

Negative and Distorted Attributions Towards Child, Self, and Primary Attachment Figure Among Posttraumatically Stressed Mothers: What Changes with Clinician Assisted Videofeedback Exposure Sessions (CAVES)

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Abstract This study found that within a non-referred community pediatrics clinic sample, the severity of mothers' trauma-related psychopathology, in particular, their interpersonal violence-related (IPV) posttraumatic stress, dissociative, and depressive symptoms predicted the degree of negativity of mothers' attributions towards their preschool age children, themselves, and their own primary attachment figure. Results also showed that mothers with IPV-related posttraumatic stress disorder (PTSD) as compared to non-PTSD controls showed a significantly greater degree of negativity of their attributions toward their child, themselves and their primary attachment figure during childhood. The study finally found a significant reduction in the degree of negativity of mothers' attributions only towards their child following a three-session evaluation-protocol that included a form of experimental intervention entitled the "Clinician Assisted Videofeedback Exposure Session(s)" (CAVES), for mothers with IPV-PTSD as compared to control-subjects.

Keywords Maternal PTSD · Interpersonal violence · Maternal attributions · Videofeedback intervention · Infant and early childhood mental health · Intergenerational transmission of violence and trauma

Introduction

Negative and age-inappropriate or "distorted" maternal mental representations of a child's personality, intentions, and behavior have long been understood among parent-infant psychotherapists as reflections of malignant internalized object representations that are projected onto the child [1]. Change in such perceptions, together with associated maternal behavior, are among the most important goals of therapeutic intervention. Yet research into the processes that contribute to changes in the way parents mentally represent their child has been a rather more recent endeavor.

Parental attributions are assertions that mark more elaborated mental representations of the child and that often regard the child's way of being as objective truths [2, 3]. Normative attributions range from extremely positive ("s/he is amazingly bright") to benign ("s/he loves the water") to mildly negative ("s/he can be so stubborn"). However, the farther these attributions stray from the child's actual age-appropriate capacities, feeling states, or underlying motivations ("s/he likes to hurt others"), the more they are understood to reflect the parent's own projections, displacements, and other psychic defense mechanisms. Strongly negative attributions are not responsive to the actual state or actions of the child, they are transferential in nature and "obscure" the real child [3]. As Lieberman [4] (p. 107) notes, when these attributions become entrenched they "...can ensnare the child's evolving sense

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of self and of intimate relationships” in parental conflicts from the past.

There is evidence that maternal attributions predict to a certain degree how a mother is likely to behave with her child [5, 6]. Several studies have linked mothers’ negative perceptions of their young children both to negative self-attributions and to a maternal history of maltreatment and other forms of interpersonal violence exposure [2, 7, 8]. Lyons-Ruth and Block [9] found associations between violence-related maternal PTSD, atypical caregiving behavior, and attachment disorganization. Among insecurely attached toddlers, 88 % of those who have mothers with a history of violent trauma and PTSD symptoms exhibited disorganized attachment in comparison to 33 % of the toddlers of mothers without such a history.

Our research group previously found evidence that mothers with posttraumatic stress disorder (PTSD) related to interpersonal violence can indeed experience routine distress in their very young child as a posttraumatic trigger [6, 10]. This interference in the mutual regulatory dimensions of attachment can be understood from at least two perspectives. The first is that PTSD, with its implicit confusion of past and present and inherent dysregulation of affect and arousal, can lead to the mother feeling as if she must enter into a defensive, hypervigilant, self-preserving mode of social functioning [11]. This self-protective position interferes with an affiliative, prosocial stance as is consistent with Porges’ Polyvagal theory [12]. The redirection of attention to survival necessarily removes the mother from focusing on her child’s cues. She becomes focused on self rather than being psychologically available to her child and engaging in mutual regulation of affect and arousal. For the child, repeated acts of attentional redirection increase the sense of helplessness and distress which motivate the mother to defend herself further. This cycle of maternal redirection, increased child distress, and elevated maternal self-protection can result in ever increasing physical and emotional distance from the child [13].

A second perspective derives from Fonagy et al. [14] concept of Mentalization (operationalized as Reflective Function; RF); which is an awareness of and ability to hold in mind meaningful relationships between underlying mental states (feelings, thoughts, intentions) and behavior in the self and in others. This group [14] has suggested that if caregiver mentalization of the child’s (distressed) state of mind leads to disturbing levels of negative emotion, as could occur for a caregiver whose own history is marked by experiences of helplessness or distress, then mentalization may be curtailed in order to defensively inhibit such unwelcome and overwhelming affect. From both perspectives the essential variable is the caregiver’s inability to perceive, reflect on, and appropriately respond to distressed

infant states. The avoidance of the distressed infant or toddler, in turn, poses major developmental challenges with long-term consequences for that very young child [15, 16]. Importantly, concurrent and consistent with this psychological avoidance of the distressed child’s feeling state, misattributions of the child’s underlying mental state arise (“s/he is trying to control me”).

In the effort to change parental states of mind and associated behaviors toward the child, forms of parent–child psychotherapy that utilize videofeedback have been documented to result in dramatic changes in parent–child behavior in a relatively brief period of time [17, 18]. Videofeedback intervention allows the clinician to engage the parent in focusing on parent–child interactions from a safe, supported, and regulated distance. It is therefore a particularly potent intervention for exploring moments of parent–child interaction that were affectively ‘triggering’ or dysregulating for the parent when they occurred in real time. In a previous study in 2006 [2], we applied a brief experimental intervention with a clinically referred sample of traumatized mothers (100 % with violence-related PTSD symptoms, 90 % meeting full-criteria for lifetime PTSD diagnosis) and their preschool-age children 12–48 months. This intervention consisted of two videotaped evaluation sessions plus a single “Clinician Assisted Videofeedback Exposure Session” (CAVES). The CAVES intervention integrates the following elements: (1) principles of infant–parent psychotherapy using video feedback, (2) controlled exposure via video-feedback to a child separation reaction, and (3) the modeling and stimulation of reflective functioning following joint attention to video-feedback excerpts.

Moreover, the CAVES both evaluates and supports the maternal capacity for engagement in joint attention to child states of mind during and after interpersonal stressors such as mother–child separation (i.e. states of helplessness, distress, fear of separation and loss). Such engagement is typically avoided by mothers who suffer from IPV-PTSD in so far as these child states of mind can function as posttraumatic triggers for these mothers. The CAVES intervention also encourages joint attention during play and other typically pleasurable moments, the joy related to which may also be dampened as a function of emotional numbing due to maternal PTSD.

The 2006 study was designed to test the following hypothesis: If traumatized mothers were assisted by an experienced clinician who could support maternal regulation of affect and arousal outside the heat of the interactive moment with the child, those mothers would be able to change their minds regarding negative attributions previously ascribed to the child [2]. After controlling for the effects of the two preceding evaluation visits, the results indicated that participant mothers had significantly less

negative attributions towards their children after administration of the CAVES. We also found that greater degrees of maternal reflective functioning (RF) as measured at the time of initial assessment were associated with greater reductions in negativity. Thus higher maternal RF with its implicit ability to identify emotions in self and child was shown to be a change-promoting factor during intervention. Greater capacity for RF likely supports the caregiver's ability to tolerate and integrate her own negative, trauma-associated emotions and memory traces that are triggered by routine child distress as occurs during separations or tantrums.

In the present study, we not only aimed to replicate but also to significantly extend these findings, and moreover, to do so within a *non-referred* pediatric clinic sample as described in a more recent study [10]. We extended the 2006 study [2] by asking for maternal attributions towards herself and her primary attachment figure in order to examine the possible interrelationships between mental representations of her child, herself, and her own primary caregiver as clinically observed by Fraiberg, Adelson, and Shapiro [1]. We did this in relation to maternal interpersonal violence-related PTSD, and in relation to change of the quality of attributions after as compared to before the CAVES.

We hypothesized that self-attributions and attributions towards the primary caregiver would be less amenable to change with brief intervention and even more so, to a parent–child focused intervention. This latter hypothesis stems from the fact that a parent's mental representations of her own primary attachment figure and self have been held in mind over years and have been shown to require a long and intensive psychotherapeutic process that focuses on self-representation and on early attachment relationships to effect change in these measures within high-risk populations [19, 20]; whereas, a mother's mental representations of her young child remain more plastic, especially given the rapidity of development and the constant influx of new interactions and relational challenges [17, 18]. These representations and the attributions that mark them can thus more easily change with brief parent–child focused intervention [2].

Thus, our specific a priori hypotheses were as follows:

1. Mothers with current PTSD diagnosis related to interpersonal violence (IPV-PTSD) would have more negative attributions of their child's, their own, and their identified childhood primary attachment figure's (M-PAF) personality than subthreshold or control-group mothers at baseline.
2. Mothers with current PTSD diagnosis compared to the two other groups would demonstrate greater reduction of the degree of negativity of their attributions towards

their child but not towards self or attachment figure during the 3-visit protocol that included videotaped observations of interactions with their young child and a CAVES session.

Methods

Participants

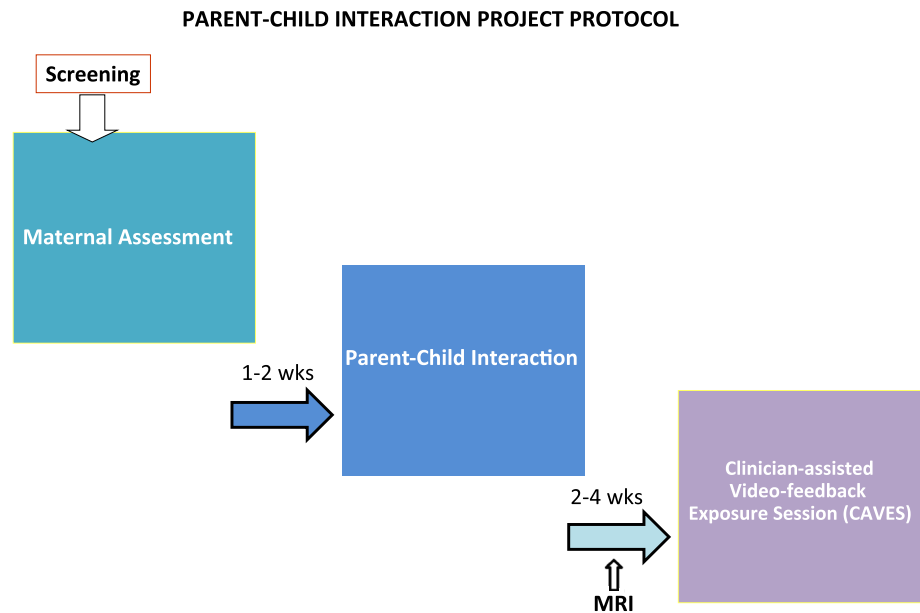
Participation in all phases of the study was voluntary; and informed consent was approved by the IRB at Columbia University at the New York State Psychiatric Institute. Mothers received \$50 compensation for each visit as well as a (book/toy) that was age appropriate for their child.

Seventy-seven biological mothers ages 18–48 years ($X = 29.39$; $SD = 6.76$) and their children ages 12–48 months ($X = 27.75$; $SD = 10.72$) were recruited from community pediatric clinics from February 2004 until January 2007 via institutional review board approved flyers in English and Spanish and by bilingual clinic staff members in and around the Columbia University Medical Center in Northern Manhattan. The study was advertised by asking if the potential participant were a mother of a child age 1–4 years and if so, if she would like to participate in a study in which she would talk to child development specialists alone and with her child about what makes parenting a young child more and less stressful. Women with active psychotic symptoms, substance abuse, or who did not function as the primary caregiver for their child for most of that child's life (i.e. due to prolonged absence or disability) were excluded. Mothers and children who otherwise had developmental disabilities that would have precluded their participation in study tasks which involved play, mobility, and fundamental literacy (i.e. 5th grade reading-level for mothers) were also excluded.

The composition of the sample represented well the composition of the inner-city community served by the clinics where recruitment took place: 81 % of families identified themselves as Hispanic, primarily Caribbean Hispanic (i.e. Dominican and Puerto Rican), 12 % as African-American, and 7 % as "Other" which included mixed race, South Asian, and non-Hispanic Caribbean background. Therefore, all written materials related to the study including consent forms, instructions, and measures were administered according to the subject-mother's preference in English and/or Spanish. All research staff members were bilingual in English and Spanish.

The currently reported study represents a nested study within a larger study [10]. Only subjects who completed the video-feedback visit (V3) are discussed in this paper. In sum, out of the 77 participants who completed the two

Fig. 1 Protocol schema



videotaped visits (maternal interview and mother–child interaction visits) that were 1–2 weeks apart, 59 mothers returned 2–4 weeks later for the CAVES, which was the final visit in the multi-visit protocol (see Fig. 1). This nested study to look at the effect of the CAVES in fact had a target sample of 50. Yet given the interest among mothers in doing the videofeedback, we were able to extend the study up to 60 participants. The 27 mothers who were not invited to participate plus the one mother who did not return, as a group did not differ from participants in any statistically significant way in terms of demographic variables, interpersonal violence exposure severity, psychopathology, involvement with protective services, treatment history, or baseline level of negativity of maternal attributions ($p > .3$). Data pertaining to the 59 mothers who completed the CAVES and had complete data are considered below and are the focus of the present paper.

In this sample of 59 mothers (Age: mean = 30 years; SD = 6.6) and children (Age: mean = 30 months; SD = 10.5; 59 % boys, 41 % girls) 68 % of the mothers completed a high-school education or G.E.D. Ethnic distribution did not differ from that of the larger study. Average household income was \$32 K (SD 26.8 K) and >25 % of mothers reported receiving public assistance. Forty percent labelled themselves as single mothers which we defined as not living steadily with a partner who may or may not be the index child’s father (Table 1).

Procedures

Mothers and their young children ages 1–4 years participated in a protocol consisting of one initial screening visit followed by three [3] videotaped visits. All three visits

were conducted by the same clinician (male) and research assistant (female).

Videotaped Visit 1 (V1): Maternal Assessment Visit

This visit consisted of a narrative clinical interview with the mother only, a demographic and treatment history questionnaire, a measure of maternal mental representations (Working Model of the Child Interview [WMCI]) [21], and included measures of life events, PTSD, and depression that are described in the Measures section below. Maternal negative attributions of child, self, and primary attachment figure of childhood were elicited at this visit.

Videotaped Visit 2 (V2): Interaction Visit

Conducted 1–2 weeks after V1, this visit for both mother and child focused on the following modified Crowell Play Procedure [22]: Free play (10 min), separation-reunion #1 (5 min), clean-up (5 min), structured joint-attention task (5 min), and separation-reunion #2 (5 min). Following this play procedure, content items from the mental representations measure were repeated along with self-report measures regarding psychiatric symptomatology. Maternal negative attributions of child only were elicited at this visit.

Videotaped Visit 3 (V3): CAVES Intervention Visit

Conducted 4 weeks after V2, during V3, the CAVES intervention was administered.

The CAVES is both a research assessment measure as well as an experimental intervention that utilizes four

Table 1 Shows additional characteristics of the case, subthreshold, and control groups

	Means (SD) by ANOVA			<i>F</i> test (<i>df</i> 2,56)
	Case	Subthreshold	Control	
Maternal factors				
Age	31.00 (6.61)	28.35 (6.66)	31.15 (6.35)	1.22
High school/GED	69 %	61 %	75 %	.48
Highest grade-level	12.50 (2.00)	12.51 (2.29)	14.20 (3.36)	2.70 ⁺
Household income	22.50 K (21.45)	29.13 K (16.49)	51.00 K (32.75)	7.08***
CPS involvement	56 %	48 %	5 %	7.64***
No. of violent events exp	3.25 (2.82)	2.32 (1.86)	1.20 (1.76)	4.16*
Maternal suicide attempt	44 %	35 %	0 %	4.31*
CAPS (life + cur PTSD)	97.94 (18.01)	67.22 (24.42)	18.60 (25.54)	53.19***
PCL-S (current PTSD)	58.06 (7.72)	32.35 (6.94)	18.75 (24.70)	188.68***
BDI (current depression)	26.25 (10.93)	11.04 (8.01)	5.40 (4.85)	33.06***
Paternal factors				
Father present	62 %	62 %	63 %	.02
Father violent	44 %	43 %	25 %	.96
Child factors				
Age (in months)	31.69 (11.34)	28.87 (10.10)	29.10 (10.70)	.38
Sex	56 % boys	61 % boys	60 % boys	.04

CPS child protective services, BDI beck depression inventory, DES Dissociative Experiences Scale

Significance (*p*) “+” ≤ .1; “*” = ≤.05; “**” = ≤.01; “***” = ≤.005

selected 30-s excerpts from V2 for joint parent-clinician review. The excerpts were selected by the principal investigator and research assistant to demonstrate an optimal moment of interaction & play between mother and child, a moment of separation when the mother is not in the playroom, a moment of reunion when the mother returns, and a moment of sub-optimal play. In the clinician’s review of each excerpt with the mother, he underscores positive capacities demonstrated by the mother in interacting with her child, encourages the mother to describe what her child might have been thinking or feeling in each moment, then administers a content item from the WMCI, “choose 5 words (adjectives) that describe your child’s personality” without reference to previous attributions of which the mother may have spoken. If a mother changed how she would describe her child as compared to what she said during Visit 1, the clinician would ask her, “What changed? Do you think that your child changed or that your feelings changed in relation to your child?” The clinician would further ask: “Whom does your child remind you of in this excerpt?” “Does this moment remind you of any specific moments in your own life?” “On a scale of 1–10, 1 being the easiest, and 10 being the hardest, how was this moment to watch– and why?”. Maternal negative attributions of child, self, and primary attachment figure of childhood were elicited at this visit.

Measures

The *Demographic and Treatment History Questionnaire* [10] is a standard measure consisting of 33 items adapted from the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (4th ed. [DSM-IV]) [23, 24]. In addition to typical demographic data (age of mother and child, child gender, household income), this measure asked, “Has your child’s father ever been physically violent with you?” and “Have you ever taken out an Order of Protection?”

The *Traumatic Life Events Questionnaire* (TLEQ) [25] assesses exposure to 22 life-events that could fulfill the “A-criterion” for the DSM-IV PTSD diagnosis. Participants meeting the A-criterion for any event were given standard measures to assess PTSS. The TLEQ shows stability and convergent validity across diverse studies and across diverse minority populations [25].

Within the current study of 59 mothers, we present group-analyses involving three groups of mothers distinguished by their response to two standard and well-validated measures of PTSD:

The *Clinician Administered PTSD Scale* (CAPS) [26] and the *Posttraumatic Stress Symptom Checklist—Short Version* (PCL-S) [27]. The CAPS interview was focused on the “worst period of symptoms after the traumatic event(s) last

occurred”. The PCL-S was given as an interview following the CAPS for the period of the month prior to the clinical interview even if the CAPS also focused on this period of time.

Only PTSD related to interpersonal violence was included in the study. While PTSD symptoms due to any other type of traumatic event were measured; as it happened in this sample, all mothers with the diagnosis of PTSD and with subthreshold symptoms declared that the traumatic event meeting the DSM-IV “A-Criterion” was one of IPV. Mothers in the case group needed to have a PCL-S score over 45 and a CAPS score over 55 together with clinician assessment of significant suffering and/or functional impairment within the past month; subthreshold mothers needed to have a PCL-S score between 25 and 45 regardless of the CAPS scores; and control mothers needed to have a PCL-S score under 25 and a current CAPS score under 30. Thus caseness criteria were stringent. Based on these criteria, three groups were established: (a) Mothers defined as being “clinical cases of PTSD”; meeting full criteria for current PTSD related to interpersonal violence, which was defined as being the victim of physical and/or sexual abuse or assault and/or exposure to physical to abuse or assault from birth until the present. (b) Mothers defined as being “subthreshold” for PTSD diagnosis yet having clinically significant distressing and/or impairing symptoms related to interpersonal violence exposure. (c) Mothers defined as “controls” without PTSD diagnosis or subthreshold/clinically significant symptoms, with or without exposure to interpersonal violence.

A similarly standard and well-validated clinical psychiatric interview the *Mini International Neuropsychiatric Interview Mood Disorders Module* (MINI Mood) [28] was also administered by the research clinician to assess comorbid Major Depressive Disorder (MDD) and the *Beck Depression Inventory II* (BDI-II) [29], another standard and well-validated measure, was administered to evaluate the severity of depressive symptoms via 21 self-report items. Scores on the BDI-II that are equal to 14 or greater are considered to reflect a clinical level of depression, with higher scores indicating greater severity.

Maternal Attribution Rating Scale (MARS) [30]. The MARS was utilized in the assessment of maternal attributions in V1, 2, and 3. The MARS allows for rating of the single WMCI content item that states “Tell me 5 words or short phrases (adjectives) that describe your child’s personality”. For self-attributions, the mother was instructed as follows: “Tell me 5 words or short phrases (adjectives) that describe your own personality”. The mother was then asked who she would consider to have been her primary attachment figure, the single most important person on whom she depended during her first 5 years of life. And then, regarding that person, the mother was instructed as

follows: “Tell me 5 words or short phrases (adjectives) that describe him/her”. Each of the five adjectives in each of the three sets of descriptors was then coded along a 5-point rating scale for negativity which has been predictive of insensitive caregiving and maltreatment in previous studies respectively [31, 32]. It serves as a continuous measure of the degree of negativity of maternal attributions of her child, herself, and the person that she considers to be her primary attachment figure during childhood. Interrater reliability on the MARS was high across ratings by four coders naive to subject status (Intraclass Correlation Coefficient = .95***).

Data Analysis

Hypothesis 1: Categorical group analysis of variance (ANOVA) was used to compare mean degrees of negativity in attributions toward child, self, and primary attachment figure across all three groups (PTSD, Subthreshold, Control). Two-group ANOVA with PTSD and Control groups was also employed, leaving out the subthreshold group, given their high heterogeneity. Multiple regression analysis was also employed to measure severity of PTSD symptomatology as predictive of degree of negative attributions toward child, self, and maternal primary attachment figure in childhood.

Hypothesis 2: Repeated measures analysis of variance (ANOVA) tested for group differences with application of a conservative *F* test called the Greenhouse–Geisser correction. This *F* test was applied in order to reduce Type I error in the repeated measures design. We examined change in the level of negativity of attributions across visits and also covaried the demographic variable of family income which differed significantly between groups, additionally between group *t* tests were used to investigate the origins of effects at each visit. All analyses were conducted in SPSS 17.0. All probabilities were *two-tailed*.

Results

Testing Hypothesis 1: Mothers with current PTSD diagnosis related to interpersonal violence (IPV-PTSD) would have more negative attributions of their child’s, their own, and their identified childhood primary attachment figure’s personality than subthreshold or control-group mothers at baseline.

As shown in Table 2, categorical analysis via ANOVA showed that the degree of negativity of mothers’ attributions towards their child [$F(2,56) = 6.77, p = .002$], themselves [$F(2,56) = 8.86, p = .000$], and their own primary attachment figure during childhood [$F(2,56) = 4.44, p = .02$] at

Table 2 Shows degree of negativity at baseline towards child, self, and maternal primary attachment figure (M-PAF), by case, sub-threshold and control groups

Means (SD) by ANOVA				
	Case	Subthreshold	Control	<i>F</i> test (<i>df</i> 2,56)
Towards child				
V1	14.53 (4.31)	12.15 (3.49)	10.84 (3.05)	6.77**
V3	11.28 (4.04)	10.46 (3.18)	10.17 (2.39)	0.56
Towards self				
V1	14.83 (3.56)	10.64 (2.91)	10.89 (2.60)	8.86***
V3	14.26 (3.62)	11.64 (2.76)	10.61 (3.47)	5.67***
Towards M-PAF				
V1	16.12 (4.99)	13.68 (4.96)	12.24 (3.96)	4.41*
V3	15.58 (5.37)	12.96 (4.29)	11.79 (5.10)	2.76 ⁺

Significance (*p*) “+” $\leq .1$; “*” $\leq .05$; “**” $\leq .01$; “***” $\leq .005$

baseline was significantly higher among mothers meeting full diagnostic criteria for current PTSD than for sub-threshold or control group mothers.

As shown in Table 3, continuous analyses via multiple linear regression showed that the degree of negativity of mothers’ attributions towards their child, themselves, and their own primary attachment figure during childhood at baseline was significantly predicted by severity of current maternal PTSD symptoms. Household income, a potential confounder (see Table 1) did not significantly affect the predictive value of maternal PTSD in any of the three regression models.

Testing Hypothesis 2: Mothers with current PTSD diagnosis compared to the two other groups would demonstrate greater reduction in the degree of negativity of their attributions towards their child but not towards self or attachment figure by the end of the 3-visit protocol.

Due to findings regarding severity of negative attributions as shown in Table 2, in order to gain power and in accordance with our hypothesis we collapsed the sub-threshold and control subjects into one group for the following analyses.

Three repeated measures ANOVAs, each testing negativity towards child, self, and M-PAF, tested for an effect of time from V1 to V3 post-CAVES (see Table 2). For M-PAF [$F(1,57) = 6.0$; $p = 0.018$] and self [$F(1,55) = 17.2$; $p < 0.001$] there were significant group effects for negativity, but no significant effects of time. Only negativity of attributions towards the child showed a significant main effect of time [$F(1,57) = 20.6$; $p < 0.001$] as well as a significant interaction between group and time [$F(1,57) = 4.3$ $p = 0.43$].

We then performed post hoc *t* tests to further examine group differences in detail. During V1, PTSD mothers did

have significantly more negative attributions toward their child than the two other groups [$t(57) = 2.83$, $p = 0.006$], tended to differ at V2 [$t(56) = 1.85$, $p = 0.69$], and did not differ significantly anymore at V3 [$t(57) = 1.02$, $p = 0.31$]. In order to make sure that we did not fail to find this difference due our collapsing together control and subthreshold-subjects, we also examined the difference of just PTSD mothers and control subjects without sub-threshold subjects. Results remained similar [V1: $t(37) = 2.64$, $p = 0.012$; V2: $t(36) = 2.04$, $p = 0.049$; V3: $t(37) = 1.10$, $p = 0.28$].

We further examined the interaction of comorbid current major depressive disorder (MDD) as diagnosed by the MINI Mood Disorders Module within the different groups of mothers. Of the PTSD mothers 15/16 (94 %) met criteria for MDD; 10/24 (42 %) of subthreshold, and 3/18 (17 %) of controls, with the same Chi Square value = 20.20 ($p > .001$) for both three-group and then two-group (PTSD vs. controls only, leaving out subthreshold subjects) comparisons. Thus, these results were driven by the full-PTSD diagnosed mothers as compared to non-PTSD controls.

Using a repeated measures analysis that isolated changes taking place from V1 to V2, while controlling for current MDD comorbid diagnosis, the main effect of time was significant (Greenhouse–Geisser = 22.72***); as was the interaction with PTSD diagnosis (Greenhouse–Geisser = 6.10*).

Using a repeated measures analysis, that isolated changes taking place from V2 to V3 post-CAVES, while controlling for current MDD comorbid diagnosis, the main effect of time was significant (Greenhouse–Geisser = 7.74***) and the interaction with PTSD diagnosis approached significance (Greenhouse–Geisser = 3.67+).

Applying a multi-linear regression model, the overall change from V1 to V3 is largely accounted for by V1 to V2 (28 % of the variance; β change V1 to V2 = .53***) and by V2 to V3 (43 % of the variance; β change V2 to V3 = .66***).

Discussion

Results showed that attributions of the IPV-PTSD-mothers towards child, self, and mother’s primary attachment figure were significantly more negative than among mothers with no clinically significant post-traumatic stress symptoms during V1 and V2. By the end of V3 (CAVES), PTSD mothers had reduced their degree of negativity of attributions only towards their child (i.e. not towards themselves nor their primary attachment figure) significantly on the MARS, to such a degree that it now was at the level of the control-group and even slightly below. This decrease in negativity was greater than that of the control-group in the

Table 3 The degree of negativity of maternal attributions was predicted by current symptom severity at the time of assessment of attributions as tested by multilinear regression

Significance (<i>p</i>) “+” ≤ .1; “*” = ≤.05; “**” = ≤.01; “***” = ≤.005	Towards child		
	R^2 .08 F(1,57)	4.94 (sig ≤.05)	β PTSD .28*
	Covarying for household income (SES)		
	R^2 .08 F(2,56)	2.43 (sig ≤.01)	β PTSD .29* β income .007
	Towards self		
	R^2 .21 F(1,57)	14.84 (sig ≤.001)	β PTSD .46***
	Covarying for household income (SES)		
	R^2 .26 F(2,56)	10.02 (sig .008)	β PTSD .58*** β income .27*
	Towards M-PAF		
	R^2 .21 F(1,57)	15.18 (sig ≤.001)	β PTSD .46***
	Covarying for household income (SES)		
	R^2 .22 F(2,56)	7.69 (sig ≤.001)	β PTSD .42*** β income .08

present study and than that of the PTSD-mothers in the 2006 clinical study sample [2].

These results echo those of a previous study of mothers with histories of childhood physical abuse regarding perceptions of their infants versus non-abused controls [7]. Although posttraumatic stress per se was not a focus of the Gara et al. study [7], that study found that physically abused mothers were more likely to express negative perceptions of their infants than were controls. Recent studies have also related maternal IPV-PTSD to risk for child maltreatment [33] and maltreating mothers to harsh, negative attributions towards their young children [32]. Thus maternal attributions towards child, self, and attachment figures, are keys to more elaborate mental representations that inform caregiving behavior including maltreatment [34]. Decreasing negativity and distortion of maternal attributions via early intervention may thus carry over a mutative effect on maternal behavior and thus may decrease intergenerational transmission of violence and related trauma. This possibility is currently understudied and in need of further research.

Along this line of thinking, the present study also found that the degree of negativity of mothers' attributions towards her child, herself, and her primary attachment figure as compared to non-PTSD controls was predicted by the severity of her post-traumatic psychopathology. Interestingly, mothers with IPV-related PTSD showed a robust correlation of their negative attributions towards their child with those towards themselves, yet no significant relationship between attributions toward their child with those towards their attachment figure or between attributions toward themselves and those towards their attachment figure. For the control group, however, the only significant correlation was between the degree of negativity toward themselves and their attachment figure. This suggests that

compared to PTSD mothers, control subjects had a greater capacity to see their children in a different, and more positive way than themselves and their primary attachment figures, and perhaps also that psychological defences did not get in the way of seeing their children positively and their attachment figure negatively.

There was a notable significant reduction of the degree of negativity of attributions towards the child across the three visits. As previously discussed [2], we believe that what contributes most to traumatized mothers changing their minds about their young children during the CAVES intervention is seeing the expression of their child's face and seeing their own response to their child in the video. We now know, based on a larger study that contained the present study's sample, that maternal capacity to engage in joint attention during reunion following the stress of separation decreases in proportion to the severity of her posttraumatic stress [10]. Thus, it appears that the CAVE's clinician directed and supported joint attention and reflective functioning invites traumatized mothers not only to 'attend' and 'see' otherwise avoided helpless states of mind in their child, but also to reflect upon and think about what might be going on in their child's mind and in their own mind at that stressful moment. Indeed, the degree of negativity of maternal attributions toward their child decreased most significantly within the PTSD group of mothers, and, as in the 2006 study, decreased following the CAVES by the end of V3. But unlike the 2006 study, the present study shows that PTSD-mothers' negativity of attributions also decreased significantly when these subjects went from V1 to V2. One possible explanation for this is that within the clinically referred sample, mothers and children had been already evaluated by the clinical team with a trauma-focus. Therefore a co-constructed narrative about the problem that brought the mother to consultation, in context of the

mother's personal history had already been established as a foundation for change during the CAVES visit.

However, in the present study's sample, 80 % of the mothers had had no mental health professional focused discussion of stressful life-events and traumatic stress, either their child's or their own. Thus, we think that the co-construction of the child's and mother's life-events, their relationships, with a focus on violence-exposure and traumatic stress in this largely mental health naïve sample, as well as the direct interaction between mother and child in V2 following the co-constructed narrative, were themselves mutative and were subsequently further reinforced by the CAVES visit. The change in negativity of attributions was more evenly distributed over the course of the three visits. The CAVES was deliberately designed to help mothers understand, access and modulate their emotions towards their children. The clinically referred sample thus benefited most from what was novel in the research protocol, namely the CAVES. In the present study, by the end of the third visit, PTSD mothers returned to the same level of negativity as healthy control subjects, which is also a novel finding.

The fact that the degree of negativity of maternal attributions towards self and primary attachment figure did not change significantly across the three-visit intervention is understood to support the notion that mental representations of self and primary attachment figure are more "fixed" and less plastic given the relatively lengthy duration of these representations compared to the duration of representations of the very young child. The finding that the degree of negativity of maternal attributions towards her child decreased significantly but did not decrease towards herself or her primary attachment figure additionally supports the notion that brief intervention and in particular videofeedback intervention are often associated with rapid change in the parent–child relationship [17, 18].

Limitations and Considerations

We are currently addressing the limitations imposed by the high co-linearity of the different forms of trauma-related psychopathology. A depressed, non-PTSD control group of mothers is being recruited to test further for the specificity of PTSD and dissociative symptoms, and for comorbidity with major depressive disorder symptoms as predictors of (1) the quality of attributions, and (2) the potential for versus resistance to change with intervention. Other limitations include the absence of measurement of the degree of negativity of attributions towards the child's father, which we are now measuring within a similar non-referred sample in Switzerland [35].

Significant differences between cases and controls in terms of household income as a marker of social-economic

status may also be problematic in the replicability of this study in populations outside of the community studied in the 2006 and present studies (i.e. Northern Manhattan Caribbean Hispanic community). It was beyond the scope of the present study to be able to determine if poverty was related as a cause or effect of group differences between cases and controls. Both interpretations are possible as poverty can at once be a risk *for* and an effect *of* violent trauma-related psychopathology [36].

A final caveat to be mentioned is that while the 2006 and present studies of the CAVES showed promise in terms of "changing traumatized mothers' minds" about their young children immediately after a single-session, the authors still do not have evidence that such change was sustained and subsequently translated into change in maternal behaviour. Manualization of the CAVES into a longer intervention is underway in order to empirically test if repeated CAVES, via confrontation of maternal trauma-avoided affects and support of parental reflective functioning with regards to her child might render more accessible, catalyze, or accelerate change in longer evidence-based infant-parent interventions for high-risk families [18, 37]. Under no circumstances do the authors wish readers to consider the CAVES yet as a free-standing intervention unto itself given that it consists of only a single-session.

Clinical Significance of Findings

These caveats and limitations notwithstanding, the authors wish to demonstrate not only the statistical but clinical significance of a mean decrease in negativity. To that end, we present a clinical example below. These attributions were rated via the MARS as described above. The MARS yielded a simple list of five adjectives or brief descriptive phrases that the mother had been asked to generate in order to describe her child's, her own, and her own primary caregiver's personality, this as a crude indicator of clinically observable change.

*Tony and Barbara*¹

Tony was a 27 month-old boy who presented with his mother Barbara, age 30. Barbara had a significant history of physical abuse by her mother beginning in early childhood and partner violence beginning during adolescence. Diagnosed with past and current IPV-PTSD, her CAPS score was 73 and her PCL-S score 50. She was additionally

¹ "Tony and Barbara" are pseudonyms for actual subjects that participated in the study after the mother Barbara had given specific consent for clinical material that was related to the dyad's participation to be presented and/or published for the benefit of health professionals and trainees.

Table 4 The reduced degree of negativity on the Maternal Attributions Rating Scale (MARS) can be better understood in the context of the clinical example described with each table column representing one visit

Visit 1	Visit 2	Visit 3 (CAVES)
Disorganized... messy	Worries	Worries
Worries	Affectionate	Affectionate
Talkative	Disorganized	Intelligent
Possessive	Intelligent	Talkative... too much
Unstable	Sometimes selfish	Awake
MARS score = 20	MARS score = 15.5	MARS score = 13.25

Within each visit, the series of descriptors used by the mother to describe her toddler and the resulting MARS score appear

diagnosed with past but not current major depressive disorder on the MINI with a current BDI score of 11.

Barbara complained that Tony, a rather separation anxious and hypervigilant child was “angry, controlling and manipulative”. Barbara described both her mother and Tony’s father with the adjectives “disorganized, selfish, possessive and controlling”, her mother was additionally described as “unstable”. Barbara’s self attributions were “anxious” and “a worrier”. To describe Tony, Barbara used similar words as those describing her abusive mother and her violent boyfriend—Tony’s father, during Visit 1 (in the absence of Tony). The adjectives “disorganized/messy”, “possessive” and “unstable” are both negative and not developmentally typical if not inappropriate to describe a toddler. During Visit 2 in which Barbara interacted with Tony, the adjectives became more positive and age-appropriate: “affectionate” and “intelligent”. Barbara included the time-descriptor “sometimes” to modify “selfish” or “possessive” (i.e. these are not traits but rather, finite states). After reviewing the video-excerpts with the clinician during the CAVES (V3), Barbara retained the positive descriptors “affectionate” and “intelligent”. “Disorganized”, “possessive”, “unstable”, “selfish” she dropped. All of the adjectives used became more typical as descriptors of a toddler. The score thus dropped overall 6.75 points in negativity. In her narrative about Tony after viewing the video-excerpts in the CAVES, Barbara described how she had underestimated how important she was to Tony and that his efforts to maintain her presence, which she had interpreted as “possessive” and manipulative, were rather motivated by his separation anxiety (Table 4).

Summary

This paper has supported that largely non-referred mothers who suffer from IPV-PTSD as compared with non-IPV or

“healthy” controls reported significantly more negative attributions towards their toddlers, themselves, and their own primary caregivers. The paper furthermore described how a brief experimental intervention that consists of three evaluation sessions, the last of which involved a clinician-assisted exposure to videotaped excerpts of prior interactions can significantly impact how negatively a traumatized mother thinks about her toddler. The intervention did however not change negative attributions of the mother toward herself or her primary attachment figure which are not the focus of this experimental intervention. The CAVES (V3) at the end of which maternal attributions are elicited for the last time during the protocol encourages joint attention to distressing child states of mind (i.e. helplessness, fear of separation and loss). Distressing child states of mind are typically avoided by mothers who suffer from IPV-PTSD in so far as these child states of mind can function as posttraumatic triggers for the mothers. The CAVES intervention also encourages joint attention during play and pleasurable moments that may also be dampened as a function of emotional numbing due to maternal PTSD [34]. This paper supports the notion that the entire three-visit assessment process as we have conducted it is essential for the observed changes in maternal attitudes towards her young child. While further research is ongoing to understand how the subtle changes observed might be translated into maternal behavior and sustained via a longer brief psychotherapy model [35], we maintain that at the very least, the three-session experimental intervention described in this paper may be a useful assessment tool to test the capacity of a traumatized mother to view her child more sensitively, as a pre-requisite to more sensitive maternal behavior.

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