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Caregiver traumatization adversely impacts young children's mental representations on the MacArthur Story-Stem Battery

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Abstract

The aim of our study was to investigate the impact of maternal exposure to family violence, maltreatment and related posttraumatic stress disorder (PTSD) on young children's mental representations of self and caregivers. Participant mothers (n=24) and children (n=25) were recruited from a referred sample when they were 4-7-years-old. Maternal report and child story-stem narratives were used. Mothers' experience of domestic violence and severity of violence-related PTSD symptoms robustly predicted more dysregulated aggression, attentional bias to danger and distress, as well as more avoidance of and withdrawal from conflicts presented in the children's story-stems. Less narrative coherence was also noted. Maternal experience and symptoms prior to their child's turning 4 adversely affected that child's mental representations from ages 4 to 7.

Keywords

Intergenerational transmission of trauma; Child mental representations; Play narrative; Parental PTSD; Emotion regulation; Domestic violence

Great attention has been paid in recent years to risk factors for intergenerational transmission of interpersonal violence (i.e. physical and sexual abuse or assault and domestic violence exposure; Dixon, Browne, & Hamilton-Giachritsis, 2005; Pears and Capaldi, 2001; Leifer, Kilbane, Jacobsen, & Grossman, 2004; Martin et al., 2002). Yet little empirical research has been done to unravel the heretofore mysterious, or as considered by Fraiberg, Adelson, and Shapiro (1975), *spectral*psychological processes by which maternal experience of interpersonal violence leads to intergenerational transmission. Understanding those psychological processes by which experience is mentally represented and motivates behavior

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by the caregiver, and, in turn, is mentally represented and motivates behavior by the child, is essential for the development of effective interventions to interrupt familial cycles of violence and abuse (Schechter, 2003; Lieberman, Van Horn, & Ippen, 2005).

The understanding of mental representations and their role in the intergenerational transmission of attachment security/insecurity, organization/disorganization, and trauma is the hallmark of attachment theory. John Bowlby (1973, pp. 322-323) believed that a child's ongoing experience with a primary caregiver resulted in the development of an internal working model of that relationship, which would in turn become a lens through which one's sense of self, other, and self *with*other in the relational world would be interpreted. Bowlby was the first to describe how a mother who had traced back and recaptured feelings she had as a child (and found these feelings to be accepted with understanding by the therapist) became increasingly sympathetic towards her own child when her child had similar feelings (Bowlby, 1940).

Mary Main (2000) further developed the empirical work on internal working models by taking it to the explicit level of mental representations among adults. Main's findings that the effects of unresolved (i.e., unintegrated) trauma on the adult's ability to organize their attachment-memories into coherent narratives about the parent-child relationship, has converged with recent research that shows that the individual's efforts to defend oneself from trauma-associated affects contributes to intergenerational transmission of trauma despite one's best conscious efforts to stop such transmission (Egeland & Susman-Stillman, 1996; Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999; Liotti, 1999; Lyons-Ruth, Dutra, Schuder, & Bianchi, 2006). This literature has provided an important psychological dimension to epidemiologic studies substantiating intergenerational transmission of child maltreatment and domestic violence as significant public health problems as well as a foundation for further research described in the present study (Oliver, 1993; Widom, 1999; Martin et al., 2002; McFarlane, Groff, & O'Brien, 2003).

Mother's experiences of interpersonal violence and related posttraumatic stress disorder (PTSD), specifically, have been noted as risk factors for distorted maternal mental representations of her child and hostile-intrusive behavior with her child (Schechter et al., 2006; Schechter, 2003; Lyons-Ruth and Block, 1996). One study examined the intergenerational effects of maternal experience of domestic violence on attachment (Huth-Bocks, Levendovsky, Theran, & Bogot, 2004). This study found that severity of maternal experience of domestic violence, independent of PTSD, was associated with non- balanced maternal mental representations of her child as well as insecure child attachment behavior.

Yet only one study to our knowledge has examined the effects of domestic violence on child mental representations (Grych, Wachsmuth-Schlaefer, & Klockow, 2002). And no published studies to our knowledge have examined the impact of maternal violence-related PTSD on the young child's emerging mental representations of self and other. Based on the adult literature with respect to adult internal working models, we might expect that unresolved interpersonal violent trauma and related PTSD that we know negatively impact the traumatized woman's degree of coherence of her adulthood narrative responses (Stovall-McClough and Cloitre, 2006), might very well also negatively impact the narrative coherence of her child.

Children's representations of relationships via the MacArthur Story Stem Battery (MSSB) (Bretherton, Oppenheim, Emde, & the MacArthur Narrative Working Group, 2003) have been shown to enable investigations of intergenerational processes affecting preschool- and school-aged children in inner-city populations (Grych et al., 2002; Robinson, Herot, Haynes, & Mantz-Simmons, 2000). One would expect that children who had been directly and indirectly exposed to interpersonal violent trauma in efforts to maintain attachments and a sense of security amidst a potentially threatening caregiving environment, might manifest attempts at avoiding intense

interpersonal conflicts and associated negative affects, while simultaneously needing to approach that same potentially threatening caregiving environment for comfort, nurturance, and protection. This is the essence of disorganized attachment and associated ambivalent behavior (Main, Kaplan, & Cassidy, 1985; Lyons-Ruth, Dutra, Schuder, & Bianchi, 2006). In terms of what these children internalize and then express in self-concept, play, and narrative, we would expect children from threatenting caregiving environments to be more likely to construct narratives that involve both preoccupation with and withdrawal from danger. They might also, if consititutionally vulnerable, display prominent dissociation, which has been found among adolescents with histories of disorganized attachment (Lyons-Ruth et al., 2006). Consistent with disorganization of the internal working model one might expect their narratives to fluctuate between a sense of helplessness and grandiosity as well as between a self-protective stance and hostile-aggressive stance in the face of dysregulation of self and caregiver during and following represented interpersonal violence.

Indeed, the same study that examined the effects of domestic violence on child mental representations found that interparental aggression uniquely predicted dysregulated aggression and avoidance/withdrawal in child play-narratives on the MSSB (Grych et al., 2002). Several other studies have focused on maltreated preschoolers' mental representations of self and caregivers using the MSSB (Toth, Cicchetti, Macfie, & Emde, 1997; Macfie et al., 1999; Macfie, Cicchetti, & Toth, 2001). Examining child responses on the MSSB among maltreated versus non-maltreated preschoolers, Toth et al. (1997) found that maltreated preschoolers evidenced significantly more negative representations of caregivers and self and more grandiose, omnipotent representations of self than did the non-maltreated controls. Meanwhile, Macfie et al. (2001) studied a similar population of low-SES maltreated vs. non-maltreated preschoolers with respect to evidence of dissociation on the MSSB, finding that sexually molested, physically abused and neglected preschoolers manifested more dissociation than their non-maltreated counterparts. In all of these studies (Grych, et al, 2002; Toth et al., 1997; Macfie et al., 2001), evaluation of parental trauma and related symptomatology was beyond the scope of their investigations. To address the issue of intergenerational effects of parental experience, the present study aimed to investigate the impact of maternal interpersonal violent trauma and related PTSD on young children's mental representations of self and other as well as coherence expressed in play-narrative completion of story-stems.

In contrast to the prior studies, we did not have data that could validate the presence or absence of child maltreatment for the child-participants in the present study. It is important to note that the participants in the study were voluntarily seeking help with parenting and/or their own emotional difficulties. This salient feature of the sample suggests that we were studying a different population from that of mandated child maltreatment cases. We do know, however, in terms of potential risk factors for maltreatment, nearly half of the mothers in the present study during their baseline study assessments (i.e. 2 years prior to the child assessments studied here) stated that they had had involvement with child protective services regarding any of their children, including family violence between adults, parental substance abuse, and insufficient supervision as causes of the involvement.

In summary, we hypothesized that severity of maternal interpersonal violence-related PTSD would be associated with greater child dysregulated aggression, hypervigilance to danger and distress, avoidance and withdrawal from interpersonal conflict and associated negative affects, as well as narrative incoherence in children's narratives about family relationships and conflicts assessed with the MSSB two years after the baseline assessments.

Method

Participants

Participants were 24 mothers and their 25 children, representing 59% of the original sample of 41 inner-city mothers of children ages 8-50 months who had participated in a baseline study of the relationship of maternal violence-related PTSD symptomatology to maternal perception and caregiving behavior two years prior (Schechter, 2003, Schechter et al., 2004, Schechter et al., 2005). No statistically significant differences were found between those participant dyads from the baseline study who returned and those who did not with respect to maternal or child age, maternal education, father's presence, or other measures of maternal adverse life events or symptomatology. The authors calculated the power of testing the primary hypothesis in the current study. Given that only 25 children participated in the follow-up study, the power to test this hypothesis is .80 when the correlation coefficient would be greater than or equal to .54.

Sample Characteristics

At the time of this investigation, mothers were on average 32 years (SD= 7.3, range 21-47 years) and their children were ages 4 to 7 years (average age 71 months (SD=11.8, range 51-93 months. There were 13 boys and 12 girls; two children were fraternal twins, a boy and a girl. Most mothers (80%) were Caribbean Hispanic, and primarily Dominican-American or Puerto Rican; 40% of Hispanics were immigrants. Twenty percent of mothers identified themselves as African-American.

The average number of years of mothers' education was 11 (SD=2, range 7-16 years). Sixty-seven percent (16) of the mothers were without male partners steadily living in the home and were eligible for public assistance; 51% (12) received public assistance.

Demographic Measures

While we did not have definitive measurement of child abuse and neglect in the home, we did record by maternal report on our Demographic and Treatment History Questionnaire that 11 of the 25 participating children (48.5%) came from a family that had been involved in some involuntary way with child protective services investigation by the time the child was enrolled in the present study. We also already knew from baseline assessment data that 16 mothers (75%) participating in the present study, whose interactive behavior with their young children had been blindly coded on the Atypical Maternal Behavior Instrument (Lyons-Ruth, Bronfman, and Parsons, 1999), were classified as manifesting significant deficits in maternal sensitivity that were disruptive of child-parent communication.

Given the high-risk nature of this sample, we screened all children's receptive language functioning via the Peabody Picture Vocabulary Test (PPVT-III, Dunn & Dunn 1997). All children scored without exception within 1 standard deviation below the norm (norm=100, SD=15).

Maternal trauma measures

A standard Demographic and Treatment History Questionnaire, consisting of 33 close- and open-ended items was used. This measure is based on corresponding sections of the Structured Clinical Interview for the DSM-IV (SCID; First, Gibbon, Spitzer, & Williams, 1995), with additional items pertaining to the following areas of interest: Sociocultural factors, child-birth and developmental history, as well as maternal and child mental health treatment history.

One particular item of importance to this study on this questionnaire was a closed-ended question "Have you ever filed an order of protection (a.k.a. "restraining order") to protect yourself from a dangerous partner or family member?" We used this dichotomous variable in

our analyses as a conservative, verifiable measure of domestic violence. A previous study established that such orders of protection (OP) serve as markers for the experience of significant domestic violence and indicators of maternal mental health risk (Linares et al., 1999).

The Life-Events Checklist (LEC) (Johnson & McCutcheon, 1980) is a standard 17- item checklist that lists a range of potentially traumatogenic events including natural disasters, accidents, sudden losses, and combat and interpersonal violent events. It classifies events as experienced directly, witnessed, or recounted by another individual and we used it as a subjective measure of domestic violence. We created a dichotomous variable that indicated whether or not the participant had experienced one or more types of interpersonal violent trauma directly and/or witnessed first-hand.

The Brief Physical and Sexual Abuse Questionnaire (BPSAQ) (Marshall, Jorm, Grayson, & O'Toole, 1998) is a semi-structured interview that was used to track maternal violent trauma history from birth onward. The measure has reliably predicted clinician rated PTSD in two different separate studies (Marshall et al., 1998). Four types of violence exposure were indicated. *Interpersonal violence* was supported on the BPSAQ if the subject endorsed that she was physically abused during childhood, i.e. prior to age 16 years, she had been hit by a caregiver with an object or hit and injured, in excess of simple corporal punishment. *Sexual abuse was supported* if a subject reported that, prior to age 16 years, she had been fondled, placed in any form of genital contact, and/or penetrated by an individual at greater advantage due to power, size or age. *Exposure to domestic violence was supported if* a subject reported that prior to age 16 years, she witnessed physical violence between household members involving a caregiver or other adult household member. The BPSAQ also includes items that probe for *experience/exposure during adulthood of physical and sexual assault*. A score for Maternal Interpersonal Violence Exposure Severity was derived from the sum of four factors on a score sheet created for the BPSAQ (see Figure 1). The measure and corresponding score sheet are described in greater detail in a previous paper (Schechter et al., 2005, p. 317-8).

Maternal Symptoms of PTSD

The SCID (First, Spitzer, Gibbon, & Williams, 1995) is a well-established and reliable clinician-rated diagnostic measure that provides lifetime and current psychiatric diagnoses as well as clinical review of life events chronology, noting traumatic events. We rated severity of PTSD by counting the total number of clinician-rated PTSD symptoms following from interpersonal violent life experiences that were disclosed by the participant.

Child Adverse Life Events and Dissociative Symptoms

Mothers also reported on their children's adverse life experiences on The Life-Events Checklist (LEC; Johnson & McCutcheon, 1980) as described above. We used this measure to create a dichotomous variable indicating whether or not the participant had experienced one or more types of interpersonal violent trauma directly and/or witnessed first-hand. Two items were added to the LEC for the purposes of this study. We created a dichotomous child family violence exposure variable based on mothers reporting that their young children had 1) "seen someone hit, push, or kick a family member" and/or 2) "seen or heard adult family members arguing very loudly or fighting". The Child Dissociative Checklist (CDC; Putnam, Helmers, Horowitz, & Trickett, 1993) is a 20-item maternal-report checklist with a 3-point scale (0=not true, 1=sometimes true, 2=frequently true). The CDC is a clinical screening instrument that assesses dissociation on the basis of ratings given by caregivers or adults in close contact with the child. A score of 6 is considered to be a clinical cutoff for PTSD; and a score of 12 or higher, is considered to be evidence of pathological dissociation. The CDC shows good 1-year test-retest stability (r=0.65) and internal consistency (Cronbach's alpha=0.86); good convergent and

discriminant validity have also been indicated (Putnam et al. 1993). The severity of child dissociation in this study was based on the CDC score described above.

Clinician-assessed child play narrative

A total of eight story stems were administered by a female psychologist who was blind to any information about the index child and family. Story-stems were administered to all children after the examiner encouraged the child to engage with her in a positive, emotionally toned story-stem about a birthday party, given as a model. Examiner and child were alone during the videotaped administration of the MSSB that lasted generally 25 to 30 minutes. The examiner initially introduced the cast of characters in the form of a family of dolls and prior to each story-stem told the child which dolls were in the story. The dolls were ethnically- and gender-matched to participants. Narratives were always presented in the same order, and for each narrative, the child was asked to listen to the beginning of the story and then to show and tell the examiner what happened next.

The eight story-stems chosen for this study protocol included a range of emotionally-charged family interactions. Specifically, seven MSSB story-stems used in this study were as follows (with the topic that they reflect in parentheses): Spilled juice (attachment/authority), Hot Gravy (attachment/authority), Lost Keys (family conflict), Mom's Headache (moral dilemma), Parents' Departure (attachment), Family Reunion (attachment), and Cookie Jar (moral dilemma) (Bretherton, et al., 2003). One additional story stem from the Attachment Story-Stem Completion Task (ASCT; Bretherton, Ridgeway, & Cassidy, 1990) was added to address the theme of caregiver protection and containment of fear and anxiety in the context of attachment: "Monster in the Bedroom". If the central theme or conflict in the story-stem was not addressed by the child, the examiner used a standardized probe, such as, "What about the spilled juice?" or, "What else happens after Johnny spilled the juice?"

Responses to each story-stem were scored for numerous content themes and performance features (i.e., how the narrative is told) by two research assistants who were not involved in data collection and had extensive experience with scoring story responses in low-income samples of children in this age range. The MacArthur Narrative Coding Manual was used as the basis for scoring all eight story-stem completions (Robinson, Mantz-Simmons, Macfie, & Kelsay, 2002). Content and performance themes were summed and averaged across all stories that were successfully administered; 2 children's responses were evaluated based on 4-7 stories.

Since we hypothesized that severity of maternal interpersonal violence-related PTSD would be associated with greater child dysregulated aggression on the MSSB, we aggregated the following content themes into a dysregulated aggression aggregate: Verbal aggression, physical aggression, unprovoked aggression, and assaulting an adult, personal injury, and escalation of conflict. The dysregulated aggression aggregate score ranged from 0 to 1.75, with a mean of .87 and SD of .58.

The performance features of emotional distress and "new or clear worsening of danger" by the child were grouped together as "Danger and distress." Scores aggregated across all stories ranged from 0 to 0.90, with a mean of .57 and SD of .40. The performance features exclusion of self, repetition, denial of story resolution, passive refusal of empathy, mechanical/ sensorimotor play, family departure and dissociative behaviors (fleeing painful subject, fantasy proneness, spacing out, boundary confusion, intrusion of traumatic material, and sadistic pleasure with aggression; Macfie, et al, 2001) were aggregated as a dimension of "Avoidance/ withdrawal." Scores averaged across all stories ranged from -.69 to .99, with a mean of .00 and SD of .50. Based on prior research indicating the elevation among maltreated children, these three salient dimensions of narrative response (Dysregulated aggression, Danger and distress,

and Avoidance/withdrawal) were then together aggregated (i.e. summed) into one variable called the *Aggregate of MSSB Trauma-Indicators* (Cronbach's Alpha = .82). The inclusion of this aggregate indicator in addition to the individual variables permitted us to more holistically examine narrative responses directly reflective of the child's mental representation of caregiving and care-receiving during moments of distress and conflict and to maximize reliability to detect effects.

Narrative coherence additionally was evaluated as present or absent in each narrative, and was deemed to be present when the story as completed by the child flowed logically in a sequential manner, maintained a topic, developed a theme, and communicated character and/or child-as-narrator roles in an understandable and consistent manner regardless of whether the narrative was told primarily with words or in play. Scores averaged across all stories ranged from 0 to 1.00, with a mean of .47 and SD of .31.

Overall interrater reliability was excellent (ICC=0.94). Interrater reliability on the three aggregated measures that were used to test hypotheses in this study was also quite good: Dysregulated aggression (ICC=.86), Danger and distress (ICC=.79), Avoidance/withdrawal (ICC=.80), and Narrative Coherence (ICC=.98).

Procedure

Mothers who had participated in the original study when their children were 8-50 months were sent a letter asking them to contact research staff within 2 weeks if they did not want us to call them. Three weeks after the letters were sent, a female research assistant called the mothers to describe the study and set up an appointment for an office visit if a mother was interested in participating. At the office visit, following informed consent, the research assistant obtained updated demographic and treatment history data as well as self-report and report of child symptoms from participant mothers. Children were meanwhile escorted into the playroom by the clinical psychologist who administered the PPVT and MSSB. This single videotaped "follow-up visit" lasted 1-2 hours. Mothers were financially compensated and children received a toy or book.

Results

Descriptive Information

Maternal trauma and PTSD measures—All mothers who participated in the first phase of the study who returned for the follow-up reported a history of interpersonal violent trauma (physical and/or sexual abuse, and/or domestic violence exposure) prior to age 16 years on the BPSAQ. Eleven (46%) of the 24 mothers additionally stated on the Demographic and Treatment History Questionnaire that, since the age of 16, they had filed a restraining order against a male partner or other family member following physical assault. In total, the mean number of violent events reported on the LEC was 3 (SD 1.8, range 1-7). Of the 24 mothers who returned for the follow-up study, the mean number of lifetime PTSD symptoms on the SCID that were related specifically to the violent traumatic experience identified in the baseline study was 12.4 (SD=2.5, range= 8-15). All mothers met criteria for lifetime violence-related PTSD but not necessarily for current PTSD. In the follow-up study sample of 24 mothers, 6 (24%) met criteria for current violence-related PTSD on the SCID.

Child trauma and PTSD measures—84% of children experienced one or more adverse life events. The mean number of children's adverse life events across all categories on the LEC was 2.3 (SD= 2.3, range 0-10); with 60% having experienced some form of family violence. The mean severity of the Child Dissociative Checklist (CDC) was 9.4 (SD= 8.8; range 0-34).

The correlation between the number of adverse life events on the child LEC and the CDC was robust: r=.59, p=.005.

Completion of the MSSB—Twenty-three of the 25 child-participants completed the MSSB. Two children were not able to complete the MSSB. In one case, a 5-year-old boy became disorganized and disruptive 10 minutes into the procedure; and a mutual decision with the caregiver was made to terminate the MSSB. In the other case, a 5-year-old girl who had become selectively mute and separation anxious in the context of an acute family stressor would not participate in the task and became acutely distressed in the playroom in the company of her mother. In both cases, complete maternal reported data were obtained. No differences were found between these two children and those children who were able to complete the task with respect to maternal or child age, maternal education, father's presence, other measures of maternal adverse life events, or child symptomatology.

Maternal Life Events, Symptom Data, and the MSSB

As we were particularly interested in interpersonal violent trauma that may have impacted mother in her adult life, we compared the mean MSSB scores of children whose mothers had filed an OP against a male partner or other family member vs. mothers who had not. We found significantly higher mean scores for the dimensions of dysregulated aggression, danger and distress, and avoidance/withdrawal for children whose mothers had filed an OP (n=10) versus those who did not (n=13) as follows: Dysregulated aggression *X*=.93 (SD .33) versus *X*=.34 (SD .32); Danger and Distress *X*=.46 (SD .26) versus *X*=.19 (SD .23); Avoidance/Withdrawal *X*=.25 (SD .47) versus *X*=-.19 (SD .45); Aggregate of MSSB Trauma Indicators *X*=2.09 (SD . 76) versus *X*=.61 (SD 1.02). Narrative Coherence was lower for children of mothers who had filed an OP than for those who had not at a trend-level of significance: *X*=.34 (SD .21) versus *X*=.58 (SD .34). Results from related ANOVA are shown in Table 1. We additionally examined correlations of child MSSB scores with maternal severity of lifetime PTSD symptoms (see Table 1). We found significant moderate-large correlations for the Aggregate of Trauma Indicators.

Using the *Aggregate of MSSB Trauma-Indicators*, we constructed a multiple linear regression model to examine the independent impacts of lifetime violence-related PTSD plus filing of an OP (see Table 2.) We found that these two maternal factors accounted for greater than 50% of the variance of the aggregated trauma-linked indicators on the MSSB subscales.

Finally, we wanted to see if the severity of maternal experience of childhood physical and sexual abuse and domestic violence exposure might have a direct impact (i.e. independent of PTSD) on the Aggregate of MSSB Trauma Indicators. We performed bivariate correlations of the MSSB aggregate with the Maternal Interpersonal Violence Severity Score (Schechter et al., 2005) pertaining to experience of violent trauma prior to age 16 as derived from the BPSAQ, and the latter Severity Score also with the measures of maternal PTSD. We did not find any significant association between severity of maternal experience of violent trauma prior to the age of 16 and the MSSB Aggregate (r=.24, p>.2) at this level of analysis; even though, severity of maternal experience of violent trauma prior to the age of 16 on the BPSAQ was significantly related to severity of maternal PTSD (r=.56, p=.005). Adjusting the regression model (see Table 1.) for maternal traumatic experience during her childhood, as marked by the Maternal Interpersonal Violence Severity Score, did not alter the relationship of maternal PTSD severity to the dependent variable Aggregate of MSSB Trauma Indicators (β-maternal PTSD=.56, p=. 007).

Child Life Events, Symptom Data, and the MSSB—A positive, significant correlation of child adverse life events to the dysregulated aggression subscale of the MSSB (r=.46, p=.

04) was found. No other significant correlations between the number of child adverse life events were found with the MSSB, nor between child dissociative symptoms on the CDC and the MSSB.

No significant correlations were observed with respect to maternal report of child exposure to family violence on the LEC and the MSSB at this level of analysis: hypervigilance to danger and distress (r=.36; p=0.10), avoidance/withdrawal (r=.30; p=.16), dysregulated aggression (r=.19; p>0.30), and narrative coherence (r=-.26; p=.24). Adjusting the regression model (see Table 2.) for maternal report of child exposure to family violence on the LEC, did not significantly alter the relationship of maternal PTSD severity to the dependent variable Aggregate of MSSB Trauma Indicators (β-maternal PTSD=.54, p=.009).

Discussion

In this study, we found that a mother's experience of domestic violence as an adult, her experience of family violence and maltreatment as a child, together with PTSD symptoms related to these experiences, significantly impacted her young child's mental representations of self and others. Within the referred sample studied, the trauma-related features of the children's play narratives in terms of patterns of dysregulated aggression, attentional bias to danger and distress, and avoidance/withdrawal, was independently and strongly associated with maternal experience of interpersonal violence and related PTSD. The coherence of the play narratives was not significantly associated with maternal experience of violent trauma and related PTSD.

Although these maternal factors were significantly associated with the quality of the MSSB play narratives, child factors as reported by mothers, by and large, were not. One exception was that the number of child adverse life events was associated with increased dysregulated aggression on the MSSB. Contrary to our expectations, this effect was not due specifically to child exposure to domestic violence as reported by mothers. We speculate that less than adequate maternal supervision may be an important risk factor for a greater number of child adverse life events; although, we were unable to test this within the scope of the present study. While maternal PTSD may contribute to impairment of mothers' capacity to supervise their children adequately, the relationship of maternal PTSD symptoms to number of child adverse life events was not significant in this study.

Previous studies had found that maltreated preschoolers portrayed child figures as responsible for containing their own distress rather than adult figures, and that maltreated children showed more dissociation than non-maltreated children, possibly rendering them less hypervigilant to their surroundings (Macfie et al., 1999; Macfie et al., 2001; Toth et al., 2002). That being said, while the number of child adverse life events was associated with significantly higher scores on the Child Dissociative Checklist (CDC) as one would expect, CDC scores were not significantly correlated with the MSSB, including specifically, the dissociative behaviors subscale. These results differed from those of Macfie et al. (2001), who did find significant associations between the CDC and dissociative behaviors on the MSSB. That study, however, involved a sample of maltreated children as opposed to our sample of children of maltreated mothers. For various reasons, the extent of direct child maltreatment was not measured in the present study.

Finally, the question of how maternal experience and PTSD exert intergenerational effects remains to be answered. Our study supports that with the exception of moderate to severe domestic violence during adulthood that leads to filing an order of protection, maternal experience of violent trauma during her childhood in the absence of PTSD symptoms was not sufficient to account for variation in trauma indicators on the MSSB. Yet our findings,

encompassing maternal experience of interpersonal violence together with related PTSD and implied biological vulnerability in the present study, are consistent with those of multiple studies showing that a caregiver's sustained emotional dysregulation in the wake of violent trauma is both a risk factor for child psychopathology as well as a predictor of poorer child emotional and behavioral outcome when the child is confronted with adverse life events (Laor, Wolmer, & Cohen, 1996; Yehuda, Halligan, & Bierer, 2001; Holden and Ritchie, 1991). Based on their review of these and other studies, Scheeringa and Zeanah (2001) proposed various models of "relational PTSD" by which the caregiver's inability to assist the very young child with regulation of emotion and arousal can mediate and/or moderate child response to trauma and can support vicarious traumatization. Additional work from our group both confirms their model and provides evidence for psychobiological mechanisms in the context of attachment and human development that demystify intergenerational transmission of interpersonal violent trauma (Schechter et al., 2004).

Limitations

A significant limitation of this study was the absence of a control-group of mothers without PTSD. Without such a control-group, our analyses were largely based on variance in severity of PTSD within a sample in which 90% of the mothers had a diagnosis of lifetime PTSD. Nonetheless, variation in symptom severity was predictive of trauma indicators in children's narratives. Future studies involving a non-PTSD control-group would clearly allow for a stronger test of our hypotheses regarding the MSSB.

Another limitation of the study included reliance on maternal report of child exposure to family violence and of child psychopathology, as well as reliance on maternal filing of an Order of Protection (OP) as a marker of family violence. Although filing of the OP corresponds to moderate to severe domestic violence, we recognize that not all women who have experienced this level of domestic violence file an OP. An additional limitation as mentioned above, included that the extent of direct child maltreatment was not feasible to measure in the present study.

Future studies would, therefore, improve upon the methodology used by adding: 1) a more sophisticated measure of maternal and child domestic violence victimization/exposure; and 2) additional concurrent child self-report and clinician administered assessment of child psychopathology. Given the difficulty in eliciting consistent, reliable self-reported and clinician-rated symptomatology among young, often expressive language-delayed children, one might also consider measuring physiologic correlates of child psychopathology concurrent with MSSB administration. For example, one recent study of study of 58 non-referred 7-year-old children, for example, found that autonomic nervous system regulation (i.e. vagal tone) was positively associated with greater narrative coherence on the MSSB (Bar Haim, Fox, Van Meenen, & Marshall, 2004). Our finding of a trend toward less narrative coherence on the MSSB as associated with greater maternal PTSD severity, would suggest a potential effect on child physiologic dysregulation, that itself can have enduring effects when the affected child becomes a parent.

Utility in the Clinical Context

Despite these limitations, we have found robust associations of maternal emotional dysregulation in the context of interpersonal violence and related PTSD with child dysregulation of aggression, attentional bias to danger and distress, conflict-avoidance, and narrative incoherence on the MSSB. Although beyond the scope of the present study, we have preliminary evidence from an ongoing case-control study (Schechter, 2006) that, in addition to underlying emotional dysregulation and its physiologic correlates, observable maternal behavior in the forms of non-contingent withdrawal/avoidance, hostile intrusion, affect

incongruence, and breaking off of joint attention may play a key role in the mechanism by which maternal PTSD affects the child's play-narratives on the MSSB.

The following case-examples may serve to illustrate this latter point as well as to illustrate the clinical relevance of this investigation. Indeed, the following two clinical examples, both from 4-year-old child participants, illustrate how dysregulated aggression, attentional bias to danger and distress, avoidance of conflict, and disruptions in narrative coherence manifested in their story-stem completions, portraying variations of intergenerational transmission of maternal and shared maternal-child interpersonal violent trauma.

The Case of Nancy and Libby—Background to this case at the time of the initial assessment is described in greater detail in a published case report (Schechter, Kaminer, Grienenberger, & Amat, 2003). To summarize, Nancy was a 29-year-old married Dominican-American mother of two girls who presented for the initial assessment to our Infant-Family Service, an infant mental health clinic, when her younger daughter Libby was 17-months-old. Referral to the clinic followed a child protective services report filed by hospital pediatricians related to their concern about Nancy's apparent efforts to medicate her daughters' and her own psychosomatic distress with powerful anti-seizure medications and other medical interventions. When the attending pediatrician informed Nancy of the child protective services report, Nancy ran from the consulting room into her daughters' hospital room and had a violent pseudoseizure in front of her distressed children. This "ataque de nervios" (attack of nerves), as she later called it, necessitated hospital security being called, restraining Nancy in front of her children, and escorting her to the psychiatric emergency room.

In the emergency room, within minutes of the attending psychiatrist focusing on Nancy's life narrative, Nancy described a long history of multiple traumatic events. She described severe physical abuse of both her and her mother by her alcoholic father in the Dominican Republic beginning in early childhood. This contributed to her mother abandoning the family to seek safety and employment in the U.S. when Nancy was 8-years-old and leaving Nancy with her violent father and his family. While living with her father and his family, Nancy told of how she had subsequently suffered repeated sexual abuse by her alcoholic paternal uncle (ages 8-13), who during the molestation would cover Nancy's face with pillows. This sexual abuse resulted in the pregnancy and birth of two children by age 14, who were then taken away from her and never seen again. Nancy acknowledged that her experiences led her to be highly overprotective of her children. She said, "I don't let my girls go anywhere without me..." Her history of maternal abandonment and violent trauma further added understanding to her fears of losing her daughters to child protective services.

When evaluated a week later via a clinical research protocol on our Infant-Family Service, Nancy said of her 17-month-old daughter Libby, "She reminds me of my mother…she's got her attitude…and the everything's got to be her way…she got that from my brother and…my father (abusive)." When Libby was initially evaluated, Nancy described her as having many behavioral symptoms. Nancy denied that Libby had ever been physically or sexually abused by anyone, and denied displays of conjugal violence. While Libby could not be said to meet DSM-IV criteria for PTSD, given difficulty in linking her internalizing and externalizing symptoms to a specific event or series of events, Libby did have a CDC score of 14, which is in the pathological dissociation range and suggestive of significant traumatic stress. Moreover, mother-child play observations during the initial assessment revealed extensive bouts of frightening maternal behavior with Libby (i.e. looming, odd voices or devoicing, sudden intrusive poking or tickling, staring silently, holding Libby's wrist while tickling her so she could not get away, etc), in which Libby would display hypervigilance and a frozen, helpless quality to her response to Nancy (Schechter et al., 2003).

A number of gains were achieved via video feedback and then child-parent psychotherapy in terms of Nancy's perception of Libby and her behavior with Libby during the period that followed the initial research assessment and preceded the follow-up research assessment when Libby was 4-years-old. However, the following story-stem completion illustrates the persistence of dysregulated aggression that rapidly involves physical violence, and then role-reversal, in which the child quickly takes the blame as if to diffuse the conflict between the parents in the story, such that the child then becomes the object of wrath, with no resolution between the parents or solution to the problem of the lost keys. The child figure is left alone in distress with no comfort or protection by the caregivers.

Libby's "Lost keys" story-stem completion—Interviewer (I): (setting up dolls on the table) So, here's dad…and mom… and we'll call this little girl Susan again…

Libby (L): Mommy! (excited to see the mommy doll)

I: Now Susan comes into the room (places doll on table) and she sees mom and dad looking at each other like this (makes angry face)

L: (looks down)

I: Look at my face, Libby.

L: (looks up at interviewer)

I: Mom says (in dramatic angry tone), "You lost my keys!" Dad says, "I did not!" and Mom says, "Yes, you did! You always lose my keys!" and Dad says, "I did not lose them this time!" Show me and tell me what happens next.

L: Okay. So, she says, "Ahh!" (with an angry face, picks up mom doll and hits dad doll)

I: She says what?

L: She says (mumbles)…daddy's face! (swings arm in punching motion)

I: She said what? I still didn't understand…

L: She smashed daddy's face! (punches table three times)

I: She mashed daddy's face?

L: No. Like this! (smacks her own face with her hand)

I: Oh, she smacked daddy's face… Okay…

L: Uh huh, and then she says, (takes Susan-doll and speaks for Susan) "No, mommy, daddy didn't [take your keys], I did."

I: She said, "No, mommy daddy didn't do it, I did?"

L: Uh huh, and then she says, (takes mom doll and screams for her) "How dare you! Go to your room!"

I: (repeats what L. said)

L: And then she goes… (walks Susan-doll away from the others)

The Case of Cari and Berto—Cari was a 24-year-old Dominican-American mother who presented with her firstborn child, Berto, age 2 years. She requested a referral from her pediatrician for increased aggressive behavior following separation from his father several months prior. She described Berto as "violent" and having enacted "more biting, hitting, throwing, and kicking since his father left." Cari agreed to have a videotaped clinical research assessment. During this assessment, she described multiple episodes of being beaten by Berto's father to the point at which she obtained a restraining order. Cari recounted how she found it particularly challenging to respond sensitively to Berto's asking about his lost father and his sad reaction to his loss, even though Berto had exhibited fear of and hypervigilance towards his father when his father was with him. As for her own childhood history, Cari denied a history of physical or sexual abuse but reported that her mother had been depressed in the context of being battered by Cari's father.

In contrast to predominantly frightening and hostile-intrusive maternal behavior as observed in the previous case of Nancy and Libby, Cari, at the time of the initial assessment, was observed to appear frequently helpless as Berto threw destructive tantrums and became physically aggressive towards her. Cari had been observed, for example, to withdraw, flinch, smile and even laugh anxiously as Berto tore up the playroom. Both Cari and Berto were diagnosed with PTSD due to domestic violence by Berto's father. Additionally, Berto, had a CDC score of 18, well into the pathological dissociation range (i.e. >12), similar to Libby's score in the previous case. While never clearly having been the object of his father's rage, Berto witnessed and/or heard multiple violent arguments between his parents that led to extreme distress, shielding his mother at risk of being injured by his father, and hypervigilance. Complicating this, Cari reported that she simultaneously had become more irritable and short-tempered with Berto, who reminded her of his father physically and in his "way of being."

Cari and Berto engaged in child-parent psychotherapy for 12 months between ages 2-3 years. It was clear at the end of that period, that Cari and Berto had made significant gains. Videotaped maternal behavior during free-play, separation, and reunion was rated blindly post-treatment and noted to show significantly less frightened-frightening behavior. PTSD symptoms in both mother and child also subsided.

One year later, when invited to participate in the follow-up study, 2 years after the initial research assessment, Cari disclosed that she was again in a domestic violence relationship from which she wished to remove herself and Berto. It was under these circumstances that Berto at age 50 months was reassessed with the MSSB. Similar to the narrative by Libby, Berto's narratives, as illustrated below, are characterized by escalating hostile aggression by both caregivers that rapidly turns to physical violence. In Berto's narrative, there also is no resolution between the characters. The breakfast is completely disrupted and forgotten. And the child figure is left alone in distress with no comfort or protection by the caregivers. Berto's child character Mario ends up identifying with the violent daddy-doll, spinning and then hurling the mommy-doll against the wall.

Berto's "Spilled juice" story-stem completion

Interviewer (I): (positioning dolls in toy chairs around a toy kitchen table with a small toy pitcher and glasses placed around the table). So, Mommy, daddy, Mario, and his sister sit down at the table to eat breakfast. (holds up Mario doll). Mario reaches to get the juice, and you know what happens? He tries to get the juice and he spills it by mistake! (knocks over the pitcher). "Oh no!" Show me and tell me what happens.

Berto (B): Now the mom is really angry.

I: The mom is really angry.

B: "You see what you did, Michael!" (takes doll representing mom and swings it to push the dolls' kitchen table off of the table) "You see what you did! Now you gotta clean it!

I: So she wants Mario to clean it up?

B: Now I'm that… that's my juice.

I: Did Mario clean it up?

B: Yeah. He tried to reach the juice from the table, but he, he can't reach it now (mumbles)…

I: What did he do?

B: Ahh! See, Mario, what you did? Get out! Get out! Get out! (daddy doll abruptly takes mother doll and knocks the child dolls off of the table)

I: What's happening now?

B: (confusing to follow which character is speaking) See what you did! Get out! (takes mother doll and knocks the other doll off of the table)

I: What happened? Is that mommy? Mommy is angry at Mario?

B: (holding up mommy doll) "Yeah, I'm mad you spilled the bottle!" (spins mother doll on table, then smashes her into the wall)

I: So mommy got angry too at Mario about spilling the juice?

B: Yeah.

I: And then she made him clean it up?

B: Yeah.

I: And Mario got very angry at mommy…

B: (no reply)

Berto's story also illustrates, consistent with our findings across the whole sample, how interpersonal violence targeted at mother and witnessed by the child, superimposed upon a history of prior maternal violent trauma exposure is a particularly disorganizing experience for the child. In Berto's spilled juice narrative, interpersonal violence overwhelms the narrative. Hostility takes over all characters, and likely affects Berto's capacity in the role of Mario to remain coherent and verbal with the interviewer. By the end of the story, the interviewer reported feeling unsure as to whether Berto had remained in character or was concretely representing himself (indicating intrusive thoughts and dissociation). Indeed, Berto, unlike Libby, was not able to complete more than half of the MSSB story-stem completions. He threw a tantrum and went out to find his mother, and refused to return to the examining room.

Conclusion

Maternal experience of interpersonal violence and related PTSD during the child's early life affects the child's developing mental representations of self and other throughout early childhood. Specifically, we noted that children of maltreated and otherwise violence-exposed mothers had already been primed to communicate danger, helplessness, and hostile aggression

as the predominant features of child-caregiver relationships. They, furthermore, expressed high levels of distress, avoidance, and poorer coherence in the telling of their stories.

We understood this to mean that these children had not attained sufficient development of self-regulation of affect, particularly negative affect. We hypothesize that this occurs in part because maternal traumatization impairs mothers' ability to assist their very young children in regulation of emotion and arousal during critical periods of their social-emotional development, thereby interfering with development of self-regulation and the capacity to hold a protective and reflective caregiver in mind, particularly during moments of distress and acute conflict. Traumatized mothers suffering from PTSD and dissociative symptoms may also have a tendency to skew joint attention with their young child with hypervigilance to potential threats. We think that they might do this both to alert their children to dangers in the environment and to cope with their own fears and emotional dysregulation (Schechter et al., 2003). Clearly, this behavior, which is non-contingent to their child's, can elicit child anxiety and dissociation.

Clinical implications of our study include the following: Caregivers whose infants, toddlers, and preschoolers are referred for social-emotional assessment should be carefully assessed for present or past exposure to domestic violence and other interpersonal violence. These implications are echoed by the American Academy of Pediatrics Committee on Child Abuse and Neglect. That Committee recommended routine screening of all women for domestic abuse at the time of the well-child visit and implementation of a protocol that includes a safety plan for the entire family, citing that early detection and treatment for intimate partner violence against women has the potential to interrupt and prevent behavioral problems for their children, per research findings on school-aged children reported to that Committee (McFarlane, Groff, & O'Brien, 2003). Furthering this aim among mental health clinic-referred preschoolers, administration of the MSSB and its principles can be useful both for helping the child communicate something of his traumatic experience, and most importantly, the meaning he or she makes of that experience. Witnessing the telling of the story responses allows the clinician into a deep empathic understanding of the child's experiences. The MSSB procedure highlights the child's inability to regulate negative affect in the context of specific emotionally triggering themes and reveals important salient cues for the clinician working with the young child. There are few standardized opportunities to observe these types of dysregulated experiences directly with the child and the MSSB offers such a unique opportunity. Moreover, caregiver psychopathology should be actively assessed and treated while concurrently addressing the parent-child relationship, and the child's developmental and social-emotional needs. Maternal trauma-related factors were potent predictors of the quality of child mental representations and would likely continue to re-traumatize the child were they left outside of the treatment plan for the family.

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Table 1

Maternal Factors Associated with Child MSSB

	ANOVA: Associations with maternal filing of an order of protection (OP)							Correlations with number of maternal PTSD symptoms	
MSSB Dimensions	*OP*?	Mean	SD	N	Effect Size	F (df=1,21)	Sig	r	Sig
Dysregulated Aggression	No	.34	.32	13	1.79	19.31	<.001	.34	.10
	Yes	.93	.33	10					
Danger and Distress	No	.19	.23	13	1.08	6.59	.02	.75	<.001
	Yes	.46	.26	10					
Avoidance/Withdrawal	No	-.19	.45	13	0.96	5.08	.04	.43	.04
	Yes	.25	.47	10					
Aggregate of MSSBTrauma Indicators*	No	.61	1.02	13	1.61	14.58	.001	.55	.007
	Yes	2.09	.76	10					
Narrative Coherence	No	.58	.34	13	0.83	3.87	.06	-.31	.15
	Yes	.34	.21	10					

* Aggregate of MSSB Trauma Indicators was derived by taking the sum of the following MSSB dimensions: Dysregulated aggression, Danger and Distress, and Avoidance/Withdrawal

Table 2

Maternal Predictors of Aggregate of MSSB Trauma Indicators via Multiple Linear Regression

	Unadjusted Model		**Adjusted Model**	
	Order of Protection	**Maternal PTSD**	**Order of Protection**	**Maternal PTSD**
R^2	.41	.30	.54	.54
F	14.6	8.9	11.9	11.9
Df	1,21	1,21	2, 20	2, 20
Sig	.001	.007	< .001	< .001
β	.64***	.55**	.52**	.39*

"*"
= significance less than or equal to .05;

"**"
= significance less than or equal to .01;

"***"
= significance less than or equal to .001