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RESEARCH ARTICLE

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Reflective functioning and mother–infant relationships among mothers with Borderline Personality Disorder post-therapy

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Abstract

The stressful nature of parenting infants exacerbates the characteristics of Borderline Personality Disorder (BPD). Consequently, mothers with BPD tend to be emotionally dysregulated, respond impulsively to their infants, and have poorer mother–infant relationships. Few parenting interventions target the specific skill deficits observed in mothers with BPD. This study explored the differences in parental reflective functioning (PRF) and mother–infant relationship quality at baseline and following a 24-week, group parenting intervention for mothers with BPD. PRF and mother-infant relationship quality were assessed from quantitative ($N = 23$) and qualitative ($N = 32$) perspectives. Quantitative data (Parental Reflective Functioning Questionnaire) showed a significant improvement in one of the three subscales, Interest and Curiosity, between baseline and post-intervention, and a significant moderate positive association between the subscale Certainty of Mental States and maternal-infant interaction quality post-intervention. Improvements in mother-infant relationship quality were not evident from the observational measure, Nursing Child Assessment Satellite Teaching scale. In contrast, semi-structured interview qualitative data found maternal improvements in parental reflection, coping strategies implemented post-intervention, and quality of mother–infant relationships. Overwhelmingly positive intervention feedback suggested perceived maternal benefits of group format and skills taught. Future studies with larger sample sizes would allow further clarification of such parenting interventions for mothers with BPD.

KEYWORDS

Borderline Personality Disorder, mother–infant relationship, parenting, reflective functioning

1 | PARENTING WITH BORDERLINE PERSONALITY DISORDER

Early parenting experiences involve a period of adjustment, where increased demands are placed on mothers as they learn to meet the needs of their newborn infant while managing their own sleep deprivation, hormonal changes, and new daily routines. These demands can be especially challenging for mothers with Borderline Personality Disorder (BPD), whose everyday experience often involves frequent mood changes including emotional dysregulation, deficits in self-esteem and self-identity, and

instability in interpersonal relationships. BPD in mothers is associated with a reduction in positive mother–infant interactions (e.g., smiling, touch, imitation) and higher levels of intrusiveness and insensitivity toward their infants (Petfield et al., 2015). Furthermore, mothers with BPD can interpret their infant's bid for attachment as threatening. This can lead to insensitive caregiving or punitive maternal responses, increasing infant distress, and in turn elevating maternal distress (Kiel et al., 2017). Stress can amplify BPD symptoms, leading to coping strategies such as acting impulsively (e.g., anger or escape) or self-harm (Zanarini et al., 1998). These maladaptive coping strategies impair mother-infant attachment with both immediate and long-term consequences for infants (Macfie et al., 2017). While prevalence estimates for BPD in the general population vary widely from .7% to 1% (Petfield et al., 2015) to 5.9% (Florange & Herpertz, 2019), around 75% of BPD presentations in clinical settings are women, most commonly in their child-bearing years (Stepp et al., 2012). Significantly, Prasad et al. (2022) in their recent review, found pooled prevalence rates of BPD was 14% in perinatal women presenting in clinical settings. Furthermore, a significant percentage of women presenting to a mother-baby unit with post-natal depression, a very common condition, were found (albeit on self-report scales) to have co-morbid personality difficulties, particularly BPD, which continued to cause effects at the time of discharge (Bittner et al., 2020). Therefore, providing parenting interventions to mothers with BPD symptomatology may provide support in managing these challenging interactions with their infants.

There are few early parenting intervention programs which address both the mother's emotional dysregulation and the parenting skill deficits observed in mothers with BPD (Florange & Herpertz, 2019; Stepp et al., 2012). Therefore, determining whether these programs contribute to improved maternal-infant interactions (i.e., the mother's ability to read her infant's cues and respond accordingly), as well as understanding the impact of these interventions on parenting from a maternal perspective, may provide valuable information to aid future interventions.

2 | THE IMPACT OF MATERNAL BPD ON INFANT ATTACHMENT

Consistent, sensitive, and responsive caregiving from a parent builds a secure attachment for an infant, whereby the infant develops a sense of safety in its environment and the capacity for self-regulation (Tronick & Beeghly, 2011). A qualitative study on mothers with BPD reported that an infant's cry can trigger a maternal trauma response (e.g., fight or flight), resulting in maladaptive responses to their infant's cry (Geerling et al., 2019). When maternal caregiving is frightening for the infant (e.g., maternal yelling), withheld or inconsistent due to maternal withdrawal, compromised attachment patterns may develop, which in turn are associated with many problem childhood outcomes. These include difficulty with emotional regulation (van Ijzendoorn et al., 1999) and developmental delays (Stepp et al., 2012).

Key Findings

1. Women with borderline personality disorder report great benefits from a skills-based mother–infant dialectical behavior therapy group which involves other mothers with similar health issues and their infants.
2. Despite significant improvements in maternal reflective functioning on both quantitative and qualitative measures and the mothers' self-report of improved parenting skills, an observed measure of mother-infant interaction does not show significant change.
3. Given the known effects of maternal borderline personality disorder on offspring, further development and continued refinements of skills-based therapy groups are warranted to promote improved infant outcomes.

3 | PARENTING INTERVENTIONS FOR MOTHERS WITH BPD

It has been theorized that one of the areas that interventions for mothers with BPD can target to aid secure attachment is reflective functioning (Fonagy & Target, 1997), although few studies have explored reflective functioning in mothers with BPD (Newman-Morris et al., 2020). Reflective functioning is the capacity to reflect on the behavioral intentions and mental states of one's self and others, and a key component of interpersonal relationships and emotional regulation (Cordes et al., 2017). A mother's reflective functioning is central to her related ability to reflect on her infant (parental reflective functioning) allowing accurate interpretation of infant cues based on an understanding of the child's emotions and intentions (Slade, 2005). Deficits in reflective functioning, however, are a fundamental element of BPD (de Meulemeester et al., 2018), with mothers experiencing a reduced ability to identify emotions in themselves as well as in others, compared to those without BPD (New et al., 2012). Furthermore,

research suggests that reflective functioning does not differ among those with low or high levels of BPD symptoms (Dunn et al., 2020). Thus, explicit skill training in reflective functioning, including parental reflective functioning (PRF) specifically, may be beneficial to mothers with both subclinical and clinical BPD.

4 | THE ROLE OF DIALECTICAL BEHAVIOR THERAPY (DBT) IN INTERVENTION PROGRAMS FOR MOTHERS WITH BPD

One recent review of the impact of BPD on maternal parenting capacity recommends intervention programs incorporate parenting behavior awareness and enhancement of maternal attachment behaviors (Eyden et al., 2016). Another recommends psychoeducation on childhood development and mindfulness-based parenting strategies to aid stability and consistency in maternal emotions and caregiving (Stepp et al., 2012).

Dialectical behavior therapy (DBT) is an evidence-based intervention for BPD, and provides foundational skills in emotional regulation, mindfulness, distress tolerance, and interpersonal relationships (Linehan, 2014). DBT does not in itself focus on the mother-infant relationship or maternal reflective functioning but may complement programs that do. A recent qualitative study explored parenting perceptions of mothers with BPD ($N = 12$) via semi-structured interviews following completion of a DBT program (Bartsch et al., 2016). Children of these mothers ranged from 2 months to 34 years of age ($M_{age} = 16.02$, $SD = 9.00$). These mothers found the mindfulness and distress tolerance aspects of the DBT program helpful in improving their interactions with their children. Another recent study exploring parents' and practitioners' perspectives on parenting with BPD found practitioners highlighted deficits in PRF (Dunn et al., 2020). Again, the parents in this study tended to have older children (1–34 years, $M_{age} = 19.85$, $SD = 9.40$).

Participant feedback from a pilot study ($N = 15$) of mothers with BPD and younger children (86% of children under 4 years of age) undertaking a BPD parenting skills group training program designed to complement a DBT program (Renneberg & Rosenbach, 2016) showed that mothers were appreciative of learning parenting skills in a group format with other mothers with BPD and learnt a lot about their mother–child relationship.

Mother–Infant Dialectical Behavior Therapy (MiDBT) is a group parenting skills intervention providing additions to Linehan's (2014) DBT (described in Sved-Williams et al., 2018) which incorporates a focus on the mother-infant relationship and is designed specifically for mothers with BPD parenting children under three years of age. An uncontrolled pre- and post-test pilot study ($N = 26$) assessed outcomes in the first four groups that completed MiDBT. On quantitative measures, it showed promising potential to improve maternal and infant mental health, finding statistically significant improvements in PRF, depression, and anxiety symptoms and improvements in the maternal-infant relationship following completion of the program, with medium effect sizes. A later publication with a larger cohort (Sved-Williams et al., 2021) confirmed these findings, showing improvements in maternal mental health, parenting confidence, and competence, but little improvement on observed interactions between mother and infant.

5 | THE CURRENT STUDY

The aims of this current study were to explore changes in and correlations between PRF and mother–infant relationship quality at baseline and post-intervention using both quantitative and qualitative measures.

6 | METHOD

6.1 | Design

The current study was an uncontrolled pre- and post-test design. A control group (e.g., waitlist or treatment-as-usual) was not used, as withholding treatment from mothers with BPD raised ethical concerns, especially given the long duration of the program. Furthermore, limited recruitment (i.e., 32 participants over a 20-month period) resulted in a small sample size, impacting the possible study analyses.

Participants completed a 24-week MiDBT group intervention. The weekly 2.5-h sessions involved maternal skill development in mindfulness, emotional regulation, interpersonal skills, distress tolerance, child development, and mother–infant interaction quality, plus an additional 15-min reunion activity with their infant. Further details of the program are provided in Sved-Williams et al. (2018). Semi-structured interviews were completed at baseline and post-intervention to provide insight into the everyday experiences of parenting with BPD and how mothers were managing with their infant before and after completion of the program. Baseline and post-intervention assessments, the Parental Reflective Functioning Questionnaire (PRFQ) and Nursing Child Assessment Satellite Training (NCAST), were completed to assess changes in PRF and observable changes in the quality of mother–infant interactions, respectively.

6.2 | Participants

Mothers (>17 years) were referred to the MiDBT program via an inpatient mother-baby unit or community mental health providers. Many participants in this real-world sample were engaged in additional support outside the MiDBT program which included various combinations of psychologists, mental health workers and/or community support group. Inclusion criteria were a full or nearly complete BPD diagnosis, at least one child under the age of 3 at group commencement, English speaking, and commitment to attend a weekly 2.5-h group intervention for 24 weeks. Exclusion criteria were psychosis or inability to provide informed consent (i.e., insufficient cognitive capacity or significant substance abuse). Ethical approval was obtained from the Women's and Children's Health Network Human Research Ethics Committee. MiDBT intervention groups were located at three metropolitan Adelaide sites (i.e., a central, southern, and northern suburb location). The current study data included the five most recent cohorts of the MiDBT program, recruited between February 2017 and October 2018. Twenty-three mothers (M_{age} = 29.89 years, SD_{age} = 6.12) with infants (M_{age} = 1.31 years, SD_{age} = .69) completed the quantitative questionnaires. The baseline and post-intervention interviews were completed by these 23 mothers as well as an additional nine mothers who completed the baseline and post-intervention interviews only and for whom some quantitative data was missing ($N = 32$, $M_{age} = 29.33$, SD = 6.39). On average, the women were placed in decile 4 (SD = 2.7) of the Index of Relative Sociodemographic Advantage and Disadvantage (IRSAD), reflecting a moderate-high level of disadvantage. Deciles ranged from 1 to 10, with the highest proportion of women living in decile 2 areas, ($n = 10$) reflecting the lowest 20% of socioeconomic conditions in South Australia.

6.3 | Interviews

Semi-structured interviews were conducted by either a clinical psychologist or a researcher at baseline and on completion of the MiDBT intervention to develop an understanding of the maternal perceptions of parenting at baseline and post-intervention. Baseline interview questions included, "What are the issues that you are most struggling with?", "How do you manage them?", "What are you hoping to get out of MiDBT?" Post- MiDBT interview questions included "Are you still struggling with (issue reported at baseline)?"; "Are you still experiencing [baseline] issues with your infant?" and "Do you still respond in [baseline] way or do you respond differently now?"

NVivo 12 (QSR International), a software program designed for qualitative data analysis, was utilized to facilitate initial transcription of the interviews, in-vivo coding of the transcribed data, and coding of identified themes. Verbatim transcribing of the interviews was conducted by either the author, or a researcher. The author coded all interviews twice to enable immersion into the maternal perspective of parenting with BPD. An Interpretative Phenomenological Analysis (IPA; Smith et al., 1999) approach was chosen to analyses qualitative data as it enabled the participant's perspective of parenting with BPD to be examined in relation to the researcher's hypothesis that PRF and maternal-infant interactions would improve. Accordingly, the interview schedule guided the superordinate themes of (1) Management of emotions; (2) Reflective functioning skills; (3) Management of the mother–infant relationship; (4) MiDBT feedback, which connected the maternal experience with the research objective. Shared experiences were identified, and exemplars representative of these shared experiences were reported. Participants were assigned pseudonyms to protect their confidentiality.

6.4 | Measures

6.4.1 | Parental Reflective Functioning

The Parental Reflective Functioning Questionnaire (PRFQ; Luyten et al., 2017) is a self-report measure which comprises 18 statements (6 per subscale) on a Likert scale scored from 1 (strongly disagree) to 7 (strongly agree). The range for each subscale score is 1–7, representing the mean of the 6 subscale statements. Three subscales are measured: Pre-Metalizing Modes, where higher scores indicate a deficit in reflective functioning, evidenced by the maternal inability to hold the infant's mental state in mind (e.g., "When my child is fussy he or she does that just to annoy me"); Certainty about Mental States (e.g., "I always know why my child acts the way he or she does"), where higher scores indicate better reflective functioning evidenced by increasing maternal ability to recognize that mental states are not transparent, although debate exists on the possible curvilinear nature of the scale (Lindblom et al., 2022); and Interest and Curiosity, where higher scores indicate higher reflective functioning evidenced by greater and more active maternal interest in their infants' mental state (e.g., "I try to see situations through the eyes of my child"). The PRFQ internal consistencies range from .70 to .82 (Rutherford et al., 2013) and it has concurrent validity (r = .50) with the Adult Attachment Interview (Luyten et al., 2017). In the present study, across baseline and post-intervention, α ranged from .78 to .87 for

Pre-Metalizing Modes and Certainty about Mental States. For Interest and Curiosity, $\alpha = .54$ at baseline, and .86 at post.

6.4.2 | Mother–infant relationship quality

The Nursing Child Assessment Satellite Teaching Scale (NCAST; Barnard, 1994) is an observational measure of mother-infant interactions. Mother–infant interactions are scored from a video recording of the mother and infant undertaking age-appropriate teaching tasks (e.g., a 3-month-old holding a rattle, a 33-month-old stringing beads). The NCAST consists of 73 binary items measured across six subscales, with four Caregiver subscales (Sensitivity to Cues, $\alpha = .52$; Response to Child's Distress, $\alpha = .80$; Social-Emotional Growth Fostering e.g., "Caregiver smiles and/or nods after the child performs better or more successfully than the last attempt), $\alpha = .58$; Cognitive Growth Fostering, $\alpha = .78$) and two Infant subscales, Clarity of Cues ($\alpha = .50$) and Responsiveness to Caregiver ($\alpha = .78$). Subscale scores are summed to provide a Total Caregiver ($\alpha = .87$; Range 0–50), a Total Child ($\alpha = .76$; Range 0–23) and an overall total score ($\alpha = .87$; Range 0–73; Oxford & Findlay, 2013). Scoring is performed by an assessor who has undergone intensive NCAST training. Higher scores represent higher mother-infant interaction quality.

6.5 | Statistical analyses

To address the first aim, exploring quantitative differences in reflective functioning and maternal-infant interactions at baseline and post-intervention, paired *t*-tests were used to determine mean differences in reflective functioning as measured by the PRFQ and the mother–infant relationship as measured by the NCAST. Spearman's rho correlations were used to determine the relationship between reflective functioning (predictor variable as measured by the PRFQ) and mother–infant interaction quality (outcome variable as measured by the NCAST) post-intervention.

To address the second aim, exploring qualitative differences in parenting experiences at baseline and post-intervention, Interpretive Phenomenological Analysis (IPA; Smith et al., 1999) was used to gain insight into the maternal experience of parenting with BPD. Common themes arising from semi-structured interviews at baseline and post-intervention were identified using NVivo 12 (QSR International).

7 | RESULTS

7.1 | Parental reflective functioning

PRFQ subscales Pre-Metalizing Modes, Certainty about Mental States and Interest and Curiosity scores were compared at baseline and post-intervention. According to Shapiro-Wilk tests, the PRFQ subscales met the assumptions of normality and normality of difference scores ($p > .05$), except for Pre-Metalizing Modes at baseline ($p = .02$), which was positively skewed. Due to the violation of normality assumptions, a Wilcoxon signed-rank test was performed to test the differences between Pre-Metalizing Modes scores at baseline-and post-intervention. Although Pre-Metalizing Modes was slightly higher at post-intervention ($Mdn = 2.83$) than at baseline ($Mdn = 2.50$), the difference was not significant, $z = -.187$, $p = .85$, two-tailed, $r = -.04$.

Paired-samples *t*-tests were used to compare PRF for the remaining PRFQ subscales. For Certainty about Mental States, the difference between baseline ($M = 3.29$, $SD = 1.22$) and post-intervention ($M = 3.20$, $SD = 1.31$) was nonsignificant, $t(20) = .454$, $p = .66$, $d = .07$. In contrast, Interest and Curiosity improved significantly from baseline ($M = 5.25$, $SD = .80$) to post-intervention ($M = 5.65$, $SD = .98$), $t(20) = -2.58$, $p = .02$, $d = .46$, with a small effect size.

7.2 | Mother–infant interaction quality

Mother–infant interaction quality, as measured by the NCAST, was compared at baseline and post-intervention. There was a tendency towards increased mean values across NCAST subscales post-intervention, suggesting improved quality in mother infant relationships following MiDBT, however, the subscale score increases were not statistically significant, with small effect sizes (Table 1).

To give some context to the means for interaction quality, the sample's NCAST means were compared with the NCAST database of norms established by certified NCAST coders (Barnard, 1994). The NCAST database contains data from predominantly low-risk mothers ($N = 2123$, $M_{age} = 25.70$ years, $SD = 5.78$) and their infants ($M_{age} = 15.5$ months, $SD = 9.79$). Pooled means of NCAST database scores were calculated and compared to baseline and post-intervention NCAST scores using one sample *t*-tests (see Table 2).

One sample *t*-tests showed that mother-infant interaction quality among mothers in the study was significantly

TABLE 1 Means and significance tests for NCAST at baseline and post-intervention program.

NCAST subscale	Baseline (*M*)	Baseline (*SD*)	Post-intervention (*M*)	Post-intervention (*SD*)	*t*	*p*	*d*
Caregiver							
Sensitivity to cues	7.86	1.55	8.55	1.54	1.72	.10	.45
Response to distress	8.95	1.81	9.18	2.11	.04	.67	.17
Social-emotional growth fostering	8.00	2.07	8.59	1.65	1.06	.30	.29
Cognitive growth fostering	10.86	3.55	11.73	2.55	.91	.37	.25
Caregiver total	35.68	6.07	38.05	6.37	1.40	.17	.39
Infant							
Clarity of cues	8.14	1.32	8.55	1.14	1.25	.22	.31
Responsiveness to caregiver	6.73	2.53	7.41	2.04	1.07	.30	.34
Infant total	14.86	3.58	15.95	2.68	1.25	.22	.30
Caregiver/Infant total	50.55	8.11	54.09	7.62	1.56	.13	.44
Caregiver/Infant contingency items	18.61	4.69	21.36	5.97	1.48	.16	.59

Note: $N = 22$, $df = 21$.

TABLE 2 One sample *t*-test comparing NCAST database scores to baseline and post-intervention program NCAST scores.

NCAST subscale	NCAST database pooled (*M*) (*N* = 2123)	NCAST database pooled (*SD*) (*N* = 2123)	Baseline (*t*)	Baseline (*p*)	Baseline (*d*)	Post-intervention (*t*)	Post-intervention (*p*)	Post-intervention (*d*)
Caregiver								
Sensitivity to cues	9.38	1.57	4.32	.00	.90	2.55	.02	.54
Response to distress	10.20	1.60	3.37	.00	.70	2.27	.03	.48
Social-emotional growth fostering	9.22	1.69	2.78	.01	.58	1.79	.09	.38
Cognitive growth fostering	12.93	3.30	2.53	.02	.53	2.21	.04	.47
Caregiver total	41.73	6.45	4.49	.00	.93	2.71	.01	.58
Infant								
Clarity of cues	8.08	1.46	.49	.63	.10	1.91	.07	.41
Responsiveness to caregiver	7.64	3.16	1.75	.09	.36	.53	.60	.11
Infant total	15.72	4.24	1.04	.31	.22	.41	.69	.09
Caregiver/Infant total	57.44	8.74	3.81	.00	.79	2.06	.05	.44
Caregiver/Infant contingency items	16.6	3.50	5.27	.00	1.10	2.62	.02	.56

lower than NCAST database norms (Barnard, 1994) across the majority of subscales at both baseline and post-intervention. The exception to this was mother-infant interaction quality relating to Social-Emotional Growth Fostering, although this finding should be interpreted with caution as the study was underpowered. Nonetheless, there was a tendency for the caregiver effect sizes for differences between the database and current sample to be smaller at post-intervention than at baseline. Infant interactions, as measured by their Clarity of Cues and Responsiveness to Caregivers, were found to be comparable to the NCAST database norms at both baseline and post-intervention.

7.3 | Associations between reflective functioning and mother-infant relationship post-intervention

Spearman's rho correlations were used rather than Pearson's as the assumptions of normality, linearity, and homoscedasticity were not met. Results indicated a

TABLE 3 Spearman's Rho correlations between maternal reflective functioning subscales and caregiver maternal-infant relationship quality post-intervention.

Variable	PRFQ pre-mentalising modes	PRFQ certainty about mental states	PRFQ interest and curiosity	NCAST caregiver total
PRFQ pre-mentalising modes	1.00		.	
PRFQ certainty about mental states	−.31	1.00		
PRFQ interest and curiosity	−.60**	.37	1.00	
NCAST caregiver total	−.22	.46*	.33	1.00

Note: $N = 22$.
*Correlation is significant at the .05 level.
**Correlation is significant at the .01 level.

TABLE 4 Main maternal baseline issue.

Main maternal baseline issue	*n*	%
Anger	13	40.63
Depression	7	21.88
Emotional dysregulation	6	18.75
Anxiety	2	6.25
Sense of failure	1	3.13
Guilt	1	3.13
Social isolation	1	3.13
Frustration	1	3.13
Total	32	100

significant, moderate, negative association between the reflective functioning subscales Pre-Metalizing Modes and Interest and Curiosity. This finding suggests less *inability* to hold the infant's mental state in mind was linked to greater maternal interest in their infant's behavior. There was a significant, moderate, positive association between Certainty of Mental States and mother-infant relationship quality as measured by NCAST Total Caregiver scores post-intervention. This suggests that the greater the increase in a mother's confidence in understanding their infant's thoughts or feelings, the better their mother-infant interaction quality (see Table 3).

7.4 | Qualitative interview analysis

At baseline, one interview question asked participants about the key issues with which participants were struggling. As seen in Table 4, the issues were predominantly about their own personal emotions. Among the 32 mothers who completed both the baseline and post-intervention interviews, the most common issue at baseline was anger, followed by depression and feeling emotionally overwhelmed.

7.5 | Interpretative phenomenological analysis

Subordinate themes arising from the baseline interview data highlight a focus on the mothers' own emotional turmoil, a perceived lack of skills to identify their emotional experience, unhelpful strategies employed to manage the difficulties they were facing with their personal emotional regulation, the poor quality of their interpersonal relationships, and their perceived deficits in parenting efficacy. An infant-related theme identified was the externalization of difficulties in the mother–infant relationship. Examples of this include a perception that when the infant was distressed or displaying unwanted behavior, the infant was "doing this to me" rather than seeing the infant as an individual trying to meet their own needs (see Figure 1). This paper focuses only on those themes directly addressing the mother–infant relationship although it is appropriate to note that the theme identified as most helpful by mothers was mindfulness. For analyses of additional themes identified, refer to Osborne (2021).

1. **Maternal reflectivity**

In post-intervention interviews, a theme of maternal reflectivity was present, with mothers expressing curiosity in their infant's behavior and communication style. Mothers described an awareness of a shared experience with their infant and how their own behaviors may contribute to their infant's behavior.

Curiosity in infant.

> Natalie: "I've got to remind myself sometimes to just stop and watch the kids for 30 seconds. Don't say anything, just watch them and then maybe that will give me more

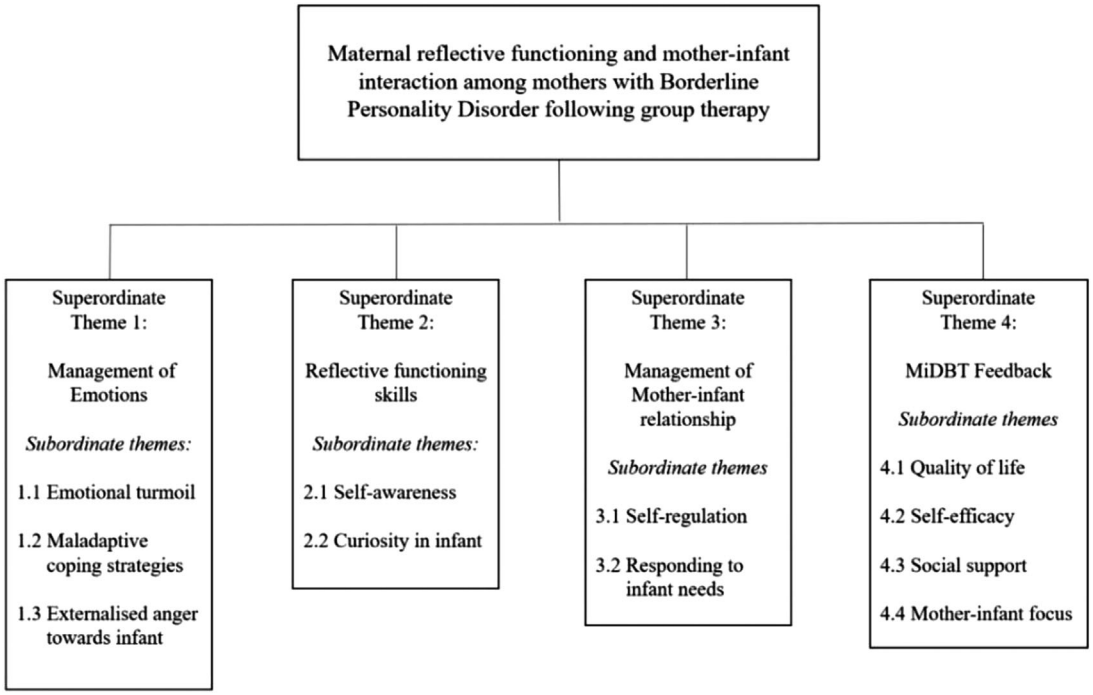

FIGURE 1 IPA superordinate and subordinate themes.

clues and context [in understanding infant's behaviour/communication]"

Adele: "I try to validate whatever could be going on for him, and half the time I don't actually know so I just said that, you know, you're obviously having a tough time at the moment, what can I do to help… I mean he can't answer me but… or I'll ask him do you want a hug and sometimes he'll come and give me a hug…"

2 **Management of mother–infant relationship**

Melissa: Yes, yes, [infant is] a lot happier since I can control my emotions more and [I'm] a lot happier than I was and um, [infant is] communicating a lot more and showing her emotions which she wouldn't before because I wasn't talking really before the group & they were worried about her level of communications but now she's back up to normal"

Jasmine: "I understand him better, I know that when he's talkier and when he's upset the reasons why I feel like, he knows that I love him and he still looks up to me. That's definitely improved in the way I'm able to calm him down, whereas before I used to just pass him on. I want to be able to deal with like the positives and the negatives of parenting. It's, I don't know, it's like I'm, I know that it's going to be challenging but I want to experience it"

The qualitative findings suggest that mothers found various components of the intervention helpful to manage their emotions, particularly mindfulness which allowed them to calm themselves and then to reflect on what was happening inside their infant and to feel more confident in parenting their infant. Also, findings suggest that the intervention helped them to develop better coping strategies and build capacity towards improvements in general reflective functioning.

8 | DISCUSSION

This study aimed to explore changes in mothers' reflections and PRF and mother-infant interactions from baseline to post-intervention using both qualitative and quantitative measures (i.e., interview themes, the PRFQ and NCAST, respectively). The study also aimed to build a richer understanding of both parenting with BPD and the impact of the MiDBT intervention program from a maternal perspective. Using qualitative measures, comparison

of maternal experiences of parenting before and after the group intervention showed a considerable benefit from the maternal perspective. Mothers identified improvements in their coping behaviors as well as viewing their infants in a different and more positive light. However, this contrasted with the limited benefits observed using quantitative measures. This discrepancy suggests that benefits from a mother-infant focused DBT intervention group may reflect an initial change in maternal mindset and parenting behaviors which was not captured in the quantitative measures.

The hypothesis that undertaking the MiDBT intervention program would lead to an increase in PRF was partially supported. A significant increase in the PRFQ subscale Interest/Curiosity in Mental States was observed following the intervention. Notably, Anis et al. (2020) comment that this subscale in the PRFQ correlates well with the more in-depth interview based reflective functioning scale when applied to the Parent Development Interview (Aber et al., 1985; Slade et al., 2004), further confirmation for positive changes achieved by MiDBT.

While qualitative data also supported the finding of increased interest in infant mental states through maternal accounts of curiosity about their infant's thoughts and behaviors, improvements in Pre-Metalizing Modes and Certainty of Infant Mental States were not observed for this cohort. This is also in contrast to findings of the previous MiDBT pilot study (Sved-Williams et al., 2018). Limitations in sample size may account for the discrepancy found between the current study and the pilot data. Stacks et al. (2022) have noted that 6 months of a home-visiting program with well-supervised clinicians is generally insufficient to provide change in maternal reflective functioning. It is possible that the group program of 24 weeks allows insufficient time for significant changes in PRF.

The hypothesis that improvements in PRF would be associated with an increase in maternal-infant interaction quality was partially supported. Correlation analysis with a significant, moderate, positive association was found between Certainty of Mental States and Caregiver Total NCAST scores post-intervention. However, the NCAST measure found no significant improvements in relationship quality measured between baseline and post-intervention. Nonetheless, some of the subscale means suggested an improvement and the effect size for Sensitivity to Cues approached medium. Additionally, when comparing maternal-infant interaction quality scores to NCAST database norms, maternal mother-infant interaction quality changed. It was significantly reduced at baseline, and approaching norms at post-intervention. This suggests a slight improvement had occurred within mothers' social-emotional growth fostering interactions (e.g., smiling in response to their infant smiling or providing affection to their infant). Furthermore, qualitative data demonstrated an improvement in the maternal-infant relationship through reported maternal responses to infant behavior. This discrepancy between qualitative and quantitative data may relate to the type of reflection observed, such that an increase in interest/curiosity in the mother–infant relationship may not be detectable using the NCAST. Furthermore, NCAST measures can only be scored if they are observed during the video timeframe. Accordingly, if the infant was sleepy or distressed during the recording, the NCAST scores may not be representative of the overall mother-infant interaction quality. More generally, observational measures consist of a brief snapshot outside the normal day-to-day context of the mother-infant relationship (e.g., Gardner, 2000). It is possible that mothers with BPD who clearly lack parenting confidence and are aware of their own tendency towards emotional dysregulation (Geerling et al., 2019) are particularly threatened by an observational tool such as NCAST, in turn impacting on such measures.

The coping strategy most utilized post-intervention in the current study was mindfulness. Bartsch et al. (2016) similarly found that parents reported the value of mindfulness skills in assisting them to manage their emotions and problem-solve challenging situations. Furthermore, in post-intervention interviews, mothers described focusing on their infant and learning to communicate by reading the infant's cues. This provides a link between their state of mind and their ability to keep their infant in their mind. For instance, mothers described taking time out to just sit and watch their infant, as well as talking to their infant to help decipher the meaning of the infant's behavior. In turn, mothers also described a feeling of connection they had not previously noticed, leading to greater perceived parenting competency. Pickard et al. (2017) in their longitudinal study, and Sajadian et al. (2022) in their controlled study of first-time mothers made similar observations linking the use of mindfulness to more secure attachment, but this finding has not been previously reported in a cohort of mothers with BPD.

Stacks et al. (2022) have summarized programs with parents with very complex needs including complex PTSD, substance use, and complex psychosocial needs. They note that PRF does not improve in several programs which aim for this outcome, and that successful programs include three foci. Of these, MiDBT, as a group-based program focusing principally on parental skills in emotional regulation, provides only developmental guidance from an attachment perspective, and does not focus on parental developmental adverse experiences or directly address PRF. Incorporating this perspective with other programs for families with complex emotional needs may therefore

be beneficial. Additionally, as the results of the quantitative measures are at variance with the more generally positive changes observed in the qualitative measures, it could be speculated that MiDBT provides optimism and hope to women who enter adult life with substantial emotional dysregulation and often compromised parenting models. However, given the complex clinical presentation of these mothers, the 24-week therapy program may not be of sufficient duration to rapidly change behavioral patterns set up over many years of childhood adversity.

8.1 | Strengths

This study provides a rare opportunity to explore the experiences of mothers with BPD symptomatology over the course of an intervention focused on their maternal–infant relationship. Qualitative findings suggest that the program is overwhelmingly well-received by mothers and perceived as highly beneficial in terms of improving their mother–infant relationships. The mixed methods design provides effectiveness of the quantitative measures of reflective functioning strengthened by comparison with qualitative data. The finding that the positive changes in the mothers are less observable in objective ratings of the mother-infant relationship remains of concern and requires further exploration in future studies.

8.2 | Limitations

A limitation of the current study is the small sample size. Difficulties recruiting large cohorts of mothers with BPD and sustaining their participation for the duration of a study appears common, with a recent review of studies in this area finding a tendency to recruit small sample groups, typically fewer than sixty participants (Steele et al., 2019), which may be attributable to the psychopathological nature (e.g., emotional dysregulation, instability) of BPD (Apter-Danon & Candilis-Huisman, 2005). Participants in the current study were likely to be motivated to complete the 24-week long program and participate in the data collection at both baseline and post-intervention and may therefore not be representative of all mothers with BPD. Furthermore, the study did not include a control group, therefore findings should be interpreted with caution as it is not possible to conclude with certainty that the MiDBT program itself provided changes in outcomes for mothers with BPD. It is possible, for example that the group environment itself, a non-specific aspect of the intervention, may have contributed to maternal changes. The timeframe over which the intervention was conducted (i.e., 24-week) may also have contributed to the observed changes in the mother–infant relationship due to developmental changes in the infant, as challenges which may have been present initially (e.g., teething, sleep problems) may no longer apply simply due to the age of the infant post-intervention. Additionally, interviews were carried out by three different research officers with some variation in their use of the semi-structured interviews.

A further confounder in this study is that all participants were engaged in additional support outside the MiDBT program which included various combinations of psychologists, mental health workers, and/or community support groups. Therefore, the degree to which the intervention contributed to changes in the mothers' personal and parenting capacity is unclear. Accordingly, the focus of this study was to explore coping strategies mothers had utilized which were part of the intervention, and to use the qualitative data to explore the mothers' experience of the program.

9 | CONCLUSION

While the number of study participants and associated analyses limit the generalizability of findings, over the course of 24-week, mothers in this small study reported an increase in their capacity to manage their own emotions and improve their relationship with their infant. Pre-group, mothers appear so overwhelmed by their own emotions that they are relatively unable to hold their infant in mind. Motherhood constellation, so aptly described by Stern (1995) is at least partially absent. However, by the group's conclusion, on qualitative assessment, with newly learned skills for regulation emotions, mothers appear more able to notice their infant, and to reflect on what they are seeing. They may also have learned a language for identifying emotions in both themselves and their infants during the skills-based groups of MiDBT.

However, quantitative findings only partially corresponded with the qualitative data, suggesting further research with a larger sample size is necessary to further understand the influence of parenting interventions on mothers with BPD and their mother-infant relationships, including the link between observational, self-report questionnaires, and qualitative measures. It is possible that longitudinal studies of participating dyads may show improved quality of mother-infant relationships, as "sleeper effects" have been hypothesized in other work on parent-child relationships (van Aar et al., 2017) although it is also possible that longer interventions (Stacks et al., 2022) or further reinforcements of skill over time are necessary.

Interventions such as MiDBT, through development of key parenting skills like PRF and use of better coping

strategies, have the potential to reduce the high stress levels faced by mothers with BPD while improving the mother–infant relationship, resulting in better infant attachment. There is an urgent need for further research around interventions to help mothers with perinatal BPD, given the significant parenting challenges this population faces and the current lack of support programs available. This should include controlled trials and also longitudinal studies of treated cohorts.

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CONFLICT OF INTEREST STATEMENT

The authors report no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions. Deidentified data only can be provided because of ethical restrictions.

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