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IMPACT OF CHILDHOOD TRAUMA ON THE OUTCOMES OF A PERINATAL DEPRESSION TRIAL

Nancy K. Grote, Ph.D.^{1,*}, Susan J. Spieker, Ph.D.², Mary Jane Lohr, M.S.¹, Sharon L. Geibel, M.S.W.³, Holly A. Swartz, M.D.⁴, Ellen Frank, Ph.D.⁴, Patricia R. Houck, M.S.H.⁴, and Wayne Katon, M.D.⁵

¹School of Social Work, University of Washington, Seattle, WA

²School of Nursing, University of Washington, Seattle, WA

³Office of Child Development, University of Pittsburgh, Pittsburgh, PA

⁴Department of Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA

⁵Department of Psychiatry and Behavioral Sciences, University of Washington, Seattle, WA

Abstract

Background—Childhood abuse and neglect have been linked with increased risks of adverse mental health outcomes in adulthood and may moderate or predict response to depression treatment. In a small randomized controlled trial treating depression in a diverse sample of nontreatment-seeking, pregnant, low-income women, we hypothesized that childhood trauma exposure would moderate changes in symptoms and functioning over time for women assigned to usual care (UC), but not to brief interpersonal psychotherapy (IPT-B) followed by maintenance IPT. Second, we predicted that trauma exposure would be negatively associated with treatment response over time and at the two follow-up time points for women within UC, but not for those within IPT-B who were expected to show remission in depression severity and other outcomes, regardless of trauma exposure.

Methods—Fifty-three pregnant low-income women were randomly assigned to IPT-B (n = 25) or UC (n = 28). Inclusion criteria included 18 years, >12 on the Edinburgh Postnatal Depression Scale, 10–32 weeks gestation, English speaking, and access to a phone. Participants were evaluated for childhood trauma, depressive symptoms/diagnoses, anxiety symptoms, social functioning, and interpersonal problems.

Results—Regression and mixed effects repeated measures analyses revealed that trauma exposure did not moderate changes in symptoms and functioning over time for women in UC versus IPT-B. Analyses of covariance showed that within the IPT-B group, women with more versus less trauma exposure had greater depression severity and poorer outcomes at 3-month postbaseline. At 6-month postpartum, they had outcomes indicating remission in depression and

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*Correspondence to: Nancy K. Grote, School of Social Work, University of Washington, Campus Box 354900, 4101 15th Ave. East, Seattle, WA 98105. ngrote@u.washington.edu.

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functioning, but also had more residual depressive symptoms than those with less trauma exposure.

Conclusions—Childhood trauma did not predict poorer outcomes in the IPT-B group at 6-month postpartum, as it did at 3-month postbaseline, suggesting that IPT including maintenance sessions is a reasonable approach to treating depression in this population. Since women with more trauma exposure had more residual depressive symptoms at 6-month postpartum, they might require longer maintenance treatment to prevent depressive relapse.

Keywords

childhood trauma; childhood maltreatment; perinatal depression; interpersonal psychotherapy; depression treatment

INTRODUCTION

Each year an estimated 3 million children are referred to child protective services for alleged maltreatment, and one-quarter of these referrals or 750,000 are substantiated.^[1] Maltreatment in childhood poses increased risks for adverse physical and mental health outcomes in adulthood. A robust literature derived from epidemiological surveys, prospective studies, and clinical research has demonstrated a pernicious link between cumulative exposures to childhood abuse and neglect and compromised health and emotional well-being in adult survivors. Regarding physical health, epidemiological studies have established that multiple exposures to childhood experiences of abuse and neglect are predictive, in a dose–response pattern, of increased likelihood of experiencing a broad range of severe, costly health outcomes in adulthood, including poorer overall health, greater physical disability, more health risk behaviors, and multiple chronic medical illnesses.^[2–6] Childhood adversity has also been linked to adult cortisol dysregulation^[7] and increased inflammatory factors^[8], both of which constitute risk factors for adverse metabolic and cardiovascular outcomes.

Similarly, a dose–response relationship between number of types of childhood maltreatment and negative mental health outcomes has been observed. Epidemiological studies have found an increased risk of depressive disorders, suicide attempts, substance abuse, and insecure attachment orientations among adult respondents with a greater number of adverse childhood experiences.^[9–12] Related research has revealed that these traumatic experiences not only exert a cumulative effect, but often occur together.^[13] Further, prospective research has demonstrated that a documented history of childhood abuse and neglect, not just the memory of maltreatment, is associated with a heightened risk of psychopathology,^[14–18] as well as personality disorders.^[19,20] Empirical data from clinical samples also support this pattern of findings.^[21–23]

Despite substantial evidence of a relationship between childhood maltreatment and adult depression, only a few randomized controlled trials (RCTs) have examined the effect of childhood trauma on response to treatment for depression. Those that have done so, report inconsistent findings, possibly because of differences in types and severity of child maltreatment examined, sample demographic differences, or differences in the types or schedule of psychotherapy and/or antidepressant medication provided. First, two RCTs found that the impact of childhood emotional abuse on depressed patients' response to antidepressant medication was either negative^[24] or had no effect.^[25] Second, several trials compared responses of childhood trauma-exposed versus nonexposed patients to either psychotherapy or antidepressant medication. Nemeroff et al. (2003) observed that among those with a history of childhood maltreatment, remission rates were twice as high for a

form of cognitive behavioral therapy that emphasized interpersonal interactions [Cognitive Behavioral Analysis System of Psychotherapy (CBASP)] compared to medication.^[26] Other investigations, however, found that depressed adolescents with a history of childhood abuse who received Cognitive Behavioral Therapy (CBT) tended to remain in the depressed range, compared to their counterparts who received medication.^[27,28] In yet another study, depressed outpatients with a history of emotional and physical abuse in childhood who received either interpersonal psychotherapy (IPT) or a Selective Serotonin Reuptake Inhibitor SSRI experienced a significantly longer time to remission, regardless of treatment type.^[29] Third, two trials that focused exclusively on depressed patients with childhood maltreatment showed that either IPT^[30] or psychodynamic therapy^[31] compared favorably to usual care (UC) in reducing depressive symptoms and improving functioning. Finally, several RCTs have examined the effectiveness of IPT in reducing or preventing perinatal depression in socioeconomically disadvantaged women, many of whom reported a history of childhood abuse; however, these studies did not directly examine whether childhood trauma moderated or predicted treatment outcomes.^[32,33] The current RCT is one of the few to consider degree of childhood trauma exposure in comparing depression and functioning outcomes among depressed patients randomized to UC or brief IPT (IPT-B) plus IPT maintenance.

Although the mental health burden of childhood maltreatment appears to be disproportionately borne by socioeconomically disadvantaged individuals,^[34–36] for whom persistent affective disorders are more common,^[37–39] little depression treatment research has investigated the role that degree of childhood adversity plays in moderating or predicting treatment outcomes in poor women of diverse racial/ethnic backgrounds. In addition, even fewer treatment studies,^[29] with one exception, have examined this question when maintenance treatment is provided to optimize depression treatment outcomes. Thus, the present report is unique in presenting a secondary analysis examining whether childhood trauma exposure moderates or predicts treatment outcomes in a socioeconomically disadvantaged sample of pregnant, depressed patients allocated to UC or IPT-B plus IPT maintenance.

Based on the Talbot et al. study^[30] showing promising results of IPT versus UC solely for low-income, depressed women exposed to childhood sexual abuse, we thought that the logical next step would be to examine whether IPT is equally beneficial for socioeconomically disadvantaged, depressed women with more versus less childhood trauma exposure who are randomized to IPT-B or UC. IPT emphasizes the provision of a safe, empathically reflective therapeutic environment, which focuses on managing current interpersonal difficulties very relevant to the types of trauma experienced in childhood.^[30] By contrast, research has consistently documented that UC for depression treatment in primary care or community settings consists of a heterogeneous set of treatments that are typically inadequate in the provision of guideline-level antidepressant medication or psychotherapy.^[40] Not surprisingly, a study of depressed, diabetic patients showed that those with more childhood emotional abuse were less likely to show depression remission in UC than in collaborative care.^[41] Thus, based on these previous findings, we first hypothesized that depressed women with more childhood trauma exposure allocated to UC, compared to those allocated to IPT-B, would show significantly less improvement primarily in depressive symptoms/diagnoses and secondarily in other outcomes over the two time periods: (1) from baseline to 3-month postbaseline (mostly before childbirth) and (2) from baseline to 6-month postpartum.

Second, we examined, *separately* within each treatment group, whether trauma exposure predicted treatment outcomes (1) over the two time periods mentioned above and (2) at the two follow-up time points—3-month postbaseline (Time 2) and 6-month postpartum (Time

3). We predicted that depressed women in UC, but not IPT-B, with more trauma exposure would show less improvement primarily in depressive symptoms and secondarily in other outcomes over the two time periods. We also expected that women in IPT-B with more trauma exposure would be just as likely as those with less exposure to show outcomes indicating remission primarily in depressive symptoms and secondarily in other outcomes at the two follow-up time points—3-month postbaseline and 6-month postpartum. Consistent with our previous results for the same sample,^[42] we did not expect those in UC regardless of level of trauma exposure to achieve outcomes indicating remission.

METHODS

PARTICIPANTS AND SETTING

Information about approved IRB research procedures, participant selection, and culturally relevant IPT-B for depression has been reported elsewhere.^[42,43] Briefly, 113 participants were screened in a large public care obstetrics and gynecology (Ob/Gyn) hospital-based clinic in Pittsburgh, Pennsylvania. Fifty-three eligible, pregnant, depressed, nontreatment-seeking African-American and White women on low incomes, entered the study and were randomly assigned to enhanced UC ($n = 28$) or to IPT-B ($n = 25$). Primary inclusion criteria were 18 years, a score of >12 on the Edinburgh Postnatal Depression Scale (EPDS),^[44] 10–32 weeks gestation, English speaking, access to a telephone, and living in the Pittsburgh region. Exclusion criteria included substance abuse/dependence within the last 6 months; actively suicidal; history of mania, a psychotic disorder, or an organic mental disorder; severe intimate partner violence; and current receipt of another form of depression treatment. None of the women who entered the study were on antidepressant medication, nor was antidepressant medication included in the IPT-B intervention. Previous data from the trial showed that IPT-B and UC participants did not differ on baseline demographic and clinical characteristics or gestational age.^[42] Intent-to-treat analyses of the trial showed that participants in IPT-B, compared to UC, displayed significant reductions in depression diagnoses and symptoms at 3-month postbaseline (mostly before childbirth) and at 6-month postpartum and a significant improvement in social functioning at 6-month postpartum.^[42]

ASSESSMENTS

Participants in the current study were assessed, using reliable and valid measures, at baseline (during pregnancy), at 3-month postbaseline (Time 2—mostly before childbirth and at the end of acute treatment), and at 6-month postpartum (Time 3). IPT maintenance began after the end of acute IPT-B and continued up to 6-month postpartum. Higher scores on continuous measures represent greater dysfunction. The EPDS (0–30; remission = <10)^[44] and the *Beck Depression Inventory* (BDI; 0–63; remission = <9)^[45] assess depression severity. Lifetime and current major depressive disorder was assessed with the *Structured Clinical Interview for DSM-IV*, Clinician Version (SCID)^[46] and other current and lifetime psychiatric disorders were assigned by using the *Diagnostic Interview Schedule* (DIS).^[47] The *Beck Anxiety Inventory* (BAI; 0–63; remission = <7)^[48] measures anxiety symptoms. The Social and Leisure Domain of the *Social Adjustment Scale* (SAS; 1–5; remission = <2.2)^[49] evaluates quality of social functioning with friends. The *Inventory of Interpersonal Problems* (IIP; 1–5; remission = <2.1)^[50] assesses the extent of longstanding interpersonal problems, found to be associated with personality disorders. History of childhood maltreatment was measured by the 28-item *Childhood Trauma Questionnaire* (CTQ; 1 = never true to 5 = very often true), consisting of five 5-item subscales, including emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect.^[51,52] To reduce respondent burden, we omitted the three CTQ items assessing response bias. The higher the trauma severity score, the more likely an individual had experienced multiple types of trauma. The short-form of the CTQ showed good reliability and validity in previous

studies, including the invariance of its factor structure across seven different clinical and nonclinical samples and external validation against independent evidence.^[52] *The Relationship Quality Questionnaire* measures four attachment orientations in close relationships (secure, fearful/ disorganized, anxious/preoccupied, and avoidant/dismissing) categorically and continuously (1 = not like me to 7 = very much like me) in response to four descriptive paragraphs.^[53]

INTERVENTIONS

Culturally Relevant IPT-B—Culturally relevant IPT-B is a multicomponent model of care,^[54] consisting of a motivationally enhanced, pretreatment engagement session, eight acute sessions of IPTB,^[55,56] and maintenance IPT.^[57] Briefly, the engagement session, described elsewhere,^[43,58] is designed to promote treatment engagement by addressing the practical, psychological, and cultural barriers to care experienced by socioeconomically disadvantaged individuals. IPT-B, described elsewhere,^[54] was augmented with modifications relevant to the cultures of race/ethnicity and poverty.^[59,60]

Enhanced Usual Care—Participants assigned to UC were provided verbal and written psychoeducation about depression and encouraged to seek treatment at the behavioral health center in the OB/Gyn clinic, a destigmatizing, convenient setting providing free bus passes and childcare.

DATA ANALYSES

For descriptive purposes, we compared participants with more versus less trauma exposure (defined by median split) on baseline demographic, clinical, and personality characteristics by chi-square tests and analysis of variance, as appropriate. Before our RCT began, we estimated power to test our primary, but not secondary, outcomes. Because the RCT intent-to-treat analyses showed medium to large treatment group-by-time effect sizes for depression severity,^[42] we thought it warranted to conduct a secondary analysis examining moderation of treatment outcomes by trauma exposure over time. Regarding the hypothesized three-way interaction of time, trauma exposure, and treatment group, we used regression analyses, as recommended by Kraemer (2002),^[61] to test whether trauma exposure as a continuous variable moderates change primarily in depressive symptoms and secondarily in other outcomes over the two time periods across treatment groups. We also employed mixed effects, repeated measures models using maximum likelihood procedures to test whether trauma exposure as a categorical variable (more versus less) moderates outcomes in UC, but not IPT-B, over the two time periods. Next, we examined whether trauma exposure was a predictor of treatment response, *separately* within each treatment group over the two time periods, using regression analyses and mixed effects repeated measures analyses to test the two-way interaction of trauma exposure by time. Finally, to examine trauma group differences in depressive symptoms and other outcomes, separately within each treatment group at 3-month postbaseline (Time 2) and 6-month postpartum (Time 3), we used univariate analyses of covariance, controlling for baseline severity.

RESULTS

Alpha coefficients and participant endorsements of the CTQ and subscales are shown in Table 1. We also found that eight of the 10 the trauma subscales were moderately to highly intercorrelated (ranging from .36, $P < .05$ to .71, $P < .01$), indicating that rarely did one type of trauma occur in isolation from the other types, consistent with previous research.^[13] For example, of the 92% of the women in the sample reporting traumatic childhood experiences, 94% reported experiences in more than one category of abuse. Demographic characteristics for each trauma group are summarized in Table 2. For descriptive purposes, participants

were divided into two groups by degree of exposure to childhood trauma, using a median split: those with more exposure (total trauma 1.72; $n = 24$) and those with less exposure (total trauma 1.72; $n = 28$). Overall, study attrition rate regarding completion of follow-up assessments was low ($n = 7$; 13%) for this diverse sample and equivalent across treatment and trauma exposure groups.

Participants categorized by more versus less trauma exposure did not differ on age, weeks pregnant, education, employment, race, or marital status. Those with more versus less trauma exposure were more likely to have lower incomes. Regarding clinical characteristics in Table 3, trauma groups did not differ on baseline depression and anxiety symptoms/ diagnoses or social functioning impairment, with one exception. Women with more exposure showed a higher degree of depression severity on the BDI than women with less exposure. Those with more versus less trauma exposure were also more likely to endorse a fearful/disorganized attachment orientation, consistent with the previous literature^[12] and to report more chronic interpersonal difficulties on the IIP, suggestive of a personality disorder.^[50] Although women in UC versus IPT-B reported significantly greater childhood trauma exposure at baseline [$F(1,50) = 8.14$, $P < .01$], controlling for this difference did not alter the original significant treatment group by time differences in symptom and functioning outcomes.^[42]

We first hypothesized that depressed women with more versus less childhood trauma exposure in UC, relative to IPT-B, would show significantly less improvement primarily in depression and secondarily in other outcomes over the two time periods. Employing regression and mixed effects, repeated measures analyses, we did not find evidence of a three-way interaction of time, treatment group, and trauma exposure. Thus, changes in symptom and functioning outcomes over time in UC relative to IPT-B did not depend on amount of trauma exposure (see Fig. 1 illustrating BDI depression severity results and the note presenting the significance values associated with the three-way interactions terms).

Second, we examined, *separately* within each treatment group, whether trauma exposure predicted outcomes over the two time periods: baseline to 3-month postbaseline and baseline to 6-month postpartum. Both regression and mixed effects repeated measures analyses failed to yield evidence in either group supporting the prediction that more trauma exposure would be associated with less improvement in outcomes over time, with one exception. In the IPT-B group, regression analyses showed that trauma exposure significantly predicted BDI depression severity from baseline to 3-month postbaseline, with a significant interaction term ($t = 2.52$, $P < .05$) in a significant equation [$F(3,18) = 3.51$, $P < .05$]. To probe the nature of the interaction, we adopted procedures recommended by Aiken and West (1991)^[62] and found that the effect of baseline depression on depressive symptoms at 3-month postbaseline was significant for participants low in trauma exposure, $\beta = 1.40$, $P < .05$, but not for participants high in trauma exposure, $\beta = -.60$, $P = .11$. Thus, it appears that women in IPT-B with more versus less trauma exposure experienced significantly less reduction in depressive symptoms from baseline to Time 2.

In addition, we predicted that trauma exposure would be negatively associated with depression severity and functioning at 3-month postbaseline and at 6-month postbaseline, separately for women within UC, but not for those within IPT-B who were expected to show remission primarily in depressive symptoms and secondarily in other outcomes. The note in Table 4 defines remission for each outcome. Table 4 reveals that at 3-month postbaseline (Time 2), women in IPT-B with more versus less exposure showed significantly more BDI depressive and BAI anxiety symptoms, marginally greater social dysfunction, and significantly more interpersonal problems on the IIP. These findings are consistent with the aforementioned finding that those in IPT-B with more versus less exposure were

significantly less likely to show improvement in BDI depression severity from baseline to 3-month postbaseline. Further, it appears that at Time 2 those in IPT-B with more trauma exposure were less likely, on average, to achieve remission in depressive and anxiety symptoms and interpersonal problems with BDI, BAI, and IIP scores above the cutoff for the normal range of symptoms and of functioning. Similarly, those with more trauma exposure tended to be more likely to meet criteria for major depression (20%) compared to those with less exposure (0%) at Time 2, $\chi^2(1) = 3.6$, $P < .06$. At 6-month postpartum (Time 3), however, the only significant differences that remained between the trauma exposure groups in IPT-B were significantly higher depression scores on the EPDS and marginally more interpersonal problems (IIP) for those with more trauma exposure. Table 4 and Figure 1 show that, on average, participants in IPT-B, regardless of trauma exposure, achieved remission in depressive symptoms on the EPDS and BDI, anxiety symptoms on the BAI, and social functioning by 6-month postpartum.

Table 4 and Figure 1 also reveal that women in UC did not achieve symptom and functioning outcomes consistent with remission, regardless of level of trauma exposure, as predicted. In addition, exposure groups in UC did not significantly differ on symptoms, functioning, or interpersonal problems at Times 2 and 3, nor did they differ on rates of major depression. As previously reported, women in UC relative to IPT-B were more likely to meet criteria for major depression at Times 2 and 3, regardless of trauma exposure.^[42]

DISCUSSION

The present study showed that women with more versus less cumulative exposure to childhood trauma entered the trial with higher levels of depression severity on the BDI, greater likelihood of having insecure versus secure attachment orientations, especially fearful/disorganized attachment, and more longstanding interpersonal difficulties, possibly indicative of maladaptive personality traits or disorder. These findings are consistent with the literature revealing that childhood adversities of an interpersonal nature were strongly related to insecure adult attachments^[12] and that persons with documented childhood abuse or neglect were four times more likely to be diagnosed with maladaptive personality traits or disorders.^[16]

We first predicted that women in UC, but not those in IPT-B, who had more versus less exposure to childhood trauma, would show significantly less improvement primarily in depression and secondarily in other outcomes over time. Counter to this prediction, we found that childhood trauma exposure did not compromise change in depression or functioning outcomes over the two time periods (baseline to 3-month postbaseline; baseline to 6-month postpartum) for women in UC relative to those in IPT-B. It is conceivable that we would have found more support for moderation by trauma exposure if childhood maltreatment had been more severe and/or if participants had been recruited from community mental health care rather than from a public care obstetrics clinic serving nontreatment-seeking women. Thirty-eight to 40% of our participants reported moderate to severe levels of emotional abuse, emotional neglect, physical abuse, and physical neglect, and 17% reported moderate to severe levels of sexual abuse, proportions that would likely have been higher in a community mental health setting.^[63] In addition, prospective research has found that adult violent victimization is strongly related to a history of childhood physical or sexual abuse.^[64] Because current severe intimate partner violence was an exclusion criterion in the study, we may have excluded participants whose childhood maltreatment was more severe.

Second, we expected that trauma exposure would predict treatment response separately within each treatment group, such that participants within UC, but not within IPT-B, with

more trauma exposure would show poorer outcomes over time and at the two follow-up time points. Unexpectedly, we found that women in IPT-B with more trauma exposure showed significantly less improvement in depressive symptoms on the BDI over time from baseline to 3-month postbaseline, had greater depression severity and functional impairment at 3-month postbaseline (Time 2), and were less likely to show remission on these outcomes at Time 2. These data suggest that trauma exposure did have an impact on time to improvement in IPT, in line with previous research.^[29] What might account for these findings? A recent study observed that it may take patients with a history of maltreatment longer to respond fully to acute IPT or SSRI treatment because they have a subtype of depression characterized by more severe, treatment-resistant neurovegetative, and psychomotor symptoms.^[29] In addition, childhood abuse and neglect are strong risk factors for the development of subsequent maladaptive personality traits or disorders^[19,20], which are notably difficult-to-treat.^[65] At baseline, women in IPT-B with more versus less childhood trauma exposure had more longstanding, intractable interpersonal problems, possibly indicative of maladaptive personality traits or disorder, which may have interfered with the timing of their treatment responsiveness. A related speculation is that because childhood maltreatment often predicts the cooccurrence of depression and anxiety disorders^[66,67] and inasmuch as depressed women in IPT-B with more relative to less childhood maltreatment tended to have more anxiety symptoms at baseline, this anxiety comorbidity may have delayed treatment response, as previous research has shown.^[68,69] In sum, this delay in treatment response suggests that longer continuation of IPT treatment and possible augmentation with antidepressant medication may be required to optimize depression outcomes.

Why might childhood trauma be associated with 3-month postbaseline variation in treatment outcomes in IPT-B, but not UC? As previously reported,^[42] depressed patients in UC did not fare well in symptom and functioning outcome scores compared to those in IPT-B and only 7% of UC participants versus 68% of those in IPT-B reported receiving a full course of acute treatment defined as 7–8 treatment sessions. Thus, consistent with prior research on depression treatment in primary care,^[40] it does not appear that UC patients received an adequate course of psychotherapy or pharmacotherapy, an opportunity which, in turn, might have facilitated the differentiation of high versus low trauma groups in terms of treatment responsiveness.

At the 6-month postpartum time point, it is noteworthy that women with more trauma exposure did not significantly differ from those with less trauma exposure on BDI depressive symptoms, BAI anxiety symptoms, and social functioning outcomes. Further, at 6-month postpartum, participants in IPT-B, regardless of degree of trauma exposure, typically experienced remission from depressive symptoms and marked improvement in social functioning, as predicted, and no longer met criteria for major depression. These findings highlight the continuing effectiveness up to 6-month postpartum of IPT maintenance for nontreatment-seeking depressed, pregnant participants, including those with more childhood trauma exposure.

A 16-week course of IPT has previously been demonstrated to be particularly effective for depressed women with sexual abuse histories.^[30] Aspects of IPT that appear relevant or beneficial for this population include (1) the theoretical roots of IPT in attachment theory; (2) the provision of a safe, empathically reflective environment for the expression of negative emotions, such as anger, sadness, or fear; (3) the here-and-now emphasis on building stable, supportive social relationships; and (4) the development of skills in assertiveness, negotiation, and problem solving in current interpersonal relationships.^[70] Most important, in IPT (as in any effective psychotherapy), the development of the therapeutic alliance, characterized as an empathic, affirming, reliable, and collaborative

relationship, seems key to tapping into the resilience in individuals who have experienced childhood adversity. In describing their treatment satisfaction, IPT-B participants with childhood trauma commented that their therapist: “understood me”; “helped me say what I feel”; “helped me see the things I do well”; “helped me deal with issues I was avoiding”; “helped me figure out how to talk to my boyfriend.” The important role that validating therapeutic interactions play has been described in a study of women who considered themselves successful despite childhood maltreatment.^[71]

Nonetheless, at 6-month postpartum women in IPT-B with more versus less trauma exposure showed significantly more residual depressive symptoms on the EPDS, an important risk factor for depressive relapse, and still tended to have more interpersonal problems. These findings suggest that individuals with greater childhood maltreatment may require a longer course of maintenance treatment, either with IPT and/or pharmacotherapy, to prevent depressive relapse.

A limitation of the present study is that results are based on adult women's retrospective self-reports of childhood maltreatment. As such, our conclusions were derived from reported, rather than confirmed, cases of childhood abuse and neglect. Studies examining the accuracy of retrospective reports have found that respondents may have difficulty recalling certain severe childhood events, may choose not to disclose shameful, personal experiences, or may engage in mood-congruent recall when depressed.^[72–75] We acknowledge that the retrospective reports of childhood maltreatment in the study may have been subject to biases of underreporting or overreporting and, consequently, cannot be viewed as objective causal occurrences. Rather, they represent possible risk factors for adverse mental health outcomes. Another clear limitation is the relatively small sample size of the present investigation. Thus, the study may be underpowered to detect three-way interactions, that is, the extent to which childhood trauma moderates treatment outcomes in UC relative to IPT-B. Finally, the reported severity of childhood maltreatment was moderate in this sample. Thus, our findings should be considered preliminary until replicated in future larger depression treatment trials with depressed, disadvantaged, pregnant women that include those with a history of more severe childhood trauma exposure.

CONCLUSION

The promising message of this treatment trial that included a socioeconomically disadvantaged, diverse, underserved sample of pregnant women is that participants, irrespective of degree of childhood trauma exposure, were retained in treatment and appeared to benefit by 6-month postpartum from a reduction in depressive and anxiety symptoms and improved social functioning when they were provided culturally relevant IPT-B, augmented with IPT maintenance sessions up to 6-month postpartum. These findings have important clinical and public health policy implications for evaluating and treating depression in low-income, pregnant women with a history of childhood maltreatment.

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Figure 1.

Repeated measures mixed-effect models showing that trauma exposure did not moderate changes in depressive symptoms from baseline to Time 2 [$F(4,45) = .29, P = .592$] and from baseline to Time 3 [$F(4,42) = .05, P = .831$] for women in usual care relative to those in brief IPT. At 6-month postpartum, both trauma exposure groups within brief IPT, but not within usual care, achieve BDI outcomes consistent with remission.

TABLE 1

Childhood Trauma Questionnaire (CTQ): reliability coefficients and percent of participants endorsing moderate to severe ($n = 52$)

	Alpha coefficients	<i>N</i>	%
Total overall trauma	$\alpha = .94$	18	35.0
Emotional abuse	$\alpha = .92$	21	40.5
Physical abuse	$\alpha = .94$	20	38.5
Sexual abuse	$\alpha = .93$	9	17.3
Emotional neglect	$\alpha = .94$	20	38.5
Physical neglect	$\alpha = .64$	21	40.5

Note: Specific cutpoints for CTQ (none = 0, low = 1, moderate = 2, severe = 3) recommended by Bernstein and Fink (1994).^[44]

TABLE 2
Demographic characteristics by degree of exposure to childhood trauma ($n = 52$)

	<u>More exposure ($n = 24$)</u>		<u>Less exposure ($n = 28$)</u>		<u>Test statistic</u>
	<i>N</i>	%	<i>N</i>	%	
Education					6.54 (3)
Less than H.S.	4	16.7	3	10.7	
H.S. Degree/GED	10	41.7	6	21.4	
Some college/vocational	10	41.7	14	50.0	
College or graduate degree	0	0	5	17.9	
Employment					5.09 (2)
Full-time	1	4.2	7	25.0	
Part-time	4	16.7	6	21.4	
Unemployed	19	79.2	15	53.6	
Income					8.95* (2)
<10 K	19	79.2	11	39.3	
10–20K	4	16.7	10	35.7	
>20 K	1	4.2	7	25.0	
Race					7.34 (3)
White	4	16.7	10	35.7	
Black	17	70.8	16	57.1	
Latina	0	0	2	7.1	
Biracial	3	12.5	0	0	
Marital status					3.86 (3)
Never married	11	45.8	15	53.6	
Married	1	4.2	2	7.1	
Cohabiting	7	29.2	10	35.7	
Divorced/Sep/Widowed	5	20.8	1	3.6	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (1,50)
Age	23.8	4.7	25.2	6.0	.79
Weeks pregnant	22.6	7.2	20.9	6.2	.78

* $P < .05$.

TABLE 3

Clinical and personality characteristics by degree of exposure to childhood trauma

	More exposure (<i>n</i> = 24)		Less exposure (<i>n</i> = 28)		Test statistic
	<i>N</i>	%	<i>N</i>	%	
Depression diagnosis					
Major depression (MDD)	21	87.5	23	82.1	0.28 (1)
Dysthymia	3	13.0	3	10.7	0.07 (1)
MDD and dysthymia	3	12.5	3	10.7	0.04 (1)
Minor depression	0	0	3	10.7	2.73 (1)
Anxiety diagnosis					
Panic Disorder	4	17.4	8	29.6	1.02 (1)
Posttraumatic Stress Disorder (PTSD)	5	25.0	7	25.9	0.01 (1)
Social phobia	4	17.4	5	18.5	0.01 (1)
General anxiety disorder	5	21.7	5	18.5	0.08 (1)
1 anxiety disorder	12	50.0	15	53.6	0.07 (1)
Attachment orientation					6.27* (3)
Secure	2	8.3	9	32.1	
Fearful/disorganized	13	54.2	9	32.1	
Anxious/preoccupied	4	16.7	2	7.1	
Avoidant/dismissing	5	20.8	8	28.6	
Baseline functioning	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (1,50)
EPDS ^a	19.2	3.9	18.1	3.3	1.20
BDI ^b	28.5	12.1	22.3	8.6	4.63*
BAI ^c	18.3	11.5	13.8	10.0	2.33
SAS/Social and leisure ^d	3.3	.6	3.1	.7	1.12
No. previous dep. episodes	4.2	6.1	1.8	1.5	.74
IIP ^e	2.6	.8	2.0	.7	9.40**
Childhood trauma ^f	2.8	.7	1.4	.2	112.32***

^aEdinburgh Postnatal Depression Scale (0–30).

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- ^bBeck Depression Inventory (0–63).
- ^cBeck Anxiety Inventory (0–63).
- ^dSocial Adjustment Scale (1–5).
- ^eInventory of Interpersonal Problems (1–5).
- ^fChildhood Trauma Exposure (1 = never true to 5 = very often true). Higher scores = greater dysfunction.
- * $P < .05$;
- ** $P < .01$;
- *** $P < .001$.

TABLE 4

One-way univariate analyses of covariance evaluating effects of trauma exposure on Time 2 and Time 3 symptoms and functioning, controlling for baseline severity

	Baseline variables by trauma exposure			Baseline trauma diffs			Time 2 variables by trauma exposure (3-month postbaseline)			Time 2 trauma diffs			Time 3 variables by trauma exposure (6-month postpartum)			Time 3 trauma diffs		
	More exp		Less Exp	More exp		F	More exp		Less exp	More exp		F	More exp		Less exp	More exp		F
	M	SD	M	SD	M		M	SD	M	SD			M	SD	M	SD		
Brief IPT (<i>n</i> = 24)																		
^a EPDS	19.8	(3.5)	18.3	(3.1)		0.8	9.0	(5.8)	4.7	(6.7)		3.3	5.8	(2.8)	3.0	(3.1)		4.6 [*]
^b BDI	27.0	(10.0)	21.9	(9.6)		1.0	16.6	(11.5)	7.7	(4.9)		5.5 [*]	7.8	(5.4)	4.8	(4.4)		2.1
^c BAI	20.8	(8.0)	12.2	(9.7)		3.2 ⁺	12.4	(4.6)	5.0	(3.9)		9.6 ^{**}	6.6	(9.8)	2.9	(3.2)		2.1
^d Social/Leisure	3.1	(0.6)	3.0	(0.8)		1.3	2.7	(0.6)	2.4	(0.2)		4.4 ⁺	2.1	(0.7)	2.1	(0.4)		0.8
^e IIP	2.8	(0.3)	1.9	(0.8)		6.4 [*]	2.4	(0.7)	1.5	(0.4)		8.4 [*]	1.5	(0.9)	1.5	(0.4)		4.1 ⁺
Usual Care (<i>n</i> = 28)																		
^a EPDS	18.7	(3.9)	17.1	(3.9)		1.0	13.0	(7.1)	14.7	(5.7)		1.2	13.9	(6.0)	11.3	(5.4)		0.4
^b BDI	27.9	(12.5)	21.9	(7.7)		1.8	23.3	(12.4)	17.1	(6.9)		0.5	22.1	(11.1)	16.0	(8.4)		0.4
^c BAI	16.3	(11.2)	18.4	(10.1)		.02	14.5	(8.6)	20.2	(9.1)		3.2	13.3	(6.4)	9.0	(6.9)		2.6
^d Social/Leisure	3.2	(0.6)	3.1	(0.8)		.07	3.1	(0.8)	2.8	(0.7)		0.8	3.3	(0.8)	2.8	(0.5)		1.9
^e IIP	2.4	(0.8)	2.1	(0.6)		0.7	2.1	(0.7)	2.1	(0.5)		0.4	2.3	(0.7)	1.7	(0.4)		1.9

Note: Subsample sizes: Brief IPT (6 = more exposure; 18 = less exposure) Usual Care (18 = more exposure; 10 = less exposure).

Diffs for Baseline ANOVAs are 1.22 for Brief IPT and 1.26 for Usual Care. Diffs for the Time 2 and Time 3 ANCOVAs range from (2.17) to (2.19) for Brief IPT and (2.20) to (2.24) for Usual Care.

*** $P < .001$;

** $P < .01$;

* $P < .05$;

⁺ $P < .06$.

^a Edinburgh Postnatal Depression Scale. Possible scores range from 0 to 30, with higher scores indicating more symptoms. An underlined, bold score <10 indicates remission.

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- ^b Beck Depression Inventory. Possible scores range from 0 to 63, with higher scores indicating more symptoms. An underlined, bold score <9 indicates remission.
- ^c Beck Anxiety Inventory. Possible scores range from 0 to 63, with higher scores indicating more symptoms; An underlined, bold score <7 indicates remission.
- ^d Social and Leisure domain on the Social Adjustment Scale. Possible scores range from 1 to 5, with higher scores indicating greater impairment. An underlined, bold score <2.2 indicates remission.
- ^e Inventory of Interpersonal Problems. Possible scores range from 1 to 5, with higher scores indicating greater impairment; An underlined, bold score <2.1 indicates normal amount of interpersonal difficulties.