

The Association Between Infant Distress to Limitation and Postpartum Depression Treatment Response

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Postpartum depression (PPD) affects up to 20% of birthing parents and has a significant negative impact on birthing parent-infant dyads.^{1,2} Cognitive-behavioral therapy (CBT) is established as an effective evidence-based treatment for PPD,^{3,4} but no studies have examined if infant temperament can predict parental treatment outcomes. Temperamental distress to limitation, which refers to infants' distress when restricted from activities,⁵ is particularly significant. Infants high in this trait are likely to display defiance,⁶ and their fussiness and frustration in response to restrictions demand consistent parental attention, making distress to limitation a tangible component of dyadic interactions for parents.^{7,8} Indeed, distress to limitation has been shown to explain unique variance in bonding and attachment security.^{9,10} Therefore, this study examines if infant distress to limitation predicts greater maternal depressive symptoms following CBT for PPD. We hypothesized that greater baseline infant distress to limitation will predict increased maternal PPD symptoms posttreatment. Understanding how infant temperament associates with maternal treatment response could aid treatment selection and optimization of interventions for dyads.

Methods

Forty birthing parent-infant dyads were recruited during March 2016–July 2019 from Ontario, Canada. Participants must have had a primary MDD diagnosis confirmed by a psychiatrist using *DSM-5* criteria; been free of bipolar disorder, schizophrenia, or substance use

disorders; been fluent in English; and had infants <12 months old. Participants received a 9-week in-person group CBT for PPD in weekly 2-hour sessions delivered by psychotherapists in pairs.¹¹ Each session's first half covered core CBT content, while the second half included discussions on relevant topics co-led by patients and therapists. Data were collected at 3 points: postfirst session (T1), posttreatment (T2), and 3 months later (T3). The Hamilton Integrated Research Ethics Board approved the study (#0912), and all participants gave informed consent.

Birthing parents completed both the Edinburgh Postnatal Depression Scale (EPDS)¹² assessing their PPD symptoms (Cronbach $\alpha = 0.85$) and the distress-to-limitation subdomain of the Infant Behavior Questionnaire-Revised Short-Form¹³ to assess infant distress ($\alpha = 0.68$). Distress to limitation was chosen a priori based on evidence indicating that this stable infant characteristic¹⁴ may be especially challenging for parents,^{6–10} potentially hindering their improvements after treatment.

Descriptive statistics summarized participant characteristics. Linear regression models were used to determine if baseline infant distress to limitation predicted parent depressive symptoms at T2 and T3. Results were considered significant at $P < .05$, using RStudio for analysis.

Results

At T1, maternal age was 32.3 years, and infants were 5.6 months, all carried to term. Most participants were White, had a high school education or greater, and were married.

Paired samples *t*-tests showed a significant decrease in EPDS scores from T1 to T2 ($P < .01$) and T1 to T3 ($P < .01$) (See Table 1). Baseline infant distress did not correlate with baseline (T1) EPDS scores ($R = 0.25$, $P = .14$) but was associated with higher depression scores at T2 ($\beta = 0.38$, $R = 0.38$, $P = .02$) and T3 ($\beta = 0.50$, $R = 0.49$, $P < .01$). Results remained statistically significant after adjusting for parity, infant age marital status, and education, with no moderation by infant age.

Discussion

Higher infant distress to limitation predicted elevated PPD symptoms both at posttreatment and 3 months after treatment ended.

Distress to limitation heightens infant defiance⁶ and strains mother-infant bonding,^{9,10} and caring for such temperaments can reduce parenting self-efficacy,¹⁵ leading to burnout.⁹ These challenges might have reduced parental engagement during CBT, limiting the use of learned strategies.

This study was comprised of mostly White, middle-class, married participants and lacked a control group, limiting generalizability and causal conclusions. Future research should use randomized controlled trials and larger, more diverse samples to examine how different temperamental subdomains affect parental treatment outcomes, including whether the effects of infant temperament on maternal post-treatment symptoms are moderated by partner support and/or mediated by mother-infant bonding. The current study's findings highlight the need to consider infant temperament's impact on parental PPD treatment outcomes.

Table 1.
Sample Characteristics, Mean Temperament, and Depressive Symptoms Scores Across Visits (N = 40)

Infant age in months, mean (SD)	
Visit 1	5.6 (2.7)
Visit 2	7.7 (2.7)
Infant sex, n (%) male	16 (40)
Birth parents' age in years, mean (SD)	32.3 (4.1)
Ethnicity, % white	97.5
Household income, CAD, mean (SD)	80,000 (32,694)
Parity, n (%)	
Primiparous	21 (53)
Multiparous	19 (47)
Marital status, n (%)	
Single	3 (8)
Separated	1 (2)
Common law	9 (22)
Married	26 (68)
Years of education, mean (SD)	16.4 (2.26)
Birth weight, mean (SD), g	3,329.5 (448.4)
Gestational age, mean (SD), wk	39.5 (2.2)
Sessions attended, % of people attending	
9 Sessions	62.5
8 Sessions	15
7 Sessions	12.5
6 Sessions	10
IBQ-R SF distress to limitations, mean (SD)^a	
Visit 1	4.2 (1.1)
Visit 2	4.2 (1.2)
Visit 3	4.1 (1.1)
EPDS, mean (SD), range^b	
Visit 1	14.5 (5.5), 3–26
Visit 2	11.0 (5.5)*, 1–24
Visit 3	9.4 (6.2)*, 0–28

^aHigher scores on the Infant Behavior Questionnaire-Revised Short Form (IBQ-R SF) indicate more distress to limitation.

^bHigher scores on the Edinburgh Postnatal Depression Scale (EPDS) indicate greater depression symptoms. We found change in depressive symptoms not to be moderated by sample characteristics including infant sex, birthing parents' age, income, years of education, marital status, infant gestational age, and parity.

*Statistically significant difference ($P < .05$) compared to Visit 1.

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