Subjective and Objective Measures of Parent-Child Relationship Dysfunction, Child Separation Distress, and Joint Attention

Daniel S. Schechter, Erica Willheim, Claudia Hinojosa, Kimberly Scholfield-Kleinman, J. Blake Turner, Jaime McCaw, Charles H. Zeanah, Jr., and Michael M. Myers

The literature suggests an adverse impact of maternal stress related to interpersonal violence on parent-child interaction. The current study investigated associations between a mother’s self-reported parent-child relationship dysfunction and what she does in response to her child’s cues. It also examined whether maternal perception of parent-child dysfunctional interaction and child behavior when stressed by separation, along with maternal behavior in response to child distress, predicted impaired joint attention (JA) during play. Participant mothers (n = 74) and their children ages 12-48 months were recruited from community pediatrics clinics and completed two videotaped visits. After correlations, multiple linear regression was applied to find the best model fit that would predict outcomes of interest. We found that both maternal subjective report of self-reported parent-child relationship dysfunction and observed child separation distress together predicted atypical maternal behavior. Self-reported parent-child relationship dysfunction, observed atypical maternal behavior, and child separation distress combined significantly predicted less time spent in joint attention during play. Maternal posttraumatic stress predicted less maternal availability after separation stress. Clinicians should thus carefully assess and listen to parents’ communication of disturbances in their relationship with their young child. Left untreated, parent-child relationship dysfunction may well lead to impairment in learning and social-emotional development.

Daniel S. Schechter, M.D., is Chief of the Consult-Liaison Unit and Parent-Infant Research, Department of Child & Adolescent Psychiatry, University of Geneva Hospitals and Faculty of Medicine, Geneva, Switzerland. He is also Adjunct Assistant Professor of Psychiatry (Division of Developmental Neuroscience & Behavior), Columbia University College of Physicians & Surgeons, in New York City. Erica Willheim, Ph.D. is Director of the Family Peace Program/ Columbia SafeStart, and Instructor, the Parent-Infant Program, Department of Psychiatry, New York Presbyterian Hospital and the Columbia University College of Physicians & Surgeons, in New York City. Claudia Hinojosa, M.S., is Research Technician, Department of Psychiatry (Division of Developmental Neuroscience & Behavior), Columbia University College of Physicians & Surgeons, in New York. Kimberly Scholfield-Kleinman, M.S.W., is Instructor in the Parent-Infant Program, Columbia University Center for Psychoanalytic Training & Research, New York. J. Blake Turner, Ph.D., is Assistant Professor of Clinical Psychiatry (Division of Child & Adolescent Psychiatry), Columbia University College of Physicians & Surgeons and the Mailman School of Public Health, New York. Jaime McCaw, B.A., is Research Coordinator, Department of Psychiatry (Division of Developmental Neuroscience & Behavior), Columbia University College of Physicians & Surgeons, New York. Charles H. Zeanah, Jr., M.D., is Sellar-Polchow Professor, Department of Psychiatry and Neurology, Tulane University School of Medicine, New Orleans, Louisiana. Michael M. Myers, Ph.D., is Professor of Clinical Psychiatry and Chief of the Division of Developmental Neuroscience and Behavior, Columbia University College of Physicians & Surgeons, New York.

Address correspondence to Daniel S. Schechter, Chef de l’Unité de Liaison et de la Recherche Parents-Bébé, Service de Psychiatrie de l’Enfant et de l’Adolescent (SPEA), Hôpitaux Universitaires de Genève, 51 Boulevard de la Cluse, 2ème Etage, CH-1205 Genève, Switzerland. E-mail: daniel.schechter@hcuge.ch.
Parent-child relationship disturbances during the formative development of affect regulation, within the first years of life, have significant public health implications (Skovgaard et al., 2007). Disturbances in the parent-child relationship in early childhood are known risk-factors for later psychological maladjustment (Dutra et al., 2009). Continuing refinements in the identification of underlying causal factors and the directional relationships embedded in impaired early interaction patterns support the development of more effective, better individually matched clinical assessment and treatment (Schechter & Willheim, 2009).

Multiple studies have identified factors that can adversely impact interactions between a parent and their very young child, for example, poverty and immigration (Gershoff, Aber, Raver, & Lennon, 2007), parental psychopathology such as major depression (Dietz, Jennings, Kelley, & Marshal, 2009), and intergenerational disturbances in attachment patterns (Fraiberg, Adelson, & Shapiro, 1975). Of particular interest to the present authors has been the contribution of violence exposure and its sequelae to parent-child relational disturbances (Levendosky et al., 2006). Specifically, the authors have been concerned with the impact of maternal stress related to interpersonal violence on patterns of parent-child interaction, the development of intersubjective understanding, and broader social cognition. Interpersonal violence in this paper, as in previous papers by the present authors, encompasses physical and/or sexual abuse and/or assault, as well as domestic violence exposure and/or victimization throughout the lifespan (Schechter et al., 2008).

Recently, at least two studies have raised the question of whether there is something particularly salient about exposure to child distress for mothers with a history of interpersonal violence (Cohen, Hien, & Batchelder, 2008; Schechter et al., 2008). These two studies have found that following laboratory-induced mother-child separations, mothers with violence-related PTSD are more avoidant, withdrawing, and laissez-faire in their caregiving than controls (Cohen et al., 2008; Schechter et al., 2008). Cohen and colleagues study, involved 176 mothers divided into four groups: substance using with PTSD, depressed with PTSD, comorbid (depressed, substance abusing) with PTSD, and healthy controls. This study suggested that cumulative violent trauma and associated comorbidity (i.e., PTSD, depression, and substance abuse together) contributed most to insensitive caregiving behavior.

The Schechter study, by contrast, focused specifically on 41 maternal violence-exposed mothers within a non-controlled, clinical sample, who had varying degrees of PTSD. The severity of maternal PTSD was found to be associated with negative and distorted mental representations of their young children and their relationship with their children. Those representations, in turn, were significantly predictive of problematic or “atypical” maternal behavior with their child, that is behavior that tends to disorganize and stress the child rather than organize and soothe the child (Schechter et al., 2008). While comorbid depression alone did not significantly alter the findings with respect to the Schechter and colleagues a priori hypotheses, additional comorbidity was not considered in further detail in that study.

The question of the psychological mechanisms by which cumulative violent experiences and associated comorbid psychopathology affect parenting behavior therefore remains unaddressed. An important clinical observation noted in the Schechter study was that 59% of mothers within the clinical sample studied remarked that their young child was among the top three stressors in their life (Schechter et al., 2008). Thus subjective parenting stress within a population of violence-exposed mothers, and how this stress translates into parent-child interactions and intersubjective states, is salient.

In order to explore this question of psychological mechanisms more fully, the present study examines the interplay of four principle variables among a population of vi-
Parent-Child Dysfunction

violence-exposed mothers; maternal perception of the parent-child relationship, child distress upon separation, caregiving behavior, and joint attention. The study further examines the association of maternal violence-related PTSD to these four principle variables.

As noted above, negative or distorted maternal representations of her child and their relationship have been found to be predictive of maternal behavior that tends to disorganize and stress the child. In the present study, the Parent-Child Dysfunctional Interaction (PCDI) subscale of the Parenting Stress Index (PSI) (Abindin, 1995) was employed to tap maternal perception of overall dysfunction within the relationship—rather than specific representations—in relation to the other study variables. Scores on this self-report measure have been found to be related to both parental psychopathology and psychosocial risk (Whiteside-Mansell et al., 2006).

We also wished to explore the impact of child expression of negative emotion during helpless states, such as during separation from the mother in the laboratory, on maternal perception and behavior. Despite extensive study within the attachment literature of child behavior upon reunion with the mother, there has been less emphasis on the behavior of the child during separation or its effect on the parent. One study has demonstrated that reunion behaviors were often at least partially mediated by the intensity of children’s separation distress (Kochanska & Coy, 2002). We wondered if a mother’s impression that her child poses a stress for her, and thus is the cause of the dysfunctional parent-child relationship, might be determined by the degree of expressed child separation distress. In an effort to quantify this variable, the authors developed a scale to code child behavioral expression of stress during separation (see Methods).

“Atypical maternal behavior” (i.e., non-contingent, disruptive and disrupted, social communication) has been studied in mothers during reunion episodes following the stress of separation episodes, and is predictive of disorganized attachment in toddlerhood (Lyons-Ruth, Bronfman, and Parsons, 1999). It has further been found to be predictive of subsequent disturbances in psychosocial functioning during adolescence, including dissociative symptoms (Dutra et al., 2009). Given the significance of this factor, we wished to explore the question of which variables might impact—or derive from—caregiving behavior, that is, what is the relationship between caregiving behavior and maternal perception of the relationship and/or child distress?

Joint attention is the capacity to attend to external objects or events “jointly” (i.e., together) and internal states and feelings intersubjectively. The maintenance of joint attention may well relate to the capacity to maintain attention to feeling states and thoughts that are crucial in the formation of successful social relationships (Schechter et al., 2008). Difficulty in maintaining joint attention to external reality has been described as a marker for other adverse consequences in childhood: disruptive behavior (Sheinkopf, Mundy, Claassen, & Willoughby, 2004), disturbances in language development (Watt, Wetherby, & Shumway, 2006) and disturbances in learning and social cognition (Tomasello & Carpenter, 2007; Moll et al., 2007; Vaughan van Hecke et al., 2007). These same three consequences have been prospectively linked to the subsequent development of violence, trauma, and related psychopathology in adulthood (Simonoff et al., 2004).

The capacity to “be together” requires a level of comfort and openness to others and one’s surroundings that is not compatible with a fear-induced state of hypervigilance, survival planning, and physiological self-regulation of arousal in the face of threat (Porges, 2007). If anticipated or actual child states of helplessness, distress, and aggression are experienced as “threatening” by a highly stressed or traumatized mother, we would anticipate that she might become less emotionally available to her child during or after such states, experience the relationship
as more dysfunctional, and that as a result, joint attention would be more difficult to attain.

The current study was thus designed to test the following specific hypotheses:

1(a). There will be a positive association between the severity of current maternal posttraumatic stress disorder (PTSD) and each of the following three variables: maternal perception of dysfunctional parent-child interaction, child distress during separation, and atypical maternal behavior.

1(b). There will be a negative association between maternal PTSD severity and the amount of time mothers and their children engage in joint attention prior to separation.

2(a). There will be a positive association between maternal perception of parent-child dysfunctional interaction and the degree of atypical maternal behavior.

2(b). There will be a positive association between greater child stress during separation and maternal perception of parent-child dysfunctional interaction, as well as with a greater degree of atypical maternal behavior.

2(c). There will be a statistically predictive interaction between a mother's perception of parent-child dysfunctional interaction and the degree of child distress during separation, with these two variables together predicting a significantly greater degree of atypical maternal behavior.

3. There will be a negative association between the amount of time mothers and their children engage in joint attention (prior to separation) and each of the following three variables: maternal perception of dysfunctional parent-child interaction, child distress during separation, and atypical maternal behavior.

METHODS

Participants

Permission to conduct this study was obtained from the institutional review board of the Columbia University Department of Psychiatry. Participant mothers and their children were recruited from hospital-affiliated community general and specialty pediatrics clinics. All participants were reached through IRB-approved flyers posted on bulletin boards and distributed among staff in the clinics and main medical center buildings. Flyers targeted mothers with children age 1 to 4 years and in the follow-up phone call, research staff stated to the parent that the study was designed to look at how stress in parents' lives affected their relationship with their young children. Participants were compensated with $50 and toys and/or books for their child.

Participants were included in this study if they were between the ages of 18 and 48, were the child's biological mother, had lived with the child for the majority of the child's life, and if they suffered no major physical or mental disability that would preclude them from participating in the study-tasks, which included play, mobility, and fundamental literacy (i.e., equivalent to a 5th grade level) in English or Spanish. All measures and interviews were available in English and Spanish, depending on the mother's preference, and all research staff-members were fluent in English and Spanish. Potential participants were excluded if they reported or were assessed as manifesting psychotic symptoms or evidence of a chronic psychotic illness, current moderate to severe substance abuse or dependence, or acute suicidality requiring immediate attention.
TABLE 1. Sample Description for Trauma History and Posttraumatic Stress (n = 74)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of lifetime traumatic life-events (all types) (TLEQ)</td>
<td>21.13</td>
<td>16.41</td>
<td>1.00</td>
<td>60.00</td>
</tr>
<tr>
<td>Number of lifetime interpersonal violent traumatic life-events (TLEQ)</td>
<td>15.76</td>
<td>14.54</td>
<td>0.00</td>
<td>73.00</td>
</tr>
<tr>
<td>Maternal lifetime PTSD (CAPS)</td>
<td>56.01</td>
<td>37.31</td>
<td>0.00</td>
<td>122.00</td>
</tr>
<tr>
<td>Maternal current PTSD (PCL-S)</td>
<td>33.29</td>
<td>16.68</td>
<td>0.00</td>
<td>73.00</td>
</tr>
</tbody>
</table>

In this study, 77 mothers and their children participated. Out of the 77 mothers who completed the screening and two required videotaped visits, 74 had complete and usable data (i.e., 3 participants’ data had to be excluded due to malfunction of the videotape or other equipment, or due to the parent and/or child being unable to complete the study-tasks).

Mothers’ ages ranged from 18 to 48 years (M = 29.39, SD = 6.76). Children were 58% boys, 42% girls, and their ages ranged from 12 to 48 months (M = 27.75, SD = 10.72). The sample was representative of the population surrounding the medical center and its community clinics: 81% Hispanic, 12% African American, and 7% Other (i.e., mixed race, South Asian, non-Hispanic Caribbean). A total of 67% of participant mothers were immigrants, largely from the Dominican Republic. Mean number of years of maternal education was 12.85 (SD = 2.78), with 69% having completed high school or a GED. The majority of the sample were married or in common-law relationships at the time of the interview (64%), had an average of 2 children (SD = 1.1), and had an annual income under $35,000 (M = 33.74K, SD = 28.21).

Of the 74 mothers with complete and usable data, 17 met criteria for current DSM-IV diagnosis of PTSD, 30 had subthreshold-level of PTSD symptoms in the wake of one or more traumatic life events, and 27 had clearly no evidence of sub- or full-threshold PTSD, regardless of their life events history. Table 1 shows the distribution of all types of traumatic life events in the mothers’ lives and then, specifically, those that involved exposure to interpersonal violence that would meet DSM-IV Criterion A for PTSD, as well as maternal lifetime and current PTSD severity. The mean number of traumatic life events across the sample was 21; and the mean number of interpersonal violent events approached 16. Measures of lifetime PTSD approached the clinical range with the across-sample mean on the Clinician Administered PTSD Scale (CAPS) at just over 56. The details of measures and experimental procedures used to discern these and related frequencies are described below.

Measures

A standard Demographic and Treatment History Questionnaire consisting of 33 closed and open-ended items was used in this study (Schechter et al., 2005). The questionnaire was originally adapted from the Structured Clinical Interview for the DSM-IV (First, Spitzer, Gibbon, & Williams, 1995).

The Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000) is a 23-item questionnaire administered by clinicians as an interview that assesses exposure to physical abuse, rape and other forms of sexual abuse, witnessing violence or its aftermath, as well as non-violent events. In this study, the TLEQ was used for the purposes of identifying maternal traumatic experiences meeting the A-criterion for the diagnosis of PTSD. The TLEQ has been demonstrated to show excellent test-retest reliability (ICC = .88).

The Clinician Administered PTSD Scale (CAPS; Blake et al., 1995) was used to determine lifetime diagnosis of PTSD. Current PTSD diagnosis at the time of participa-
tion in the research protocol was determined by clinician interview using the CAPS and by the subject's self-report about her present symptoms using the Posttraumatic Symptom Checklist—Short Version (PCL-S; Weathers & Ford, 1996). Additionally, to measure co-morbid depressive symptoms, we used the Beck Depression Inventory II (BDI-II; Beck, Steer, & Brown, 1996). The CAPS, PCL-S, and BDI-II are all standard assessment psychiatric measures and have excellent validity and reliability (Beck et al., 1996; Carlson, 1997 pp. 221 & 232; Schechter & Willheim, 2009).

The Parent-Child Dysfunctional Interaction (PCDI) subscale of the Parenting Stress Index—Short Form (PSI-SF; Abidin, 1995) contains 12 items (ICC = .83 respectively for each subscale of the PSI). This subscale measures a parent's perceptions about the emotional quality of his or her relationship with their child, in light of his or her expectations about the parent-child relationship. Parents are asked how much they agree or disagree with statements such as: “Most times I feel that my child does not like me and does not want to be close to me” or “Sometimes my child does things that bother me just to be mean.” This subscale has been associated with parent reports of psychological symptoms as well as psychosocial risk factors (Whiteside et al., 2006). This particular subscale independently has good internal reliability with a Cronbach’s alpha of .82.

A review of the attachment literature yielded many studies utilizing multiple coding schemes to quantify and clarify child behaviors during play and during reunion episodes, but not during separation. Since mothers often wait just outside the door of the playroom during the separation, and can not only imagine but hear the cries of their children during these stressful minutes—typically three minutes as in the Strange Situation (Ainsworth & Wittig, 1969) and in the procedure used here—we felt that the impact of child separation distress on mothers’ perception and behavior deserved greater attention. We therefore consulted with ethologists who had created a measure pertaining only to rat pup vocalizations during separation (Brunelli & Hofer, 2007) and created a behavioral observation measure applicable to human child subjects.

The resulting measure is the Separation Distress Scale (SDS; Schechter & McCaw, 2005) in which videos of child distress during separation are rated on a 5-point scale by two independent raters naïve to child or maternal history (rating 0 = no observable distress, 1 = marking separation with negative expression but no crying or agitation, 2 = calling for mother with negative expression but no crying or agitation, 3 = crying with no physical agitation, 4 = crying and physical agitation). The consistency of the response of the child to separation across two separations was robust (Cronbach’s alpha = .82). Inter-rater reliability was achieved on the rating of the degree of child distress independently by two trained college-graduate raters who watched the videotapes, one of whom was blind as to the children’s or mother’s history. Interrater reliability was excellent (ICC = 0.95, p<.001). In this paper, we operationally refer to severity of child scores on this scale in terms of Child Separation Distress (CSD).

The Atypical Maternal Behavior Instrument (AMBI or “Ambiance”; Lyons-Ruth et al., 1999) is an observational measure of caregiving behavior designed for use in videotaped laboratory protocols that include sequences of separation and reunion. The measure yields an overall rating for extent of atypical maternal behavior with the child (also described in the literature as maternal disrupted communication) on a scale of 1 (no disrupted communication) to 7 (extreme and persistent disrupted communication). The overall score is rated by coding videotaped behavior across five dimensions: affective communication errors, withdrawal, disoriented behavior, hostility/intrusiveness, and role-confusion. The AMBI has proven to be a strongly predictive measure of inse-
cure, disorganized-type attachment across a variety of settings, with diverse samples and across a range of ages from infancy to six years (Madigan et al., 2007). For a similar study of inner-city mothers, the level of disrupted communication was found to be highly reliable among raters (ICC = 0.93) (Madigan et al., 2007).

In this study, two history-naive coders used the AMBI coding scheme to rate the videotapes of the interaction sequence known as the Modified Crowell Procedure (Zeanah et al., 2000. See Procedures.). The coders, who were bilingual in Spanish and English, watched all 25 minutes of videotape multiple times. Both were trained to reliability by Dr. Lyons-Ruth and her team, achieving excellent interrater reliability (ICC = 0.91).

The Coordinated Joint Attention Scales (Adamson, Baker, & Deckner, 2004) measure the time that parents and children are engaged in coordinated joint attention, when they are “actively involved with the same object or event, and the child [was] actively and repeatedly acknowledging the mother’s participation [and the mother, hers]” (Adamson et al., 2004, p. 1176). For the present study, two naive raters used this coding scheme to measure the number of seconds during the 8-minute free-play portion of the protocol during which child and mother were engaged in coordinated joint attention. Raters viewed and reviewed the videotapes in order to identify clear beginnings and ends of coordinated joint attention engagement, identifying (a) time of onset and offset, and then counting the duration in seconds of each of these interactions from onset to offset, and (b) which dyadic partner initiated and ended the bout of attention. Raters also coded the amount of time each dyadic partner spent trying to engage the other partner without success. This specific item is coded by counting the number of seconds that one dyadic partner gestures and/or looks at the other partner to initiate joint attention but receives no response.

The Joint Attention Scales coding was applied at two points during the mother-child interaction procedure: 1) It was applied to free, unstructured play with mother for 8 minutes at the start of the protocol; and 2) It was again applied to free, unstructured play with mother following the stress of separation-reunion (4 minutes). This was done to see if the stress of separation-reunion would impact upon maternal availability to read child cues in a direction proportional to the mother’s degree of posttraumatic stress symptom severity. Inter-rater reliability on the timings (ICC = .87) and on initiation attempts (ICC = .76) both pre- and post-separation were good. These values are consistent with the previous use of this measure in which the measure’s authors achieved reliability using statistical analyses that corrected for chance agreement that was between .70 and .80, indicating good to excellent interrater observational reliability (Adamson et al., 2004).

PROCEDURES

The protocol consisted of two 2-hour videotaped visits that followed informed consent and screening in person.

During the initial videotaped visit, mothers were administered a clinical and treatment history interview regarding their child and their relationship with their child. Mothers were then asked about stressful events during their own lives via the clinician’s administration of the TLEQ. After reviewing the violent events that had been rated as “traumatic” by the mother, the clinician asked the mother to describe, if there were multiple events rated, the top three “most traumatic events” in further detail (i.e., in terms of impact close to the time of the event in the past if the event was not recent, and in terms of impact within the month prior to the current interview). The evaluation of PTSD using the CAPS and PCL-S was then based on the mother’s responses. The Parent-Child Dysfunctional Interaction (PCDI) subscale of the PSI-SF (Abidin, 1995) was also administered during this first visit to evaluate
TABLE 2. Sample Description for Key Variables (n = 74)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent-child dysfunctional interaction</td>
<td>51.49</td>
<td>7.18</td>
<td>25.00</td>
<td>60.00</td>
</tr>
<tr>
<td>Child separation distress (0-4)</td>
<td>2.21</td>
<td>1.38</td>
<td>0.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Atypical maternal behavior</td>
<td>4.13</td>
<td>1.51</td>
<td>0.00</td>
<td>7.00</td>
</tr>
<tr>
<td>Time spent in joint attention (out of 8 minutes)</td>
<td>5.41 minutes</td>
<td>1.57 minutes</td>
<td>0.97 minutes</td>
<td>6.95 minutes</td>
</tr>
</tbody>
</table>

mother's perception of dysfunction in the relationship with her child.

During the second visit, approximately one to two weeks later, mothers and children were videotaped for 30 minutes while engaged in the Modified Crowell Procedure: a) playing together as they would at home using a range of toys provided (8 minutes); b) separating (3 minutes) and reuniting (3 minutes); c) cleaning up the play area (2 minutes); d) engaging in a challenging structured activity, such as building a tower (toddlers) or doing a puzzle (preschoolers) (4 minutes); e) separating (3 minutes) and reuniting (3 minutes) for a second time; and f) exploring novel toys with mother and clinician (4 minutes).

The AMBI, Child Separation Distress Scale, and Joint Attention Scales are all measures that were coded from this interaction procedure based on repeated viewings of the videotapes. That being said, each of these measures focused on different segments of the interaction procedure so as to minimize overlap. The Child Separation Distress Scale focused on the child's behavior during the second and more stressful of the two separations. The AMBI concentrated on overall maternal caregiving behavior (i.e., coders watched all 30 minutes at least once) but then focused particularly on the two reunions. Maternal behavior in response to child cues during the reunion is weighted heavily in this coding system.

The Joint Attention Scales focused on the 8-minute period of free play prior to the first separation-reunion and the two periods of two minutes each following both separation-reunions (total of 4 minutes). The coding of mother-child behavior during the free-play was used to test the a priori hypothesis described above. We therefore coded the interaction for the maximal time possible (i.e., 8 minutes). The post-separation coding was used for exploratory analysis only. For these latter analyses, we were restricted to the 4 minutes allowed by the protocol.

Data Analysis

Pearson correlations were conducted to determine confounders and to confirm important relationships among key variables based on our a priori hypotheses. A series of multiple linear regression models containing significantly associated variables were then estimated in order to find the best model fit that would predict outcomes of interest. Models were subsequently adjusted in order to test interaction effects between variables and according to our hypotheses. All reported results are two-tailed.

RESULTS

To provide a sample-wide context for the key variables pertaining to the hypotheses, we present the frequencies of these variables across the 74 subjects in Table 2. Good variability is noted across these four key measures: Parent-child dysfunctional interaction (PCDI) as subjectively reported by mother, Child separation distress (CSD) as observed and coded by naive raters, Atypical maternal behavior on the AMBI as observed and coded by naive raters, and Time spent in Joint Attention (JA) during play as observed.
TABLE 3. Correlation Matrix of Salient Variables (n = 74)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Parent-Child Dysfunctional Interaction (PSI subscale)</td>
<td>-</td>
<td>.31**</td>
<td>-.02</td>
<td>-.30**</td>
</tr>
<tr>
<td>2. Atypical Maternal Behavior Instrument</td>
<td>.31**</td>
<td>-</td>
<td>.29*</td>
<td>-.48***</td>
</tr>
<tr>
<td>3. Child Separation Distress</td>
<td>-.02</td>
<td>.29*</td>
<td>-</td>
<td>-.27*</td>
</tr>
<tr>
<td>4. Time Spent in Joint Attention</td>
<td>-.30</td>
<td>-.48***</td>
<td>-.27*</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. * < 0.05; ** < 0.01; *** < 0.005.

and coded on the Joint Attention Scales by naive raters.

We first entered all background and key variables into a Pearson's correlation matrix in order to see which independent variables might confound the regression models that were planned to test our a priori hypotheses (see Table 3).

Background variables including maternal and child ages, maternal education, and household income were not significantly correlated with the PCDI subscale. We noted that maternal education level as an indicator of socioeconomic status (SES) was negatively correlated with atypical maternal behavior (AMBI) (r = -.41, p < .001). This indicator of SES was not associated with any of the independent variables and was thus not found to be a confounder of the model in which AMBI was the dependent variable.

As expected given the broad range of child ages in this study, younger child age was modestly and negatively associated with greater separation distress (r = -.26, p = .02); however, controlling for child age did not significantly alter the results.

Maternal Current PTSD Severity, Maternal Report of Parent-Child Dysfunctional Interaction (PSI-PCDI), Child Separation Distress (CSD), Atypical Maternal Behavior (AMBI), and Time Spent in Joint Attention During Play (JA)

In addressing our first hypothesis, we examined the relationship of maternal current PTSD severity with both PSI-PCDI and CSD. We found a positive and significant moderate correlation between maternal PTSD severity and PSI-PCDI, but no significant relationship between maternal PTSD severity and CSD: (r = .34, p = .003; r = .08, p = .52). When we correlated maternal current PTSD severity with atypical maternal behavior, we found a positive association as hypothesized, but only at a trend level of significance (r = .20, p = .09). Finally, there was no significant association between maternal PTSD and time spent in joint attention during free play (r = .05, p = .69).

While depressive symptoms on the Beck Depression Inventory-II (BDI-II; Beck et al., 1996) were highly correlated with both current PTSD (r = .80, p < .001) and the PCDI (r = .35, p < .005), depressive symptoms were not significantly associated with atypical maternal behavior (r = .15, p = .21). Clearly both maternal PTSD severity and depressive symptoms are powerfully associated with mothers' subjective sense of parent-child relationship dysfunction as a domain of parenting stress. As maternal PTSD and depression were, however, not significantly associated with maternal behavior, we did not include them further in the analyses that follow.

Maternal Report of Parent-Child Dysfunctional Interaction (PSI-PCDI), Child Separation Distress (CSD), and Atypical Maternal Behavior (AMBI).

Following the use of the correlation matrix (Table 3), significantly correlated variables were placed in multiple regression models in order to test our hypotheses. Re-
TABLE 4a. Predictors of Atypical Maternal Behavior (AMBIANCE) (n = 74) Unadjusted model

<table>
<thead>
<tr>
<th>Unadjusted model</th>
<th>R-square</th>
<th>$F$ (df 2, 72)</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSD</td>
<td>0.16</td>
<td>5.96**</td>
<td>.25*</td>
</tr>
<tr>
<td>PSI-PCID</td>
<td></td>
<td></td>
<td>.30**</td>
</tr>
</tbody>
</table>

TABLE 4b. Model Above Adjusted for the CSD X PSI-PCDI Interaction

<table>
<thead>
<tr>
<th>Adjusted model</th>
<th>R-square</th>
<th>$F$ (df 3, 71)</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSD</td>
<td>0.16</td>
<td>3.50**</td>
<td>0.28</td>
</tr>
<tr>
<td>PSI-PCDI</td>
<td></td>
<td></td>
<td>.35+</td>
</tr>
<tr>
<td>CSD X PSI-PCDI</td>
<td></td>
<td></td>
<td>0.07</td>
</tr>
</tbody>
</table>

Note. $p < +0.10, * 0.05, **0.01, ***0.001$

results of testing the second hypothesis were that both CSD and PCDI were independently associated with higher scores on the AMBI (see Table 4a). The CSD and PCDI were not significantly associated with one another. However, after entering the product of CSD and PCDI as an independent variable in the regression model so as to test for an interaction effect concerning these two predictors, no such interaction was found (see Table 4b).

Maternal Report of Parent-Child Dysfunctional Interaction (PSI-PCDI), Child Separation Distress (CSD), Atypical Maternal Behavior (AMBI), and Time Spent in Joint Attention During Play (JA)

We then addressed our third hypothesis: that maternal perception of mother-child relationship disturbance, child separation distress, and atypical maternal behavior would each be associated with reduced maternal-child time spent in joint attention during play. We found that the PCDI and CSD predicted decreased maternal-child time spent in JA at only a trend level of significance (see Table 5a). When an interaction effect for PCDI and CSD was explored, only a small, insignificant increase in statistically significant predictive power resulted (see Table 5b). Maternal behavior as measured by the AMBI was also independently predictive of decreased time in JA (see Table 5c). Finally, we found that together the PCDI, CSD, the interaction of PCDI and CSD, and AMBI were significantly associated with less time spent in joint attention. As maternal education had been significantly associated with AMBI, we additionally controlled for this variable. We found that controlling for maternal education did not significantly change the model.

EXPLORATORY ANALYSIS

In previous findings (Schechter & Willheim, 2009), maternal-child attachment disturbances were found to be continuously associated with the severity of maternal PTSD symptoms—possibly due to the fact that maternal violence-related PTSD can impair a mother’s ability to hear, to interpret, and to respond to her young child’s efforts to communicate. Hypothesizing that maternal PTSD would render the traumatized mother less available for mutual regulation of affect, we were curious to explore whether there would be a positive and direct association between severity of maternal PTSD, the PCDI, CSD, AMBI, and the amount of time a child spent unsuccessfully trying to engage
mother in joint attention during the play periods that immediately followed separation.  

We found that, indeed, maternal PTSD severity significantly predicted the amount of time that the child unsuccessfully attempted to engage mother in joint attention after separation, as mothers were less emotionally available and responsive ($\beta = .38, p<.001$). Yet no significant relationships were found between the amount of time that the child unsuccessfully attempted to engage mother in joint attention after separation and the variables of CSD, PCDI, or AMBI ($p>.3$). A negative association was found between PTSD severity and the amount of time mothers spent unsuccessfully trying to engage their children after separation at only a trend level of significance ($\beta = -20, p<.1$). Finally, no significant relationships between PTSD severity and either partner unsuccessfully attempting to engage the other partner during play before separation were noted. In summary, we found that post-separation play involved less maternal availability to child bids for engagement, and that this decreased availability was negatively correlated with maternal PTSD severity.

DISCUSSION

In this controlled study, as compared to our previous study within a smaller clinical sample, we found only a modest association between (violence-exposed) maternal PTSD severity and atypical maternal behavior. No significant association was found between maternal depressive symptom severity and maternal behavior. We did, however, find strong associations for both of these highly comorbid psychiatric conditions with maternal perception of parent-child dysfunctional interaction as a dimension of parenting stress. Maternal psychopathology has indeed been noted in multiple studies to be a powerful contributor to parenting stress (Williford, Calkins, Keane, 2007; Scheeringa and Zeanah, 2001). In terms of clinical care, the current findings support the need for careful
evaluation and treatment of parental psychopathology.

While violent trauma-related PTSD was significantly correlated with mothers’ perception of dysfunctional interaction, there were no further direct significant relationships between maternal PTSD and the main variables of interest in this paper. The one exception, found in post-hoc exploratory analysis, was a significant association between current maternal PTSD symptom severity and greater time spent by the child unsuccessfully attempting to engage the mother in joint attention during the period of play following separation and reunion.

This finding suggests to us that maternal PTSD as one extreme contributor to parental stress does indeed limit maternal availability for joint attention in the wake of the acute stressor of separation. This is consistent with our previous work suggesting that the child’s expression of negative emotion during helpless states such as separation impacts maternal perception and behavior (Schechter et al., 2006). Indeed, we wonder whether the interpersonal stressor of separation might even have promoted dissociative states of mind in traumatized mothers who, prior to the separation stressor, were able to engage in joint attention. While this area requires further study, we conclude that maternal violence-related PTSD does have certain specific consequences with respect to the parent-child relationship that are potentially quite important to clinical intervention. Yet PTSD is but one sequela of interpersonal violence that can adversely augment parenting stress and affect the parent-child relationship (Cohen et al., 2008).

Consistent with our a priori hypotheses, we found that there are indeed important independent effects between maternal perception of parent-child dysfunctional interaction as a dimension of parenting stress and atypical maternal behavior. Additionally, there were important independent effects between the observed child level of distress during separation and atypical maternal behavior, although there was no statistically significant interaction effect for dysfunctional interaction plus child distress with atypical maternal behavior. This means that child distress and dysfunctional interaction did not synergistically magnify each other’s effects on maternal behavior, but rather exerted their effects independently of one another.

In contrast to our initial hypotheses, we found that mothers’ reports of dysfunctional interaction with their children were not associated with the degree of their child’s separation distress. This suggests that actual child distress is not influencing maternal perception of dysfunction as much as her preexisting mental representation of her child (and her child’s distress) and her relationship with her child.

As predicted, all three variables—maternal perception of parent-child dysfunctional interaction, child separation distress, and atypical maternal behavior, both independently and in interaction—were significantly associated with the total amount of time mothers and their children spent in joint attention during play (prior to separation). This latter set of findings supports but does not conclusively prove that the capacity to share in joint attention is mediated by all three of these variables. We therefore suggest that in the absence of an acute stressor, mothers’ subjective view of their relationship with their child, their child’s actual level of distress, and mothers’ objectively observable behavior all contribute to the support or impairment of mother and child’s capacity to share in both joint attention to objects/events in their environment (i.e., learning) and intersubjective states of mind (i.e., social cognition). These findings echo previously published clinical studies among violence-exposed, traumatized and depressed caregivers, and otherwise disadvantaged and adopting families (Fraiberg, Adelson, & Shapiro, 1975; Goldsmith & Rogoff, 1997; van Londen et al., 2007).

One limitation, due to the cross-sectional design of the present study, is the possibility of an alternate interpretation of the findings. It could be argued that both atypi-
Parent-Child Dysfunction

cal maternal behavior and decreased time spent in joint attention are poor caregiving outcomes related to maternal negative and distorted experience of her relationship with her young child. Also, the fact that the sample was largely of Caribbean Hispanic origin, including many immigrants, may mean that the present findings may not be generalizable to a more diverse population. A final limitation may be the use of the Separation Distress Scale (Schechter & McCaw, 2005) to measure Child Separation Distress. While demonstrating high interrater reliability, the measure has yet to be validated in further studies.

Finally, it was interesting to note that a greater number of years of maternal education was significantly associated with less atypical maternal behavior. Does this mean that one could decrease disturbances in caregiving behavior via education? Or that greater intelligence and/or resources may help a mother interpret and respond to her child’s communication? Alternatively, could this association be a marker of resilience to psychopathology? Since this study lacked a prospective design and larger sample, such questions await further investigation.

REFERENCES


