mothers' depressive symptoms. However, if changes over time in mothers' depressive symptoms predict changes over time in children's withdrawal, it would be evidence that stable child, mother, and family factors are not accounting for the relation between mothers' depressive symptoms and children's withdrawal. In this study, we examined such longitudinal relations within dyads.

## **Control Variables**

Earlier reports (Campbell, Matestic, von Stauffenberg, Mohan, & Kirchner, 2007; NICHD Childcare Network, 1999) demonstrate that mothers' depressive symptoms are associated with maternal age, maternal education, average family income, marital status and child ethnicity. Therefore, in the current study we included these variables as control variables. In addition, studies of child withdrawal suggest that withdrawal is a more important risk factor for boys than for girls (Coplan et al. 2004; Henderson et al., 2001). In order to explore whether the associations between maternal depression and child withdrawal differs for boys and girls, we included child gender as a control variable as well. Moreover, inhibitory temperament might be associated with both stable characteristics inherited from their depressed mothers (Jones, Field, Davalos, & Pickens, 1996) and the development of withdrawal problems (Fox et al., 2005). Therefore, child inhibitory temperament was also included as a control variable in the all the analyses.

## **Present Study**

Using longitudinal data covering 6 to 54 months, the present study examined the association between mothers' depressive symptoms and children's withdrawal and the role of parenting in mediating these associations. We hypothesized, first, that across-dyad variance in mothers' depressive symptoms from 6- to 24- months would predict higher child withdrawal at 24 months and a faster increase in withdrawal from 24 to 54 months. Second, we hypothesized that across-dyad variance in early insensitive, negative, and intrusive parenting will mediate the associations of early maternal depression and early child withdrawal. Third, we hypothesized that within-dyad changes in mothers' depressive

symptoms from 24 to 54 months would predict both changes in children's withdrawal from 24 to 54 months and a faster increase in withdrawal over that time. Fourth, within-dyad variance in insensitive, negative, and intrusive parenting from 24 and 54 months will mediate the within-dyad associations between changes in mothers' depressive symptoms and the changes in child withdrawal over this time.

## **Chapter 2: Method**

### **Participants**

Data for the present study came from the NICHD Study of Early Child Care and Youth Development (SECCYD). This is a comprehensive longitudinal study of 1,364 families from 10 sites in the U.S. (Little Rock, AK; Irvine, CA; Lawrence and Topeka, KS; Boston, MA; Philadelphia, PA; Pittsburgh, PA; Charlottesville, VA; Morganton and Hickory, NC; Seattle, WA; and Madison, WI). Participants were recruited in 1991 when the children were born. Using conditional-random sampling, the sample included a comparable number of male (N=705) and female (N=659) children, 24% ethnic minority children, 10% mothers who had less than high school education, 3.6% of families that had a poverty income-to-needs ratio less than 2.0, and 14% single mothers when their child was born. Through the 36 months of Phase I (1991-1994), 89.9% (1,226) families were retained and continued to participate in Phase II (1995-1999).

### **Procedure**

This report is based on data collected when children were 1-month through 54-months old. Reports of mothers' depressive symptoms were collected when children were 6, 15, 24, 36, and 54 months old. Assessments of children's withdrawal were collected when children were 24, 36 and 54 months. Parenting behaviors were observed in semi-structured observations when children were 6, 15, 24, 36, and 54 months old. Child inhibitory temperament was assessed by maternal report at 6-months. The demographic variables we will include are ethnicity, child gender, maternal education (in years, at 1

month), family income-to- needs ratio, marital status, and presence of the father in the home at 6 months.

## **Measurement**

### **Depressive Symptoms**

Mothers' depressive symptoms were assessed at 6, 15, 24, 36 and 54 months with the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is widely used to assess depressive symptoms in non-clinical samples. During each home visit, mothers rated on a 4-point scale the frequency of 20 symptoms over the past week. This measure has a good internal validity, with high Cronbach alphas at each assessment (range from .88 to .91). In order to capture the chronic impact of mothers' depressive symptoms, a mothers' cumulative depressive score was created. Mothers' CES-D scores at 6, 15, and 24 months were summed to represent mothers' early cumulative depressive symptoms. Mothers' CES-D scores from 6 months to 36 months were summed to represent mothers' cumulative depressive symptoms at 36 months. Mothers' cumulative depressive symptoms score at 54 months was calculated by adding up all five CES-D scores from.

### **Child Withdrawal**

Children's withdrawal was assessed with the withdrawal scale of the Child Behavior Checklist (CBCL; Achenbach, Edelbrock, & Howell, 1987). At 24, 36, and 54 months mothers were asked to rate the extent to which each of seven withdrawal-related behaviors represented their children's characteristics over the last two months (i.e., 0=not true; 1=somewhat or sometimes true; 2=very true or often true). The CBCL is a well-validated

measure of child withdrawal (Bokhorst, Goossens, & de Ruyter, 2001; Booth & Oxford, 2006; DiLalla & Caraway, 2004). The T scores were calculated and used in the analyses.

### **Parenting Behavior**

The three types of parenting behaviors of interest were observed in the home at 6 and 15 months and in the laboratory at 24, 36, and 54 months during 15-min mother-child semi-structured interactions. The 6-month observation included two parts. In the first 7-min, mothers were asked to play with their infants as they normally did using the toys of their own choosing. In the following 8-min, mothers were given a standard set of toys with which to engage their infants in play. At 15, 24, and 36 months, mothers were instructed to show their children three containers of age-appropriate toys and have their child play with these toys in a specific order. The 54-month observation included two tasks that were too difficult for the child to carry out independently and required the parent's assistance and a third activity that encouraged play between mother and child.

All the videotaped records were coded at a central location. Coders received intensive training before coding. They were randomly assigned to observation tapes and were blind to other information about the mother and child. Mothers' behaviors were coded based upon slightly different criteria at different ages. Mother-child interaction at 6, 15, and 24 months was rated on 4-point global rating scales; 7-point rating scales were used at 36 and 54 months. At 6, 15, and 24 months, observers rated the mother's sensitivity/responsiveness to non-distress (reverse scored for insensitive parenting), negative regard for the child (negative parenting) and intrusiveness (intrusive parenting). At 36 and 54 months, observers rated mothers' supportive presence (reverse scored for insensitive parenting), hostility (negative parenting), and respect for autonomy (reverse

scored for intrusiveness). Previous research has demonstrated that supportive presence is analogous to sensitivity to non-distress, hostility is analogous to negative regard, and respect for autonomy is analogous to lack of intrusiveness (NICHD Early Child Care Research Network, 1999). Each score was standardized before aggregating them into the three parenting variables in this study. The reversed standardized scores of sensitivity and respect for autonomy scores were used to indicate insensitive parenting and intrusive parenting respectively. Early insensitive parenting was the average score of the insensitive parenting scores from 6, 15, and 24 months. Early negative parenting and early intrusive parenting scores were computed in the same way. The standardized insensitive, negative, and intrusive parenting scores at 24, 36, and 54 months were used as indicators of each type of parenting at each of the three assessments.

### **Inhibitory Temperament**

Temperament was assessed by maternal report at 6 months using the 56-item versions of the Infant Temperament Questionnaire (Carey & McDevitt, 1978). Mothers rated infants' temperamental characteristics on a six-point scale from "almost never" to "almost always". This questionnaire included five subscales including approach/withdrawal, activity, intensity, mood, and adaptability. Internal consistency coefficients ranged from .53 to .71. The subscale of approach/withdrawal was included in the current study to represent children's inhibitory temperament.

## **Chapter 3: Results**

### **Analyses Plan**

The analyses proceeded in four steps. First, to summarize basic features of the study's major variables, descriptive statistics were computed. Second, bivariate correlational analyses were conducted to determine if mothers' depressive symptoms, parenting, and child withdrawal were related as predicted. Third, in Hierarchical Linear Modeling (HLM) analyses, mothers' early depression from before 24 months was modeled as an across-dyad predictor to examine its impact on children's withdrawal at 24 months and its slope from 24 to 54 months. This analysis examined the effects of across-dyad variance in mothers' depressive symptoms on children's withdrawal. To examine the role of parenting in mediating this across dyad association, the three parenting behaviors were added to the across-dyad HLM model. Sobel tests (Sobel, 1982a) were used to determine the significance of observed mediation. Fourth, to assess how changes in children's withdrawal from 24 to 54 months correspond with changes in mothers' depressive symptoms over this time, mothers' depressive symptoms from 24 to 54 months were modeled as a time-varying predictor to predict children's withdrawal over time. This analysis examined the effects of within-dyad changes of mothers' depressive symptoms across time on children's withdrawal across time. The mediational role of three types of parenting between 24 and 54 months was also examined in the within-dyad model.

In all analyses, child inhibitory temperament, child gender, data collection site, child ethnicity, maternal education, family income-to- needs ratio, marital status, and presence of the father in the home at 6 months were added as control variables. The

centered score of all the control variables were used in the analysis for easy interpretation of the results. In all models, if gender emerged as a significant predictor of within-person variance, separate models were conducted for boys and girls in order to characterize accurately models that best predicted withdrawal for each sex.

### **Descriptive and Correlational Analyses among Major Constructs**

Table 1 represents the descriptive statistics of the study's major variables. The means for mothers' depressive symptoms range from 8.97 to 9.83 across the five assessments. The average CES-D score across all assessments was 9.29. 14.2% of mothers have an average CES-D score equal to or over than 16 points, which is the standard cut-off point for significant depressive symptoms in CES-D (Murrell et al., 1983). This prevalence rate is slightly lower than the national average of depressive symptoms. At all ages, correlations between mothers' depressive symptoms and children's withdrawal were significant (see Table 2). Mothers' depressive symptoms were associated with children's withdrawal both concurrently and in across time. As expected, the three types of parenting were positively correlated with mothers' depressive symptoms and children's withdrawal, except that parenting and child withdrawal were not significantly correlated at 54 months. In addition, the three types of parenting behaviors were highly correlated.

### **Across-Dyad Effects: Relation of Mothers' Early Depressive Symptoms Before 24 Months To Child Withdrawal and The Mediational Role of Early Parenting**

The across-dyad model was run in HLM to examine the extent to which difference across mothers in cumulative depressive symptoms up to 24 months predict children's

withdrawal trajectory from 24 to 54 months. In addition, we examined the role of early parenting practices in mediating this effect.

*Across-dyad model.* In the across-dyad model, the early depressive symptom score before 24 months was used as a between-person variable to predict children’s individual withdrawal trajectory from 24 to 54 months. This model was specified at two levels: within-child and between-child levels. A within-child difference was specified at Level-1. It represents the individual change in children’s withdrawal over 24, 36, and 54 months as a linear function of time. The between-child difference is specified at Level-2. In the Level-2 submodel, the intercept and time coefficients from the Level-1 submodel were predicted by the hypothesized predictors in two equations respectively. Those predictors included mothers’ early depressive symptoms and all the control variables. Missing values were deleted listwise while generating the HLM model. In this across-dyad model, 2838 and 994 observations were included in the level-1 and level-2 submodels respectively.

Table 1 Means and Standard Deviations of Major Variables

	6 months	15 months	24 months	36 months	54 months
Mothers’ CES-D	8.97 (8.34)	9.05 (8.18)	9.40 (8.63)	9.22 (8.31)	9.83 (8.70)
Child Withdrawal	–	–	2.70 (2.84)	4.01 (1.67)	1.67 (1.68)
Insensitive Parenting	-2.95 .73	-3.03 (.69)	-3.01 (.74)	-5.28 (1.32)	-5.16 (1.30)
Negative Parenting	1.09 (.33)	1.05 (.28)	1.25 (.57)	1.38 (.82)	1.43 (.89)
Intrusive Parenting	1.59 (.78)	1.44 (.73)	1.48 (.72)	-5.29 (1.10)	-5.22 (1.11)

Table 2 Correlations between Major Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Mothers' Depressive symptoms																	
1. 6	–																
2. 15	.58**	–															
3. 24	.52**	.53**	–														
4. 36	.47**	.50**	.54**	–													
5. 54	.42**	.39**	.50**	.52**	–												
Child Withdrawal																	
6. 24	.29**	.30**	.29**	.30**	.25**	–											
7. 36	.30**	.31**	.32**	.35**	.26**	.62**	–										
8. 54	.23**	.23**	.20**	.25**	.17**	.34**	.44**	–									
Insensitive Parenting																	
9. 24	.18**	.16**	.22**	.18**	.23**	.19**	.18**	.01	–								
10. 36	.17**	.18**	.23**	.19**	.21**	.21**	.20**	.08*	.41**	–							
11. 54	.21**	.19**	.25**	.17**	.18**	.21**	.23**	.06	.40**	.48**	–						
Negative Parenting																	
12. 24	.13**	.11**	.17**	.16**	.18**	.17**	.13**	.04	.51**	.30**	.33**	–					
13. 36	.15**	.18**	.22**	.18**	.21**	.17**	.21**	.06*	.32**	.55**	.39**	.36**	–				
14. 54	.17**	.17**	.23**	.15**	.16**	.18**	.19**	.05	.30**	.34**	.82**	.31**	.36**	–			
Intrusive Parenting																	
15. 24	.18**	.16**	.20**	.20**	.19**	.19**	.15**	.00	.54**	.30**	.34**	.58**	.31**	.33**	–		
16. 36	.20**	.20**	.24**	.21**	.23**	.23**	.19**	.03	.38**	.68**	.46**	.33**	.54**	.36**	.37**	–	
17. 54	.19**	.16**	.20**	.15**	.16**	.16**	.18**	.01	.36**	.41**	.90**	.28**	.31**	.64**	.33**	.44**	–

HLM results for the across-dyad model are displayed at Table 3. Results demonstrated a main effect of mothers' early depressive symptoms on the intercept of children's withdrawal across this developmental period. Across dyads, mothers' cumulative depressive symptoms up to 24 months were associated with higher initial child withdrawal at 24 months. Withdrawal did not change significantly across time, and mothers' early cumulative depressive symptoms did not predict the slope of withdrawal across time. In this across-dyad model, because gender was a significant predictor of neither the intercept nor the slope of withdrawal, gender specific models were not examined.

Table 3 HLM Results from Across-Dyad Model to Examine the Relation of Mothers' Early Depressive Symptoms Before 24 Months to Child Withdrawal between 24 and 54 Months

	Child Withdrawal from 24 to 54 Months Old
	Coefficient (SD)
Intercept	<b>45.46</b> <b>(.67)</b>
Cumulative Depression	<b>.43</b> <b>(.07)</b>
Gender	-.37 (.81)
Slope	.35 (.30)
Cumulative Depression	-.02 (.03)
Gender	.11 (.36)

Note: The coefficients with a p-value smaller than .05 are highlighted in bold.

Mediational Effects of Early Parenting in Across-dyad Model. Given the significant association between mothers' depressive symptoms up to 24 months and children's withdrawal at 24 months, we examined the role of early parenting from 6 to 24 months in mediating this association. Following Baron and Kenny's approach (1986) to test mediation

in single-level regression models, methods for testing indirect effects in multi-level models have been proposed (Krull & MacKinnon, 2001; Zhang, Zyphur, & Preacher, 2009). First, the relation between mothers' depressive symptoms (initial antecedent) and children's withdrawal (outcome variable) was established. Second, the relation between the mothers' depressive symptoms (initial predictor) and their parenting practices (mediator) must be established. Third, after adding the parenting practices in the initial across-dyad model, the effect of mothers' depressive symptoms on children's withdrawal must decline, whereas the mediator must still predict the outcome variable significantly. A Sobel z statistic (Sobel, 1982b) was used to demonstrate the significance of mediational effects.

Results from regression models predicting early parenting from mothers' early depressive symptoms showed that mothers' early depressive symptoms significantly predicted insensitive parenting ( $\beta = .041$ ,  $p < .001$ ), negative parenting ( $\beta = .030$ ,  $p < .001$ ), and intrusive parenting ( $\beta = .008$ ,  $p < .01$ ) respectively. Results from the across-dyad HLM models that included parenting scores (Table 4) showed that insensitive, negative, and intrusive parenting all predicted higher child withdrawal at 24 months. Z scores from Sobel tests verified that all three types of parenting mediated the relation of mothers' early cumulative depressive symptoms to the intercept of children's withdrawal. When three parenting factors were added to the same across-dyad model simultaneously, none predicted the intercept of child withdrawal independent of the others. Because child gender did not emerge as a significant predictor in these analyses, gender-specific models were not tested.

## Within-Dyad Relations of Changes in Mothers' Depressive Symptoms After 24 Months to Changes in Child Withdrawal and The Mediational Role of Parenting

The within-dyad model was run in HLM to address whether within-person changes in mothers' depressive symptoms after 24 months were associated with within-person changes in children's withdrawal from 24 to 54 months. We examined as well mothers' parenting practices during this two and a half year period mediated this association.

Table 4 Results from HLM Models to Examine the Meditational Effects of Three Types of Parenting in Across-Dyad Models

	Child Withdrawal from 24 to 54 Months Old			
	Negative Model	Intrusive Model	Insensitive Model	All Parenting Model
Intercept	<b>45.73</b> (.68)	<b>45.75</b> (.68)	<b>45.79</b> (.68)	<b>45.90</b> (.69)
Cumulative Depression	<b>.41</b> (.06)	<b>.41</b> (.06)	<b>.41</b> (.06)	<b>.40</b> (.07)
Negative Parenting	<b>.67</b> (.24)			.46 (.35)
Intrusive Parenting		<b>.51</b> (.21)		.15 (.31)
Insensitive Parenting			<b>.57</b> (.22)	.30 (.32)
Gender	-.24 (.82)	-.17 (.81)	-.26 (.77)	-.16 (.81)
Slope	.251 (.28)	.20 (.29)	.17 (.29)	.13 (.30)
Cumulative Depression	-.02 (.03)	-.01 (.03)	-.01 (.03)	-.01 (.03)
Gender	.06 (.32)	.02 (.32)	.06 (.32)	.02 (.36)
Sobel Test				
Intercept	<b>1.85</b> (.03)	<b>2.09</b> (.02)	<b>2.16</b> (.02)	—

Note: The coefficients with a p-value smaller than .05 are highlighted in bold. Because slope was not significant in the base model, the parenting coefficient predicting the slope was not present in the table. Among all the control variables, only the coefficient for gender is displayed here.

*Within-dyad model.* In the within-dyad model, the mother's cumulative depressive symptoms at 24, 36, and 54 months were used as within-person variables to predict the child's withdrawal trajectory from 24 to 54 months. This model was also specified at two levels. The Level-1 submodel represents how children's withdrawal operates as a function of time, the mother's individual depressive symptoms from 24 to 54 months, and the interaction of mothers' depressive symptoms with the time slope of child withdrawal across time. Three predictors were included in this submodel: time, mothers' time-varying depressive symptoms, and the interaction of time and mothers' time-varying depressive symptoms. In Level-2 submodel, the intercept, time, mothers' depressive symptoms, and the interaction of time and depressive symptoms from Level-1 submodel were predicted by the child inhibitory temperament, gender, and other demographic variables. In the within-dyad model, 3163 and 1107 observations were included in the level-1 and level-2 submodels respectively.

Results from the within-dyad model are presented in Table 5. As mothers' depressive symptoms at any assessment increased, children's withdrawal at that assessment increased by .37. The coefficient for the slope of withdrawal across time was not significant, demonstrating that there was no systematic change from 24 to 54 months in children's withdrawal. In addition, the absence of a significant interaction between time and mothers' cumulative depression demonstrated that within-person changes in mothers' cumulative depressive symptoms were not associated with the slope of children's withdrawal over time. Gender emerged as a significant predictor of all the level-1 variables. This suggests that gender interacted with level-1 variables to predict child withdrawal

between 24 and 54 months. Thus, the associations between within-person changes in mothers' depressive symptoms and children's withdrawal are different for boys and girls. Therefore, within-dyad models were run separately for boys and girls.

Results from the separate within-dyad models for boys and girls are displayed in Table 5. The coefficients for depressive symptoms were significant for both boys and girls, but the coefficient for boys is larger. This indicates a stronger association between changes in mothers' depressive symptoms and changes in child withdrawal during 24 and 54 months among boys. Despite the fact that time coefficients were significant neither for boys nor for girls, the coefficient was positive for boys but negative for girls. The coefficients for the interaction of time and mothers' depressive symptoms were negative for boys and positive for girls, but neither was significant.

*Mediational Effects of Parenting From 24 to 54 Months in Within-dyad Models.*

Since changes in mothers' depressive symptoms from 24 to 54 months were associated with changes in children's withdrawal over that time, we examined the role of parenting practices from 24 to 54 months in mediating these effects. Mediational analyses were conducted following procedures similar to those used to assess mediation in the across-dyad model except for that the associations between mothers' depressive symptoms and parenting were analyzed in HLM models instead of in linear regression models.

Table 5 HLM Results from Within-Dyad Models To Examine the Relations of Within-Dyad Changes in Mothers' Depressive Symptoms to Changes in Child Withdrawal between 24 and 54 Months

	Child Withdrawal from 24 to 54 Months Old		
	Full Model: Coefficient (SD)	Male Model: Coefficient (SD)	Female Model: Coefficient (SD)
Intercept	<b>46.18</b> (.67)	<b>44.23</b> (.87)	<b>46.81</b> (.93)
Gender	<b>3.76</b> (1.27)		
Time	-.11 (.30)	.49 (.43)	-.32 (.39)
Gender	<b>-1.32</b> (.55)		
Depression	<b>.37</b> (.06)	<b>.55</b> (.09)	<b>.29</b> (.09)
Gender	<b>-.49</b> (.12)		
Time by Depression	.02 (.03)	-.03 (.05)	.05 (.04)
Gender	<b>.17</b> (.05)		

Note: The coefficients with a p-value smaller than .05 are highlighted in bold. Among all the control variables, only the coefficient for gender is displayed here.

Result from the HLM analyses showed that the mothers' cumulative depressive symptoms from 24 to 54 months significantly predicted their insensitive ( $\beta = .010$ ,  $p < .05$ ), negative ( $\beta = .012$ ,  $p < .05$ ), and intrusive parenting ( $\beta = .021$ ,  $p < .00$ ) over the same period. Results from the time varying HLM models predicting children's withdrawal from within-person parenting variables are presented in Table 6. When added to the within-dyad model, neither insensitive or negative, nor intrusive parenting significantly predicted child withdrawal. However, gender was a significant predictor of all the level-1 variables in these models. Therefore, separate models were conducted for boys and girls. As shown from Table 6, insensitive and negative, but not intrusive, parenting significantly predicted withdrawal for boys, but not for girls. The Z scores from the Sobel Test demonstrated that

for boys, negative parenting, but not intrusive parenting from 24 to 54 months mediated the relation of mothers' depressive symptoms to child withdrawal. Finally, when the three parenting types were added to the level-1 submodel simultaneously, none were significant independent of the others.

Table 6 Results from HLM Models and Sobel Test to Examine the Meditational Effects of Three Types of Parenting in Within-Dyad Models

	Child Withdrawal from 24 to 54 Months Old									
	Insensitive Parenting			Negative Parenting			Intrusive Parenting			All Three Parenting
	Full	Male	Female	Full	Male	Female	Full	Male	Female	Full
Intercept	<b>46.09</b> (.68)	<b>44.32</b> (.94)	<b>46.92</b> (.94)	<b>46.06</b> (.68)	<b>44.46</b> (.87)	<b>46.75</b> (.93)	<b>46.08</b> (.68)	<b>44.48</b> (.88)	<b>46.77</b> (.94)	<b>46.13</b> (.67)
Gender	<b>3.17</b> (1.26)			<b>3.22</b> (1.25)			<b>3.12</b> (1.26)			<b>3.04</b> (1.28)
Time	.03 (.30)	.51 (.43)	-.37 (.39)	-.02 (.30)	.49 (.43)	-.32 (.39)	.06 (.30)	.42 (.43)	-.34 (.39)	-.07 (.29)
Gender	<b>-1.25</b> (.56)			<b>-1.20</b> (.56)			<b>-1.17</b> (.56)			<b>-1.21</b> (.55)
Depression	<b>.38</b> (.07)	<b>.55</b> (.09)	<b>.29</b> (.09)	<b>.37</b> (.07)	<b>.53</b> (.08)	<b>.30</b> (.09)	<b>.38</b> (.07)	<b>.54</b> (.08)	<b>.30</b> (.09)	<b>.37</b> (.06)
Gender	<b>-.39</b> (.23)			<b>-.39</b> (.13)			<b>-.39</b> (.13)			<b>-.37</b> (.12)
Time X Depression	.02 (.03)	-.03 (.04)	.05 (.04)	.02 (.03)	-.03 (.05)	.05 (.04)	.02 (.03)	-.03 (.05)	.05 (.04)	.02 (.03)
Gender	<b>.14</b> (.06)			<b>.14</b> (.06)			<b>.14</b> (.06)			<b>.13</b> (.05)
Insensitive Parenting	.21 (.19)	<b>.51</b> (.26)	-.20 (.27)							.02 (.24)
Gender	<b>-.91</b> (.37)									<b>-.55</b> (.47)
Negative Parenting				.38 (.22)	<b>.74</b> (.30)	-.10 (.31)				.31 (.25)
Gender				<b>-.84</b> (.42)						<b>-.61</b> (.43)
Intrusive Parenting							.23 (.18)	.45 (.24)	-.11 (.27)	.04 (.23)
Gender							.14 (.06)			.02 (.46)
Sobel Test	-	<b>1.40<sup>+</sup></b> (.08)	-	-	<b>1.72</b> (.04)	-	-	-	-	-

Note: The coefficients with a p-value smaller than .05 are highlighted in bold. Because slope was not significant in the base model, the parenting coefficient predicting the slope was not present in the table. Among all the control variables, only the coefficient for gender is displayed here.

## **Chapter 4: Discussion**

Withdrawal is a risk factor for child development and is associated with higher adjustment difficulties. The present study demonstrated that mothers' depressive symptoms are one important predictor of children's emerging withdrawal during early childhood. Mothers' cumulative depressive symptoms across dyads up to 24 months predicted children's withdrawal at two years of age. In addition, within-person changes in mothers' depressive symptoms after 24 months predicted within-person changes in children's withdrawal over the two and half years that followed. Finally, low competent parenting was partially responsible for the impact of mothers' early depressive symptoms on children's withdrawal. In addition, boys' withdrawal was more strongly associated with mothers' depressive symptoms than girls'.

### **Children's Emerging Withdrawal: Vulnerable to Mothers' Depressive symptoms**

#### **Before 24 Months**

The current study extends previous research on the relation of mothers' depressive symptoms to child withdrawal by focusing on a developmental period that is important but not well understood. Because many individual and social competencies are at crucial stages of development in the first year or two, children may be particularly vulnerable to developing withdrawal problems if their mothers have depressive symptoms (Cicchetti & Toth, 1998). By using the CBCL withdrawal subscale to capture a large cluster of withdrawal behaviors across situations, instead of using short observations of mother-child interactions (Dix, Cheng, & Day, 2009; Dix, Meunier, Lusk, & Perfect, in press; Dix, Stewart, Gershoff, & Day, 2007; Kagan et al., 2007; Kochanska, 1991; Pauli et al., 2004;

Rubin, Both, Zahn-Waxler, Cummings, & Wilkinson, 1991), the current study demonstrated that in the first two years, children are vulnerable to becoming withdrawn when their mothers have depressive symptoms.

As mothers' depressive symptoms increase, they are more likely to be insensitive and to respond to children's need and distress less quickly and efficiently, more likely to display negative affect during parent-child interaction, and more likely to be intrusive and over-regulate children's activities (Cohn, Campbell, Matias, & Hopkins, 1990; Field, Healy, Goldstein, & Guthertz, 1990; Lovejoy, 1991). These parenting practices, in turn, pose significant risks for children to develop withdrawal problems through multiple mechanisms. First, the first two years is a critical period for children to establish emotional security with their mothers (Ainsworth, 1974; Sroufe, 1995). Insensitive and unresponsive reactions to children's distress may increase the likelihood of ambivalent attachment, which is characterized by fewer initiations to get mothers' reactions (Rubin, Coplan, & Bowker, 2009). An internal working model focused on avoiding rejection from mothers (Booth, Rose-Krasnor, McKinnon, & Rubin, 1994; Burgess & Rubin, 2001; Calkins & Fox, 1992; Erickson, Sroufe, & Egeland, 1985; Renken et al. 1989) might generalize to children's other relationships and lead to attempts to withdraw from interactions with people outside of the family. Second, children's emerging sense of autonomy is a centerpiece of development in the first two years (Bandura, 2006). Mothers' depressive symptoms and associated negative parenting could also serve to punish children's attempts to elicit reactions from their mothers actively and to manipulate the environment, thereby dampening children's autonomy and self-efficacy. With repeated interactions with aversive

or unresponsive parents, children of mothers high in depressive symptoms are likely to display withdrawal due to the expectation that they can not successfully initiate actions to manipulate the environment. Third, the depressed mothers' tendency to over-regulate children's environment may restrict opportunities for children to develop competent communication and social skills. Low social competence might lead these children to withdraw from social interactions.

The importance of the three parenting pathways demonstrated above was also supported by the findings in the current study. These findings suggest that more than one parenting pathway connects mothers' depressive symptoms to children's withdrawal. In addition to intrusive and over-protective parenting, which have been theorized and tested more often in previous studies, insensitive and negative parenting might also be important in understanding why children of depressed mothers are at higher risks for developing withdrawal problems. Since insecure-resistant attachment has been proposed as an antecedent to the development of withdrawal in children (Rublin & Coplan, 2008), future research could examine if the pathway among mothers' depressive symptoms, insensitive and negative parenting, and children's withdrawal is mediated by children's insecure attachment. It should be noted, however, that the three types of parenting did not predict withdrawal independently. They were highly correlated and, when used as simultaneous predictors, did not separately mediate depression-withdrawal relation. This suggests that three parenting practices often co-occur or that they were hard to disentangle from each other during observation of parent-child interaction. Therefore, when assessing differences

between dyads, they did not seem to differ from each other in predicting child withdrawal.

The finding of children's vulnerability to develop withdrawal in the first two years has significant implications for prevention and interventions. First, early identification of children whose withdrawal may become problematic is important. Child withdrawal at two years of age has been associated with social reticence in early childhood (Rubin, Burgess, & Rustin, 2002), which increases children's risk for peer rejection and other internalizing problems (Nelson, et al. 2005; Rubin, Coplan, & Bowker, 2009). Early identification of those children at high risk of withdrawal may reduce subsequent social and psychological problems. Second, because the association between mothers' depressive symptoms and child withdrawal was partially due to mothers' parenting practices, intervention programs that aim to help the withdrawal problems of those children with depressed mothers might focus on helping those depressed mothers on changing their parenting practices. Especially since within-person changes in negative parenting have been demonstrated to mediate the association between within-person changes in mothers' depressive symptoms and children's withdrawal, intervention aimed at the negative parenting of depressed mothers could be given more attention in intervention programs.

### **Within-Dyad Changes In Child Withdrawal Correspond With Within-Dyad Changes In Mothers' Depressive Symptoms After 24 Months**

Besides demonstrating that mothers' early depressive symptoms before 24 months across dyads predicted child withdrawal in two years olds, the current study is the first to demonstrate that within-dyad changes in mothers' depressive symptoms from 24 to 54

months predict changes in children's withdrawal over that period. Once children start to show risks to develop withdrawal problems in the second year, their withdrawal problems are still susceptible to change as mothers' depressive symptoms change. By controlling individual characteristics that are stable over time, this result demonstrates a close correspondence between mothers' changing depressive symptoms and change in children's withdrawal across development. Previous studies have demonstrated the relation of mothers' depressive symptoms to child withdrawal using across- rather than within-mothers designs (Glögler & Pauli-Pott, 2008; Pauli-Pott et al., 2004). However, in these studies it is unclear the extent to which stable individual characteristics across mothers and families that co-vary with maternal depression or child withdrawal might be responsible for these relations. In particular, because depression and inhibition share patterns of genetic or personal characteristics (e.g., patterns of EEG and hemisphere activation and neuroticism; Downey & Coyne, 1990; Jones et al. 1996, Kochanska, 1991; Lovejoy et al. 2000), a genetic transmission hypothesis might be an alternative explanation for the development of withdrawal for the children of depressed mothers. By identifying the association between mother's depressive symptoms and the child's withdrawal as depressive symptoms change in the same dyad, the current study minimizes the confounding effects of stable personal skills, dispositions, and family characteristics.

Across the two and a half years from 24 to 54 months, the within-person changes in negative parenting associated with mothers' depressive symptoms appeared to mediate the relation of changes in mothers' depressive symptoms to changes in boys' withdrawal over time. As the mother's depressive symptoms increased, boys' withdrawal appeared to

increase partially due to an increase in the mothers' negative parenting. Unlike the mediational analysis of parenting variance across dyads, which revealed mediation effects of all three types of parenting, only negative parenting mediated the within-dyad impacts of mothers' depressive symptoms on changes in children's withdrawal. By demonstrating the dynamic relation of within-mother changes in depressive symptoms, negative parenting, and within-child changes in withdrawal over time, this finding demonstrates the dynamic role that changes in mothers' negativity plays in determining the impact of mothers' depressive symptoms on boys' withdrawal in early development. Further research could be conducted to explore why and how the negative parenting differs from the other two parenting in the mediational process. However, the mediational effect of negative parenting disappeared when all three parenting practices were examined simultaneously in the within-dyad model. Thus, negative parenting may operate with or through closely associated forms of parenting (e.g., insensitive or intrusive parenting).

### **Sex Difference: Boys' Withdrawal Is More Strongly Associated With Maternal Depression**

Even though across-dyad differences in child withdrawal at 24 months were predicted by across-dyad variance in mother's early depressive symptoms regardless of the child's gender, the within-dyad impact of changes in the mother's depressive symptoms to child withdrawal from 24 to 54 months was dependent on the child's gender. Changes in the mother's depressive symptoms predicted more changes in the withdrawal of boys than girls. Also, negative parenting mediated this relation only for boys. This suggests that, compared with girls, boys start to become more vulnerable to develop withdrawal from two

years old if they have mothers with depressive symptoms. This could be explained by the culturally prescribed gender stereotypes held by both parents and people from outside of the family (Henderson et al., 2001). Withdrawal is perceived as more socially incompetent for boys than for girls. As a result boys' withdrawal might elicit more negative affect and rejection from mothers (Radke-Yarrow, Richters, & Wilson, 1988; Stevenson-Hinde, 1989). Therefore, not only may mothers' depressive symptoms be exerting an influence on children's withdrawal, there may be a bidirectional relation; boys' withdrawal might also be eliciting more negative parenting behaviors. This bidirectional argument was not yet demonstrated directly in the current study, and future research is needed to further understand the mechanism of the gender difference exhibited here.

### **Limitations**

There are several limitations in interpreting and generalizing the results from the current study. First, only mothers' reports of CBCL withdrawal were used to assess children's withdrawal. Because mother also reported on their own depressive symptoms, this could create potential reporter bias problems. Multiple reporters of CBCL withdrawal could potentially alleviate this problem, but only caregivers' and mothers' reports of CBCL were available at all three time points in the current study. Because mother has been demonstrated as the more reliable reporter of children's internalizing problem than other caregivers (Briggs-Gowan, Carter, & Schwab-stone, 1996; Stanger & Lewis, 1993), mothers' reports of CBCL withdrawal was used. However, in the current study, all the parenting mediators were assessed from observed interactions. The significant mediational effects suggest that the relations of mothers' depressive symptoms to child withdrawal were

not due to reporter bias. Second, in the current HLM model, withdrawal was modeled only as linear trajectory, and the findings suggest that there were no systematic changes of withdrawal over time. However, the developmental trajectories of withdrawal might not be homogeneous and may have different developmental patterns for different subgroups of children (Booth, Rose-Krasnor, McKinnon, & Rubin, 1994). Growth Mixture Modeling could be used to investigate the heterogeneity in developmental patterns of withdrawal in order to capture the heterogeneous characteristics of children's withdrawal. Finally, the NICHD SECCYD is a sample with slightly higher socioeconomic background than a nationally representative sample. Therefore, interpretations and generalization of results from the current study need to be made cautiously. However, since these findings indicate that maternal depression is associated with children's withdrawal even in a non-clinical sample from a slightly advantaged socioeconomic background, mothers' depressive symptoms would be expected to have a larger impact on children's withdrawal in a socioeconomically disadvantaged sample given the other contextual risks that might be intertwined with mothers' depressive symptoms.

## **Conclusion**

The current study contributed to knowledge of child withdrawal in several ways. As an adjustment problem that is associated with many internalizing problems in adolescents and adulthood, withdrawal in early childhood was demonstrated to be associated with one of the most prevalent risk factors in family contexts – mothers' depressive symptoms. By extending previous literature that examined children's withdrawal only among parent-child interactions, the current study demonstrates mothers' early depressive symptoms across

dyads predicted the development of children's general withdrawal problems across situations in the first two years. Moreover, within dyads over time, changes in mothers' depressive symptoms were associated with changes in children's withdrawal over time, which provides evidence for those intervention programs targeting on children's withdrawal problems to work on alleviating mothers' depressive symptoms at the same time. The supported mediational role of parenting practices in the current study could guide intervention programs to pay attention to the improvement of depressed mothers' parenting processes.

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