

CHILD-PARENT PSYCHOTHERAPY EXAMINED IN A PERINATAL SAMPLE: DEPRESSION, POSTTRAUMATIC STRESS SYMPTOMS AND CHILD-REARING ATTITUDES

IRIS LAVI

University of California, Berkeley

ARIANNA M. GARD

University of Michigan

MELISSA HAGAN, PATRICIA VAN HORN,[†] AND ALICIA F. LIEBERMAN

University of California, San Francisco

This pilot study examined the potential impact of a perinatal adaptation to Child-Parent Psychotherapy (CPP), an evidence-based treatment for traumatized mother-child dyads, on maternal functioning 6 months post-partum among women with history of complex trauma and current intimate partner abuse. Pregnant women ($n = 64$) enrolled during the third trimester of their pregnancy (Mean gestational age = 27.48 weeks, range of 12 to 42) and participated in weekly perinatal CPP sessions until their infant was 6 months old. Women completed measures of trauma history, depression, posttraumatic stress symptoms (PTSS), and child-rearing attitudes at pre- and post-treatment. Results showed decreases in depression and PTSS from pre- to post-treatment assessments, as well as an increase in positive child-rearing attitudes. As hypothesized, women with low maternal-fetal attachment demonstrated the greatest improvement in depression, PTSS, and child-rearing attitudes compared to women with high maternal-fetal attachment. The current study provides promising results indicating that a perinatal

[†]deceased.

This study was conducted with the generous grant from the Hedge Funds Care Foundation and was supported by the European Commission Marie Curie International Outgoing Fellowship awarded to the first author.

Address correspondence to Iris Lavi, School of Public Health, University Hall 533, University of California Berkeley, Berkeley, CA 94720-7360; E-mail: irisravi@berkeley.edu.

adaptation of CPP may lead to improved maternal mental health and parenting attitudes at a time of increased vulnerability in a high-risk population.

The perinatal period is a transformative time for women, placing multiple demands on their physical and psychological well-being. Transition to motherhood is also a time of heightened risk of intimate partner violence (IPV) and increased vulnerability to the psychological consequences of traumatic stress. Pregnant women have a 36% increased risk of experiencing violence compared to women who are not pregnant (Gelles, 1988). IPV exposure is one of the most common sources of reported trauma during pregnancy (Mendez-Figueroa, Dahlke, Vrees, & Rouse, 2013), with rate of prenatal IPV on par with many common medical conditions screened for during prenatal visits (Gazmararian et al., 1996). The prevalence of IPV is striking as it is a major contributor to adverse maternal and child health outcomes, including later entry into prenatal care, low birth weight, premature labor, fetal trauma, and unhealthy maternal behaviors (Coker, Sanderson, & Dong, 2004; Jasinski, 2004).

As an interpersonal trauma perpetrated by a close other, IPV during pregnancy can have devastating effects on the mother's mental health, when the need for social and psychological support is high. IPV in the perinatal period is associated with greater maternal depression and posttraumatic stress symptomatology (Rodriguez et al., 2008). Depressive and posttraumatic stress symptomatology, in turn, has serious implications for child development. Infants born to women with abuse-related PTSS have lower birth weight compared to women with abuse who did not develop PTSS and non-traumatized women (Seng, Low, Sperlich, Ronis, & Liberzon, 2011). Current and past exposure to IPV can also have an indirect impact on the child via its effects on the mother-infant relationship and parenting practices. Maternal exposure to IPV is associated with greater risk for child abuse and maladaptive parenting practices, as evidenced by greater interruptions in post-birth service usage and lower levels of warmth, nurturance, and positive discipline in early childhood (Letourneau, Fedick, & Willms, 2007). Additional stressors may amplify IPV-related psychological distress during pregnancy. Women reporting low socioeconomic status, defined as a combination of low income, less than a college education, being

unmarried and being unemployed, were at an 11-fold greater risk for postnatal depression compared to women reporting high socioeconomic status (Goyal, Gay, & Lee, 2010).

Women who experience IPV are more likely than non-exposed women to have a childhood history of family violence (Jeyaseelan et al., 2004). This is notable as traumatic events that occurred during mother's childhood may resurface during pregnancy and gain enhanced salience in transition to motherhood (Lieberman, Diaz, & Van Horn, 2011). One suggested path of intergenerational transmission of victimization is via replication of attachment patterns. In the prenatal period, this path takes the form of maternal-fetal attachment—the affiliation a mother feels towards her unborn child. A mother's mental representations of the infant-caregiver relationship, crafted with her own childhood experiences, affects her attachment experience with her newborn (Huth-Bocks, Levendosky, Bogat, & Von Eye, 2004). Mothers' memories of parental acceptance and encouragement for independence during childhood predict their infant's attachment security (Ricks, 1985), with quality of attachment expectant mothers report with her own parents predicting development of attachment with her own infant at one year of age (Steele, Steele, & Fonagy, 1996). Maternal-fetal attachment also has implications for infant development (Bergman, Sarkar, Glover, & O'Connor, 2010), mother-infant interaction (Fonagy, Steele, & Steele, 1991) and later child development (Belsky & Fearon, 2002).

Exposure to IPV is a type of physical and/or psychological trauma that occurs in a relational context, impacting the victim's sense of self as well as the developing child's experience in the attachment relationship. As a large portion of the emotional and behavioral problems during infancy are seen as relational, there is general agreement that the focus of mental health interventions for infants must be on improving parent-infant relationships (Cohen et al., 1999). The current study examines the potential efficacy of an adaptation of Child Parent Psychotherapy (CPP) to the perinatal period. Originating from infant-parent psychotherapy (Fraiberg, 1980), CPP is a relationship-based treatment designed to break the intergenerational transmission of trauma and psychopathology in families with children under the age of 5 (Lieberman & Van Horn, 2005, 2008). CPP is a multi-theoretical intervention that integrates theories of attachment, psychoanalysis, and complex trauma with

clinical strategies derived from cognitive-behavioral and social-learning therapies (Lieberman & Van Horn, 2005, 2008). The efficacy of CPP has been demonstrated in five randomized studies targeting anxiously-attached low-income Latina mothers and their 12-month-old children (Lieberman, Weston, & Pawl, 1991), maltreated infants and preschoolers (Cicchetti, Rogosch, & Toth, 2006; Toth, Maughan, Manly, Spagnola, & Cicchetti, 2002), pre-schoolers and mothers exposed to domestic violence (Lieberman, Ghosh-Ippen, & Van Horn, 2006; Lieberman, Van Horn, & Ippen, 2005), and toddlers of depressed mothers (Cicchetti, Rogosch, & Toth, 2000; Toth, Rogosch, Manly, & Cicchetti, 2006).

The current study evaluates changes in depression, posttraumatic stress symptomatology, and child-rearing attitudes among women who participated in a perinatal adaptation of CPP during and following pregnancy. Given that CPP has been found to significantly reduce posttraumatic stress, depression, and avoidance symptoms in mothers and to increase maternal empathy and positive interactions between mothers and their children (Ghosh Ippen, Harris, Van Horn, & Lieberman, 2011; Lieberman et al., 2006; Lieberman et al., 2005; Lieberman et al., 1991), we predicted that women who participated in perinatal CPP would show a decrease in levels of depressive and PTSS and exhibit more positive child-rearing attitudes from pre- to post-treatment assessments. We also expected changes in symptoms and attitudes to be dependent on level of maternal-fetal attachment at baseline and number of perinatal CPP sessions received. Women with higher maternal-fetal attachment at baseline or longer treatment courses were expected to display greater improvement (decrease in depression and PTSS, and increase in positive child-rearing attitudes) in comparison to women with lower maternal-fetal attachment or shorter treatment courses.

METHOD

PARTICIPANTS

Pregnant women ($n = 116$) aged 18 to 40 were identified by social workers in San Francisco General Hospital's Women's Health Clinic based on women's report of feeling unsafe in their relationship with their partner when interviewed during prenatal medical appoint-

ments. Exclusion criteria included mental retardation, psychosis, or current use of alcohol or drugs. Of the 116 eligible participants, 64 (55.17%) completed the perinatal CPP, and this latter group comprises the study group used in the current analyses. Attrition occurred at various stages, as noted in Table 1, with attrition rates in this study being comparable attrition rates found in community samples (Kingston, Tough, & Whitfield, 2012). Majority of participants ethnically identified themselves as Latina (86%). Mean age at pre-treatment was 27.48 years ($SD = 8.87$) and 53% of women ($n = 34$) were in their third trimester of pregnancy at that time (27 weeks or later).

PROCEDURES

Informed Consent Process and Pre/Post Treatment Assessments. All women deemed eligible for the current study were offered treatment with perinatal CPP due to the circumstances surrounding the women's arrival to the clinic and the element of urgency with upcoming birth. Participants were assigned a perinatal CPP-trained clinician who outlined the course of treatment, described potential risks, and obtained informed consent. Prior to initiating treatment, the clinician conducted a multi-session assessment, during which time mothers completed multiple measures of past and current stressful life events, demographics, mental health symptoms, and parenting attitudes. The clinician conducted a similar assessment post-treatment when the infant reached 6 months of age ($M = 6.56$, $SD = .94$). All measures were administered in the participant's native language (English or Spanish). If literacy was an issue, instruments were delivered in interview format. All assessment and treatment procedures were approved by the institutional review board at the University of California, San Francisco.

Perinatal Child-Parent Psychotherapy. Consistent with CPP, the perinatal adaptation aims to prevent and/or ameliorate short and long-term consequences of IPV on child and maternal well-being and safety. However, the perinatal adaptation includes supplemental components that consider the unique emotional and physical transitions that occur during the perinatal period (Lieberman et al., 2011). Master's or doctoral-level clinicians trained in perinatal CPP deliver the intervention in the context of two overall goals: (1) pro-

motion of maternal self-care, attunement to child, and responsiveness to infant's signals, and (2) address negative maternal attributions of infant and potentially maladaptive caregiving behaviors by exploring links between these attributions/behaviors and mother's own experiences of current and past trauma. Details of perinatal CPP are reported elsewhere (e.g., Lieberman et al., 2011) but are briefly described here.

During pregnancy, treatment focuses on woman's experience of her pregnancy and her fantasies, fears, attributions, and hopes for her unborn child. Between two to four weeks following the birth, therapy resumes with women participating in dyadic sessions with infant. During this phase, therapeutic focus turns toward the mother's experience of labor and delivery, her perception of her newborn, and the moment-to-moment interactions between mother and baby. Throughout treatment, the following intervention strategies are used: psycho-education on infant development and the impact of intimate partner violence on the fetus/baby, body-based and mindfulness-promoting strategies to help women to be aware of and tolerate negative body sensations, reflective developmental guidance, insight-oriented interpretation, and concrete assistance with problems of living and crisis intervention (Diaz, Van Horn, & Lieberman, 2008; Lieberman et al., 2011). Fidelity of the treatment was monitored through weekly supervision with one of the treatment developers on the basis of adherence to the perinatal CPP protocol.

MEASURES

Demographic and Intervention Information. Clinicians collected information of parents' demographics, income, and substance abuse. The substance abuse scale asked participants whether they used alcohol, cigarettes, or drugs (marijuana, crack, cocaine, opioids, stimulants, prescription drugs, or other drugs) in the past, during the first pregnancy trimester, or during the second/third trimesters (possible answers: none, infrequent, monthly, weekly, daily, unknown). A socioeconomic status (SES) variable was created using parental occupation status and education level as stipulated by Hollingshead (1975). Dosage actually received was tracked by

recording number of prenatal assessment, prenatal treatment, and postnatal treatment sessions.

Current and Past Interpersonal Trauma. Participants were interviewed using items from the Life Stressor Checklist (LSC; Gray, Litz, Hsu, & Lombardo, 2004) that refer to interpersonal trauma. The 7 items were asked in regard to childhood and adulthood and included: questions about family violence, "When you were young (before age 16) did you ever see violence between family members—for example, hitting, kicking, slapping, punching"; verbal abuse and neglect, "Have you ever been emotionally abused or neglected - for example, being frequently shamed, embarrassed, ignored, or repeatedly told that you were no good?"; "Have you ever been physically neglected—for example, not fed, not properly clothed, or left to take care of yourself when you were too young or ill?"; physical abuse, "Were you ever abused or physically attacked, not sexually, by someone you knew—for example, a parent, boyfriend, or husband hit, slapped, choked, burned, or beat you up?"; sexual harassment, "Have you ever been bothered or harassed by sexual remarks, jokes, or demands for sexual favors by someone at work or school—for example, a co-worker, a boss, a customer, another student, a teacher?"; sexual victimization, "Were you ever touched or made to touch someone else in a sexual way because he/she forced you in some way or threatened to harm you if you didn't?"; "Did you ever have oral, anal, or genital sex when you didn't want to because someone forced you in some way or threatened to harm you if you didn't?." A total childhood interpersonal trauma scale was computed by summing the childhood items. A lifetime interpersonal score was also computed to capture trauma at all ages by summing all items.

Maternal Fetal Attachment. The Maternal-Fetal Attachment Scale (MFA; Cranley, 1981) is a 24-item self-report questionnaire administered during pregnancy, designed to capture the women's bond with her unborn child (e.g., I imagine myself taking care of the baby). Women completed the measure during the pre-treatment assessment only. Participants rated items on a Likert-type scale ranging from Definitely No (1) to Definitely Yes (5). The maternal-fetal attachment score was computed as a sum of the answers to all items, where higher scores indicate higher levels of positive maternal-fetal

attachment. The scale demonstrated good internal consistency in the current study (Cronbach's $\alpha = .87$).

Depression. The Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977) is a 20-item scale that yields a continuous score of depression between 0 and 60. Respondents rate each depressive symptom experienced (e.g., You thought your life had been a failure.) during the past week on a 4-point Likert scale ranging from Rarely or None of the Time (0) to Most or All of the Time (3). The scale was administered at pre-treatment (Cronbach's $\alpha = .91$) and post-treatment (Cronbach's $\alpha = .90$) assessments.

Posttraumatic Stress Symptoms (PTSS). The Davidson Trauma Scale (DTS; Davidson et al., 1997) is a 17-item self-report measure that asks participants to rate the frequency and severity symptoms of PTSS during the past week, on a trauma the participant has identified as most disturbing to her, with a score range of 0 to 136. The score takes into account frequency and severity of symptoms, and is calculated as a total summary score. Respondents rate each symptom experienced (e.g., Have you ever had distressing dreams of the event?) on a 5-point Likert scale ranging from Not at All (0) to Every Day (4) for the frequency items and on a 5-point Likert scale ranging from Not at All Disturbing (0) to Extremely Disturbing (4) for the severity items. The measure demonstrated good internal consistency at both pre-treatment (Cronbach's $\alpha = .93$) and post-treatment (Cronbach's $\alpha = .95$).

Child-Rearing Attitudes. The Adult-Adolescent Parenting Inventory-2 (AAPI-2; Bavolek & Keene, 2001) is a 40-item instrument that measures child-rearing attitudes (e.g., Strict discipline is the best way to raise children.). The inventory includes five subscales: inappropriate expectations, empathy, corporeal punishment, role reversal, and power independence. Participants rate items on a Likert scale ranging from Strongly Agree (1) to Strongly Disagree (5), where higher scores indicate more appropriate attitudes. Ratings of items are summed, with a possible range of 40 to 200. Participants completed the AAPI-2 during pre-treatment (Cronbach's $\alpha = .88$) and post-treatment (Cronbach's $\alpha = .85$) assessment.

TABLE 1. Attrition Data and Study Variables (Means and SD) of Completed and Attrited Participants

Attrition Phase	N	Percentage Attrited of Initial Sample Approached	
During pre-treatment assessment	22	18.97	
After pre-treatment assessment and before birth	18	15.52	
After birth and before post-assessment	11	9.48	

Study Variables	Completed		Attrited		t-test	
	M	SD	M	SD	t	Sig.
Mother age at pre-treatment	28.13	7.21	27.09	5.65	-.83	.41
SES	28.24	11.66	24.02	9.58	-2.09	.04
Weeks pregnant at pre-treatment	27.48	8.87	28.44	9.45	.56	.58
CES-D	27.88	13.65	22.88	12.22	-2.01	.047
DTS	54.35	28.58	49.37	33.18	-.78	.44
Maternal-fetal attachment	85.25	13.32	88.33	12.70	1.24	.22

Notes. CES-D = Center for Epidemiological Studies-Depression scale; DTS = Davidson Trauma Scale.

DATA ANALYSIS

Baseline characteristics were compared between attrited participants and participants who completed the intervention using *t*-tests. For the primary analyses exploring change from pre- to post-assessments, depression, PTSS, and child-rearing attitudes were analyzed separately using repeated-measures Analysis of Variance (rANOVA), as is typical in pre-post designs (e.g., Ammerman et al., 2005). Effect sizes (*Cohen's d*) were calculated from baseline to post-treatment within groups, using Morris and DeShon's (2002) equation eight, enabling examination of effect sizes in repeated-measures design. To explore whether changes from pre- to post-treatment were influenced by maternal-fetal attachment and dosage, moderation analyses were added to the basic rANOVAs using the following two variables, separately: maternal-fetal attachment and dosage.

TABLE 2. Correlations Among Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	1.00											
2. SES	.15	1.00										
3. Interpersonal trauma at childhood	.24	.03	1.00									
4. Interpersonal trauma	.41	.83	.44	1.00								
5. Weeks pregnant at pre-treatment	.005	.14	<.001	.08	1.00							
6. Number of treatment sessions	.11	.08	.08	.55	.68	1.00						
7. Maternal-fetal attachment MFA	.38	.52	.54	.14	.30	.22	1.00					
8. Pre-treatment CES-D	.03	.25	.60	.30	<.001	.22	.33	1.00				
9. Post-treatment CES-D	.04	.16	.01	-.03	.22	-.25	.01	.09	1.00			
10. Pre-treatment DTS	.78	.21	.93	.80	.09	.05	.99	.46	.29	1.00		
11. Post-treatment DTS	-.15	.04	.36	.33	-.14	.22	-.33	.70	.02	.38	1.00	
12. Pre-treatment AAPI	.25	.75	.003	.01	.27	.09	.01	.32	.74	.002	.42	1.00
13. Post-treatment AAPI	.09	-.08	.37	.18	-.19	.18	.001	.09	.02	.001	.09	.001
	.48	.51	.002	.16	.14	.16	.11	.46	.74	.002	.42	.45
	.34	.27	.004	<.001	-.40	.38	.32	.70	.02	.38	.77	<.001
	.12	.03	.32	.22	-.17	.15	.05	.09	.74	.38	.10	<.001
	.34	.81	.01	.08	.18	.24	.72	.46	<.001	.002	.10	<.001
	.14	.22	-.16	-.04	.04	-.07	.34	-.37	.28	-.23	.42	1.00
	.30	.09	.23	.79	.78	.62	.01	.005	.04	.09	.001	.45
	-.01	-.05	-.05	-.01	.04	.04	.12	-.02	.26	.04	.21	.45
	.97	.71	.71	.94	.74	.79	.35	.88	.04	.77	.10	<.001

Notes. CES-D = Center for Epidemiological Studies-Depression Scale; DTS = Davidson Trauma Scale; AAPI = Adult-Adolescent Parenting Inventory.

RESULTS

ATTRITION ANALYSES

Women who completed perinatal CPP were compared to women who attrited from treatment with respect to socio-demographic variables, pre-treatment maternal-fetal attachment, and outcomes. Results from *t*-tests are displayed in Table 1. The two groups did not differ with respect to mothers' age and gestational age at enrollment, PTSS, and mother-fetal attachment. Compared to women who completed perinatal CPP ($n = 64$), attrited women ($n = 50$) had lower SES and depression.

DESCRIPTIVE STATISTICS

Zero-order correlations between the study variables are presented in Table 2. Of the 64 women who completed treatment, two-thirds reported an incident of interpersonal violence before age of 16, including physical abuse (40%), sexual abuse (6%) and a combination of physical and sexual abuse (19%). Seventeen percent of women reported that the pregnancy was not planned. Almost 40% of women reported that the pregnancy was unwanted by the biological father. A majority of women (80%) reported being verbally abused during their pregnancy, and one-third reported physical abuse during pregnancy. In most cases of abuse during pregnancy the perpetrator was the baby's father (75%). As noted earlier, women were not eligible for the study if they reported any substance use during pregnancy; however, more than one third of women reported a history of substance use (alcohol = 42%; nicotine = 18.80%).

About a third of mothers in this study were pregnant with their first child (31%). While slightly more than half of the women in this study reported complications in delivery (58%) the majority of these women experienced only mild, well-managed complications. Most women had a vaginal delivery (80%). Only one infant was reported to have low birth weight (defined as lower than 5 pounds, 8 ounces, Lucile Packard Children's Hospital, 2014).

The standard duration of perinatal CPP is 20 weekly 1-hour sessions; however, given the high-risk nature of the sample and com-

plications with scheduling, average number of treatment sessions was 27 (over 90 percent of treatments within the range of 12 to 49). Perinatal CPP was conducted by one of 11 qualified clinicians and was initiated when women were 27.48 weeks pregnant on average (gestational age range of between 12 to 42 weeks).

PRIMARY ANALYSES

Women who completed the treatment displayed a significant decrease in levels of depression (pre-treatment CES-D: $M = 27.88$, $SD = 13.65$; post-treatment CES-D: $M = 12.84$, $SD = 10.02$), *Wilk's* $\lambda = .53$, $F_{(1, 63)} = 55.32$, $p < .0001$; *Cohen's d* = .94, $\eta^2 = .47$, and PTSS (pre-treatment DTS: $M = 54.35$, $SD = 28.58$; post-treatment DTS: $M = 25.09$, $SD = 24.02$), *Wilk's* $\lambda = .50$, $F_{(1, 62)} = 61.40$, $p < .0001$; *Cohen's d* > .99, $\eta^2 = .50$ from pre- to post-treatment. Women also showed more positive child-rearing attitudes at the post-treatment assessment compared to pre-treatment levels (pre-treatment AAPI: $M = 131.86$, $SD = 21.25$; post-treatment AAPI: $M = 148.73$, $SD = 12.60$), *Wilk's* $\lambda = .53$, $F_{(1, 63)} = 49.85$, $p < .0001$; *Cohen's d* = .95, $\eta^2 = .47$. Additional analyses were conducted to explore the potential influence of demographic characteristics, including participant age at pre-treatment assessment, SES, and interpersonal trauma at childhood. There were no significant interactions between these factors and the within participant factor (time) and were not included in further analysis.

MODERATION ANALYSES

Maternal Fetal Attachment. Changes in depression, PTSS, and child-rearing attitudes from pre- to post-treatment assessments varied according to maternal-fetal attachment at pre-treatment; for depression, $F_{(1,62)} = 10.86$, $p = .002$, $\eta^2 = .15$; for PTSS, $F_{(1,61)} = 6.74$, $p = .01$, $\eta^2 = .09$; and for child-rearing attitudes, $F_{(1,55)} = 4.05$, $p = .049$, $\eta^2 = .07$. The pattern of moderation was similar across the three outcome variables, such that the greatest improvement in depression, PTSS, and child-rearing attitudes were observed in women who reported low maternal-fetal attachment. Illustratively, the finding for depression is depicted in Figure 1.

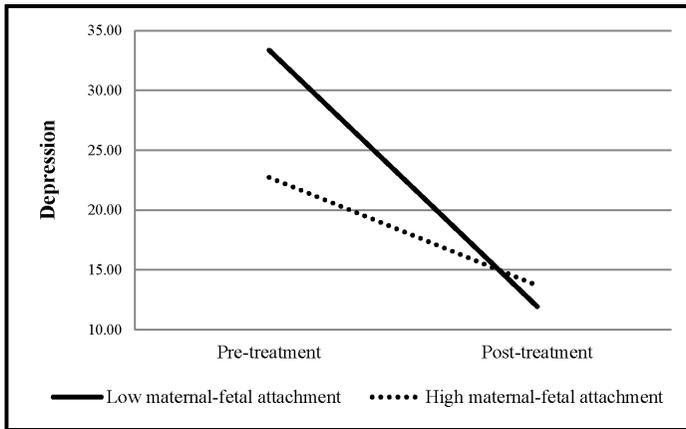


FIGURE 1. Interaction of pre- and post-depression with maternal-fetal attachment.

Treatment Dosage. Outcomes did not vary according to total dosage from pre- to post-treatment assessment: $F_{(1,60)} = .33, p = .57, \eta^2 = .01$ for depression; $F_{(1,59)} = .03, p = .85, \eta^2 = .001$ for PTSS; $F_{(1,54)} = .13, p = .72, \eta^2 = .002$ for child-rearing attitudes.

DISCUSSION

The current study explored the potential effects of a perinatal adaptation to Child-Parent Psychotherapy (CPP) on maternal functioning at 6 months postpartum. Although pregnancy has been identified as a high-risk period for mental health deterioration and exposure to intimate partner violence (Gelles, 1988), only a few studies have examined the effects of interventions aimed at pregnant women suffering from interpersonal trauma (e.g., Muñoz et al., 2007). The current open trial of perinatal CPP found a significant change from pre- to post-treatment in maternal symptomatology and parenting attitudes among a sample of women who reported extensive histories of interpersonal trauma and current intimate partner abuse. Results indicated that post-treatment levels of depression and posttraumatic stress symptoms (PTSS) were significantly lower compared to pre-treatment levels. Women also displayed higher levels of positive child-rearing attitudes at post-treatment com-

pared to pre-treatment. Consistent with hypotheses, women with low levels of maternal-fetal attachment prior to treatment showed the greatest improvement in depression, PTSS, and child-rearing attitudes. Contrary to hypotheses, number of perinatal CPP sessions was not related to pre to post change in maternal mental health or child-rearing attitudes.

Studies examining perinatal treatments for women subjected to multiple traumas are scarce. Two exceptions (Muñoz et al., 2007; Vieten & Astin, 2008) reported a reduction of postnatal depression in high-risk populations following therapeutic intervention. In comparison to Vieten and Astin (2008), the current study showed a comparable rate of reduction in depression symptoms. Although Muñoz et al. (2007) found a relatively larger reduction in levels of depression postnatally, this decrease in symptoms was not maintained at 6 months postpartum. The current study found that the perinatal adaptation of CPP may lead to decreases in maternal depression and PTSS six months after birth, which is notable given that maternal mood symptoms are known to increase and remain elevated during this time (Josefsson, Berg, Nordin, & Sydsjö, 2001; Munk-Olsen, Laursen, Pedersen, Mors, & Mortensen, 2006; O'hara & Swain, 1996; White, Matthey, Boyd, & Barnett, 2006). Illustratively, roughly 13% of women suffer from depression after giving birth and a similar rate is seen 6 months following birth (Josefsson et al., 2001). Perinatal CPP gives simultaneous attention to maternal histories of trauma and recent exposure to IPV while supporting maternal mental health. This dual focus on present functioning and past life experience may help explain why women who participated in the intervention experienced a decrease in PTSS and depression at 6 months post-partum.

Women who have experienced IPV are more likely to engage in harmful or maladaptive parenting practices (Levendosky & Graham-Bermann, 2001) and less likely to perceive themselves as competent parents (Huth-Bocks et al., 2004). We found a significant improvement in child-rearing attitudes from pre- to post-intervention. This result is interesting when considering that the post-treatment assessment was conducted when the infants were six months old. Some of the child-rearing behaviors likely received real practice within this time frame, such as empathy and inappropriate expectations. In addition, changes in child-rearing attitudes may be related to the concomitant decrease in mental health symptoms. This would

be consistent with studies that have found maternal psychological health mediates the impact of IPV on parenting (Levendosky, Leahy, Bogat, Davidson, & von Eye, 2006).

Examination of potential contributors to change in symptoms and child-rearing attitudes revealed that perinatal CPP may be most effective for those at high-risk of maladaptive parenting behaviors due to lower levels of prenatal bonding with the child (i.e., maternal-fetal attachment). Given the attachment-based nature of the intervention and the relation between mental health problems and problematic attachment styles, it is not surprising that the greatest change in depressive and PTSS occurred for women reporting low maternal-fetal attachment prior to treatment. Contrary to predictions, women benefited from the perinatal CPP regardless of number of treatment sessions. Number of sessions, or dosage, varied greatly between participants, and treatment length was not related to baseline symptoms or child-rearing attitudes. Although speculative, the variability in dosage may represent the ability of the clinician to appropriately tailor the length of treatment according to the changing needs of the client.

LIMITATIONS AND STRENGTHS OF THE STUDY

This study has several limitations. This is a pilot study with an open trial design and a small sample. The lack of a control group precludes generating causal conclusions regarding intervention efficacy. The potential for regression to the mean tempers interpretation that changes were due solely to treatment. Future research should include a control group as well as more frequent assessments and standardized dosage to minimize these concerns. In addition, although comparable to community samples (Kingston et al., 2012), attrition rate was high. While the sample in the current study was relatively lower in depression and had a higher SES than those who dropped out, women who remained in treatment were still at very high risk of poor outcomes due to multiple trauma exposure, low-income status (relative to general population), and ethnic/minority status. Finally, a major limitation of the current study is that both pre-treatment and post-treatment assessments were conducted by

the clinician. It cannot be ruled out that social desirability influenced how mothers completed post-treatment instruments.

Despite these limitations, results presented here are promising given the dearth of literature examining interventions for pregnant women. Targeting the perinatal period is a gateway to establishment of better parent-child relationships and perinatal CPP was designed to take advantage of this unique time in a woman's life. In light of known rates of depression in treated and nontreated pregnant women from similar populations (Muñoz et al., 2007; Vieten & Astin, 2008), the current study shows very encouraging results. In addition, findings are notable given the population targeted. Low-income, traumatized women who have recently immigrated to the United States represent a population in grave need. In sum, the present findings demonstrate the promise of a dyadic, attachment-based intervention in promoting maternal mental health and positive child-rearing attitudes among a hard-to-reach, high risk, and underserved population.

REFERENCES

- Ammerman, R. T., Putnam, F. W., Stevens, J., Holleb, L. J., Novak, A. L., & Van Ginkel, J. B. (2005). In-home cognitive behavior therapy for depression: An adapted treatment for first-time mothers in home visitation. *Best Practices in Mental Health, 1*, 1–14.
- Bavolek, S. J., & Keene, R. G. (2001). *Adult-adolescent parenting inventory—2*. Asheville, NC: Family Development Resources.
- Belsky, J., & Fearon, R.M.P. (2002). Early attachment security, subsequent maternal sensitivity, and later child development: Does continuity in development depend upon continuity of caregiving? *Attachment & Human Development, 4*, 361–387.
- Bergman, K., Sarkar, P., Glover, V., & O'Connor, T. G. (2010). Maternal prenatal cortisol and infant cognitive development: Moderation by infant-mother attachment. *Biological Psychiatry, 67*, 1026–1032.
- Cicchetti, D., Rogosch, F. A., & Toth, S. L. (2000). The efficacy of toddler-parent psychotherapy for fostering cognitive development in offspring of depressed mothers. *Journal of Abnormal Child Psychology, 28*, 135–148.
- Cicchetti, D., Rogosch, F. A., & Toth, S. L. (2006). Fostering secure attachment in infants in maltreating families through preventive interventions. *Development and Psychopathology, 18*, 623–649.
- Cohen, N. J., Muir, E., Lojkasek, M., Muir, R., Parker, C. J., Barwick, M., & Brown, M. (1999). Watch, wait, and wonder: Testing the effectiveness of a new approach to mother-infant psychotherapy. *Infant Mental Health Journal, 20*, 429–451.

- Coker, A. L., Sanderson, M., & Dong, B. (2004). Partner violence during pregnancy and risk of adverse pregnancy outcomes. *Paediatric and Perinatal Epidemiology, 18*, 260–269.
- Cranley, M. S. (1981). Development of a tool for the measurement of maternal attachment during pregnancy. *Nursing Research, 30*, 281–284.
- Davidson, J.R.T., Book, S. W., Colket, J. T., Tupler, L. A., Roth, S., David, D. et al. (1997). Assessment of a new self-rating scale for post-traumatic stress disorder. *Psychological Medicine, 27*, 153–160.
- Diaz, M., Van Horn, P., & Lieberman, A. F. (2008). *Perinatal child-parent psychotherapy manual*. San Francisco: University of California San Francisco.
- Fonagy, P., Steele, H., & Steele, M. (1991). Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. *Child Development, 62*, 891–905.
- Fraiberg, S. (1980). *Clinical studies in infant mental health*. New York: Basic Books.
- Gazmararian, J. A., Lazorick, S., Spitz, A. M., Ballard, T. J., Saltzman, L. E., & Marks, J. S. (1996). Prevalence of violence against pregnant women. *Journal of the American Medical Association, 275*, 1915–1920.
- Gelles, R. J. (1988). Violence and pregnancy: Are pregnant women at greater risk of abuse? *Journal of Marriage and the Family, 50*, 841–847.
- Ghosh Ippen, C., Harris, W. W., Van Horn, P., & Lieberman, A. F. (2011). Traumatic and stressful events in early childhood: Can treatment help those at highest risk? *Child Abuse & Neglect, 35*, 504–513.
- Goyal, D., Gay, C., & Lee, K. A. (2010). How much does low socioeconomic status increase the risk of prenatal and postpartum depressive symptoms in first-time mothers? *Women's Health Issues, 20*, 96–104.
- Gray, M. J., Litz, B. T., Hsu, J. L., & Lombardo, T. W. (2004). Psychometric properties of the life events checklist. *Assessment, 11*, 330–341.
- Hollingshead, A. B. (1975). *Four factor index of social status*. New Haven, CT: Yale University.
- Huth-Bocks, A. C., Levendosky, A. A., Bogat, G. A., & Von Eye, A. (2004). The impact of maternal characteristics and contextual variables on infant-mother attachment. *Child Development, 75*, 480–496.
- Jasinski, J. L. (2004). Pregnancy and domestic violence: A review of the literature. *Trauma, Violence, and Abuse, 5*, 47–64.
- Jeyaseelan, L., Sadowski, L. S., Kumar, S., Hassan, F., Ramiro, L., & Vizcarra, B. (2004). World studies of abuse in the family environment—risk factors for physical intimate partner violence. *Injury Control and Safety Promotion, 11*, 117–124.
- Josefsson, A., Berg, G., Nordin, C., & Sydsjö, G. (2001). Prevalence of depressive symptoms in late pregnancy and postpartum. *Acta obstetrica et gynecologica Scandinavica, 80*, 251–255.
- Kingston, D., Tough, S., & Whitfield, H. (2012). Prenatal and postpartum maternal psychological distress and infant development: A systematic review. *Child Psychiatry & Human Development, 43*, 683–714.
- Letourneau, N. L., Fedick, C. B., & Willms, J. D. (2007). Mothering and domestic violence: A longitudinal analysis. *Journal of Family Violence, 22*, 649–659.

- Levendosky, A. A., & Graham-Bermann, S. A. (2001). Parenting in battered women: The effects of domestic violence on women and their children. *Journal of Family Violence, 16*, 171–192.
- Levendosky, A. A., Leahy, K. L., Bogat, G. A., Davidson, W. S., & von Eye, A. (2006). Domestic violence, maternal parenting, maternal mental health, and infant externalizing behavior. *Journal of Family Psychology, 20*, 544.
- Lieberman, A. F., Diaz, M. A., & Van Horn, P. (2011). Perinatal child-parent psychotherapy: Adaptation of an evidence-based treatment for pregnant women and babies exposed to intimate partner violence. In S. A. Graham-Bermann & A. A. Levendosky (Eds.), *How intimate partner violence affects children* (pp. 47–66). Washington, DC: American Psychological Association.
- Lieberman, A. F., Ghosh-Ippen, C., & Van Horn, P. (2006). Parent-child psychotherapy: Six-month follow up of a randomized control trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 45*, 912–918.
- Lieberman, A. F., & Van Horn, P. (2005). *“Don’t hit my mommy!”: A manual for child-parent psychotherapy with young witnesses of family violence*. Washington, DC: Zero to Three.
- Lieberman, A. F., & Van Horn, P. (2008). *Psychotherapy with infants and young children: Repairing the effects of stress and trauma on early development*. New York: Guilford.
- Lieberman, A. F., Van Horn, P., & Ippen, C. G. (2005). Toward evidence-based treatment: Child-parent psychotherapy with preschoolers exposed to marital violence. *Journal of the American Academy of Child & Adolescent Psychiatry, 44*, 1241–1248.
- Lieberman, A. F., Weston, D. R., & Pawl, J. H. (1991). Preventive intervention and outcome with anxiously attached dyads. *Child Development, 62*, 199–209.
- Lucile Packard Children’s Hospital, S. (2014). *Low birthweight*. Retrieved from <http://www.stanfordchildrens.org/en/topic/default?id=low-birthweight-90-P02382>
- Mendez-Figueroa, H., Dahlke, J. D., Vrees, R. A., & Rouse, D. J. (2013). Trauma in pregnancy: An updated systematic review. *American Journal of Obstetrics and Gynecology, 209*, 1–10.
- Morris, S. B., & DeShon, R. P. (2002). Combining effect size estimates in meta-analysis with repeated measures and independent-groups designs. *Psychological Methods, 7*, 105–125.
- Munk-Olsen, T., Laursen, T. M., Pedersen, C. B., Mors, O., & Mortensen, P. B. (2006). New parents and mental disorders. *The Journal of the American Medical Association, 296*, 2582–2589.
- Muñoz, R. F., Le, H.-N., Ippen, C. G., Diaz, M. A., Urizar, G. G., Soto, J. et al. (2007). Prevention of postpartum depression in low-income women: Development of the Mamás y Bebés/Mothers and Babies Course. *Cognitive and Behavioral Practice, 14*, 70–83.
- O’hara, M. W., & Swain, A. M. (1996). Rates and risk of postpartum depression: A meta-analysis. *International Review of Psychiatry, 8*, 37–54.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401.

- Ricks, M. H. (1985). The social transmission of parental behavior: Attachment across generations. *Monographs of the Society for Research in Child Development*, 50, 211–227.
- Rodriguez, M. A., Heilemann, M. V., Fielder, E., Ang, A., Nevarez, F., & Mangione, C. M. (2008). Intimate partner violence, depression, and PTSD among pregnant Latina women. *The Annals of Family Medicine*, 6, 44–52.
- Seng, J. S., Low, L. K., Sperlich, M., Ronis, D. L., & Liberzon, I. (2011). Post-traumatic stress disorder, child abuse history, birthweight and gestational age: A prospective cohort study. *BJOG: An International Journal of Obstetrics and Gynaecology*, 118, 1329–1339.
- Steele, H., Steele, M., & Fonagy, P. (1996). Associations among attachment classifications of mothers, fathers, and their infants. *Child Development*, 67, 541–555.
- Toth, S. L., Maughan, A., Manly, J. T., Spagnola, M., & Cicchetti, D. (2002). The relative efficacy of two interventions in altering maltreated preschool children's representational models: Implications for attachment theory. *Development and Psychopathology*, 14, 877–908.
- Toth, S. L., Rogosch, F. A., Manly, J. T., & Cicchetti, D. (2006). The efficacy of toddler-parent psychotherapy to reorganize attachment in the young offspring of mothers with major depressive disorder: A randomized preventive trial. *Journal of Consulting and Clinical Psychology*, 74, 1006–1016.
- Vieten, C., & Astin, J. (2008). Effects of a mindfulness-based intervention during pregnancy on prenatal stress and mood: Results of a pilot study. *Archives of Women's Mental Health*, 11, 67–74.
- White, T., Matthey, S., Boyd, K., & Barnett, B. (2006). Postnatal depression and post-traumatic stress after childbirth: Prevalence, course and co-occurrence. *Journal of Reproductive and Infant Psychology*, 24, 107–120.