Research article

Differential responsiveness to a parenting intervention for mothers in substance abuse treatment

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A B S T R A C T

This study examines the relationship between levels of psychological distress in substance-dependent mothers and their differential response to a dyadic parent–child intervention. A sample of 66 mothers who were receiving treatment for substance abuse, as well as a simultaneous parenting intervention, were interviewed pre and post-treatment on measures of psychological distress, adult and child trauma history, parental reflective functioning, and child social–emotional development. Additionally, clinicians provided assessments of the parent–child relationships. As anticipated, trauma histories for mothers and children, children's social emotional development, and parental reflective functioning were associated with aspects of maternal psychological distress. Kruskal–Wallis and subsequent Wilcoxon signed rank tests revealed that women with highest levels of baseline psychological distress showed significant improvements in psychological functioning post-treatment while women with moderately elevated levels of psychological distress did not. Women who were most distressed at baseline showed increased levels of parental reflective functioning post-treatment while women with moderate and lower levels of baseline psychological distress showed improvements on clinician-rated assessments of parent–child relationships. Chi Square analyses showed that parents who endorsed the highest levels of distress at baseline reported that their children's risk status regarding social–emotional development decreased post-treatment. Despite similarities in substance dependence, mothers in this sample had different needs and outcomes in the context of this parenting intervention due to variation in mental health. Given this variation, parenting interventions for substance-dependent mothers need to account for the individual differences in levels of psychological distress.

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Introduction

Children of substance-dependent parents are at risk for poor cognitive, social, and emotional development (Beckwith et al., 1994; McNichol & Tash, 2001; Salo & Flykt, 2013). They are highly represented in the population of children in protective custody, having been removed from their primary caregivers due to abuse or neglect (U.S. Department of Health and Human Services, 2009). Rather than in utero exposure alone causing these difficulties, the quality of relationships with caregivers,

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the caregiving practices themselves, and the home environment are significantly associated with developmental outcomes for these young children (Bennett, Bendersky, & Lewis, 2002; Hurt, Malmud, Betancourt, Brodsky, & Giannetta, 2001; Nair, Schuler, Black, Kettinger, & Harrington, 2003). Parental substance use and related factors, including the psychological distress and co-occurring disorders often experienced by these same parents, contribute to the ongoing risk (Whitaker, Orzol, & Kahn, 2006). Given the complexities of addiction and co-occurring disorders, and the ways in which they influence parenting and the parent–child relationship, it is imperative to understand how they contribute to children’s cognitive, social, and emotional developmental risk and, subsequently, the best ways to intervene at a dyadic level in order to positively impact these outcomes. Increasingly, there is evidence that interventions targeting the mother–child dyad that recognize the differential needs of substance-dependent women can address these complexities (Suchman, Mayes, Conti, Slade, & Rounsaville, 2004).

Building on knowledge gained from these new interventions, this study examines differential responsiveness to a dyadic parenting intervention for mothers and young children offered as an enhancement to substance abuse treatment. The foci of the study include mothers’ psychological distress, children’s social emotional developmental risk, parenting capacities, and the parent–child relationship.

Connections Between Trauma and Psychological Distress

In the context of intervention development for substance-dependent mothers, it is difficult to overstate the importance of trauma and its impact on women’s mental health and substance use. Significant trauma histories and posttraumatic stress disorder (PTSD) have been associated with substance-dependent women (Back, Sonne, Killeen, Dansky, & Brady, 2003; Cohen and Hien, 2006; Schiff, Levit, & Cohen-Moreno, 2010; Ullman, Relyea, Peter-Hagene, & Vasquez, 2013). In a sample of 402 men and women in treatment for substance use disorders, 52% were diagnosed with PTSD, while the majority endorsed child trauma histories (Wu, Schairer, Dellor, & Grella, 2010). Often connected with trauma, mental health disorders co-occur with substance dependence at notable rates. It has been reported that among adults with substance use disorders, 36% have co-occurring disorders, whereas among adults without substance use disorders, 16% reported mental illness (Substance Abuse and Mental Health Services Administration [SAMHSA], 2013). Additionally, it has been estimated that the majority of women with co-occurring disorders are mothers (Hans, Bernstein, & Henson, 1999; Nicholson et al., 2006). Moreover, distinct levels of psychopathology were found in drug-dependent women who were part of an outpatient perinatal addiction program (Ingersoll, Knisely, Dawson, & Schnoll, 2004). These clinically relevant findings support the notion that treatment programs for substance-dependent mothers should take into account differing types and levels of psychopathology (Kessler et al., 1996).

Addiction and Parenting

Contrary to popular discourse that tends to characterize substance-dependent pregnant and parenting women as lacking an ability to care for their children and demonstrating an unwavering preference for their substance of choice rather than focusing on parenting, the nature of addiction and mothering is profoundly complex (Beekman & Neiderhiser, 2013; Kaltenbach, 2013). Focusing attention on the bio-psychosocial understanding of addiction as it relates to pregnant and parenting women (Kaltenbach, 2013) provides insight into these complexities, as well as a necessary springboard from which to base the development of interventions. The growing research behind the establishment of these bio-psychosocial profiles indicates characteristics related to trauma history, levels of psychological distress, caregiving environment, and attitudes about parenting, among others (Kaltenbach, 2013). Additionally, recent research on the neurobiology of addiction, specifically related to the reward and pleasure system in the brain, suggest difficulties in maternal responsiveness and subsequent attachment relationships (Landi et al., 2011). Furthering the complicated nature of addiction and mothering, these findings related to the impact of addiction on neural reward pathways combine with the bio-psychosocial profiles of women who are substance dependent to suggest the need for a nuanced approach to intervention development for these families.

Parental Substance Misuse and Child Social–Emotional Developmental Outcomes

Given the complexity of factors contributing to addiction and impacting the environment in which children of parents who are substance dependent develop, there are a number of ways young children may be affected in terms of social–emotional development. Research findings show that children of substance-dependent parents have an increased risk of poorer developmental outcomes than those whose parents are not misusing substances (Beckwith et al., 1994; McNichol & Tash, 2001; Salo & Flykt, 2013). However, the etiology of a child’s compromised development is complex and multi–determined. Recent findings have shown that children exposed in utero to opiates have a greater risk of birth defects (Yazdy, Mitchell, Tinker, Parker, & Werler, 2013). Conversely, another study extended previous findings indicating that in utero cocaine exposure itself was not associated with poor developmental outcomes (Hurt et al., 2001). Consideration of the reciprocal nature of the parent–child relationship is important as the substance-exposed infant may have difficulty regulating his/her physical and emotional states and the mother may have an impaired ability to read the child’s cues. This combination can be problematic, leading to maternal withdrawal, increase in the risk of child neglect and subsequent negative consequences for development (Pajulo, Suchman, Kalland, & Mayes, 2006). Furthermore, we know that the quality of relationships with caregivers,
the caregiving practices themselves, and the home environment are significantly associated with developmental outcomes in young children (Hurt et al., 2001), making the parenting domain ripe for intervention.

Attachment Theory

A great deal is known about the critical nature of the child’s relationship with his primary caregiver, particularly through the lens of attachment theory (Ainsworth, 1973; Bowlby, 1977). Central to the theory is the idea of the secure base – experienced in the safety and comfort of the relationship with a primary caregiver – from which a child feels comfortable exploring and negotiating potentially stressful situations (Ainsworth, 1973; Ainsworth, Blehar, Waters, & Wall, 1978; Emde & Easterbrooks, 1985). This aspect of attachment and its reciprocal nature are essential when considering parent–child relationships with substance-dependent mothers. Not all mothers who are in recovery or actively using express or demonstrate significant difficulties with parent–child interactions. Co-occurring mental illness, additional stressors in the caregiving environment, and severity of substance dependence may increase the risk of difficulties with parent–child interactions (Kaltenbach, 2013; Nair et al., 2003). Findings suggest, however, significant associations between substance-dependent mothers and difficulties with parental involvement, including the expression of enjoyment in interactions with their infants (Burns, Chethik, Burns, & Clark, 1997), less sensitivity and responsiveness to their children’s cues (Burns et al., 1997; Hans et al., 1999; Landi et al., 2011; Suchman, Mcmahon, Zhang, Mayes, & Luthar, 2006), decreased interest in the children’s activities, and greater intrusiveness in interactions (Hans et al., 1999). These types of concerns impact the development of trust and the critical secure base inherent in the attachment relationship, thereby affecting the parent–child relationship in both broad and nuanced ways.

Relatedly, other important elements of parent–child interactions include the parent’s ability to understand and reflect on his or her child’s internal experiences and to keep those experiences in mind in the context of their interactions (see, e.g., Slade, 2005). These abilities are referred to as mentalization or reflective functioning (Slade, 2005). A distortion of the child’s emotions and cues and a subsequent suboptimal (or lack of) response to those emotions indicate a decreased parental reflective capacity, deeply impacting the child’s development of self (Slade, 2005). Considerations of the parenting difficulties demonstrated by mothers who are substance-dependent – such as decreased sensitivity and responsiveness, and greater intrusiveness (Burns et al., 1997; Hans et al., 1999; Suchman & Luthar, 2000; Suchman, Mcmahon, et al., 2006; Suchman, Pajulo, DeCoste, & Mayes, 2006; Swanson, Beckwith, & Howard, 2000) – are therefore essential in the development of effective interventions to support these families.

Parenting Interventions for At-risk Mothers and Young Children

Recently, taking the above into account, a number of programs grounded in attachment theory and focused on the parent–child relationship have been developed for substance-dependent mothers (Bromberg, Backman, Krow, & Frankel, 2010; Pajulo et al., 2006; Pajulo & Kalland, 2013; Suchman, DeCoste, Castiglioni, Legow, & Mayes, 2008). Overall, the interventions aim to support parents in becoming more emotionally attuned to their children and develop their own capacity for emotion regulation (Suchman, Pajulo, et al., 2006). These programs include a clinic-based intervention, Mothering from the Inside Out (Suchman, DeCoste, Ordway, & Bers, 2013), as well as a Finnish residential facility for mothers and their young children (Pajulo et al., 2006).

These new interventions have demonstrated early effectiveness in the parent–child relational domain, yet they do not typically focus on the in vivo experience of intervening with the mother–child dyad in sessions. Preliminary evidence suggests that effective programs addressing the parent–child relationship are dyadic (or triadic) in nature, informed by attachment theory, and strive to improve the parent’s capacities to attune to his or her child (e.g., parental reflective functioning) (Lieberman & Van Horn, 2005; Slade, Sadler, & Mayes, 2005). Therapeutic interventions with non-substance-dependent but at-risk mothers and young children such as Early Connections (Paris, Bolton, & Spielman, 2011; Spielman, 2002), Minding the Baby (Slade et al., 2005), Watch, Wait and Wonder (Cohen et al., 1999), and Child-Parent Psychotherapy (Lieberman & Van Horn, 2005), among others, use a variety of approaches and techniques to assist parents in understanding their child’s emotional and behavioral needs, working with live, in-the-moment parent–child interactions. The clinician also addresses the psychological challenges faced by the mother, as well as her history of trauma and/or abuse and neglect in terms of their relationship to parenting.

The Present Study

This study was part of an academic-community partnership aimed at evaluating Project BRIGHT. Two community agencies and a clinical researcher collaborated in developing the intervention and evaluation. Given that this type of dyadic parent–child therapy had not been offered previously within substance abuse treatment, numerous research questions were developed to build on knowledge available about mothers in recovery from SUDs and CODs and their young children, as well as to assess possible different responses to the program depending on baseline mental health of the parent. Research questions included the following: (1) In order to understand participants’ functioning at baseline we studied the relationships among psychological distress, child and adult trauma histories, parenting capacities and parent–child relationships at the beginning of the dyadic intervention for mothers in substance abuse treatment and their young children; (2)
Furthermore, we were interested in examining whether or not there was a differential response to treatment given baseline levels of psychological distress, specifically testing for change in: (2a) reported maternal distress symptoms, (2b) risk of problematic social emotional development for the child, (2c) reflective functioning capacities of the mother, and (2d) the parent–child relationship.

Method

Project BRIGHT Intervention

Learning from the increasing empirical support for the aforementioned models of intervention, psycho-education and parent skills training for substance-using parents, attachment-based interventions focused on reflective functioning, and dyadic therapy with parents and young children at risk due to psychological distress and trauma, a dyadic intervention for parents and young children was designed as an enhancement to substance abuse treatment. Project BRIGHT (Building Resilience through Intervention: Growing Healthier Together) was developed as a dyadic therapeutic intervention to address traumatic stress in children birth to five and their parents in recovery from Substance Use Disorders (SUDs) and Co-Occurring Disorders (CODs). Sites were eight Family Residential Treatment programs (FRTs) across one New England state that annually serve approximately 200 families with children under five. Most of the parents were voluntarily seeking treatment for the overwhelming effects of SUDs, mental illness, and trauma while raising young children. Encouragement by child welfare workers also served as motivation for women to enter residential treatment. Each FRT typically serves 11–15 families. On average, the families remain at FRTs for six to nine months receiving in-house substance use treatment, family therapy, and case management services. Given this variability in length of stay, the BRIGHT dyadic intervention dosage varied from six to twenty-two sessions lasting approximately one to one and a half hours.

Project BRIGHT primarily chose to use the principles and techniques of Child-Parent Psychotherapy (CPP; Lieberman & Van Horn, 2005) to inform its intervention model. CPP is an evidence-based intervention focused on strengthening and supporting parent–child relationship dyads with significant trauma histories. The central foundation of CPP is based on close to forty years of theory and research demonstrating that responses of young children to danger are organized by and can be changed through attachment relationships (Bowlby, 1977; Lieberman, Silverman, & Pawl, 2000). The primary focus is the trauma-affected attachment of parents and young children, toward the goals of improving the parent–child relationship, reducing traumatic stress and behavioral symptoms, and returning the child to a healthier developmental trajectory. Additions for Project BRIGHT were drawn from the previously mentioned best practices given the particular needs and histories of substance-dependent parents. They include a focus on (1) emotion regulation to support parents and infants whose regulatory capacities had been affected by parental addiction, (2) reflective functioning as one key mechanism for a parent to become attuned to his/her child’s emotional and behavioral needs, and (3) developmental guidance to improve parenting knowledge and attitudes. In sessions, the clinician worked with the mother or mother–child dyad to regulate strong affect that emerges in the parenting process, link past and present relationships as they pertain to parenting, build mother’s attunement to her child, and facilitate shared experiences of pleasure and connection between the parent and child.

Procedures

In order to obtain assessments of maternal psychological distress, trauma history, parental perception of child social and emotional development, and parenting capacities, participants completed self-report questionnaires which included five measures, administered at the beginning and ending of treatment. Additionally, clinicians completed a measure assessing mother–child interactions early in treatment and again at termination. In the present study, data from pre and post-treatment, including self-report measures and clinician ratings of maternal–child interactions, were examined to assess differential changes in the mothers’ distress levels, perception of child development, parenting capacities, and mother–child interactions. Institutional Review Board approval was received from Boston University.

Sample

Pregnant women or mothers with children birth to five years of age who were living in the FRTs when BRIGHT clinicians were offering services during an approximate ten month period between January of 2010 and September of 2012 were referred to the program. Eighty-seven mother–child dyads from eight different FRTs enrolled in the Project BRIGHT intervention. All program participants were invited into the study by their clinician. Sixty-six of them agreed to participate in the evaluation study and completed most relevant measures at both pre and post treatment. In non-mutually exclusive categories, the majority (79%) of the women identified as Caucasian; the remainder identified as African American (17%), Hispanic (22%), Asian-American (1%) and Native American/Hawaiian (2%). Close to 80% of the mothers reported never having been married. Thirty-eight percent of the participants received less than a high school education, 32% attained a high school diploma or equivalent, while 24% attended some college and 6% received a vocational diploma after high school. Ninety-eight percent of the mothers reported being unemployed. Participation in the evaluation was not a condition of receiving the intervention. We have no data on the twenty-one dyads who participated in BRIGHT but not the evaluation other than
their status as living in family residential substance abuse treatment. Sample sizes vary (range = 48–66) for some self-report measures due to incomplete questionnaires. Of this group of 66 participants, clinicians rated 56 mother–child dyads in terms of the quality of their relationship pre and post treatment.

As was the case for all residents of the FRTs, mothers in the study were in recovery from substance dependence, the vast majority from heroin, opiates, cocaine and crack (76%). With an average of 14 lifetime traumatic incidents reported, the women in this sample experienced significant traumas both connected to and separate from their substance use. Anecdotally, we know that many struggled with co-occurring mental illness, although we do not have detailed diagnoses. All of the children participating in BRIGHT were under five years of age and living with their mothers in the family residences. Per parent report, 70% of the children had been removed from their mothers for periods of time and placed in foster or kinship care due to parental substance dependence and conditions that may accompany mis-use of substances (e.g., neglect, physical abuse, and community violence). Furthermore, clinicians reported that periods of homelessness, traumatic separations, and witnessing substance use and family violence were frequently part of these children’s lives. See preliminary analyses for further details on the study sample.

**Data Collection**

Baseline questionnaires were completed by BRIGHT clients in interviews with their clinicians during the first two to three sessions, as part of the assessment process. All clients were consented to participation in the intervention as well as the program evaluation. Self-report questionnaire packets were comprised of demographic questions and six standardized measures including the Brief Symptom Inventory (BSI; Derogatis, 1993a), the Life Stressor Checklist – Revised (LSC-R; Wolfe & Kimerling, 1997), the Traumatic Event Screening Inventory Parent Report Revised (TESI-PRR; Ippen et al., 2002), the Ages and Stages Questionnaire–Social Emotional (ASQ-SE; Squires & Bricker, 2009) and the Parental Reflective Functioning Questionnaire (PRFQ; Luyten et al., 2009). Post-treatment questionnaires included all standardized measures except for the LSC-R and the TESI-PRR. Clinicians were trained on administering questionnaires by the senior researcher on the team. In addition, clinicians assigned a baseline PIRGAS score (described in measures section) to the parent–child relationship based on observations of interactions over the first three to five sessions and again assigned a score at the end of treatment. Data were entered into SPSS Statistics Version 20 and analyzed by the evaluation team. All measures except for the AAPI were used for this study.

**Measures**

**Parent Psychological Distress.** The Brief Symptom Inventory (BSI; Derogatis, 1993a) is a shorter version of the Symptom Checklist 90-R (Derogatis, 1993b). The 53 item measure is designed to assess psychological symptoms by assessing emotional, somatic, and interpersonal dimensions of distress (Derogatis, 1993a). Items are scored on a Likert Scale of 1 (strongly disagree) to 5 (strong agree) with possible scores ranging from 0 to 212. The BSI includes one Global Severity Index (GSI) that measures psychological symptoms of distress and nine subscales measuring Somatization, Obsessive Compulsive Symptoms, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. Although there is no clinical cut-off, higher scores on the GSI indicate greater levels of distress on the relevant subscales as well as on the global index. The GSI was used for our analyses, although we report correlations for the subscales in Table 1. In an early sample of 719 psychiatric outpatients, the BSI showed good to very good internal consistency reliability, with alphas ranging from .71 to .85 on the various subscales (Derogatis, 1993a). The Cronbach’s alpha coefficient in this sample for the BSI total score was excellent at .95.

**Parent and Child Trauma History.** The Life Stressor Checklist – Revised (LSC-R; Wolfe & Kimerling, 1997) is a self-report measure for adults that assesses 27 different types of traumatic events that happened to the individual or that the individual witnessed. The LSC-R contains 27 items that are scored as 1 (yes) or 0 (no) and if endorsed, the age of the incident is recorded. A high score on the LSC-R indicates greater levels of life stressors and cumulative trauma. The LSC-R has been used to measure trauma with diverse age groups and maintains good criterion validity and test–retest reliability (Wolfe & Kimerling, 1997).

The Traumatic Event Screening Inventory Parent Report Revised (TESI-PRR; Ippen et al., 2002) can be used during a structured clinical interview with a parent or guardian or as a self-report measure that assesses a child’s experience of traumatic events. The TESI-PRR is a 24 item inventory; the items are recorded as “yes” (parent describes one or more incidents of the type defined by the question), “no” (parent reports the child has not experienced any incident of the type defined), “not sure” (insufficient information for yes or no; gather additional data if possible). The TESI-PRR provides a comprehensive analysis of child’s trauma exposure and is recommended as the best available option for assessing children’s trauma exposure (Stover & Berkowitz, 2005). While psychometric properties of the TESI-PRR are currently being evaluated, the previous version, the Traumatic Events Screening Inventory–Parent Report, demonstrated test–retest reliability kappas ranging from .50 to .79 (Berent et al., 2008).

**Child Social/Emotional Development.** The Ages and Stages Questionnaire – Social Emotional (ASQ-SE; Squires & Bricker, 2009) is a screening tool that is designed to identify infants and young children whose social or emotional development requires further evaluation for referral or intervention services. The 30 items on the ASQ-SE focus on a child’s social and emotional
Table 1

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<td>.08</td>
<td>.04</td>
<td>.13</td>
<td>.04</td>
<td>-.04</td>
<td>.22</td>
<td>.08</td>
<td>.25</td>
<td>.01</td>
<td>.02</td>
<td>.12</td>
<td>.21</td>
<td>-.37</td>
<td>-.22</td>
<td>-</td>
</tr>
<tr>
<td>Assessment of parent–child relationship</td>
<td>-.01</td>
<td>-.02</td>
<td>.04</td>
<td>-.08</td>
<td>-.03</td>
<td>-.12</td>
<td>-.16</td>
<td>-.003</td>
<td>.19</td>
<td>.09</td>
<td>-.13</td>
<td>-.17</td>
<td>-.17</td>
<td>.03</td>
<td>.15</td>
<td>-.11</td>
</tr>
</tbody>
</table>

Note. Ns range from 53 to 66.

*p < .05.

**p < .01.

behavior in terms of self-regulation, compliance, communication, adaptive behaviors, autonomy, affect, and interactions with people. Items are scored on a scale of “most of the time,” “sometimes,” “rarely or never,” as well as a box for parents to indicate if the question is an area of concern for them. Scores are then coded as a dichotomous variable to determine their risk status. The clinical cutoff for the ASQ-SE is 70 and a high score indicates a greater likelihood of risk for social and emotional development. Internal consistency of the ASQ-SE was found to be good, with an overall alpha of .82, while test–retest reliability of parents’ assessments of their children at two different time points was .94 (Squires, Bricker, Heo, & Twombly, 2001). The small group sizes in our sample prohibited the calculation of alpha coefficients.

Parental Reflective Functioning (RF). The Parental Reflective Functioning Questionnaire (PRFQ: Luyten et al., 2009) is a 39 item multidimensional, self-report measure designed to assess parental reflective functioning or mentalizing. The PRFQ has been modified and is currently comprised of three subscales including Interest and Curiosity (IC; e.g., “I am curious to find out how my child feels”), Pre-Mentalizing (PM; e.g., “When my child is fussy he or she does that just to annoy me”), and Certainty of Mental States (CM; e.g., “I always know what my child wants”) (P. Luyten, personal communication, May 2013). The items are scored on a 7 point scale from 1 (strongly disagree) to 7 (strongly agree). The measure has been found to be highly predictive of attachment, and has good internal consistency and discriminant validity (Luyten et al., 2009). Cronbach’s alphas for this sample ranged from .56 to .78 for each of the three subscales indicating moderate to good internal consistency reliability.

Parent–Child Relationship. The Parent–Infant Relationship Global Assessment Scale (PIRGAS), one part of Axis II of DC: 0–3R (Zero to Three, 2005), measures the quality of the parent child relationship for children 0–5 years old. The PIRGAS allows a clinician to judge the relationship classification based on a number of evaluations, clinical interviews, and play interviews. When difficulties in the relationship are present, clinicians assess the intensity, frequency, and duration to classify the relationship problem as perturbation, a disturbance, or a disorder. Relationships are then scored by the clinician and given a numerical value placing them in one of three categories, either an adapted relationship (score of 81–100), features of a disordered relationship (score of 41–80), and disordered relationship (score of 0–40). The PIRGAS allows for global ratings of quality of the relationship as well as identifying individual differences in how children relate to their caregiver. In addition, it provides a developmentally based approach to classification of mental health and developmental disabilities.

Analysis Overview

All analyses were conducted using IBM SPSS Statistics Version 20. Given the small sample size and non-normality of data, non-parametric statistical tests were used. Preliminary analyses were first conducted to determine mean baseline scores on study variables, to assess associations among study variables, and to provide information about the psychological functioning of participants and their children. In order to assess differential responsiveness to the intervention based on mothers’ levels of psychological distress, analyses were also conducted to categorize participants into groups based on their baseline BSI Global Severity Index scores. Specifically, this allowed for a consideration of whether women with psychological distress levels similar to those in a community sample differed from those with moderate to severe levels of psychological distress on outcome variables. Additionally, preliminary analyses (Kruskal–Wallis and Chi Square tests) explored whether
women in the resulting BSI GSI severity groups varied with respect to demographic characteristics or trauma histories. Next, Kruskal–Wallis tests were conducted to examine whether women in the treatment group and their children experienced differential changes from pre to post on study dependent variables based on participants’ BSI severity group. This allowed for exploration of differential responses to treatment based on baseline mental health.

Results

Preliminary Analyses

For continuous study variables, mean baseline scores were computed. Within this sample, the mean age for mothers was 29.21 (SD = 5.52); the identified children were on average 21.05 months old (SD = 16.21). Mean number of children for each mother was 2.7 (SD = 1.6) with a range in age of birth to nine years old. Trauma scores for mothers, as determined by the LSC-R, averaged 13.52 (SD = 4.14) discrete events. PTSD diagnosis has been correlated with as few as one or two stressful events on the LSC-R (Wolfe, Kimerling, Brown, Chrestman, & Levin, 1996). Trauma scores for children, as determined by the TESI, averaged 3.52 (SD = 2.59) discrete events. Furthermore, 70% of mothers endorsed their young child’s removal from them by child welfare as a source of trauma. With respect to psychological distress scores, the average BSI Global Severity Index for women was .94 (SD = .61) as compared to a non-clinical community sample mean of .30 (SD = .31) and an adult psychiatric outpatient sample mean of 1.32 (SD = .72) (Derogatis, 1993a) indicating a moderately high mean level of distress in our sample. Average PIRGAS scores for the mother–child relationship were 52.13 (SD = 14.03; features of a disordered relationship) at baseline. With respect to the primary substance of choice for participants, of the 54 women responding to this question, the most common substance was heroin (33.3%) followed by crack cocaine (20.4%). Women also reported primary substances of choice to be cocaine (11.1%), other opiates/synthetics (11.1%), alcohol (7.4%), marijuana (7.4%), benzodiazepines (3.7%), oxycodone (3.7%), and non-prescription drugs (1.9%). The average number of treatment sessions for BRIGHT participants was 13.7 (SD = 5.41).

Spearman’s correlations were computed to determine bivariate associations between study variables. As indicated in Table 1, BSI subscales demonstrated moderate to strong correlations with one another and correlations between the BSI Global Severity Index and BSI subscales were all statistically significant, ranging from .63 (Phobic Anxiety subscale) to .89 (Psychoticism subscale). Only two PRFQ subscales were significantly associated with one another; there was a negative correlation between Pre-Mentalizing Modes and Interest and Curiosity in Mental States. Select PRFQ subscales (IC and PM) were associated with one aspect of maternal psychological distress – paranoid ideation. LSCR scores were positively correlated with TESI total scores, the BSI Global Severity Index, and three BSI subscales (Interpersonal Sensitivity, Anxiety, Paranoid Ideation). With respect to the TESI, in addition to being related to the LSCR, scores were positively associated with the BSI Global Severity Index and the BSI Obsessive Compulsive subscale. ASQ risk scores were positively associated with two BSI subscales (Obsessive Compulsive, Hostility) and negatively related to the PRFQ Certainty of Mental States. Finally, PIRGAS scores were not significantly correlated with any of the other study variables.

Chi Square analysis was used to compare the percentage of children in the overall treatment sample classified as at risk for social–emotional development problems at each time point, as measured by the ASQ-SE. Results indicated that 33.3% of children at Time 1, in contrast to 22.9% of children at Time 2, scored above the risk cut-off for the ASQ-SE ($\chi^2 (2, N = 48) = 15.1, p < .01$).

Analyses by BSI Group and Time

Participants were divided into three groups based on their Time 1 BSI Global Severity Index scores to obtain an index of the extent of their psychological distress at baseline. Specifically, groups consisted of women who had scores in the bottom third (i.e., had the lowest distress scores; n = 23), middle third (n = 21) and top third (i.e., had the highest distress scores; n = 22) of Time 1 BSI GSI scores. The Time 1 BSI GSI mean score for women in the bottom third (M = .36, SD = .16) was comparable to the mean score in a community sample (M = .30, SD = .31) (Derogatis, 1993a). In contrast, the mean Time 1 BSI GSI score for those in the middle third (M = .86, SD = .17) was 1.81 standard deviations above the community sample, and the mean Time 1 BSI GSI score for those women in the top third (M = 1.63, SD = .48) was 4.29 standard deviations above the community sample mean.

With respect to key differences across BSI groups, analyses revealed that women in the three groups did not differ with respect to maternal age at baseline, child age at intake, number of sessions, or race. There were, however, statistically significant differences in mean trauma scores between groups ($F (2, 65 = 5.63, p < .01$), whereby as BSI scores increased, so did trauma scores (e.g., the women in the bottom third of Time 1 BSI scores also had the lowest LSC-R scores). Finally, a Chi Square analysis was conducted to determine whether there were differences across BSI groups on the top two substances of choice identified at baseline – heroin and crack. Results indicated that there were not statistically significant differences.

A Kruskal–Wallis test was used to determine whether groups experienced different patterns of change in psychological distress from Time 1 to Time 2 (Table 2). Results indicated that there were statistically significant differences in change scores between groups over time ($\chi^2 (2, N = 66) = 20.2, p < .01$) with follow-up Wilcoxon signed rank tests demonstrating that women in the top third in particular showed statistically significant reductions in BSI GSI scores ($z = -3.3, p < .01$). Specifically, within this group, the mean BSI score at Time 1 was 1.63 (SD = .48) compared to a mean BSI score at Time 2 of 1.07 (SD = .56),...
Table 2
Kruskal–Wallis comparisons of psychological distress, parental reflective functioning, and parent–child relationship scores by Brief Symptom Inventory group.

<table>
<thead>
<tr>
<th></th>
<th>BSI Lower Third</th>
<th>BSI Lower Third</th>
<th>BSI Middle Third</th>
<th>BSI Middle Third</th>
<th>BSI Top Third</th>
<th>BSI Top Third</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 1 ( M(\text{SD}) )</td>
<td>Time 2 ( M(\text{SD}) )</td>
<td>Time 1 ( M(\text{SD}) )</td>
<td>Time 2 ( M(\text{SD}) )</td>
<td>Time 1 ( M(\text{SD}) )</td>
<td>Time 2 ( M(\text{SD}) )</td>
</tr>
<tr>
<td>BSI</td>
<td>.36 (.16)</td>
<td>.33 (.26)</td>
<td>.86 (.17)</td>
<td>.87 (.57)</td>
<td>1.63 (.48)</td>
<td>1.07 (.56)</td>
</tr>
<tr>
<td>PRFQ – pre-mentalizing</td>
<td>1.87 (1.0)</td>
<td>1.65 (.74)</td>
<td>1.52 (.65)</td>
<td>1.56 (.67)</td>
<td>1.96 (1.2)</td>
<td>2.11 (.98)</td>
</tr>
<tr>
<td>(I)</td>
<td>3.41 (1.28)</td>
<td>3.12 (1.18)</td>
<td>3.06 (.85)</td>
<td>2.87 (1.06)</td>
<td>3.19 (1.10)</td>
<td>3.35 (1.49)</td>
</tr>
<tr>
<td>PRFQ – Interest and</td>
<td>6.11 (.86)</td>
<td>5.90 (.72)</td>
<td>6.16 (.55)</td>
<td>6.23 (.61)</td>
<td>6.12 (.71)</td>
<td>6.45 (.48)</td>
</tr>
<tr>
<td>curiosity</td>
<td>50.83 (8.66)</td>
<td>56.50 (9.06)</td>
<td>52.47 (13.69)</td>
<td>58.65 (11.95)</td>
<td>52.95 (18.04)</td>
<td>55.62 (18.51)</td>
</tr>
<tr>
<td>PIRGAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. BSI, Brief Symptom Inventory; PRFQ, Parental Reflective Functioning Questionnaire; PIRGAS, Parent–Infant Relationship Global Assessment Scale. p-Values are calculated by Kruskal–Wallis test.

\( p < .05 \)
\( ^* \) \( p < .01 \)
\( ^a \) Completed BSI \( n = 23 \); Completed PRFQ \( n = 23 \); Completed PIRGAS \( n = 18 \).
\( ^b \) Completed BSI \( n = 21 \); Completed PRFQ \( n = 21 \); Completed PIRGAS \( n = 17 \).
\( ^c \) Completed BSI \( n = 22 \); Completed PRFQ \( n = 22 \); Completed PIRGAS \( n = 21 \).

which reflected a statistically significant decrease in distress symptoms. In contrast, mean BSI scores for the bottom and middle third groups remained relatively stable over time.

Subsequent analyses evaluating Time 1 to Time 2 changes on study measures focused on whether there were different patterns across time based on BSI severity group. Analyses as such addressed whether participants’ baseline mental health influenced the extent to which they benefited from the intervention.

**Pre-Post Test Differences: Influence of Baseline Psychological Distress Severity**

Kruskal–Wallis tests were used to evaluate change scores between Time 1 and Time 2 on PRFQ subscales based on Time 1 BSI GSI severity level (i.e., bottom, middle, and top third). With respect to the PRFQ Interest and Curiosity Subscale, results indicated that changes in this subscale from Time 1 to Time 1 varied by BSI group \( (\chi^2(2, N = 66) = 8.4, p < .05) \). Follow-up Wilcoxon Signed Rank tests showed that only women in the top third of BSI GSI scores at baseline (i.e., had the highest levels of psychological distress) demonstrated statistically significant changes in Interest and Curiosity over time, and these changes were in a positive direction \( (Z = −2.8, p < .01) \). There were no differences between BSI groups on the PRFQ Pre-Mentalizing or Certainty of Mental States subscales.

To assess whether there were significant differences in ASQ-SE risk status for the child from Time 1 to Time 2 based on Time 1 BSI distress severity level of the mother (i.e., bottom, middle, and top third), a 3-way Chi Square analysis was conducted. Significant differences emerged \( (\chi^2(2, N = 48) = 15.1, p < .01) \), whereby for women in both the bottom and top thirds of baseline BSI GSI scores there was a greater tendency for their child to move from at risk at Time 1 to not at risk at Time 2 than the converse. Specifically, there were four children in the bottom third of Time 1 baseline BSI GSI scores who were classified as at risk on the ASQ-SE at Time 1, but there was only one child classified as at risk at Time 2. Patterns over time for this group were not, however, statistically significant. Similarly, for those women in the top third of Time 1 baseline BSI GSI scores, ten had children classified as at risk on the ASQ-SE at Time 1 whereas at Time 2 only six children from this

Table 3
Wilcoxon signed rank follow-up of psychological distress, parental reflective functioning, and parent–child relationship scores by brief symptom inventory group.

<table>
<thead>
<tr>
<th></th>
<th>BSI Lower Third *</th>
<th>BSI Middle Third *</th>
<th>BSI Top Third *</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( Z )</td>
<td>( p )</td>
<td>( Z )</td>
</tr>
<tr>
<td>BSI</td>
<td>−1.10</td>
<td>.27</td>
<td>−.49</td>
</tr>
<tr>
<td>PRFQ – pre-mentalizing</td>
<td>−.79</td>
<td>.43</td>
<td>−.06</td>
</tr>
<tr>
<td>(I)</td>
<td>−1.11</td>
<td>.27</td>
<td>−1.00</td>
</tr>
<tr>
<td>PRFQ – interest and</td>
<td>−1.16</td>
<td>.25</td>
<td>−.04</td>
</tr>
<tr>
<td>curiosity</td>
<td>−2.49</td>
<td>.01*</td>
<td>−2.25</td>
</tr>
</tbody>
</table>

Note. BSI group \( N \)’s range from 17 to 23. BSI, Brief Symptom Inventory; PRFQ, Parental Reflective Functioning Questionnaire; PIRGAS, Parent–Infant Relationship Global Assessment Scale.

\( * p < .05 \)
\( ^* \) \( p < .01 \)
\( ^a \) Completed BSI \( n = 23 \); Completed PRFQ \( n = 23 \); Completed PIRGAS \( n = 18 \).
\( ^b \) Completed BSI \( n = 21 \); Completed PRFQ \( n = 21 \); Completed PIRGAS \( n = 17 \).
\( ^c \) Completed BSI \( n = 22 \); Completed PRFQ \( n = 22 \); Completed PIRGAS \( n = 21 \).
group were classified as at risk. Changes in risk status for the top third were statistically significant based on a Fisher’s exact test \((p < .01)\). For the middle third of Time 1 baseline GSI scores, the two children classified as at risk on the ASQ-SE at Time 1 remained in the at risk category at Time 2, and one of the eleven children categorized as not at risk at Time 1 moved to the at risk category at Time 2 (Fisher’s exact test, \(p < .01)\) (Table 3).

Finally, to evaluate changes in PIRGAS scores from Time 1 to Time 2, taking into account Time 1 BSI GSI severity level, another Kruskal–Wallis test was used. Results indicated that there was not a significant effect of BSI group by time \((\chi^2 (2, N = 56) = 2.4, p > .05)\). However, follow-up exploratory Wilcoxon signed rank tests suggested that participants who were in the bottom and middle third of BSI GSI scores at Time 1 (i.e., had low and moderate distress scores) showed statistically significant improvements in their relationship with their child over the course of the study \((z = -2.5, p < .05\) and \(z = -2.2, p < .05\) respectively). Notably, participants in the bottom third of BSI GSI scores at Time 1 also had the lowest Time 1 PIRGAS scores, in comparison to women in the other BSI groups.

Discussion

This study aimed to examine the differential effectiveness, based on psychological distress prior to treatment, of a dyadic intervention for mothers who were receiving treatment for substance abuse and their young children. As expected, results showed that our sample of substance-dependent mothers also struggled with histories of trauma and mental health concerns and that adult trauma, child trauma, and overall maternal distress were positively associated with each other at baseline, supporting the well-developed knowledge regarding the relationship between trauma and mental health (see, e.g., Edwards, Holden, Felitti, & Anda, 2003; Turner & Lloyd, 1995). Also unsurprising were the positive relationships among adult and child-focused variables including trauma, maternal mental health, and child social-emotional developmental risk (Silverstein, Augustyn, Cabral, & Zuckerman, 2006; Whitaker et al., 2006). Although demonstrated with a relatively small sample, these associations offer support for understanding the complexity of the parent–young child relationship, in particular when trauma and substance dependence are involved. Further, these multiple relationships may imply that intervening at a dyadic level with an in-the-moment therapy could offer a mother the opportunity to learn about her child, his/her complicated needs, the subsequent evocation of her feelings, and possible ways to respond. This type of intervention can go beyond parenting classes by recognizing the challenges of initiating changes in parenting practices, and is important when working with families who are impacted by co-occurring substance use disorders and mental illness, often compounded by trauma.

Additional baseline results provide a more nuanced understanding of the relationships among mental health, trauma, child social–emotional developmental outcomes, and parenting practices and beliefs. The positive association between the pre-mentalizing aspect of reflective functioning and paranoid ideation may suggest that serious mental health–related struggles on the part of the mother can be related to her diminished ability to take a reflective stance regarding her child. We might see this operationalized in a mother who is unable to imagine her child’s emotional or cognitive experience and thereby miss important cues or misunderstand the impact of frightening situations for the young child, such as witnessing domestic violence or substance abuse. This, in turn, may impact the child’s social–emotional development. That mental health may be impacted by a therapeutic intervention speaks to the need for its thoughtful, effective development and implementation.

The mothers with most mental health challenges at baseline showed significant change in their overall psychological distress after BRIGHT. Although the primary goal of the intervention was not improvement in mental health per se, it is important to note the multi-dimensional quality of BRIGHT. Offered as an enhancement to substance abuse treatment as an attachment-focused parenting intervention, it is likely that the reflective stance of the clinicians was quite different than the primary treatment approach within the family residence. As is typical and necessary in residential substance abuse treatment, there was a limit–setting approach with regard to the use of drugs or alcohol and significant expectations in terms of responsibilities when living with other families. The flexible and relationship-based approach of the BRIGHT clinicians offered somewhat of a contrast and possibly a safe and conducive place for the mothers to share trauma histories and life challenges, particularly with regard to parenting and their own family histories. In addition, it is possible that the support received around the mothering role enabled them to feel more confident in relationships with their children. These two avenues for improved mental health – sharing deep feelings and experiences, and achieving a sense of comfort – as well as developing more confidence in a central life role, might have served to improve overall mental health for the most distressed women.

The mothers who had moderately elevated distress scores at baseline had fewer discrete trauma incidents in their history but their substance abuse was similar to the mothers who were most highly distressed. They did not report significant improvement in mental health after BRIGHT. This finding underlines our premise that women with serious substance dependence may not have similar histories with regard to trauma and mental health, thereby underscoring the possibility of differential response to services. A short-term intervention, such as BRIGHT, offered as an enhancement to treatment for substance abuse, may not have been sufficient or long enough to evoke change in psychological distress. Further, it is generally more difficult to improve moderately elevated scores rather than highly elevated ones. Another perspective to consider is that these women needed more intervention in order to improve their distress levels and gain relief from a safe and supportive relationship. In fact, the chance to talk openly with a clinician may have actually brought them face-to-face with some of the stark realities of their lives, such as maintaining custody of their children and difficulties with optimal
parenting while in recovery, without a job or a permanent place to live. One might argue that these mother–child dyads needed a longer time in treatment in order to affect significant change in mental health.

Women in the highest distress group at baseline were the only group to report a mild increase in their reflective capacities, specifically with regard to their interest in and curiosity about their children. This can be understood in a number of different ways. Perhaps the relief of feeling psychologically better enabled them to increase the focus on their child. It is also possible that the parenting support they received enabled them to feel more confident as mothers and, in turn, improved their mental health and facilitated taking a greater interest in their children. This same group of women viewed their children as less at-risk regarding their social and emotional development. Again, the shift in how they perceived their children may be a byproduct of improved mental health, improved confidence as parents, or both.

The final changes reported in our results focus on clinician ratings of the mother–child relationship. Interestingly, although the most highly distressed group self-reported the aforementioned changes in the way they viewed parenting and their children, these changes were not seen by the clinicians in parent–child interactions. The groups starting out at the lowest and moderate distress levels were rated as improved in this domain. One way to view these findings is to consider the fact that these are very different measures. The mothers are reporting on their lived experiences and how they think about parenting and children, while the clinicians are scoring interactions that they have been observing. Internal changes in a parent may not yet be reflected in outward behavior. However, another way to consider these findings is to think about intervention expectations. The clinicians in Project BRIGHT were trained to offer a dyadic intervention focused on transforming the mother–child relationship through improving maternal attunement and reflective functioning. This type of work would be easier to facilitate with a mother who was less depressed and anxious, as the lowest scoring group of mothers were. The clinicians may see greater relational improvements in that group of mothers and children. Whereas, they are less likely to see improvements in dyadic interactions through a clinical intervention where more time might have been spent reducing depression and anxiety and less on actual parent–child interactions.

**Limitations**

While the current study contributes to understanding dyadic parenting treatment for substance-dependent mothers and their young children, there are numerous limitations. The sample size was small to start and due to data collection challenges in the community settings, cases with incomplete measures were dropped from specific analyses, thereby further limiting group size. Relatively, no reliable control group data were available, rendering the findings preliminary and limited in their generalizability and scope. The use of parental report to assess a child’s social–emotional development and trauma experience is common in studies of young children, but can be viewed as a limitation. Therefore, we included a measure of the parent–child relationship as assessed by the clinician to strengthen the study design. Finally, the BRIGHT intervention was relatively short and therefore unable to provide the depth afforded to other longer-term therapeutic interventions. However, it is possible that the small changes in these findings may be magnified in the context of longer-term interventions. Thus, while the BRIGHT intervention was brief in duration, its impact may be notable. Further exploration of similar interventions is suggested to test these preliminary results.

**Implications for Clinical Practice and Research**

The lessons learned from this study include relevant and critical practice implications in the context of working with parents and children who, due to substance dependence and any number of other factors, may be at risk for child abuse and neglect. First, the findings demonstrate the feasibility of enhancing substance abuse treatment with an evidence-informed attachment-based intervention. The theoretical underpinnings of residential programs are quite different from those put forth in the BRIGHT program. Furthermore, typical parenting interventions offered to substance-dependent parents of young children rely heavily on didactic models. However, the BRIGHT program was successfully administered in the FRTs and the findings suggest modest efficacy of the approach to improve parenting. Second, while practice and research have afforded us valuable insight into working with and supporting families and children who are impacted by trauma, mental health concerns, substance abuse, and various related factors, it is crucial that we not overlook the heterogeneity inherent in these families. It is necessary to develop and adapt interventions that can impact the parent–child relationship in ways that go beyond standard prescription and instead consider differential needs. Attention to these differential needs and responses to treatment may serve to better support mothers in substance abuse recovery and their young children, ensuring safety and the children’s optimal growth and development. Third, further research into the details of attachment-based dyadic interventions should expand the scope of this study by using a more rigorous controlled design, exploring the therapeutic mechanisms at work in the treatment, and detailing the nuances of the intervention from both the clinicians’ and clients’ perspectives.

**References**


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