

Patterns of Conflict Interaction in Mother–Toddler Dyads: Differences Between Depressed and Non-depressed Mothers

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Abstract We examined the differences in conflict interaction between depressed mothers and their toddler and non-depressed dyads and whether these differences mediated the association of maternal depression with compromised child socioemotional development. Mother/child interaction was videotaped during a teaching task and during a free play task as part of a home visit when the target child was between 16 and 18 months old. Each turn of every conflict was coded for behavior and affect of each member of the dyad. Interaction data were summarized to calculate the number of conflict turns, the rate of conflict, and the proportion of mother-initiated versus child-initiated conflicts per dyad. Sequential analysis was used to estimate the probability of specific maternal responses to specific child behaviors. Bivariate comparisons indicated that depressed dyads experienced higher rates of conflict, especially during the teaching task, and that depressed mothers were more likely to respond destructively to child oppositional behavior. Results of multivariate linear regression indicated that the higher probability of destructive response mediated the association of maternal depression with lower quality of mother–child attachment.

These findings have implications for the development of interventions to support mothers in dealing with the conflicts that are so common during the second year of a child’s life.

Keywords Maternal depression · Mother–child interaction · Conflict · Emotional development

Introduction

Mother–child interaction has been acknowledged as an important element of early development (Bromwich 1990; Morisset et al. 1990) not only because parent–child interaction is the first socializing relationship that most children encounter, but also because the early experience of parent–child interaction shapes children’s perceptions of the world and their later patterns of behaviors (Barnard and Kelly 1990). One important aspect of parent–child interaction is the study of conflicted mother–child (M–C) interaction. Starting from the second year of life, M–C conflict becomes common and frequent as children make great improvements in linguistic skills and cognitive abilities coupled with an increased need for independence (Dunn 1993; Laible 2000; Lamb et al. 1992). It has been reported that parent–toddler conflicts arise as often as once every 3–9 min in the home (Dunn 1993; Laible 2000; Lamb et al. 1992) or on average between 3.5 and 15 times an hour (Dix 1991; Huang and Brotman 2007). The peak of conflict incidents is between 2 and 3 years of age and begins to decrease after age 4 (Klimes-Dougan and Kopp 1999). The fact that parent–child conflict during the toddler years is both normative and frequent suggests that conflict may be an important component of the emerging parent/child relationship. Therefore, it is important to study the

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nature of conflict interaction and how early conflict is related to children's social emotional development.

In the child development literature, very few studies have investigated the effect of observed M–C conflict on children's socioemotional development (Granic and Patterson 2006; Huang et al. Under review; Ingoldsby et al. 2006; Patterson 1980; Snyder et al. 1994; Snyder et al. 2003). Most studies have been based on older children rather than toddlers, the age at which conflicted interaction is peaking. Although there is a body of research investigating maternal discipline in a context of child non-compliance and their effect on child development (Patterson 1980), beside our own work, no study that we are aware of has used a micro-observational approach to investigate the effect of M–C conflict prior to age 2 and to identify behavioral sequences that may have an effect on subsequent socioemotional development. In our own work, we have found that M–C conflict interaction is a frequent behavior in 16–18 month-old children (author reference). Conflict interaction during this age tends to be brief, and conflicts may not always give rise to negative states. Mothers and children respond to most conflicts with neutral affect and neutral behavior, and negative affect or destructive conflict responses occur in only a small proportion of M–C conflict interaction (author reference). In addition, we found that M–C and child–mother behavioral sequences during conflict interaction in toddlerhood were related to early psychopathology development. A high rate of child aversive behavior in response to maternal oppositional behavior was associated with lower maternal perception of M–C attachment. Also, high maternal destructive or high child overt oppositional behavior in response to the other's oppositional behavior was related to higher child aggression as well as greater anxious/depression and withdrawal in girls. Child passive behavior and aversive behavior in response to maternal oppositional behavior were associated with lower levels of aggression and withdrawal symptoms in boys (author reference). This study builds upon this work by focusing on M–C conflict interaction in dyads in which the mother is depressed and whether the differences in patterns of conflict interaction between depressed and non-depressed dyads are associated with differences in child socioemotional outcomes.

To conceptualize the effect of M–C conflict on children's socioemotional development, we use an emotion regulation framework (Calkins 1994). This framework emphasizes how the transactional relationship between of mother and child coupled with individual differences in reactivity in the development of child self regulation (Izard and Malatesta 1987; Thompson 1994). According to this model, children construct an understanding of emotions within the context of social relationships with other people, particularly caregivers (Brown and Dunn 1996). Therefore, a mother's direct

intervention in a toddler's distress and frustration, selective reinforcement of positive emotion expression, and verbal instruction about emotion and emotion regulation strategies during M–C conflict incidents will have an impact on the organization of a child's emotional expression and behavioral adjustment (Thompson 1994).

Empirical evidence that supports the influence of M–C conflicts on subsequent socioemotional development can be derived from maternal discipline and maternal control research. Studies have found that early coercive parenting and conflict between family members influence children's later relationships and adjustment (Herrera and Dunn 1997; Ingoldsby et al. 2006; Scaramella and Leve 2004; Shaw et al. 2004; Strassberg et al. 1994). Also, early punitive and coercive discipline is associated with lower quality of M–C interaction (Bronstein 1994) as well as the development of aggressive and noncompliant behavior in young children and antisocial behavior in adolescents (Dishion and Patterson 1997; Herrenkohl et al. 1997; Strassberg et al. 1994). Although such findings suggest that forceful and negative resolution strategies (destructive conflict resolutions) used by parents during conflict incidents are related to the development of problem behavior and poor M–C attachment, the focus has been primarily on parent-initiated conflict and older children. The influences of other kinds of daily conflicts, such as a mother's noncompliance with her child's request or a child's prohibition of his/her mother's action, on child development have not been examined. Also, whether early M–C conflict is related to children's internalizing problems is not fully understood.

Children of depressed mothers are at higher-risk for poor socioemotional development relative to children of non-depressed mothers. Children of depressed parents have poor social competence, poor attachment relationships, as well as more behavioral adjustment problems such as externalizing and internalizing problems (Beardslee et al. 1998; Beck 1999; Campbell et al. 2004; Kane and Garber 2004; Lee et al. 2007; Ohannessian et al. 2005; Papp et al. 2005; Pilowsky et al. 2006). Understanding the underlying mechanisms has important implications to help this at-risk population.

Parenting is one potential mechanism mediating the association of maternal depression with negative child outcomes because expression of depressive symptoms can interfere with mothers' abilities to be nurturing or to use appropriate discipline (Elgar et al. 2007; Lovejoy et al. 2000). It has been found that depressed mothers are more likely than non-depressed mothers to use physical discipline (Irvine et al. 1999; Lovejoy et al. 2000; Smith and Brooks-Gunn 1997; Tidmarsh 2000), and to yell at their children (Dumas and Wekerle 1995). Depressed mothers are also less likely to adopt positive discipline, such as reasoning (Bluestone and Tamis-LeMonda 1999), and exhibit greater degrees of intrusive/hostile behavior, show

poorer child management techniques, and use more ineffective and inconsistent disciplinary strategies, than are non-depressed mothers (Beck 1999; Goodman and Brumley 1990). These negative parenting practices contribute to higher rates child maladjustment among children of depressed mothers.

Another potential mediating factor between maternal depression and child socioemotional development is through the influence of depression on M–C interaction, such as the pattern of M–C conflict interaction. Although previous meta-analytic reviews have demonstrated that conflict may mediate the association between maternal depression and child maladjustment (Beck 1999; Kane and Garber 2004; Lovejoy et al. 2000), the mediation processes were not expressly tested until recently. Of the available mediation evidence, they were also not focused on young parent–child dyads. For example, Cummings et al. (2005) studied kindergarten children and found that marital relations, but not parental psychological control and parental warmth, mediated the association between parental depression and children’s problem behaviors. Elgar et al. (2007) studied 10–15 year old children and found that parenting behaviors (i.e., nurturance, rejection, monitoring) mediated the association between parental depression and child internalizing and externalizing problems. Whether and how maternal depression influences mothers’ strategies in handling mother–toddler conflict behavior has not been investigated. Also, we do not know what elements of conflict behaviors (e.g., frequency, constructive/destructive behavioral sequences) may mediate the association between maternal discipline and negative child development. This study investigates behavior differences between depressed and non-depressed mothers during preverbal conflict events and examines whether these differences may mediate differences in socioemotional development associated with maternal depression. We have three specific hypotheses regarding mother/child conflict interaction

in depressed dyads. First, we hypothesize that M–C dyads in which the mother is depressed will have higher rates of conflict. Second, we hypothesize that depressed mothers will be more likely to respond destructively to child oppositional behavior. Finally, we hypothesize that the differences in frequency and characteristics of conflict interaction will mediate the association between maternal depression and child socioemotional well-being.

Method

Participants

Data were drawn from the Healthy Steps for Young Children (Healthy Steps) Embedded Observational Study, a direct observational study of M–C interaction nested within the National Evaluation of Healthy Steps. Healthy Steps was a pediatric practice-based parent support program for families of children from birth to age three (author references). A total of 658 eligible families were approached to participate in the Embedded Study, which included two home visits, one at 16–18 months and a second at 34–37 months. A total of 378 of the eligible families (57%) completed at least part of the first home visit and comprise the sample for our study. Reasons for non-completion of the study by 43% of eligible families included: refusal (19%); unable to locate (11%); over the age limit before children could be located and interviewed (9%); and other reasons such as language constraints (4%). Of those 378, 23 (6%) did not have data available for the M–C interaction tasks (primarily due to equipment/tape failure), and 10 dyads (3%) did not have any conflicts during the interaction tasks. Of the remaining 345 participants, 318 (92%) had a valid measure of maternal depression and form the sample for this analysis. The characteristics of the study sample are displayed in Table 1. Approximately

Table 1 Demographic characteristics of study sample ($N = 318$)

Characteristic	N	%	Characteristic	N	%
Maternal race			Poverty status		
White/Non-Hispanic	197	62.3	Less than 100% poverty	76	74.2
Black/Non-Hispanic	79	25.0	100% poverty or higher	219	25.8
Hispanic	40	12.7	Maternal education		
Maternal marital status			Less than high school	43	13.6
Married	216	67.9	High school	104	32.8
Single	96	30.2	Some college	109	34.4
Divorced/separated/widowed	6	1.9	College graduate or more	61	19.2
Maternal age			Child gender		
19 years or younger	55	17.4	Boy	165	51.9
20–29 years	182	57.4	Girl	153	48.1
30 years or older	80	25.2			

two-thirds of the sample was white/non-Hispanic, about a quarter was black/non-Hispanic, and the remaining 13% were Hispanic. Over two-thirds of mothers in the sample were married, and most were over the age of 20. A little more than a quarter of the families were living below 100% of the federal poverty level, and 87% of the mothers had at least a high school education. Boys were slightly over-represented in the sample.

Of these 318, 151 (47.5%) completed the home visit at 34–37 months (Time 2). Reasons for non-completion included refusal (61, 19.2%), failure to locate (41, 12.9%), moved out of area (22, 6.9%), and other (43, 13.5%). Compared to mothers who did not complete the Time 2 home visit, mothers who completed the home visit tended to be better educated, $\chi^2(3, N = 318) = 8.22$, $p < .05$.

Procedure

Data reported in our study came from three sources: data collected during the first (16–18 months) and the second (34–37 months) home visits of the embedded study and data collected as part of the National Evaluation of Healthy Steps. At the first home visit, when the child was 16–18 months, mothers and children participated in a series of videotaped tasks, including a teaching task (6 min) and a free-play task (15 min). During the teaching task, the mother was asked to select one task that her child had not yet learned from a list of options from the Nursing Child Assessment Teaching Scales (NCATS) (Sumner and Spietz 1994). For the free-play task, the mother was asked to play with her child on the floor as she normally would for 15 min. A standard collection of toys was provided by the interviewers, including some gender-specific and gender-neutral types of toys. The entire home observation lasted 2 h. Both the teaching and free-play episodes were used to code conflict behaviors. A second home visit was conducted at 34–37 months, and from those data we will utilize measures of child behavior problems and mother/child attachment security for the present study.

In addition to the observation data collected at 16–18 months, several measures were derived from a questionnaire that was completed when the child enrolled in the Healthy Steps program as a newborn and from a questionnaire administered at age 16–18 months during the home visit. The newborn questionnaire (assessed at 2–4 months) provided maternal depression data and basic demographic information on the family. The self-administered questionnaire at 16–18 months included questions about child temperament.

Measures

Mother–Child Conflict Measures

A new conflict coding scheme was developed for our study, and it has been described fully elsewhere (author reference). Here, we will only describe the parts of the coding system most relevant to the current study. The categorization of conflict behaviors was adapted from several researchers' works (Dunn and Munn 1985; Eisenberg 1992; Gardner et al. 1999; Kleinman et al. 1998; Kochanska et al. 1995; Minton et al. 1971). However, a new coding system was needed because existing systems did not include codes for both children and mothers simultaneously nor consider mother-initiated as well as child-initiated conflict. Episodes of conflict interaction were coded from videotapes of M–C interaction at the first home visit using an event-recording method. *Conflict episodes* were defined unilaterally as starting when a mother initiated an oppositional act or a child initiated an oppositional act, including verbal protest and physical objection (e.g., crawling away, crying, head shaking) (Hay 1984). If any of these oppositional behaviors occurred, the coder observed the entire conflict event and determined the acts that provoked conflict and the type of conflict. Conflict episodes ended when one party submitted, a consensus was reached, or the topic of the discourse was changed. Each conflict episode was coded for the *number of oppositional turns*. *Conflict turns* included all verbal statements or physical behavior made by one partner prior to the other partner's response. Total conflict turns were calculated beginning from the initial oppositional act to the end of each conflict episode.

For each conflict turn, maternal and child affect and behavioral responses were coded. *Affect responses* were coded separately for the mother and the child into one of three different categories for each turn of conflict: highly negative affect, neutral affect (including slightly positive or slightly negative affect), and highly positive affect. Only maternal behavioral responses are considered in this analysis. Four broad categories of *maternal behavioral responses* were coded. An *oppositional response* was defined as the use of simple oppositional behavior, such as saying “no” or holding a child's hand to stop behavior. A *constructive response* was defined as the use of distraction, reasoning, suggesting an alternative, negotiation or promising a reward with the intent of stopping the behavior. A *destructive response* was defined as the use of criticism, scolding, threatening, withdrawing privileges, or aversive physical control with the intent of stopping the behavior. An *acquiesce/ignore* response was defined as accepting the child's disobedience or ignoring the child's requests.

Interrater reliability for the coding of the conflict measures was established by two graduate psychology students with one coding all videotapes and a second student coding a 20% random sample of tapes representing the span of the coding period. Interrater agreement was adequate. The nonchance (Kappa) reliability for the identification of conflict event (yes/no) was .62, interrater reliability (ICC) for the number of conflict turns was .97, and ICCs for rate of maternal and child conflict behaviors ranges from .83 to .97.

A number of variables were derived from the coded conflict data. The *total number of conflict turns* was computed by summing the number of mother and child turns across the entire observation period. Total number of conflict turns was also computed separately for the teaching and free-play tasks. *Rate of conflict* was computed by dividing the total number of conflicts by the minutes of observation and then multiplied by 20 to yield the rate per 20 min and to facilitate interpretation. The *proportion of conflicts initiated by maternal oppositional behavior* was calculated by dividing the number of mother-initiated conflicts by the total number of conflicts, and the *proportion of conflicts initiated by child oppositional behavior* was calculated by dividing the number of child-initiated conflicts by the total number of conflicts.

We created variables derived from the sequence level data, using Sequential Data Interchange Standard (SDIS) and Generalized Sequential Querier (GSEQ) programs (Bakeman and Gottman 1997). These programs allow pooling all conflict events for each case and the calculation of frequency and simple probabilities of different sequences. We pooled all conflict events for each case because conflicts occurred infrequently and were brief. A lag of one sequence (e.g., maternal behavior given child behavior) was used. Focusing on the behavioral sequences in which a child behavior was followed by a mother behavior (i.e., CM sequences), we calculated the proportion of CM sequences initiated by child oppositional behavior by summing the number of CM sequences initiated by child oppose, child passive, child averse, and child overt, and dividing this total by the total number of CM sequences. The *probability of maternal acquiescence* was calculated by dividing the number of maternal acquiescence responses in child oppositional CM sequences by the total number of child oppositional CM sequences, and the *probability of maternal constructive response* was calculated by dividing the number of maternal constructive responses in child oppositional CM sequences by the total number of child oppositional CM sequences. A similar approach was used to compute the *probability of maternal oppositional response* and the *probability of maternal destructive response*.

Maternal Depressive Symptoms

Maternal depressive symptoms were assessed at 2–4 months using questions adapted from the Centers for Epidemiological Studies-Depression (CES-D) inventory (Radloff 1977). A shortened version of the instrument, from 20 items to 14, was developed for the Healthy Steps evaluation by assessing redundant items using data from 600 parents in an evaluation of child abuse prevention programs in Pennsylvania. The correlation of the reduced version with the full scale was over .90 and .95 in a separate study involving pregnant drug users (D. M. Strobino Personal communication, 2000). For the Healthy Steps sample, a clinical cut-off 11 was used ($\geq 11 =$ depressed) (Minkovitz et al. 2005).

Child Outcomes

Outcomes were child behavior problems and security of M–C attachment. *Child behavior problems* were assessed during the second home visit at age 34–37 months using the Child Behavior Checklist/2–3 (CBCL, Achenbach 1991). For this study, T-scores for the Internalizing and Externalizing global scales and for Total Problem Behaviors were computed.

Quality of mother–child attachment was assessed both at 16–18 months and at 34–37 months using the Attachment Q-Sort (AQS; Waters and Deane 1985) in which mothers sorted 90 descriptors in terms of how like or unlike their child they were. The sorting procedure yields nine piles of ten cards each. Pile 9 represents behaviors “very much like the child”, and pile 1 represents behaviors “very much unlike the child”. Items in pile 9 were given a score of 9, items in pile 8 were given a score of 8, and so on. The criterion sort scoring method was used. The child’s AQS description was correlated with experts’ AQS description of the hypothetically “most secure child”. A Pearson correlation coefficient was derived for each child to represent the child’s Criterion Sort score, resulting in a security score ranging from + 1.00 for a perfectly secure child to -1.00 for a perfectly insecure child. The higher the correlation between maternal ratings of her child and the criterion profile, the more secure the M–C relationship was presumed to be. Because the correlation coefficients are not normally distributed, they were transformed to Fisher’s z scores.

Covariates

Child temperament was assessed during the first home visit and was utilized as a covariate in the “mediation analyses” because temperament has been found to be related to

maternal depression and child problem behaviors. Child temperament was assessed using the Toddler Behavior Assessment Questionnaire (TBAQ) (Goldsmith 1996). The TBAQ consists of 128 parent report items representing the dimensions of Activity Level, Anger Proneness, Social Fearfulness, Pleasure and Interest/Persistence. For our study, only the Anger Proneness (28 items) dimension was used because previous studies suggested that this dimension is highly correlated with problem behaviors (Eisenberg et al. 2001).

Results

Preliminary Analyses

Differences in conflict characteristics by maternal depression status are displayed in Table 2. The number of conflict turns observed for the sample as a whole ranged from 0 to 26 (mean = 7.58). Not surprisingly, depressed dyads had a higher number of conflict turns, although this difference was wholly driven by differences in conflict during the teaching episode (a structured context). There was no difference in the number of conflict turns during the free-play episode (a less structured context). The rate of conflict was also higher for depressed dyads, averaging one conflict every 2 min versus one every 2.5 min in non-depressed dyads, $t(317) = -2.78, p < .01$. The proportion of conflicts initiated by children ranged from 0% to 100% as did the proportion of conflicts initiated by mothers, with the average proportion being approximately two-thirds initiated by mothers. The most common maternal response to child oppositional behavior was acquiesce (.49 for non-depressed versus .38 for depressed), followed by

oppositional response (.29 for non-depressed versus .36 for depressed). Destructive responses were least common, occurring 3% of the time among non-depressed mothers and 7% of the time among depressed. Non-depressed mothers were more likely to acquiesce, $t(317) = 2.43, p < .05$, whereas depressed mothers were more likely to respond destructively, $t(327) = -3.23, p < .001$.

Intercorrelations of conflict variables with the child outcomes are displayed in Table 3. Attachment security was inversely associated with conflict turns, rate of conflict, and probability of maternal destructive response. Although child behavior problems were positively associated with maternal depressive symptoms, the only conflict variables that were associated with behavior problems were proportion of CM turns initiated with child oppositional behavior and probability of maternal acquiescence. Higher proportions of CM turns initiated by child oppositional behavior and higher probability of maternal acquiescence were both associated with higher levels of child externalizing problems.

Mediation Analyses

Based on the recommendations of Baron and Kenny (1986) and MacKinnon et al. (2002), we conducted regression analyses focused on the conflict variables significantly associated with maternal depression (total number of conflict turns, rate of conflict, probability of maternal acquiescence, probability of oppositional response, and probability of destructive response). A mediation model was tested using multivariate regression analyses. In Model 1, we regressed child outcomes on maternal depressive status. In Model 2, we added the conflict variables as potential mediators. All models were adjusted for treatment

Table 2 Differences in conflict characteristics by maternal depression status

Conflict variable	Non-depressed		Depressed		<i>t</i>
	Mean	SD	Mean	SD	
Total number of conflict turns ^a	7.48	5.22	9.65	5.41	-2.71**
Teaching conflict turns ^a	3.57	2.92	5.16	3.44	-3.46***
Free play conflict turns ^a	3.91	3.57	4.49	4.08	-1.05
Rate of conflict ^a (# per 20 min)	7.89	5.37	10.19	5.66	-2.78**
% conflicts initiated by maternal oppositional behavior	.62	.32	.69	.26	-1.43
% conflicts initiated by child oppositional behavior	.38	.32	.31	.26	1.43
Maternal responses to child oppositional behavior					
Probability of acquiescence	.49	.30	.38	.23	2.43*
Probability of constructive response	.19	.22	.19	.22	-.10
Probability of oppositional response	.29	.26	.36	.24	-1.62
Probability of destructive response	.03	.08	.07	.12	-3.23**

Note. ^a Includes both mother-initiated and child-initiated conflicts

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 3 Intercorrelations of child outcomes, conflict variables, and covariates

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Attachment security (T1)	1.00																
2 Attachment security (T2)	.52	1.00															
3 CBCL Total problems	-.24	-.50	1.00														
4 CBCL Internalizing problems	-.14	-.30	.76	1.00													
5 CBCL Externalizing	-.21	-.45	.84	.47	1.00												
6 CESD score	-.23	-.23	.23	.20	.16	1.00											
7 Total number of conflict turns	-.23	-.29	.04	.04	.01	.16	1.00										
8 Teaching conflict turns	-.13	-.18	.00	-.01	.02	.21	.74	1.00									
9 Play conflict turns	-.22	-.27	.06	.06	.01	.06	.83	.24	1.00								
10 Rate of conflict	-.22	-.31	.06	.05	.03	.15	.98	.69	.85	1.00							
11 Prop mother initiated	.01	-.03	.10	.03	.05	.11	.00	-.09	.07	.00	1.00						
12 Prop child initiated	-.01	.03	-.10	-.03	-.05	-.11	.00	.09	-.07	.00	-1.00	1.00					
13 Prob maternal acquiesce	.05	.04	.06	.03	.11	-.21	-.28	-.24	-.20	-.28	-.38	.38	1.00				
14 Prob maternal constructive	.05	.10	-.02	.02	-.03	.02	.02	.05	-.01	.01	.18	-.18	-.50	1.00			
15 Prob of maternal oppositional	-.03	-.09	-.04	-.06	-.08	.15	.21	.20	.14	.21	.23	-.23	-.66	-.25	1.00		
16 Prob of maternal destructive	-.20	-.10	-.03	.03	-.05	.22	.26	.09	.30	.31	.14	-.14	-.19	-.09	-.04	1.00	
17 Child anger proneness	-.40	-.39	.27	.19	.26	.17	.20	.09	.21	.19	.01	-.01	-.08	-.03	.09	.08	1.00

Note. Significance levels: $|r| \geq .12$ for $p < .05$; $|r| \geq .14$ for $p < .01$; $|r| \geq .19$ for $p < .001$

group status and child anger proneness. Analyses were conducted separately for each child outcome.

The top panel of Table 4 displays the results for attachment security at Time 1. In the first model, maternal depressive status is a significant predictor of low attachment security after adjusting for treatment group and child anger proneness. However, once the conflict variables were added to the model, maternal depression was no longer a significant predictor for attachment security. Results indicate that M–C conflict behaviors (particularly maternal destructive response to child opposition) mediated the association between maternal depression (2–4 months) and M–C attachment (16–18 months).

The bottom panel of Table 4 displays the results for attachment security at Time 2. Because attachment security in Time 1 is included as a covariate, coefficients are interpreted as reflected their association with the change in attachment security from Time 1 to Time 2. The results did not indicate that conflict characteristics mediated the association between depression status and change in attachment security from Time 1 to Time 2.

We conducted similar analyses to examine the mediation link between maternal depression at 2–4 months and child problem behaviors at 34–37 months. We did not find a significant association between conflict behaviors and externalizing problem, nor between conflict behaviors and

internalizing problem, after adjusting for maternal depression (results not shown). These findings coupled with Table 3 indicate that although maternal depression plays a role in the development of problem behaviors, conflict interaction did not mediate the association between early maternal depression and later child problem behaviors.

Discussion

The purpose of this study was to examine how characteristics of conflict interactions between mothers and their toddlers differed by maternal depressive symptoms and whether these differences mediated the association between maternal depression and child socioemotional outcomes (including attachment and problem behaviors). Each turn in conflict interactions observed during two episodes, a teaching task and a free play task, was coded for type of behavior and affect, and a sequential analysis approach was utilized to examine patterns of conflict at a detailed level. Results indicated that depressed M–C dyads had higher rates of conflict and that this difference was primarily driven by differences during the teaching episode. Contrary to predictions, the rate of conflict during the free-play interaction did not differ between depressed and non-depressed dyads. It appears that the stress placed on

Table 4 Regression of attachment security on maternal depression and conflict characteristics

	Attachment security (16 m)			
	Model 1		Model 2	
	b (se)	t	b (se)	t
Maternal depression (binary)	-.09 (.04)	-2.44*	-.06 (.04)	-1.63
Total number of conflict turns	-	-	-.01 (.02)	-.72
Rate of conflict	-	-	.01 (.02)	.53
Prob. of acquiescence to child opposition	-	-	-.02 (.06)	-.35
Prob. of oppositional response to child opposition	-	-	.01 (.07)	.16
Prob. of destructive response to child opposition	-	-	-.38 (.17)	-2.24*
Constant	.77 (.06)	12.80***	.76 (.08)	9.46***

	Attachment security (36 m)			
	Model 1		Model 2	
	b (se)	t	b (se)	t
Attachment security (16 m)	.40 (.08)	4.84***	.37 (.09)	3.91***
Maternal depression (binary)	-.13 (.06)	-2.03**	-.13 (.07)	-1.94*
Total number of conflict turns	-	-	-.02 (.03)	-.87
Rate of conflict	-	-	-.01 (.03)	.55
Prob. of acquiescence to child opposition	-	-	-.08 (.09)	-.84
Prob. of oppositional response to child opposition	-	-	-.01 (.11)	-.08
Prob. of destructive response to child opposition	-	-	-.15 (.25)	-.59
Constant	.50 (.11)	4.44***	.53 (.11)	4.69***

Note. Models are adjusted for child anger proneness and treatment status
 * $p < .10$; ** $p < .05$; *** $p < .001$

the dyad by the teaching task associated with increased need for child compliance to complete the task was more likely to result in conflicted interaction when the mother was depressed.

Maternal responses to child oppositional behavior also differed by maternal depressive status. In the face of child oppositional behavior, non-depressed mothers were more likely to acquiesce whereas depressed mothers were more likely to respond destructively. Examples of destructive responses included use of criticism, scolding, threatening, or aversive physical control. These differences in maternal behavior during conflict were not confounded by the probability of child oppositional behavior. There was no difference between depressed and non-depressed dyads in the proportion of conflicts that were child-initiated, suggesting children of depressed mothers did not initiate more non-compliance or oppositional act than children of non-depressed mothers during preverbal period.

The second primary aim of this study was to determine if differences in patterns of M–C conflict behavior mediated the association of maternal depression with child socioemotional well-being. In this study, we assessed M–C attachment security at 16–18 months (concurrent with the assessment of conflicted interaction) and 34–37 months as

well as child behavior problems at 34–37 months. Although correlation analyses indicated that maternal depression at 2–4 months predicts M–C attachment as well as child problem behavior 2–3 years later, a mediation model was not supported for child problem behaviors. Child behavior problems as assessed by the CBCL were not significantly associated with rate of conflict or the probability of maternal destructive response to child oppositional behavior. However, the probability of maternal destructive response appeared to mediate the association of maternal depression with security of attachment at 16–18 months. In multivariate analyses, the association of maternal depression with lower attachment security was no longer significant once the probability of maternal destructive response was included in the model.

These findings build upon existing research documenting differences in M–C interaction between depressed and non-depressed dyads with depressed mothers more likely to engage in negative behaviors toward their children (Beck and Davila 2003; Bluestone and Tamis-LeMonda 1999; Dumas and Wekerle 1995; Goodman and Brumley 1990; Irvine et al. 1999; Lovejoy et al. 2000; Papp et al. 2005; Smith and Brooks-Gunn 1997; Tidmarsh 2000). In a meta-analytic review, Lovejoy et al. (2000) combined findings

from 46 observational studies and found that maternal depression was moderately associated with maternal negative/coercive behaviors, with maternal depression most strongly associated with irritability and hostility directed toward the child. Our findings of higher rates of conflict interaction and greater probability of maternal destructive response to child oppositional behavior are consistent with Lovejoy et al.'s findings. However, we did not find any differences between depressed and non-depressed mothers in the proportion of conflicts that were initiated by the mother, something that would be predicted from the results of Lovejoy et al.'s meta-analysis. As only four of the 46 studies included in Lovejoy et al.'s meta-analysis included observations of M–C interaction with children under the age of two, our findings provide important confirming evidence that differences in M–C interaction emerge very early during the child's life. More longitudinal research is needed in order to document the stability of those differences from infancy through early childhood.

Consistent with Cummings et al. (2005), we also found that neither parental negative control nor parental warmth mediated the association between maternal depression and children's problem behaviors. This suggests that the developmental process for problem behaviors is complex. It may be that the combination of negative conflict behavior and other family issues such as parental conflict contribute to early problem behaviors. It is also likely that conflict interaction is not a fixed pattern of behavior, especially in the 16–18 month period. It is likely that M–C dyads are still learning ways to compromise with each other. It may be that later conflict interaction patterns are better predictors of problem behaviors. Future research should examine the stability of M–C conflict behavior from toddler through the preschool period and how this stability is related to short and long term behavior.

There are limitations to the current study which should be kept in mind when evaluating the findings. First, the videotaped interactions used to code conflict behavior were not originally designed for the observation of conflict. As we did observe higher rates of conflict for depressed mothers in the teaching task, it is evident that the type of activity may be an important determinant of the type of conflicts observed, particularly for psychologically distressed caregivers. The findings of this study should be replicated using observations in a wider range of contexts. Second, as reported earlier, mothers who completed the home visit were of higher socioeconomic status than those who did not complete the home visit, and as such, this may limit the generalizability of the findings to more high risk samples. In addition, because the completion rate for the second home visit was relatively small, we had limited power with which to examine mediation of attachment and behavior outcomes at the second time point. Since conflict

in general and destructive/maladaptive M–C conflict interaction in particular are more common in high risk families, it is possible that the variance in conflict behavior was suppressed in this study, thereby reducing our statistical power in examining associations between conflict and child outcomes. Finally, we were limited by the data collected by the Healthy Steps project that included maternal depression assessment only at the first assessment point (2–4 months postpartum) with no repeated assessments after that point. Therefore, our maternal depression group may have included mothers who were only transiently experiencing depressive symptoms.

Despite these limitations, however, the results of this study make important contributions to our knowledge regarding conflicted interaction between mothers and their young, pre-verbal children and how these patterns of interaction may be disrupted by maternal depression. These findings have important implications for future research as well as for the development of preventive interventions for depressed mothers and their children. For example, further examination of the factors underlying the higher probability of destructive response of depressed mothers to their toddlers' oppositional behavior would support the development of preventive interventions similar to those developed for parents at high risk of abuse based on research indicating abusive parents differ in their attributions of caregiving failures (Bugental et al. 1989, 2002; Bugental and Happaney 2004). Improving the ability of mothers to deal with the routine conflict that is a normal part of parenting a young child would have benefits not only for her psychological well-being but also for the emotional development of her child.

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