The Effect of Maternal Borderline Personality Disorder and Social Support on Patterns of Emotional Availability in Mother-Child Interactions

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Rebecca Devan Trupe
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Abstract

Individuals with borderline personality disorder (BPD) experience severe and pervasive disturbances in the development of attachment relationships, identity, and emotion regulation. Given these deficits, there is an important need to understand the unique challenges mothers diagnosed with BPD are likely to face in parenting their children, as well as identify contextual variables that might be associated with maternal functioning and parenting outcomes. The current study used a low socioeconomic sample of children aged 4-7 of mothers with BPD, and a comparison group of children of mothers without BPD, to examine associations between maternal BPD, maternal borderline features, social support, and emotional availability. Results of the study found that social support played a mediating role on the relationship between (1) affective instability and maternal emotional availability, (2) identity problems and maternal emotional availability, (3) self-harm/impulsivity and maternal emotional availability, and (4) self-harm/impulsivity and child emotional availability. Contrary to hypothesis, the moderating effects of social support were strongest for mothers with low levels of borderline features; social support did not seem to buffer the effects of higher levels of borderline features on emotional availability. Results of cluster analysis also revealed 4 unique patterns of both optimal and nonoptimal mother-child emotional availability, labeled (1) High Functioning—Sensitive, (2) Low Functioning—Intrusively Hostile, (3) Low Functioning—Passive/Disengaged, and (4) Low-Functioning—Inconsistent. Mothers in Cluster 1 reported the highest levels of social support and the lowest levels of borderline features, while mothers in Cluster 2 reported the lowest levels of social support and highest levels of borderline features; furthermore, mothers in Cluster 2 endorsed significantly more problems with Negative Relationships when compared to mothers in

Cluster 1. Mothers in Clusters 3 and 4 reported levels of borderline features and social support that were similar to the overall group mean. The results of the study are discussed in terms of developmental precursors to BPD, clinical implications for parent-child interventions, directions for future research, and strengths and limitations.

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Chapter I.

Introduction

The present study investigates how maternal borderline personality disorder (BPD) affects observations of emotional availability in a sample of mothers and their children age 4-7. Low-SES mothers with BPD and normative comparisons were sampled. The study extends previous research (Trupe, 2010) by examining the role of social support in mediating the relationship between maternal BPD and emotional availability. The study further aims to explore clustered patterns of dyadic emotional availability within our sample, and identify individual and contextual variables associated with different patterns of interaction. In addition to assessing BPD as a categorical diagnosis, continua of self-reported borderline features were also utilized. In the introduction, theoretical and empirical literatures on BPD, social support and emotional availability are reviewed to provide a rationale for the current hypotheses. Following the introduction, the study methods, analyses, and results are presented. Finally, results are discussed.

Individuals with borderline personality disorder (BPD) may experience stormy and volatile relationships, affective instability, identity disturbances, and self-destructive behavior (American Psychiatric Association, 2000). Characterized as a disorder of attachment (Fonagy, Target, & Gergely, 2000), self-development (Westen & Cohen, 1993), and self-regulation (Posner et al., 2003), BPD affects many domains conceptually similar to developmental tasks of early childhood (Sroufe, Egeland, Carlson, & Collins, 2005). Given these pervasive psychological and emotional deficits, and given that BPD affects women primarily in their child-

bearing years, it is likely that a mother diagnosed with BPD may face considerable challenges in fulfilling the tasks of parenting and promoting her child's success with developmental tasks (Macfie, 2009; Macfie & Swan, 2009; Newman & Stevenson, 2005; Newman, Stevenson, Bergman, & Boyce, 2007; Trupe, 2010).

The impact of BPD may place additional strain on family members, subjecting them to stressful contexts—such as poverty, material deprivation, domestic violence, and low or absent social support—that may affect the quality of parenting and, consequently, child development (Lenzenweger & Cicchetti, 2005). Based on theory suggesting that both stresses and supports in a mother's environment may have direct and indirect impacts on parenting behaviors (Belsky, 1984; Bronfenbrenner & Ceci, 1994), it is thought that the high levels of stress and risk factors experienced by mothers with BPD may interfere with their capacity to provide consistent, sensitive, and emotionally available parenting. The same interpersonal difficulties that mothers with BPD face in their parenting relationships may also lead to difficulties in sustaining positive social support networks (Chan, 2005). The availability of social support, however, may serve as a "buffer" against the negative effects of on a family system. Social support may provide a protective function for parent-child relationship difficulties, and act as a pathway to help women with BPD cope with the emotional challenges of parenting (Cohen & McKay, 1984; Powell, 1979; Unger & Powell, 1980)

There is an important need to understand the parenting challenges faced by mothers with BPD so as to identify potential risks to their offspring that may lead to later disorder or maladjustment, as well as target areas for preventive intervention. It is theorized that the attachment, affective, and identity disturbances inherent in BPD may impact the quality of

maternal caregiving, placing the dyad at risk for dysfunctional patterns of mother-child interaction (Macfie, 2009; Newman & Stevenson, 2005). As children approach ages 4 to 7, they move beyond the developmental task of attachment into the domains of self and emotional regulation, as they work on developing communication skills, an increasing sense of autonomy and independence, theory of mind, and relationships with peers and other caregivers outside the family (Sroufe et al., 2005). Of the existing research with mothers with BPD and their children, there are few studies exploring interactions between mothers with BPD and their young children at this stage of development; even less is known about the impact of other contextual factors on the parenting behaviors of mothers with BPD. Prior studies have shown that children of mothers with BPD demonstrate maladaptive patterns of interpersonal engagement with their mothers, as well as negative representations of self and other as early as age 4 (Macfie & Swan, 2009; Trupe, 2010), suggesting that children of mothers with BPD are already beginning to show adverse outcomes at this developmental stage.

One domain that may be negatively impacted by BPD is emotional availability, a relational construct involving emotional expression and responsiveness between parent and child (Biringen & Robinson, 1991; Biringen, Robinson, & Emde, 1998; Easterbrooks & Biringen, 2000). The construct is conceptualized to include maternal sensitivity, maternal structuring, maternal intrusiveness, maternal hostility, child responsiveness to mother, and child involvement of mother as important for understanding the quality and health of the parent-child relationship (Biringen, 2000; Biringen & Robinson, 1991).

Furthermore, there is a need to identify contextual variables, such as social support, which may act as a buffer against the parenting stresses faced by mothers with BPD. The current

study seeks to explore whether maternal social support plays a mediating or moderating role on the relationship between maternal BPD and emotional availability with children age 4—7. The study also aims to explore clustered patterns of emotional availability during mother-child interactions, and to identify individual and contextual variables (including maternal borderline features and social support) associated with different patterns of interaction.

Chapter 2.

Literature Review

Developmental Psychopathology

From a developmental psychopathology perspective (Cicchetti, 1984; Sroufe & Rutter, 1984), study of the children of women with psychological disorders like BPD may yield important insight into the understanding of links between early adaptations and later disorder, as these children comprise a group at high risk for developing the disorder themselves (Lenzenweger & Cicchetti, 2005; Macfie, 2009; Newman & Stevenson, 2005). Exploring both typical and atypical development provides opportunities for uncovering pathways towards and away from various disorders. From such a perspective, studying development in the children of mothers with BPD may help identify factors that might make the development of disorder more likely, thereby aiding in the development of effective preventive interventions (Cicchetti, 1984; Sroufe & Rutter, 1984).

Borderline Personality Disorder (BPD)

Compared to the extensive studies of the offspring of mothers with depression, there have been few empirical studies of the risk of psychopathology in children of mothers with BPD. A severe and chronic mental disorder, BPD is based on a constellation of clinical features across several domains, characterized by chronic instability and impulsivity in the individual's interpersonal relationships and regulation of emotions. Other diagnostic criteria include frantic efforts to avoid real or imagined abandonment, recurrent suicidal or self-injurious behavior,

chronic feelings of emptiness, and brief paranoid states or severe dissociation (American Psychiatric Association, 2000).

Linehan and colleagues (Fruzetti, Shenk, & Hoffman, 2005; Linehan, 1993) have developed a transactional, biosocial theory for the development and maintenance of BPD, in which BPD is proposed to develop as a result of the ongoing, mutually exacerbating transactions between emotional vulnerabilities and invalidating responses from the social environment. The transactional model proposes that emotional vulnerabilities, such as heightened sensitivity and reactivity to emotional cues, lead to heightened emotional arousal, which in turn can lead to inaccurate expression of emotions (such as mislabeling of emotions and "out of control" behaviors). The inaccurate expression is usually followed by an invalidating response (e.g., "you're overreacting"), which leads back around to increased emotional arousal, and the cycle continues to perpetuate itself (Fruzetti et al., 2005). Thus, the pervasive emotion dysregulation that is characteristic of BPD is thought to develop from the reciprocal influences and transactions between emotional vulnerabilities and invalidating environment.

A large nationally representative study found that BPD affects approximately 5.9% of the general population (Grant et al., 2008), a prevalence rate twice as high as previously reported (American Psychiatric Association, 2000). In clinical populations, the disorder affects approximately10% of outpatient mental health clinic populations and 20% of psychiatric inpatients (American Psychiatric Association, 2000). Although BPD occurs with equal rates across men and women, women with BPD appear to experience more substantial mental and physical disability, and the diagnosis is more prevalent among those with lower incomes and education (Grant et al., 2008). Of those diagnosed, 8-10% will commit suicide (American

Psychiatric Association, 2000). The most common course of BPD follows a path of chronic instability marked by episodes of serious emotional dysregulation and impulsivity, coupled with high levels of use of health and mental health resources (American Psychiatric Association, 2000).

A diagnosis of BPD thus reflects pervasive disturbances in relationships, identity, and emotion regulation. It is likely that individuals with BPD experience frequent emotional turmoil, as well as substantial impairment in social and occupational domains (Lenzenweger & Cicchetti, 2005). Although clinical samples have often been used to document the various dysfunctions associated with a diagnosis of BPD, it may also be important to examine individuals with borderline personality features—individuals who posses characteristic features that are prominent in BPD, but may or may not necessarily meet the full diagnostic criteria (Morey, 1991; Zeigler-Hill & Abraham, 2006). Indeed, it has been suggested that personality disorders may be best conceptualized along a continuum of personality structures, rather than as discrete categorical diagnoses (Widiger, 1992; Widiger & Trull, 2007). The Borderline Features scale of the Personality Assessment Inventory (Morey, 1991), which was designed to assesses features of BPD along a self-report continuum, correlates very highly with BPD diagnosis. In keeping with this dimensional perspective, it may be useful to examine borderline personality features in both clinical and nonclinical samples, as individuals in these populations may possess differing levels of the features that are associated with BPD. In nonclinical samples, borderline personality features have been shown to be associated with higher levels of interpersonal distress (Trull, 1995), as well as unstable self-esteem, unstable negative affect, and labile reactivity to social interactions (Zeigler-Hill & Abraham, 2006). Thus, individuals with borderline personality

features may experience difficulties in domains similar to the dysfunction experienced by individuals with BPD (Zeigler-Hill & Abraham, 2006). In the current study, both a categorical (BPD diagnosis) and continuous (self-reported borderline features) approach was used.

BPD and Parenting. It has been suggested that individuals who spend considerable time with a person affected by BPD, such as their children, may be subjected to significant stresses and strains associated with the impact of BPD on the family (Lenzenweger & Cicchetti, 2005). The core features of BPD may have an immediate impact on parenting, affecting the parent's capacity to manage emotional responses, process and attend to child communication, and promote attachment security and child development. Mothers with BPD appear to have difficulties understanding and responding to their infant's emotional state, making it more likely that they will misinterpret or even avoid the infant's communication. Processing and responding in an empathic way to the emotional communications of their infants may be particularly challenging for these mothers (Newman & Stevenson, 2005). Additionally, mothers with BPD may struggle to modulate the range and intensity of emotions that are aroused in the parenting relationship, leading them to feel estranged, anxious, overwhelmed, or even angry with their infant from birth (Newman & Stevenson, 2005). It has been posited that mothers with BPD may demonstrate extreme inconsistencies in parenting strategies, characterized by oscillations between over-involved, intrusive behaviors (such as hostile control) and withdrawn, avoidant behaviors (such as passive aloofness); these inconsistencies are likely to be present across both emotion socialization practices, as well as discipline and monitoring strategies (Stepp, Whalen, Pilkonis, Hipwell, & Levine, 2011). Moreover, the families of mothers with BPD are more likely to experience instability and disruption in their home environments, which may further

affect the parenting capacities of the mother with BPD (Feldman et al., 1995). Mothers with BPD, therefore, can be seen as parents at high risk for having attachment and relationship difficulties with their children, as well as dysfunctional patterns of mother-child interaction and communication (Newman & Stevenson, 2005).

Risk to Offspring of Mothers with BPD. Although research and theory suggest that the parenting skills of women with BPD may be impaired by the mood lability, irritability, impulsivity, and reality distortion that characterize the disorder, relatively few empirical studies have examined the effects of maternal BPD on child development. In empirical studies, children of mothers with BPD are more likely to be diagnosed with psychiatric disorders such as impulse-control disorders, attention disorders, and disruptive behavior problems in middle- to late-childhood (M. Weiss et al., 1996). Furthermore, child and adolescent offspring (ages 11-18) of mothers with BPD exhibit high rates of emotional and behavioral problems, such as anxiety, depression, problems with attention, aggression, and delinquency (Barnow, Spitzer, Grabe, Kessler, & Freyberger, 2006).

In terms of representations of the self, other, and relationships, preschool-aged children of mothers with BPD tell stories that characterize the caregiver-child relationship with more role reversal, fear of abandonment, and negative parent-child relationship expectations, and represent themselves as more incongruent, shameful, and emotionally dysregulated than do normative comparisons (Macfie & Swan, 2009). Moreover, children (ages 11-18) of mothers with BPD tend to perceive their mothers as overly protective, and describe themselves as having very low self-esteem (Barnow et al., 2006).

To date, very few studies have directly examined interactional patterns between mothers with BPD and their children, and no published studies have sampled children beyond infancy or toddlerhood. As mentioned previously, we know from studies with both 2- and 13-month-old infants that mothers with BPD as a group demonstrate more insensitivity, more intrusiveness, and less awareness of the infant's need for emotion regulation, and that their infants are less available for positive engagement with mother (Crandell, Patrick, & Hobson, 2003; Hobson, Patrick, Crandell, Garcia-Perez, & Lee, 2005). We also know that 80% of infants of mothers with BPD are more likely to display disorganized attachment to their mothers at 13 months (Hobson et al., 2005). With infants between the ages of 12-18 months, mothers with BPD show disrupted affective communication with their infants, such as mixed or negative affective signals, errors in responding to infant needs, failures to match infant's signaling, intrusive behavior, confusion, role-reversing behavior, or difficulties with physical contact with the infant. In addition, these mothers are more likely to exhibit fear or disorientation in response to the infant's attachment bids (Hobson et al., 2009). These findings suggest that mothers with BPD have particular difficulty navigating the domains of sensitivity, intrusiveness, and emotional communication in their interactions with their infants. Moreover, it seems likely that these mothers will face challenges in providing emotionally available relationships to their children overall. However, these studies were limited by small sample sizes, with $n = 8$, $n = 10$, and $n = 13$ mothers, respectively, in the BPD groups, and control groups that were not precisely matched on demographic factors.

A study by Newman and colleagues (2007) investigated emotional availability in mothers with BPD and their 3- to 36-month-old infants during free play sessions. Using the same

construct of emotional availability utilized here, they found that mothers with BPD demonstrated less sensitivity and less optimal structuring in their interactions with their infants. Moreover, their infants were less responsive to and involving of their mothers. In addition, the mothers with BPD reported feeling less satisfied, less competent, and more distressed. Interestingly, in this sample no differences were found for hostility or intrusiveness. Again, these preliminary findings were limited by a small sample size (n = 14 mothers in the BPD group). Furthermore, the groups were not matched on demographic variables, and significant group differences were accounted for by creating a composite "social disadvantage" variable, rather than controlling for significant differences between groups.

Together, these studies of mothers with BPD and their infants support the view that mothers with BPD find the interactional and emotional aspects of parenting to be challenging. The findings suggest that the offspring of mothers with BPD are exposed to a combination of risk factors, placing them at greater risk for behavioral, emotional, and somatic problems, as well as more severe psychopathology. As children approach ages 4 to 7, they move beyond the developmental task of attachment into the domains of self and emotional regulation (Sroufe et al., 2005). There continues to be limited research exploring interactions between mothers with BPD and their young children at this stage of development; even less is known about the impact of other contextual factors on the parenting behaviors of mothers with BPD. The current study hopes to add to the existing literature by further exploring the meaningful relationships between BPD, borderline personality features, emotional availability, and social support.

Social Support

The term "social support" has been used broadly within the literature to refer to the ways in which interpersonal relationships may buffer an individual against a stressful environment (Cohen & McKay, 1984). Social support has been conceptualized as comprising four core factors: the amount of *emotional*, *informational*, *appraisal*, and *instrumental* support made available to individuals from the people around them (Edwards & Benson, 2010). In attempting to describe the mechanisms by which social support modifies outcomes of stress, research has focused largely on two models: the direct effects model and "buffering" models. The direct, or main effects, model suggests that social support exerts global beneficial effects on psychological well-being regardless of the individual's level of stress, thereby lessening the likelihood of symptom development (Israel, Farquhar, Schulz, James, & Parker, 2002; Mathiesen, Tambs, & Dalgard, 1999; Norris & Murrell, 1984; Quittner, Glueckauf, & Jackson, 1990; Wade & Kendler, 2000).

In contrast, the stress-buffering hypothesis or "buffer" model predicts an interaction between levels of stress and social support, such that social support may provide a protective effect in the face of stressful life events (Cooper et al., 2009; Manuel, Martinson, Bledsoe-Mansori, & Bellamy, 2012). For individuals with little or no social support, negative stresses are thought to have deleterious effects on health and well-being, whereas these effects are lessened or even eliminated for those with stronger support systems and well-developed, satisfying social relationships, thus suggesting that social support will moderate the effects of stressful situations (Cohen & McKay, 1984; Cohen & Wills, 1985; Quittner et al., 1990). Studies have proposed altered appraisals of the stressors, inhibition of maladaptive coping responses, and enhanced self-

esteem and sense of belonging as possible mechanisms for these buffering effects (Cohen & McKay, 1984; Cohen & Wills, 1985). While many studies have focused on this moderating or "buffer" effect of social support, studies concerning an indirect or mediating effect of social support and its mechanisms are more rare (Edwards & Benson, 2010).

The mediator model of social support posits that social support functions as an intervening variable between the stressor and an outcome, thereby indirectly influencing the effects of stress. According to Lin and Ensel's "support deterioration model," (1984), stressful life events may elicit shunning or avoidance responses from members of a social network. Traumatic or stigmatizing events, such as serious illness or the death of a child, might lead network members to avoid contact with individuals experiencing these events or to respond in ways that are unhelpful (Wortman & Lehman, 1985). Alternatively, those experiencing chronic stress conditions, and therefore engaged in frequent help-seeking behaviors, may exhaust their resources or perceive support as less helpful because its receipt magnifies feelings of inadequacy. (Hobfall & Lerman, 1988). Within the context of long-term stressors, social support and helping behaviors may initially be appreciated, but with the passage of time come to be perceived as intrusive or suggestive of incompetence (Quittner et al., 1990). A study of mothers of hearing impaired children found that chronic parenting stress was associated with lowered perceptions of emotional support, and greater symptoms of depression and anxiety: rather than mitigating the impact of stress, mothers' perceptions of social support were negatively influenced by the ongoing strain of caring for a child with a disability. This suggests that for mothers experiencing long-term or chronic stressors, helping behaviors and support offered by others may come to be

viewed as critical and unhelpful; alternatively, social networks may diminish when members do not feel that they are able to offer helpful assistance to those in need (Quittner et al., 1990).

The current study seeks to address the existing gap in the literature by contrasting the "buffer" model of social support with the "support deterioration" model, and investigating whether social support acts as a mediator or moderator (or both) on the relationship between maternal borderline features and emotional availability. For the purposes of the current study, social support is measured using the Nonsupport scale of the PAI (Morey, 1991), which conceptualizes nonsupport as a perceived lack of social support and poor quality of interpersonal interactions (Morey, 1991).

Both the stress-buffering hypothesis and support deterioration model differentiate between *perceived* social support, defined as subjective judgments that social network members (i.e., family and friends) are available for help during times of stress or discomfort, and *enacted* social support, which refers to specific helping actions (i.e., giving advice, loaning money, providing transportation) received from others (Barrera, 1986). The current study assesses perceived social support in women with BPD; that is, the perception that support is available (or not) during times of stress, rather than tangible acts of support or assistance. Research suggests that even the perception of social support may help to diminish the effects of stressful situations (Edwards & Benson, 2010). Studies have found significant relationships between perceived support and children's positive school adjustment (Malecki & Demaray, 2003) adolescent depressive symptoms (Sawyer et al., 2012), symptoms of posttraumatic stress disorder in postpartum women (Sumner, Wong, Schetter, Myers, & Rodriguez, 2012), and treatment motivation among women with substance abuse and co-occurring disorders (Stevenson, 2009).

It appears, then, that the perception that support is available and accessible when needed might mediate or moderate the effects of stress, thereby fostering well being (Edwards & Benson, 2010).

Social Support and BPD. Sustaining social support networks appears to be a challenge for individuals with BPD, and low levels of social support are often associated with poorer outcomes. In samples of individuals with BPD, social support has been linked to treatment outcome (Koekkoek, van Meijel, & Schene, 2009; Marini et al., 2005; Zanarini, Frankenburg, Bradford Reich, & Fitzmaurice, 2010), substance use (Porter, 2008), social problem-solving (Chan, 2005), negative social interactions (Clifton, Pilkonis, & McCarty, 2007; Stepp, Pilkonis, Yaggi, Morse, & Feske, 2009), and family discord (Corwin, 1996). Lower levels of social support have also been linked to treatment dropout (Marini et al., 2005), treatment noncompliance (Koekkoek et al., 2009), and poorer prognosis in treatment (Zanarini et al., 2010) for patients with BPD. A study of the effect of social support on substance abuse treatment outcome in patients with BPD found that patients with BPD experienced distress when their social support was higher or lower than their ideal range; clinicians reported that they believed patients used substances to help cope with changes in their interpersonal relationships (Porter, 2008).

The social networks of women with BPD are often characterized by negative interpersonal and emotional experiences during social interactions. A study by Chan (2005) found that women with BPD who use an avoidant style of social problem-solving may have difficulties sustaining a positive social network. Furthermore, individuals with BPD report lower levels of positive relationships and greater numbers of terminated relationships within their

social networks (Clifton et al., 2007). Moreover, they describe their social interactions as more disagreeable, ambivalent, angry, empty, and sad when compared with patients with other personality disorders or no personality disorder diagnosis (Stepp et al., 2009). Finally, within their family relationships, individuals with BPD report family discord, isolation from social supports, and parenting limitations (Corwin, 1996).

It is thought that the interpersonal difficulties characteristic of BPD may lead to conflicted relationships within the social networks of women with BPD, similar to the ways that emotional, social, and financial stresses create conflicts in the social networks of homeless mothers (Marra et al., 2009). In keeping with the support deterioration model, the emotional and material drain these conflicts place on support systems may exhaust or disintegrate social support networks (Letiecq, Anderso, & Koblinsky, 1998; Solarz & Bogat, 1990), or lead to perceptions of social support as intrusive, ineffective, and suggestive of incompetence (Quittner et al., 1990). Conflict within an otherwise supportive relationship can diminish the positive effects of social support and lead to negative outcomes for parents and children (Marra et al., 2009). Likewise, obstacles in the pathways of support, such as pathogenic caregiving, negative life events, or parental psychopathology (i.e., BPD and its symptoms), are likely to diminish the quality of supportive environments and adversely affect child outcomes (Edwards & Benson, 2010). To date, no studies have examined the mechanisms by which social support and borderline personality features might contribute to parenting behaviors, such as emotional availability, within the stressful environment that often characterizes the family systems of mothers with BPD.

Social Support and Parenting. It has been theorized that both stressors and supports in a mother's environment will affect parents, both directly and indirectly, by influencing parental attitudes and behaviors (Belsky, 1984; Bronfenbrenner & Ceci, 1994). As such, one might expect that certain factors in a mother's life, such as perceived social support, might differentially impact parenting behavior. There is a large body of literature documenting the ways in which various kinds of social support (e.g., emotional, instrumental) from family, friends, or mental health professionals can help buffer the negative effects of stress (Cohen & McKay, 1984; Cohen & Wills, 1985; Israel et al., 2002; Manuel et al., 2012; Mathiesen et al., 1999; Wade & Kendler, 2000), which in turn can increase effective and consistent parenting behavior (Abidin, 1992; Kotchick, Dorsey, & Heller, 2005). Social support is thought to enhance a mother's psychological well-being and promote positive parenting by providing emotional, information, and material support (Leadbeater & Linares, 1992). Both frequency and perceived quality of support appear to be important factors (Voight, Hans, & Bernstein, 1996). Emotional and instrumental support have been found to be particularly important factors in reducing the risk of parenting stresses and improving overall well-being, particularly within the context of daily hardships related to socioeconomic status, availability of financial support and child care, and mental health disorders (Henly, Danziger, & Offer, 2005; Manuel et al., 2012).

Research has found that social support provided to adult mothers is associated with maternal positive affect, positive perspectives of their children, and responsiveness in interactions with their children (Crnic, Greenberg, & Slough, 1986; Priel & Besser, 2002). Similar empirical findings suggest that maternal social support is associated with maternal acceptance of child and the amount of stimulation she provides (Pascoe, Loda, Jeffries, & Earp,

1982), as well as with engaged parenting by mothers (Ghazarian & Roche, 2010). In a study with infants, maternal social support predicted positive mother-infant interactions, characterized by enhanced reciprocity and mutual gratification within the relationship, increased infant responsiveness to mother, and positive affective tone (Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983). Likewise, Jennings, Stagg, and Connors (1991) found that mothers who had larger maternal networks and were more satisfied with their personal networks also demonstrated positive interactions with their children, as they were more likely to praise their children and showed less intrusive and controlling behaviors. Research has also found the reverse—social support perceived as negative (e.g., dissatisfying, stressful, or limited) is associated with poor parenting competence, disengaged parenting, and high psychological distress (Kotchick et al., 2005; Silver, Heneghan, Bauman, & Stein, 2006).

Both mediating and moderating effects of social support on parenting behaviors have been demonstrated in samples of depressed mothers. Simons, Lorenz, Wu, & Conger (1993) found that social network support was associated with supportive parenting though decreased parental depression. In a sample of low-income depressed parents, Lee and colleagues (2009) found that social support mediated the association between low family income and parental depressive symptoms. Moreover, they found a direct relationship between social network support and positive parenting, such that parents with high social support reported better parent-child communication, more involvement with their children, and greater confidence in their parenting. In a longitudinal study of temperamental infants and their families, mothers of irritable babies who had high levels of social support were able to establish more secure attachments with their infants than were women with low levels of social support (Crockenberg, 1991), suggesting that

social support played a moderating role in helping these mothers cope with parenting stressors. The present study theorizes that social support may offer similar effects on the parenting behaviors, such as emotional availability, of mothers with BPD.

Emotional Availability

The construct of emotional availability used in the current study provides a unique framework for observing patterns of interaction between mothers with BPD and their children. A dyadic construct, emotional availability refers to emotional openness, warmth, mutual understanding, and communication between a parent and a child, and emphasizes the bidirectional quality of emotional dialogue between partners in a relationship (Biringen, 2000; Biringen & Robinson, 1991). Characterized by emotional "attunement," emotional availability reflects not only the parent's emotional signals, but also the emotional signals sent by the child, and the parent's ability to interpret and understand the child's emotional experience (Biringen, 2000; Biringen & Robinson, 1991; Easterbrooks & Biringen, 2000). It denotes the overall quality of the affective relationship between parent and child (Biringen, 2004).

The construct of emotional availability utilized here is influenced both by early writings on emotional availability in the clinical literature and by elements of attachment theory (Biringen, 2000; Biringen & Robinson, 1991). Geared specifically towards research and the assessment of parent-child interactions, a growing body of research using this construct shows that emotional availability is associated with the quality of the attachment relationship in infancy (Easterbrooks & Biringen, 2000), as well as other aspects of development in early- to middle-childhood years, such as emotion regulation, social relationships, classroom adjustment, and

language development (Biringen, 2000; Biringen et al., 2005; Little & Carter, 2005; Robinson, Little, & Biringen, 1993).

According to the framework operationalized by Biringen and Robinson (1991), maternal emotional availability consists of aspects of sensitivity, non-hostility, non-intrusiveness, and appropriate structuring, while child emotional availability encompasses responsiveness to and involvement of the mother. It is a *dyadic* construct which refers to emotional exchange between interactive partners (Biringen, 2000). In addition to examining the role of the primary caregiver, the construct of emotional availability also includes the child's contribution to the emotional regulation of the relationship (Biringen et al., 1998; Easterbrooks & Biringen, 2000).

An emotionally available mother uses a sensitive, structuring, nonintrusive, and nonhostile style of caregiving that facilitates the child's ability to successfully regulate emotion and behavior. This in turn enables the child to reciprocate in a responsive and involving manner towards the mother. Although parent and child aspects of emotional availability are viewed on separate dimensions, they are conceptualized in terms of the dyadic relationship. Emotional availability is characterized by congruence, mutual interaction, and positive shared meaning, rather than discordance between partners. Thus, an overly sensitive mother coupled with an unresponsive child would not comprise an emotionally available dyad—neither parent nor child can "look good" on their own (Biringen, 2000; Biringen et al., 1998; Easterbrooks & Biringen, 2000).

Each dimension of emotional availability is embedded within an emotional framework, taking into account the bidirectional expression and communication of emotional signals. Both the maternal and child dimensions are judged holistically within the context of the interaction,

and viewed in terms of a balance of emotional connection and autonomy between parent and child. The coding of emotional availability is multimodal, taking into account facial, vocal, and physical signals, as well as displays of positive and negative emotions (Biringen & Easterbrooks, 2012). It is worth noting that optimal emotional availability does not mean constant sensitivity or responsiveness; instead, an optimal degree of parental and child emotional availability reflects moderate, flexible qualities that vary depending on age and context (Biringen et al., 1998; Easterbrooks & Biringen, 2000).

Emotional Availability and Child Development. There is a growing body of empirical research that suggests that emotional availability is related to the quality of attachment, as well as to other meaningful aspects of the parent-child relationship, across age spans of 12 months to 7 years (Biringen, 2000, 2004). Studies investigating the link between emotional availability and attachment have often used the Strange Situation procedure (Ainsworth, Blehar, Waters, & Wall, 1978) to assess for attachment security in infancy.

In general, studies using the Strange Situation have found emotional availability to be positively associated with infant attachment security, demonstrating significant links with observed assessments of emotional availability and observed assessments of attachment (Easterbrooks, Biesecker, & Lyons-Ruth, 2000; Swanson, Beckwith, & Howard, 2000; Ziv, Aviezer, Gini, Sagi, & Koren-Karie, 2000). In these studies, dyads with more optimal parental and child emotional availability show more securely attached infants. Swanson and colleagues (2000) demonstrated significant links between high caregiver intrusiveness and avoidant and disorganized attachment in a sample of drug-abusing mothers. Similarly, in a study of Israeli dyads, mothers who were less sensitive, less optimally structuring, and more intrusive were more

likely to have insecurely or ambivalently attached infants, who were in turn lower in responsiveness to and involvement of mother (Ziv et al., 2000). Furthermore, a longitudinal study by Easterbrooks and colleagues found that infant attachment security predicted emotional availability in later interactions: securely attached 18-month-old infants and their parents showed greater emotional availability at a 7-year follow-up. In contrast, mothers of disorganized infants were less sensitive and less appropriately structuring than mothers of secure infants. Moreover, as 7-year-olds, children who were disorganized in their attachment as infants continued to be less optimally involving of their mothers than children who were secure as infants (Easterbrooks et al., 2000). In sum, studies on emotional availability and attachment provide a pattern of findings suggesting that infants and children who have emotionally available relationships with their parents or caregivers are more likely to also show secure patterns of attachment, while dyads who have less emotionally available relationships are more likely to experience disruptions in the attachment system.

Correlates of Deficits in Emotional Availability. Consistent with the research on emotional availability and attachment, parent-child relationships characterized by deficits in emotional availability place the child at risk for poorer psychological adjustment across several areas of development. In a study of emotion regulation and reactivity in 12-month-old infants, Little and Carter (2005) found that infants from dyads with lower emotional availability had greater difficulty regulating their emotional states both during and after an emotionally challenging event. In particular, greater maternal hostility was significantly associated with infant difficulty in regulating distress when the mother was not present. These findings suggest that even at a young age, the mother's emotional availability towards her infant has a noticeable

affect on the infant's ability to regulate his or her own emotions in an adaptive way, particularly during distressing conditions.

A study of emotional availability and social development found that deficits in emotional availability were predictive of poorer adjustment in kindergarten (Biringen et al., 2005). Maternal hostility, low child responsiveness to mother, and low child involvement of mother during preschool were correlated with higher levels of aggression in the kindergarten classroom. Additionally, children demonstrating poorer emotional availability towards their mothers were more likely to be aggressive with their classmates, and/or be the target of aggression by other peers. This suggests that children who are less emotionally responsive to and involving of their mothers prior to kindergarten entry are more likely to have problems with aggression and adjustment in the classroom one year later (Biringen et al., 2005). The findings highlight the impact that less emotionally available caregiver relationships during early childhood years can have on later child adjustment and development.

Cluster Analysis of Emotional Availability. Although emotional availability is conceptualized as a relational construct (Biringen & Robinson, 1991), much of the research in the area has focused on the qualities of the individual members of the dyad, analyzing maternal emotional availability and child emotional availability separately. There has been a movement within the field to examine the patterns of dyadic organization (Bretherton, 2000) in order to better understand both the adult *and* child characteristics that contribute to particular patterns of emotional availability within a dyad (Easterbrooks & Biringen, 2000; Oppenheim, 2012), for example, a highly sensitive mother with a less responsive child, versus a highly responsive child with a less sensitive mother (Bretherton, 2000; Oppenheim, 2012). Recent studies have used *k*-

means cluster analysis, a particular type of cluster analysis, to analyze maternal and child behavior simultaneously, using the dyad as a unit rather than separate individuals (Chaudhuri, Easterbrooks, & Davis, 2008; Driscoll & Easterbrooks, 2007; Easterbrooks, Chaudhuri, & Gestsdottir, 2005). This person-oriented approach (Bergman, Magnusson, & El-Khouri, 2003; O'Neal, Bell, Sorell, & Peek, 2002), rather than one that looks at patterning of variables, allows for the capturing of specific configurations of dyadic emotional availability that, when observed together, can describe the way the mother and child engage emotionally (Easterbrooks et al., 2005; Oppenheim, 2012).

A study by Easterbrooks and colleagues (2005) examined patterns of emotional availability in a sample of 80 young mothers (under age 21) and their infants. Cluster analysis revealed four distinct groups of emotional availability patterns, reflecting synchrony and asynchrony between maternal and child behavior: low-functioning dyads, average dyads, average parenting/disengaged infants, and high-functioning dyads. Further analyses revealed that mothers in the different clusters differed on variables such as depressive symptomatology, social support, and relationships with their own mothers (Easterbrooks et al., 2005). In a study of 107 young mothers' play with their toddlers, Driscoll & Easterbrooks (2007) used cluster analysis to identify patterns of maternal play behavior and associated social and personal factors. They found three distinct groups of maternal play, (1) sensitive-engaged, (2) inconsistent-directive, and (3) intrusive-prohibitive. Additionally they found that factors such as childhood abuse, depressive symptomatology, partner violence, social support, and parenting self-confidence, were differentially associated with the parenting clusters (Driscoll & Easterbrooks, 2007).

Finally, when cluster analysis was applied in a culturally diverse sample of 313 adolescent mothers (Chaudhuri et al., 2008), three clusters of parenting styles emerged (democratic, strict-loving, and directive). These clusters were further differentiated into 5 clusters when maternal sensitivity was taken into account (democratic sensitive, democratic insensitive, strict loving, directive sensitive, and directive insensitive). Sensitive parenting was predicted by economic contextual factors, with the most sensitive mothers living in the highest income communities. The directive insensitive mothers, who had the lowest scores on sensitivity in the sample, lived in poorer neighborhoods, had the most financial stress, and the least responsive and involving children (Chaudhuri et al., 2008). These studies demonstrate the utility of using cluster analysis with emotional availability in order to allow a more complex picture of dyadic interaction to emerge.

Emotional Availability and BPD

There is evidence to suggest that maternal factors, such as mental illness, maltreatment, substance use, and socioeconomic status, may be associated with dysfunctional patterns of mother-child interaction (Crittenden & Bonvillian, 1984; Lyons-Ruth, Connell, Zoll, & Stahl, 1987). Mothers with BPD, in particular, are likely to face challenges in these areas, due to the pervasive psychological and emotional deficits associated with the disorder (Newman & Stevenson, 2005). Such high-risk mothers are likely to have greater difficulties providing emotionally available relationships to their children. For example, depressed mothers are often rated as hostile and intrusive, insensitive, withdrawing, or showing negative affect, and their infants often exhibit distress and avoidance of mother (Downey & Coyne, 1990; Easterbrooks et al., 2000). Moreover, mothers with anxiety, depression, or comorbid disorders show poor

reciprocity, increased intrusiveness, and greater maternal distress in interactions with their infants (Feldman, 2007). It is likely that mothers with BPD, who experience mood disturbance and affective instability, may demonstrate similar disturbances in interactions with their children.

Child maltreatment is another risk factor that may be linked to the development of BPD symptoms (Carlson, Egeland, & Sroufe, 2009). Maltreating mothers are likely to experience dysfunctional interactions with their children. In a sample of high-risk mothers and their 9-to-18-month-old infants, maternal risk status was differentially associated with maternal sensitivity (Crittenden & Bonvillian, 1984). Abusive and neglecting mothers were less sensitive to infant cues, but showed two distinctly different patterns of responses: abusing mothers were generally more active, interfering, and hostile, whereas neglecting mothers were more uninvolved, passive, and withdrawn. Their infants, in turn, were less willing to engage in interaction with their mothers, and demonstrated poorer psychological adjustment (Crittenden & Bonvillian, 1984).

Moreover, a separate study of maltreating mothers found a similar style of hostile and intrusive caregiving, in which they demonstrated hostility toward their infants in subtle ways and interfered with their infants' goals and activities. Their infants were more resistant to and avoidant of interactions with mother (Lyons-Ruth et al., 1987). In a longitudinal study, infants of intrusive mothers later showed poorer academic, social, emotional, and behavioral adjustment in their early school years (Egeland, Pianta, & O'Brien, 1993). It is likely that mothers with BPD may have similar difficulties with sensitivity, hostility, and intrusiveness in their interactions with their children.

Mothers with BPD are at risk for difficulties with substance abuse, as substance use is a common symptom of the disorder (American Psychiatric Association, 2000). Studies find that

substance-abusing mothers also show patterns of hostile intrusiveness, as well as poorer quality of instruction, low maternal confidence, and diminished child persistence (Johnson et al., 2002; Swanson et al., 2000). Similarly, mothers of low-income and low socio-economic status are typically less sensitive, more interfering and overdirective, and more hostile, both in dyads with infants (Crittenden & Bonvillian, 1984; Ziv et al., 2000) and dyads with preschool-aged children (Biringen et al., 2000; Crittenden & Bonvillian, 1984; Ziv et al., 2000).

The existing research suggests that mothers with BPD are likely to constitute a particularly high-risk group for disturbances in emotional availability, as the core symptoms of the disorder may interfere with the mother's capacity for emotional expressiveness and responsiveness in her relationship with her child. In a recent study, Trupe (2010) extended findings from women with BPD and their infants, and examined the effect of maternal BPD and borderline features on emotional availability in interactions between mothers with BPD and their 4- to 7-year-old children. In the current sample, which is the largest sample of children of mothers with BPD to date (n = 35 children of mothers with BPD and n = 35 children of normative comparison mothers), no significant differences were found between groups in terms of maternal or child emotional availability. Across the sample as a whole, however, maternal self-report of affective instability, identity disturbance, negative relationships, and self-harm were significantly correlated with maternal intrusiveness and hostility; affective instability and negative relationships were also significantly correlated with maternal sensitivity, child responsiveness, and child involvement. The findings suggest that as children move beyond infancy and intro early-to-middle childhood, mothers with borderline personality features may have difficulties with appropriate emotional boundaries, modulating negative emotional

responses, and supporting positive emotional attunement in their relationships with their children. In turn, their children are beginning to demonstrate maladaptive patterns of interpersonal relatedness with their mothers.

Taken together, the existing literature suggests that mothers with BPD may face challenges in building on a foundation of emotional availability to help their children work through developmental tasks of emotion regulation and expressions of autonomy. It has been theorized that the problems with emotion dysregulation, unstable attachment relationships, and identity disturbance evident in individuals with BPD may make it difficult for mothers with BPD to help their children successfully navigate through similar developmental domains in early childhood (Macfie, 2009; Sroufe et al., 2005). Thus, it is expected that the pervasive difficulties associated with BPD are likely to interfere with emotional availability, placing the children of mothers with BPD at risk for future problems with emotion regulation, interpersonal relationships, and psychological adjustment (Barnow et al., 2006; Little & Carter, 2005; Macfie, 2009; M. Weiss et al., 1996; Zanarini et al., 1997).

Emotional Availability and Social Support

To date, there have been very few studies examining relationships between emotional availability and social support. In a sample of parents of children with an autism spectrum diagnosis, social support was found to mediate the relationship between autism severity, parenting sense of competence, and emotional availability (Davies, 2010). Parents with a low sense of parenting competence demonstrated more optimum emotional availability with their autistic children when they reported greater levels of social support. The effect of social support on emotional availability has also been explored in a sample of young mothers (Easterbrooks et

al., 2005). Interestingly, they found that young mothers who demonstrated an "intrusive-prohibitive" style of parenting, in which they were intrusive, interfering, and limiting of their child's interests, were the most likely to report having dependable social support, compared to mothers with a "sensitive-engaged" parenting style. The researchers hypothesized that the mothers in the "intrusive-prohibitive" group might be benefiting the most from the buffering effects of social support on parenting stress and depressive symptoms; they also wondered whether the mothers in this group might be overly dependent on social supports to the point that it is interfering with their acquisition of sensitive parenting skills (Easterbrooks et al., 2005). As there is a scarcity of existing research within this area, the current study seeks to further explore the associations between emotional availability and social support.

Current Study

The current study expands on the previous research findings from Trupe's (2010) study on the effect of maternal BPD and borderline personality features on emotional availability in mother-child interactions, and explores whether social support (as measured by a variable of nonsupport) mediated or moderated the relationship between borderline personality features and emotional availability outcomes. Children ages 4 to 7 whose mothers have BPD are compared with a comparison group of children whose mothers do not have BPD.

Emotional availability was assessed using coded mother-child interactions, and social support was assessed via maternal self-report. In addition to measuring a diagnosis of BPD categorically, borderline features were assessed continuously from maternal self-report across the sample as a whole. The current study also used cluster analysis to examine patterns of maternal and child emotional availability, and identify individual (e.g., borderline personality

features, nonoptimal child behaviors) and contextual (e.g., social support, demographics) variables associated with the different patterns of emotional availability.

Hypotheses. It was hypothesized that:

Hypothesis 1. Mothers with BPD will report greater levels of nonsupport (i.e., lower levels of perceived social support) when compared to mothers without BPD.

Hypothesis 2. Across the sample as a whole, maternal borderline features of affective instability, identity disturbance, negative relationships, and impulsive self-harm will be significantly positively correlated with greater levels of nonsupport.

Hypothesis 3. Across the sample as a whole, greater levels of nonsupport will be (a) significantly negatively correlated with maternal motional availability variables of sensitivity, structuring, non-intrusiveness, and non-hostility, and (b) significantly negatively correlated with child emotional availability variables of responsiveness to and involvement of mother.

Hypothesis 4. In the overall sample, maternal borderline features' association with maternal and child emotional availability will be mediated by social support. It is predicted that maternal borderline features (affective instability, identity disturbance, negative relationships, impulsive self-harm, and total borderline features) and social support will each be associated with two composite variables of maternal and child emotional availability. Specifically, it is hypothesized that social support will be the process through which each of five variables of maternal borderline features is associated with an emotional availability composite. This hypothesized mediating model of social support is depicted in Figure 1.

Hypothesis 5. In the overall sample, maternal borderline features' association with maternal and child emotional availability will be moderated by social support. It is predicted that

maternal borderline features (affective instability, identity disturbance, negative relationships, impulsive self-harm, and total borderline features) and social support will each be associated with two composite variables of maternal and child emotional availability. It is hypothesized that the relationship between maternal borderline features and an emotional availability composite will differ at different levels (high and low) of perceived social support, such that mothers who report greater borderline features, who also report lower levels of social support, will be more likely to demonstrate lower levels of emotional availability during interactions with their children. See Figure 2 for the hypothesized moderating model of social support.

Hypothesis 6. Across the sample as a whole, cluster analysis will reveal different patterns of emotional availability among mother-child dyads. It is expected that groups reflecting synchrony or asynchrony between patterns of emotional availability of mothers and children will emerge from the sample as a whole. (b) Individual variables (maternal borderline features, nonoptimal child behaviors) and contextual variables (social support, demographics) will be specifically associated with the different patterns in emotional availability.

Chapter 3.

Method

Participants

The sample consisted of *N* = 70 children (ages 4-7) and their mothers, recruited from both rural and urban areas in a 5-county region: *n* = 36 children whose mothers had BPD (17 boys, 19 girls), and *n* = 34 children whose mothers did not (18 boys, 16 girls). The children's average age was 5 years, 4 months (*SD* = 10.8 months, range 4 years 0 months to 6 years 11 months). Across the low-income sample (*M* = $31, 841, *SD* = $27, 855), 3% of participants were African American, 9% were biracial, and 11% were Hispanic. The groups were matched on demographic variables, including child age, family income, presence of partners, number of adults and number of children in the home, and maternal education. See Table 1 for descriptive statistics and tests of group differences.

Mothers with BPD were recruited from two sources: clinicians in mental health settings and directly from the community. Referring clinicians included therapists, psychiatrists, nurse practitioners, case managers, and other mental health professionals (i.e., from hospitals, private practice, community outpatient clinics, homeless shelters, professional organizations). Additionally, mothers with BPD were recruited directly from the community. Flyers posted in community locations listed questions about symptoms of BPD, including "Do you fear abandonment in relationships? Do you find it difficult to control your anger? Are you very impulsive? Do your relationships have extreme ups and downs? Have you hurt yourself or

threatened to do so?" Mothers who met these criteria and had a child aged 4-7 were invited to apply for the study.

Comparison participants were also recruited from two sources: programs for children and directly from the community. Programs for children included preschools, Head Start, and Boys' and Girls' Clubs. Comparison mothers were recruited directly from the community with posted flyers that listed information about the study. The flyers invited mothers with a child aged 4-7 to take part in a study on parent-child interactions.

Procedures

Home visit. All potential participants were screened with a brief telephone interview administered by a doctoral-level graduate student to assess for study eligibility. After the phone screening, participants completed an initial home visit lasting approximately an hour and a half, which took place in the participant's home or an alternative meeting place (if requested). During the home visit, two research assistants met with the participant and obtained informed consent, a preliminary maternal self-report screen for BPD symptoms, and demographic information. Mothers were compensated with a gift card for their participation in the home visit.

Laboratory visit. Eligibility for a laboratory visit was determined based on maternal self-report of BPD symptoms (present in BPD group, not present in comparison group). If eligible, the participant and her child were then invited to the university's research lab to take part in a laboratory visit lasting approximately three hours. During the laboratory visit, maternal psychopathology was assessed via a clinical interview, and mother and child dyads were videotaped during a 20-minute interaction task. For their participation in the lab visit, mothers were compensated with an additional gift card and children were given a small toy.

Measures

Demographics. . Demographic information was collected with a maternal interview (MHFC, 1991). See Table 1 for details.

Structured Clinical Interview for DSM-IV-TR Axis II Disorders (First, Gibbon, Spitzer, Williams, & Benjamin, 1997) . BPD diagnosis was measured categorically (yes, no) using the Structured Clinical Interview for DSM-IV-TR Axis II Disorders, SCID-II (First et al., 1997). To assess for BPD, mothers completed a preliminary self-report screen during the home visit (First et al., 1997). This initial assessment of BPD was followed up during the lab visit with the SCID-II (First et al., 1997). The SCID-II is a semi-structured interview designed to assess, evaluate, and diagnose the presence of personality disorders. The SCID-II has been found to yield reliable diagnoses for personality disorders, although the reliability varies by administration setting, interviewer training, and by personality disorder diagnosis (First et al., 1997). For test-retest reliability of BPD diagnosis, one study reported kappas as low as 0.02 (R. D. Weiss, Najavits, Muenz, & Hufford, 1995); however, the majority of studies have reported more substantial agreement, with ranges of kappas from 0.48 (First et al., 1995), 0.79 (Arntz et al., 1991), 0.87 (Malow, West, Williams, & Sutker, 1989), and 0.91 (Maffei et al., 1997).

Personality Assessment Inventory (Morey, 1991). The Personality Assessment Inventory (PAI; Morey, 1991) is a 344-item self-report measure of psychopathology and personality traits. Designed to reflect the multi-faceted nature of personality functioning, the PAI has shown high internal consistency in census, college, and clinical samples (Morey, 1991). The development of the PAI was based on a construct validation framework, which emphasizes both a theoretically informed approach to the development of scales and selection of items, and

the assessment of their psychometric properties (Morey, 2000). Steps were taken to ensure discriminant validity and to reduce cross-scale correlations, such as no overlapping items between scales, selecting items with maximal associations of the construct of interest, and deleting items that demonstrated high correlations with other scales (Morey, 2000). Thus, any resulting scale intercorrelations are thought to reflect the natural comorbidity of the scales, rather than item overlap across scales (Morey, Lowmaster, Harwood, & Pratt, 2011).

Maternal borderline features. In addition to measuring BPD diagnosis categorically, borderline personality features were assessed continuously across the sample using the Borderline Features (BOR) Scale of the PAI (Morey, 1991). The BOR Scale of the PAI consists of 24 items and includes 4 subscales that pertain to characteristic features of borderline personality disorder: Affective Instability (BOR-A), which assesses intense and unmodulated emotional experiences, especially anger; Identity Disturbance (BOR-I), which measures confusion about identity and lack of an integrated sense of self; Negative Relationships (BOR-N), which assesses acute dependence, fear of abandonment, and mistrust; and Self-Harm/Impulsivity (BOR-S), which measures impulsivity and tendencies to hurt the self when distressed.

A raw score of 38 (*T*-score of 70) on the BOR Scale has been used as a cut-off for determining the presence of prominent features of BPD in nonclinical samples (Morey, 1991; Trull, 1995). Scores at or above this cutoff indicate clinically significant features of BPD, as well as general symptoms of impulsivity, emotional lability, feeling misunderstood by others, anger, suspiciousness, anxiety, neediness, and ambivalence towards others (Morey, 2003). In the current sample, BPD diagnosis (yes/no) was significantly correlated with the BOR-A ($r = .82$, p

< .001), BOR-I (r = .78, p < .001), BOR-N (r = .73, p < .001), BOR-S (r = .67, p < .001), and Total BOR (r = .83, p < .001).

Social support. Social support was assessed using the Nonsupport (NON) Scale of the PAI (Morey, 1991). The NON Scale is one of the five "Treatment Consideration" scales of the PAI, which are designed to tap constructs that may be directly relevant to clinical treatment planning. Comprised of eight items, the Nonsupport Scale assesses an individual's perceptions of the degree and availability of social support, or lack thereof, as well as general interest in such interactions with friends and family members (e.g., "Most people I'm close to are very supportive" [reverse coded]). Higher scores on this scale reflect lower levels of social support (i.e., greater nonsupport). Raw scores above 12 are considered to be clinically significant. Scores on the Nonsupport Scale appear to correlate highly with other measures of perceived social support and similar constructs (Morey, 2007), such as the Perceived Social Support Scale (Procidano & Heller, 1983). The Nonsupport Scale shows a moderate correlation with the Borderline Features Scale of the PAI (r = .60 in clinical samples, r = .55 in normative samples); these correlations are thought to be a function of the degree of disturbance in social relationships suggested by the Borderline Features Scale (Morey, 2007).

Mother-child interaction. Mothers were observed interacting with their children during a 20-minute filmed interaction task. The portion of mother-child interaction used in the current study consisted of a 10-minute storytelling task that was filmed through a one-way mirror. For the storytelling task, mothers were given a textless storybook and provided with the following instructions: "Please read this book to your child. It does not have any words, so read the story in a way that makes sense to you." The books used were *A Boy, a Dog, a Frog, and a Friend*, by

Mercer and Marianne Mayer, or *Frog On His Own* by Mercer Mayer. Because the books did not contain written text for the mother to read out loud to the child, it was expected that they would elicit a greater variety of mother and child behaviors during the interaction. During the storytelling interaction task, the examiner stepped out of the room so that mothers and children could complete the task privately.

Emotional Availability Scales, 3rd edition (Biringen et al., 1998). The Emotional Availability Scales, 3rd edition (EAS; Biringen et al., 1998), were used to code the videotaped mother-child interactions and assess the quality of emotional availability in the dyads. The storytelling task was coded using the Middle Childhood Version of the EAS. Designed to assess the emotional availability construct through observations and ratings of parent-child interactions, the EAS consists of six globally rated dimensions, each concerned with emotional communication and interaction in the parent-child dyad.

The four maternal scales consist of sensitivity, structuring, nonintrusiveness, and nonhostility, and the two child scales are comprised of responsiveness to and involvement of mother (Biringen et al., 1998). Both the maternal and child dimensions are judged holistically across the interaction, rather than as frequency counts of discrete behaviors. The anchor points of the scales are defined in whole points, but can be coded by half-points as well. The psychometric properties of the EAS have been well established (Biringen, 2000) and have demonstrated both short- and long-term reliability and continuity across contexts of observations (Biringen et al., 2005; Bornstein, Gini, Putnick, et al., 2006; Bornstein, Gini, Suwalsky, Putnick, & Haynes, 2006). Maternal variables assessed included the dimensions of sensitivity, structuring,

intrusiveness, and hostility. Child variables included the dimensions of responsiveness and involvement (Biringen et al., 1998).

Maternal sensitivity. Maternal sensitivity refers to the mother's awareness of and contingent responsiveness to communications of the child, affective quality of interactions, quality of conflict negotiations, and creativity during play; scores ranges from 1 (*highly insensitive*) to 9 (*highly sensitive*). Scores below 4 represent nonoptimal levels of sensitivity. A highly sensitive mother is successful at reading the child's emotional cues, is emotionally responsive to the child, and demonstrates genuine, authentic, and congruent interest and pleasure in interactions, whereas a highly insensitive mother displays few strengths in these areas and is either passively or harshly disconnected in interactions. Midrange scores indicate inconsistent sensitivity, in which the mother appears "apparently sensitive" but lacks attunement to emotional cues or a real connection that is in the best interests of the child.

Maternal structuring. Maternal structuring denotes the ability of the mother to appropriately facilitate, scaffold, or organize the child's play, exploration, or routine by providing rules, regulations, and a supportive framework for interaction without overwhelming the child's autonomy; scores range from 1 (*nonoptimal*) to 5 (*optimal*). Scores below 3 are considered nonoptimal levels of structuring. A mother with high scores on maternal structuring is able to successfully structure interactions in ways to which her child is emotionally and behaviorally receptive, while at the same time being mindful of the child's autonomy. In contrast, a mother who demonstrates low scores on structuring is unable to provide an adequate scaffold for the child and may appear permissive and indulgent. Inconsistent structuring, in

which the mother attempts to structure but the attempts are unsuccessful, falls in the mid-ranges of the scores.

Maternal intrusiveness. Maternal intrusiveness was assessed using the Maternal Nonintrusiveness scale of the EAS (Biringen et al., 1998). The Nonintrusiveness scale measures the quality of intrusiveness in the interaction, beginning with the least optimal behaviors and increasing to the most optimal behaviors. It assesses the degree to which the mother is able to be responsive and available to the child during the interaction without interrupting the child by being interfering, overprotective, or overdirective, or overstimulating; scores range from 1 (*intrusive*) to 5 (*nonintrusive*). Scores below 3 indicate nonoptimal levels of intrusiveness. In contrast to the qualities of maternal structuring, which support age-appropriate autonomy, maternal intrusiveness refers to maternal characteristics that discourage or inhibit expressions of age-appropriate autonomy. High scores on nonintrusiveness suggest a mother who is able to "be there" for the child without overpowering the interaction, although high scores may also indicate a mother who is too passive to intrude. Scores in the middle represent benign forms of intrusiveness or overprotectiveness, such as mothers who are directive but do not clearly take over. Low scores signify a mother who controls the interactions and does not leave space for the child to explore or lead.

Maternal hostility. Maternal hostility was assessed using the Maternal Nonhostility scale of the EAS (Biringen et al., 1998). The Nonhostility scale measures the quality of hostility in the interaction, beginning with the least optimal behaviors and increasing to the most optimal behaviors. It refers to the mother's ability to talk to or behave with the child in a way that is generally patient, pleasant, and harmonious, and not rejecting, abrasive, impatient, or

antagonistic; scores range from I (*markedly hostile*) to 5 (*nonhostile*). Scores falling below 3 represent nonoptimal levels of hostility. A nonhostile mother is able to regulate her emotional responses in peaceful ways, whereas a markedly hostile mother demonstrates expressions of covert hostility as well as clear and obvious overt acts of hostility (e.g., threatening, frightening, or demeaning behavior, physical punishment, harshness). Midrange scores indicate covert expressions of hostility (e.g., impatience, discontent, resentment, boredom, irritation) and a pervasive low-level negative affect.

Child responsiveness to mother. Child responsiveness refers to the child's age- and context- appropriate ability and interest in exploring on his or her own and responding to the mother's bids in an affectively available way, as well as the extent of the child's own enjoyment of the interaction; scores range from 1 (*nonoptimal*) to 7 (*optimal*). High scores on responsiveness (e.g., scores above 4) indicate an optimal balance between responsiveness to the parent and autonomous activities; this child is eager to respond to the mother's bids in an affectively positive way, without anxiety. Scores at the low end of the scale (e.g., scores below 4) signify a child who frequently displays bland or negative affect in response to the mother's bids and suggestions; such scores suggest serious concerns about the child's emotional and behavioral connection with the mother. There are two types of nonoptimal responsiveness: a child who is unresponsive and/or avoidant of the mother, and a child who is over-responsive to the mother's bids for interaction. When a child is rated as being nonoptimally responsive, it is also noted whether he/she shows over-responsive behaviors or not. In the current sample, $n = 6$ (8.6%) children were rated as being "Over-Responsive" (OR). The number of OR children did not differ significantly between groups, χ^2 (1, $N = 70$) = .86, $p = .35$.

Child involvement of mother. Child involvement assesses the child's ability and willingness to attend to and engage the mother in interaction; scores range from 1 (*nonoptimal*) to 7 (*optimal*). A child who scores high on involvement (e.g., scores above 4) shows a balance between involvement of the mother and autonomous pursuits, and is able to invite the mother into play in a comfortable, affectively positive, and nonurgent way. In contrast, a child who scores low on involvement (e.g., scores below 4) does not show an optimal style of involving the mother; the child may be either avoidant of drawing the mother into play or over-involving of the mother. These nonoptimal involving behaviors may be coupled with forms of negative emotional expression (e.g., anxiety, whining, complaining, "acting out"). When a child is rated as being nonoptimally involving of mother, it is also noted whether he/she shows over-involving behaviors or not. A total of 6 children (8.6%) were rated as being "Over-Involving" (OI) in the current sample; this number did not differ significantly between groups (χ^2 (1, N = 70) = .01, p = .94).

Coding and reliability. Mother-child interaction tasks were coded independently by a doctoral-level graduate student who was trained and certified as reliable by Zeynep Biringen, one of the authors of the EAS (Biringen et al., 1998). For purposes of interrater reliability, 20% of the interaction tasks were randomly selected and rated by a 2nd trained reliable coder. Intraclass correlation coefficients were calculated for interrater reliability on each dimension of emotional availability, with correlations ranging between r_i = .60 and r_i = .86 (sensitivity, r_i = .78; structuring, r_i = .60; nonintrusiveness, r_i = .76; nonhostility, r_i = .86; responsiveness, r_i = .79; and involvement, r_i = .80). Any residual differences between coders were resolved by discussion.

Emotional availability composites. Prior to the mediation and moderation analyses, emotional availability composites were created by examining intercorrelations between the emotional availability scales, then standardizing and summing maternal and child variables separately, as suggested by Easterbrooks and colleagues (2005) and Little and Carter (2005). As Maternal Sensitivity and Maternal Non-Hostility were highly correlated with each other ($r = .64$, $p < .001$) and significantly negatively correlated with Nonsupport, the hypothesized mediating and/or moderating variable, (Maternal Sensitivity, $r = -.28$, $p < .05$, Maternal Non-Hostility, $r = -.51$, $p < .001$), they were combined to create a Maternal Emotional Availability (Maternal EA) Composite. Likewise, Child Responsiveness and Child Involvement were highly correlated with each other ($r = .98$, $p < .001$) and with Nonsupport (Child Responsiveness, $r = -.28$, $p < .05$, Child Involvement, $r = -.26$, $p < .05$), and were combined to create a Child Emotional Availability (Child EA) Composite.

Chapter 4.

Results

Analytic Plan

The Statistical Package for Social Sciences, Version 20, was used to run all analyses. Descriptive data are presented first, followed by means comparisons, bivariate correlations, simple mediation analyses, moderation analyses, and cluster analyses.

Mediation analyses. Mediation analyses (e.g., tests of indirect effects) were conducted using a bootstrapping method (Preacher & Hayes, 2008). Bootstrapping is a nonparametric sampling procedure that involves repeatedly sampling from the data set and estimating the indirect effect (i.e., the effect of an independent variable on a dependent variable through a mediator variable) in each resampled data set. By repeating this process thousands of times (generally 5,000 or more), bootstrapping is able to generate an empirical approximation of the sampling distribution of the indirect effect of interest, producing estimates of the indirect effect and yielding confidence intervals that are used to approximate the effect of the mediator variable in the population sampled. If zero does not fall between the lower and upper bounds of the confidence interval, then the mediation effect is considered significant (Preacher & Hayes, 2008).

Bootstrapping is thought to be preferable to the traditionally used casual steps approach advocated by Baron and Kenny (1986) for several reasons (Hayes, 2009; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher & Hayes, 2008). In contrast to the casual steps approach, bootstrapping does not assume that the sampling distribution of the indirect

effect is normal, nor does it require the direct effects between the IV, DV, and mediator to be significant in order for mediation to occur (Hayes, 2009; MacKinnon et al., 2002). Furthermore, the bootstrapping method described above has a more accurate Type II error rate and greater statistical power, which is more appropriate when examining small to moderate sample sizes (Preacher & Hayes, 2004, 2008; Shrout & Bolger, 2002).

The bootstrapping techniques in the current study were performed in line with recommendations by Preacher and Hayes (2008), with k = 5,000 re-samples and 95% bias-corrected and accelerated (BCa) confidence intervals (CI) used to evaluate indirect effects, which include corrections for median bias and skew (Efron & Tibshirani, 1993). A 95% confidence interval was examined for each mediation analysis, which is the equivalent of testing for significance at the .05 level. Mediation was considered to have occurred if the 95% BCa confidence intervals generated by the bootstrapping technique did not contain zero.

Moderation analyses. Moderation analyses (e.g., tests of interaction effects) were conducted using hierarchical multiple regression analyses and the product variable approach suggested by Baron and Kenny (1986). Prior to running the regression, maternal borderline features and nonsupport variables were centered in order to reduce problems with multicollinearity. An interaction term was created by computing the product of the centered maternal borderline features and nonsupport variables in order to test whether nonsupport moderated the effect of maternal borderline features on maternal and child emotional availability. Main effects for borderline features and nonsupport were entered in the first step of the regression, and the interaction of borderline features and nonsupport was entered in the second step. If addition of the interaction term results in a significant increase in R^2, then a

moderating effect is considered to have occurred over and above the main effects of each individual variable.

The first set of moderation analyses ran 5 separate regression analyses with each maternal borderline feature variable entered individually in the first step (1. BOR-A, 2. BOR-I, 3. BOR-N, 4. BOR-S, 5. Total BOR) as the predictor variable (IV; main effect), Maternal EA Composite as the outcome variable (DV), and Nonsupport as the presumed moderator; interaction terms between borderline feature variables and Nonsupport were entered in the second step. The second set of moderation analyses ran 5 separate regression analyses using the same 5 specified IVs as above, but Child EA Composite was used in these analyses as the DV. Nonsupport was entered as the presumed moderator. Main effects for borderline features and Nonsupport were entered in the first step, while an interaction between borderline features and Nonsupport was entered in the second step.

Cluster analysis. Cluster analysis was used to determine patterns of emotional availability. A multivariate statistical procedure, cluster analysis attempts to determine underlying groups of highly similar structures by identifying which of the structures are most closely related (Aldenderfer & Blashfield, 1984). In the current study, cluster analysis was used to examine the emotional availability scores of mothers and children simultaneously and then classify each dyad, based on their mean scores of emotional availability, into groups (or clusters) that were internally homogenous (i.e., similar to other members of the same cluster) but externally heterogeneous (i.e., different from members of other clusters) (Norusis, 2011). The resulting cluster solutions that emerged were examined in relation to individual (borderline features, nonoptimal child behaviors) and contextual (nonsupport) variables using analysis of

variance (ANOVA) for continuous variables and Chi-squares for categorical variables. When significant differences emerged, a Tukey procedure was used for follow-up analyses.

Descriptive Statistics

Demographic variables. To assess for group differences, *t*-tests were conducted with BPD status as the independent variable and child age, family income, and number of adults and children in the home as the dependent variables. Chi-squares were utilized to calculate categorical differences between groups on child gender, child minority ethnic background, presence of partners, and maternal education. There were no significant group differences on demographic variables. See Table 1 for means, standard deviations, and tests of significance.

Emotional availability. Means and standard deviations were calculated for maternal and child emotional availability dimensions in the sample as a whole and by group. See Table 2 for descriptive statistics.

Borderline personality features. Means and standard deviations were calculated for the maternal borderline personality features of Affective Instability (BOR-A), Identity Disturbance (BOR-N), Negative Relationships (BOR-N), Self-harm/Impulsivity (BOR-S), and Total Borderline Features (BOR-TOT) across the sample as a whole. See Table 2 for descriptive statistics. As reported in the table, the mean for total borderline features in the BPD group (M = 44.38, SD = 13.08) exceeded the clinical cutoff of 38, indicating the presence of prominent borderline personality features in the BPD group (Morey, 1991). The mean for total borderline features fell well below the clinical cutoff in the comparison group (M = 12.26, SD =8.10).

Social support. Means and standard deviations were calculated for Nonsupport (NON) across the sample as a whole. The mean levels of Nonsupport in both the BPD group (M =

10.33, *SD* = 6.260) and comparison group (*M* = 2.91, *SD* = 2.86) did not exceed the clinical cutoff of 12 (Morey, 1991). See Table 2 for descriptive statistics.

Hypothesis Testing

Hypothesis 1. To examine the effect of maternal BPD on social support, an independent samples t-test was conducted to compare group differences in Nonsupport between mothers with BPD and comparison mothers without BPD. As predicted, mothers with BPD reported significantly greater levels of Nonsupport (*M* = 10.33, *SD* = 6.26) than did mothers without BPD (*M* = 2.91, *SD* = 2.86), t (49.65) = -6.43, $p < .001$, indicating a lack of perceived social support for mothers with BPD.

Hypothesis 2. To examine associations between perceived lack of social support and maternal borderline features, two-tailed bivariate Pearson correlations were calculated across the sample as a whole. As hypothesized, significant positive correlations were found between Nonsupport and all maternal borderline features: Affective Instability (BOR-A; $r = .76$, $p < .001$), Identity Disturbance (BOR-I; $r = .69$, $p < .001$), Negative Relationships (BOR-N; $r = .77$, $p < .001$), Self-harm/Impulsivity (BOR-S; $r = .58$, $p < .001$), and Total Borderline Features (BOR; $r = .78$, $p < .001$). See Table 3 for correlation coefficients and their significance.

Hypothesis 3. Two-tailed bivariate Pearson correlations were also calculated across the sample as a whole to examine associations between perceived lack of social support and (a) maternal emotional availability and (b) child emotional availability. For maternal emotional availability, significant negative correlations were found between Nonsupport and Maternal Sensitivity ($r = -.28$, $p < .05$) and Maternal Nonhostility ($r = -.51$, $p < .001$). Contrary to hypothesis, no significant correlations were found between Nonsupport and Maternal Structuring

or Maternal Nonintrusiveness. As predicted, significant negative correlations were found between Nonsupport and both child emotional availability variables of Child Responsiveness ($r = .28$, $p < .05$) and Child Involvement ($r = -.26$, $p < .05$). See Table 3 for correlation coefficients and their significance.

Hypothesis 4. To test the model of social support as a mediator of the relationship between maternal borderline features and maternal and child emotional availability, a series of mediation analyses were conducted using the bootstrapping technique described above (Preacher & Hayes, 2008). In these analyses, mediation was considered to have occurred if the 95% bias-corrected and accelerated (BCa) confidence intervals generated by the bootstrapping method for the indirect effect did not contain zero (Preacher & Hayes, 2004, 2008; Preacher, Rucker, & Hayes, 2007). Mother's perceived lack of social support, as measured by Nonsupport, was the presumed mediating variable in each analysis.

Social Support as a Mediator Between Maternal Borderline Features and Maternal Emotional Availability. The first set of analyses tested Affective Instability (BOR-A), Identity Problems (BOR-I), Negative Relationships (BOR-N), Self-Harm/Impulsivity (BOR-S), and Total Borderline Features (BOR) as separate independent variables and the Maternal Emotional Availability Composite (Maternal EA) as the dependent variable. Results indicated that Nonsupport significantly mediated the relationship between Affect Instability and Maternal EA (point estimate = -.10, LL = -.22, UL = -.01), Identity Problems and Maternal EA (point estimate = -.09, LL = -.20, UL = -.01), and Self-Harm/Impulsivity and Maternal EA (point estimate = -.12, LL = -.23, UL = -.05). When Negative Relationships and Total Borderline Features were entered as predictor variables of Maternal EA, Nonsupport was not a significant mediator. These

results are presented in Table 4 and Figure 3.

Social Support as a Mediator Between Maternal Borderline Features and Child Emotional Availability. The second set of analyses used the same IVs as in the above design (BOR-A, BOR-I, BOR-N, BOR-S, and Total BOR), but with the Child Emotional Availability Composite (Child EA) as the dependent variable. In these analyses, Nonsupport only mediated the relationship between Self-Harm/Impulsivity (BOR-S) and Child EA (point estimate = -.08, LL = -.19, UL = -.01). Mediation did not occur when BOR-A, BOR-I, BOR-N, or Total BOR were entered as the predictor variables. See Table 4 and Figure 4 for these results.

Hypothesis 5. To test the moderating effect of social support on the relationship between maternal borderline features and maternal and child emotional availability, a series of hierarchical multiple regression analyses were conducted using the procedure described above. In the first step, maternal or child emotional availability composites were regressed onto maternal borderline features and social support; in the next step, an interaction between maternal borderline features and social support was added to the model.

Social Support as a Moderator Between Maternal Borderline Features and Maternal Emotional Availability. The first set of analyses used maternal borderline features (BOR-A, BOR-I, BOR-N, BOR-S, and Total BOR) as the predictor variables, Maternal EA as the outcome variable, and Nonsupport as the presumed moderator. As hypothesized, regression analyses revealed both main effects and significant interaction effects for Identity Problems (BOR-I), Self-Harm/Impulsivity (BOR-S), and Total Borderline Features (Total BOR). However, contrary to hypothesis, the strength of the interaction was strongest in the case of lower borderline features: it was lower levels of these variables, in the context of lower social support,

which were associated with less optimal maternal emotional availability. In other words, mothers with low social support, who also reported low levels of Identity Problems, Impulsivity/Self-Harm, and Total Borderline Features, were observed to be least sensitive and more hostile during interactions with their children. Mothers with higher levels of borderline features had low emotional availability scores, regardless of their reported levels of perceived social support. See Table 6 and Figures 5, 6, and 7 for details of the direct and interaction effects.

Social Support as a Moderator Between Maternal Borderline Features and Child Emotional Availability. These findings held true in the second set of analyses, when Child EA was entered as the outcome variable. As before, Nonsupport demonstrated a moderating effect on the relationships between Total BOR, BOR-I, and BOR-S and Child EA, but the association was strongest in the case of low borderline features, such that mothers with low social support, who also reported low levels of these borderline features, had children who were less optimally engaged with them during the interaction task. Children of mothers with higher levels of borderline features also scored lower on emotional availability, whether or not their mothers perceived that social support was available. There were no significant moderating effects for Nonsupport on the remaining borderline features (BOR-A, BOR-N) and Child EA. See Table 7 and Figures 8, 9, and 10 for details of the main and interaction effects.

Hypothesis 6. To identify patterns of maternal and child emotional availability within the sample, *k*-means cluster analysis was performed using SPSS 20. This clustering procedure uses an algorithm to assign cases to pre-specified numbers of clusters (*k)* based on the Euclidean distance from the group centers, or the smallest distance from the cluster mean; this step is

repeated until the cluster means no longer change (Norusis, 2011). *K*-means clustering is typically used when one already has hypotheses concerning the number of clusters among the data (Aldenderfer & Blashfield, 1984; Hill & Lewicki, 2007). The goal of the *k*-means method is to produce exactly *k* different clusters of greatest possible distinction, with minimum variability within clusters and maximum variability between clusters (Hill & Lewicki, 2007; Norusis, 2011).

K-means cluster analysis differs from other forms of clustering, such as hierarchical cluster analysis, in that the algorithm repeatedly assigns cases to clusters, so the same case may move from cluster to cluster over the course of the analysis. Hierarchical clustering, in contrast, uses an agglomerative method to form clusters, adding cases only to existing clusters—once a case is assigned to a cluster, it must stay there, unless it is merged into a separate cluster. Hierarchical cluster analysis also requires the generation of a similarity or distance matrix between all pairs of cases; for this reason, *k*-means cluster analysis is the preferred method with moderate to large sample sizes, as it does not require computation of all possible distances. *K*-means clustering and hierarchical cluster analysis are sometimes used in conjunction with one another in order to estimate cluster solution starting points, or to validate the *k*-means cluster solution (Norusis, 2011).

Prior to the cluster analysis, maternal and child emotional availability variables were standardized, so that the different ranges of the emotional availability scales would not impact distance measures (Aldenderfer & Blashfield, 1984; Norusis, 2011). Four maternal emotional availability variables were used (Sensitivity, Structuring, Nonintrusiveness, and Nonhostility), along with two child emotional availability variables (Responsiveness and Involvement); the

composites were not used in the cluster analysis. Consistent with Easterbrooks, Chaudhuri, and Gestsdottir (2005), it was expected that patterns reflecting synchrony and asynchrony in mother and child emotional availability would emerge (e.g., two synchronous patterns in which both mother and child were functioning at the same level, and two asynchronous patterns in which mother and child are functioning at odds with one another). Thus, four clusters were specified. Three- and five-cluster solutions were also examined, but did not provide as good a fit to the data.

A hierarchical cluster analysis was conducted to confirm the results of the patterns identified by the *k*-means cluster model. A visual inspection of the dendrogram of the hierarchical cluster analysis identified similar cluster configurations as the *k*-means cluster method. Although a few dyads were assigned to different clusters, the hierarchical cluster analysis provided general support for the outcome of the *k*-means cluster solution.

The results of the four-cluster solution are described below. Contrary to hypothesis, however, the four clusters that emerged did not correspond to patterns of synchrony and asynchrony in mother-child interactions. Rather, the clusters reflected four types of synchronous interactions: one group where mothers and children both demonstrated optimal, or "high functioning," behaviors, and three groups characterized by different types of nonoptimal, or "low functioning" mother and child behaviors. The four clusters identified, based on patterns of maternal and child emotional availability, were labeled "High Functioning—Sensitive" (Cluster 1, $n = 30$), "Low Functioning—Intrusively Hostile" (Cluster 2, $n = 6$), "Low Functioning—Passive/Disengaged" (Cluster 3, $n = 17$), and "Low Functioning—Inconsistent" (Cluster 4, $n = 17$). Despite the small size of Cluster 2 ($n = 6$), this 4-cluster model was viewed as most

preferable, as this unique group was lost in the 3-cluster solution, and the cluster grew even smaller in the 5-cluster solution. The clusters are presented graphically in Figure 11; Table 8 provides mean scores for emotional availability variables for each cluster and the sample grand mean.

ANOVA and chi-square analyses were used to examine relations between cluster membership and individual (maternal borderline features, nonoptimal child behaviors) and contextual (social support, demographics) variables. Table 9 contains descriptive information on these individual and contextual variables according to cluster membership. The analyses revealed no significant relation between cluster membership and BPD diagnosis or demographic variables, with the exception of child age; household income and child gender approached significance. Post-hoc testing did, however, reveal significant relationships between maternal borderline features, social support, and cluster membership. Characteristics of each cluster are described below.

Cluster 1: High Functioning—Sensitive. Examining the mean scores for maternal and emotional availability variables, the dyads in the High Functioning—Sensitive group (Cluster 1) were the only mothers and children who showed "optimal" emotional availability behaviors, with scores above the cutoff score differentiating optimal from nonoptimal interactions. The emotional availability scores for dyads in Cluster 1 were significantly higher than those of the other clusters and the overall sample mean. This group was the largest (n = 30), comprising nearly half of the overall sample. Mothers in this group were rated as generally to highly sensitive (M = 7.20, SD = 1.03), and successfully structured interactions with their children (M = 4.07, SD = 0.69) without being intrusive (M = 4.58, SD = 0.53) or hostile (M = 4.80, SD = 0.43).

In turn, their children were rated as the most optimally responsive to (*M* = 6.12*, SD* = 0.76) and involving of (*M* = 6.13*, SD* = 0.74) their mothers. Mothers in this cluster reported the lowest levels of borderline features (*M* = 24.93, *SD* = 21.49), and the highest levels of social support (*M* = 5.33*, SD* = 6.34); Tukey's post-hoc analyses revealed that this significantly differentiated the mothers in Cluster 1 from the mothers in Cluster 2 (see below). No instances of child over-responsiveness or child over-involvement were found in this cluster. Mothers in this group reported the highest yearly household incomes (*M* = $41, 080, *SD* = $34, 716), a trend that approached significance when compared to the incomes of mothers in Cluster 2.

Cluster 2: Low Functioning—Intrusively Hostile. The second cluster, labeled Low Functioning—Intrusively Hostile (*n* = 6), consisted of dyads in which mothers demonstrated the lowest scores on emotional availability overall, but extremely low scores on Nonintrusiveness (*M* = 2.33, *SD* = 2.33) and Nonhostility (*M* = 2.00, *SD* =0.84), indicating the presence of significant intrusive and hostile behaviors during interactions with their children. When compared to the sample grand mean, maternal emotional availability scores in this cluster were more than a standard deviation lower; scores on Nonhostility approached nearly 2 standard deviations below the mean of the overall sample. In other words, mothers in this group displayed very few instances of sensitive behaviors and struggled with engaging their children in successful interaction. Rather, they demonstrated overt instances of hostility with their children, such as name-calling, making threats, criticizing, or yelling at their children. Furthermore, these mothers displayed emotionally and physically interfering behaviors, frequently took over the interactions, peppered their children with questions during the interaction tasks, and did not allow their children to tell the story in their own way. The children in these dyads demonstrated

the worst scores for child responsiveness (*M* = 1.92, *SD* = 0.86) and child involvement (*M* = 2.00, *SD* = 0.84), indicating behavior far below optimal and a significant lack of interest and pleasure in relating to their mothers. Children of Intrusively Hostile mothers were often observed using negative affect and punitive behaviors (such as irritability, whining, and defiance) when responding to the mother.

Mothers in Cluster 2 reported the highest overall levels of borderline features, exceeding the clinical cutoff (*M* = 41.67, *SD* = 17.66), as well as the lowest levels of social support (*M* = 13.00, *SD* = 7.90). Tukey's post-hoc tests revealed that the mothers in Cluster 2 endorsed significantly greater problems with Negative Relationships (*M* = 15.00, *SD* = 3.03, mean difference 7.10, *p* = .02) when compared to mothers in Cluster 1. Although mothers in Cluster 2 reported the highest levels of Affective Instability, Identity Problems, and Self-Harm/Impulsivity when compared to mothers in the other clusters, this was not a significant difference between clusters. There were no instances of child over-responsiveness or child over-involvement in Cluster 2. Mothers in this cluster reported the lowest yearly incomes (*M* = $10, 722, *SD* = $5, 654) when compared to the other clusters. Cluster 2 also contained the highest proportion of mothers with a BPD diagnosis (66.7%), although this was not a significant difference between clusters.

Cluster 3: Low Functioning—Passive/Disengaged. Mothers in Cluster 3, the Low Functioning—Passive/Disengaged dyads, showed low scores on Sensitivity (*M* = 3.50, *SD* = 1.35) and Structuring (*M* = 2.09, *SD* = 0.69) but high scores on Nonintrusiveness (*M* = 4.68, *SD* = 0.39), reflecting a withdrawn and uninvolved pattern of interaction. Mothers in this group were characterized by passive maternal behaviors that were emotionally and behaviorally

removed, with little or no attempts made to structure the mother-child interaction. For example, these mothers were observed to sit passively and let their children read the book to them, without scaffolding the storytelling interaction. Mothers in this cluster were typically described as displaying flat affect and slowed motor activity. Of the 3 nonoptimal clusters, mothers in Cluster 3 reported the lowest levels of borderline features (M = 27.88, SD = 14.54) and levels of social support similar to the overall group mean (M = 6.88, SD = 4.65). Post-hoc tests did not reveal significant relationships between Cluster 3 membership and any of the individual borderline features (e.g., Affective Instability, Identity Disturbance, Negative Relationships, and Self-Harm/Impulsivity).

Children of Passive/Disengaged mothers were frequently "left on their own" during the interactions. They demonstrated nonoptimal levels of responsiveness (M = 3.03, SD = 0.93) and involvement (M = 2.97, SD = 0.89). Cluster 3 is notable for the presence of Over-Responsive and Over-Involving behaviors, in which the child is overly responsive to maternal bids or takes responsibility for maintaining the interaction. Of the children in Cluster 3 (n = 17), 29.4% displayed nonoptimal overresponsiveness and 35.3% demonstrated maladaptive overinvolvement—significantly more than children in the other clusters. In fact, of the 6 children rated in the overall sample as being overresponsive, 5 were placed in Cluster 3; all 6 of the over-involving children are in Cluster 3. This group contained the oldest children in the sample (M = 5.79, SD = 0.76) and the most girls (76.5%).

Cluster 4: Low Functioning—Inconsistent. Cluster 4, the Low Functioning—Inconsistent group, was characterized by mothers whose scores for emotional availability hovered around the middle or "cutoff" mark between optimal and nonoptimal. Scores in this

range reflect inconsistent maternal behaviors across the course of the interaction or a "mismatch" in the quality of behaviors between mother and child. These interactions were characterized by inconsistencies between maternal behavior, emotional expressions and underlying affective tone, and child reactions, resulting in an interactional style that may have "looked good" but was one-sided. For example, mothers in Cluster 4 were often rated as displaying "apparent" or "pseudo" sensitivity, in which they looked warm but lacked attunement to the child's emotional cues or signals, coupled with instances of covert hostility. In terms of structuring and intrusiveness, these mothers frequently demonstrated mismatched attempts to structure the interaction, such as providing too much structuring that the child could not absorb, together with benign levels of intrusiveness, such as overdirective or overprotective behaviors. Mothers in Cluster 4 reported levels of borderline features (M = 31.94, SD = 19.71) and social support (M = 6.73, SD = 6.15) that were similar to the overall sample mean.

Children of Inconsistent mothers showed levels of responsiveness (M = 4.03, SD = 0.98) and involvement (M = 4.06, SD = 4.06) that hovered just above the cutoff score differentiating optimal from nonoptimal interactions. There was one child rated as over-responsive in Cluster 4. Interestingly, this group also consisted of the youngest children (M = 4.95, SD = 0.87).

Chapter 5

Discussion

There is an important need to understand the unique parenting challenges faced by mothers with BPD, as the high levels of stress and risk factors experienced by these mothers is likely to interfere with their capacity to provide consistent, sensitive, and emotionally available parenting. At the same time, there is a need to identify contextual factors, such as social support, that might be associated with maternal functioning and parenting outcomes. The current study used a low socioeconomic sample of children aged 4-7 of mothers with BPD, and a comparison group of children of mothers without BPD, to examine associations between maternal BPD, social support, and emotional availability. The goal of the present study was to identify whether perceived social support played a mediating or moderating role on the relationships between maternal BPD, maternal borderline features, and emotional availability during mother-child interactions. The study further aimed to explore clustered patterns of dyadic emotional availability within our sample of mothers with borderline features, and identify individual and contextual variables associated with different patterns of interaction.

Results of the study found some support for both the "support deterioration" and "buffering" models of social support in this sample. Social support was a significant mediator of the relationship between (1) affective instability and maternal emotional availability, (2) identity problems and maternal emotional availability, and (3) self-harming/impulsive behaviors and maternal emotional availability, as well as the relationship between (4) self-harming/impulsive behaviors and child emotional availability. Further, social support also played a moderating role

on the relationships between (1) identity problems and maternal emotional availability, (2) self-harming/impulsive behaviors and maternal emotional availability, and (3) total borderline features; contrary to hypothesis, however, those moderating effects were only found for mothers with lower levels of those borderline features. Similar buffering effects were found for social support on the relationships between (1) identity problems and child emotional availability, (2) self-harming/impulsivity and child emotional availability, and (3) total borderline features and child emotional availability, in that moderating effects were strongest for children of mothers with low levels of borderline features. In terms of cluster analysis, unique patterns of both optimal and nonoptimal mother-child emotional availability were revealed in the sample, related to both maternal and child contextual factors. Details of the findings are described below.

Social Support

In terms of social support, as predicted, mothers with BPD reported significantly lower levels of perceived social support than did mothers without a diagnosis of BPD. Similarly, across the sample as a whole, higher levels of borderline features were significantly correlated with less social support. Mothers with BPD, and mothers reporting higher levels of borderline features, were more likely to perceive their social support networks as negative, unsupportive, and unavailable. They reported beliefs that friends would be unavailable when needed, a lack of people to talk to when having problems, a paucity of close, caring and supportive relationships, and family relationships characterized by distance and conflict.

These results are consistent with prior studies highlighting the challenges for women with BPD in sustaining social support networks (Chan, 2005). They lend further support to previous findings that the family and social networks of women with BPD are often characterized by

negative interpersonal and emotional experiences during social interactions (Clifton et al., 2007; Corwin, 1996; Lenzenweger & Cicchetti, 2005; Stepp et al., 2009). The findings raise the possibility that the impairments in functioning experienced by the women in this sample are likely to place heavy emotional, interpersonal, and material burdens on their support systems, in turn leading to exhaustion or disintegration of their available social support networks, similar to patterns observed in homeless mothers (Letiecq et al., 1998; Marra et al., 2009; Solarz & Bogat, 1990). Additionally, they point to the importance of including assessment of social supports—perceived and actual—in clinical work with mothers with both categorical diagnoses of BPD and sub-clinical threshold levels of borderline features, as well as in the design of interventions.

Further, across the sample as a whole, social support significantly correlated with maternal and child emotional availability variables. Those mothers reporting greater levels of social support also belonged to dyads demonstrating higher levels of emotional availability in mother-child interaction. In contrast, mothers who perceived their social supports to be lacking were observed to be less sensitive and more hostile in interactions with their children. These findings lend further support to Belsky's (1984) conceptual model that stressors and supports in a mother's environment will have direct and indirect effects on parenting behaviors, and are congruent with the large body of previous research findings that greater social network supports are directly related to positive parenting (Crnic et al., 1983; Crnic et al., 1986; Ghazarian & Roche, 2010; Jennings et al., 1991; Leadbeater & Linares, 1992; C. S. Lee et al., 2009; Pascoe et al., 1982; Voight et al., 1996).

In this study, greater social support was also directly related with positve child outcomes, as children of mothers reporting higher levels of perceived social support demonstrated more

optimal responsiveness to and involvement of their mothers in interaction. The converse, however, was also true: lower social support was associated with poorer parenting and child behaviors. Although much of the existing literature suggests that relations between social networks and children's behavior are largely mediated by parenting (Belsky, 1984; Bronfenbrenner & Ceci, 1994), the findings in the current study give some support to research proposing that some aspects of social support may have substantial direct associations with children's behavior (Cochran & Brassard, 1979; Roberts, 1989). Overall, the results provide general support for the model that social support acts to enhance a mother's psychological well-being and promote positive parenting, thereby helping to buffer against the negative effects of parenting stress (Abidin, 1992; Cohen & McKay, 1984; Cohen & Wills, 1985; Kotchick et al., 2005; Leadbeater & Linares, 1992). Unfortunately, the results also suggest that BPD may lead to both low social support and poor parenting behaviors, in addition to any mediating or moderating effects. Additionally, the findings with social support highlight the utility of using a measure of perceived social support, lending strength to previous findings that the perception of available and accessible support when needed may mediate or moderate the effects of stress (Edwards & Benson, 2010).

Social Support as a Mediator of the Relationship between Maternal Borderline Features and Emotional Availability

As hypothesized, the results of the study found support for a mediating model of social support. Increased levels of maternal borderline features—specifically, affective instability, identity problems, and self-harm/impulsivity—were associated with decreases in perceived support and poorer maternal emotional availability. Maternal self-harming/impulsive behaviors

were also indirectly associated with decreased child emotional availability through decreased social support. In other words, those mothers who had the greatest difficulties with modulation of emotional expression and responsiveness, feelings of emptiness and uncertainty, and impulsivity in areas likely to be dangerous perceived that they had the fewest positive social supports available when needed. In turn, they struggled with sensitivity and hostility in their interactions with their children, and their children demonstrated a lack of responsiveness and desire for involvement with their mothers. This suggests that reduced social support may serve as a mechanism through which maternal borderline features are linked with emotional unavailability. While the use of cross-sectional data in the current study (rather than longitudinal) means than limited inferences can be made about the mediating role of social support, the findings do provide initial evidence suggesting that social support (particularly the lack of social support) may negatively influence the impact of parenting stresses on behavior in women with BPD.

This finding is consistent with the "support deterioration model" (Lin & Ensel, 1984) and findings that social support may function differently in situations of chronic stress—rather than mitigating the impact of stress, perceptions of social support may become negatively influenced by ongoing strain and difficulty (Quittner et al., 1990). Although increases in support may be helpful for short-term stressors or in times of acute need, infusions of support in the context of chronic stressors, such as maternal BPD, may be viewed as intrusive or suggestive of incompetence. For mothers with BPD, likely experiencing a multitude of difficulties coping with parenting stressors, "helping behaviors" offered by others may initially be felt as appreciative, but over time come to be viewed as critical and unwelcome. It may be that mothers

with BPD and higher levels of borderline features respond negatively to attempts to provide them with social support. Alternatively, it may be the mothers with BPD exhaust their available supports with unending demands for support. In turn, this may lead social supports to turn away from mothers with BPD and withdraw offers of help, thereby contributing to mothers' perceptions that social supports are lacking.

Similarly, it is possible that mothers with BPD may perceive their social relationships as more negative, thereby influencing their interpretations of social support networks as less available and less helpful. This idea seems consistent with the support deterioration model as well, in that mothers with BPD may perceive their available support relationships as more negative, and these negative perceptions may contribute to the effects of stressors on parenting behaviors. In keeping with this, social support did not mediate the relationships between maternal negative relationships or total borderline features and emotional availability. However, there were significant overall direct effects for both negative relationships and total borderline features on maternal emotional availability. This suggests that the influence of a mother's borderline features on her perceptions of relationships as negative may have a more direct detrimental effect on her capacity for sensitive caregiving, even in the context of adequate social support.

For child emotional availability, social support was only a significant mediator of mothers' self-harming/impulsive behavior. This suggests that mothers' impulsivity in areas likely to be dangerous negatively impacts the perceived quality of their support relationships, and in turn affects their children's interpersonal relatedness. It may be that mothers who engage in self-harming and dangerously impulsive behaviors, who likely attract considerable attention

from others, come to interpret efforts of assistance as critical or negative judgments on their parenting abilities. Alternatively, it may be these mothers rapidly exhaust available social support resources, leading to perceptions that their support networks are inadequate at meeting their needs. Either way, it seems that the perceived lack of social support also interferes with the way their children respond to and engage with them. Social support did not mediate the relationships between any of the other maternal borderline features and child emotional availability, suggesting that these aspects of borderline features have more direct impacts on child engagement and relatedness.

Social Support as a Moderator of the Relationship between Maternal Borderline Features and Emotional Availability

Results from the current study provided limited support for the hypothesis that social support may also act as a moderator on the relationship between maternal borderline features and emotional availability. While support was found for the "buffering" model of social support (Cohen & McKay, 1984; Cohen & Wills, 1985), the buffering effects of social support were strongest for those mothers with lower levels of borderline features. In terms of maternal emotional availability, significant interactions were found between social support and maternal identity problems, self-harming and impulsive behaviors, and total levels of borderline features, such that lower levels of these variables, in the context of lower social support, were associated with less optimal maternal emotional availability. The buffering effect of social support was weakest for mothers with higher levels of borderline features.

A similar pattern of moderating effects was found when social support was examined as a moderator of the relationship between maternal borderline features and child emotional

availability. Again, there were significant interactions between social support and maternal identity problems, self-harm/impulsivity, and total borderline features, but it was those mothers with low levels of borderline features who benefited the most from the presence of social support. Mothers with both low levels of borderline features and low levels of perceived social support had the children with the poorest observed emotional availability. This buffering effect was not observed for children of mothers with high levels of borderline features.

In general, the findings are in line with previous research arguing that social support can be viewed as protective (Cohen & McKay, 1984; Cohen & Wills, 1985) in that more support predicted better mother-child relationship quality; however, this protective quality seems strongest for mothers with lower levels of borderline features. The surprising finding that social support did not seem to buffer against the effects of higher levels of borderline features on emotional availability provides further support for the hypothesis that mothers with BPD may simply perceive their social support relationships as more negative, and that these perceptions will influence the effect of parenting stresses. The data in the present study seem to suggest that mothers with higher levels of borderline features are more likely to perceive social support as negative, whether it is available or not; thus, the presence or lack of social support may not matter as much for these mothers when it comes to their parenting behaviors. For mothers with higher levels of borderline features, then, it seems likely that negative relationship perceptions may interfere with their capacities for sensitive caregiving, making it more difficult for them to be engaged emotionally with their children in a nonhostile way, above and beyond the impact of the availability of social support.

These results are also consistent with several studies on maternal depression in low-income women that have failed to find evidence of the stress-buffering effects of support, suggesting instead that social support may act independently of stress in relation to depression in low-income populations (Israel et al., 2002; Manuel et al., 2012; Mathiesen et al., 1999; Wade & Kendler, 2000). Similar to these studies, the dyads in the present study all benefitted from social support, but the protective effect was greatest for those mothers who reported the fewest difficulties with borderline features. These findings suggest that social support, though protective in and of itself, is likely insufficient to ameliorate the negative effects of financial, parenting, and mental-health related stress, such as that experienced by mothers with BPD.

Cluster Analysis of Dyadic Patterns of Emotional Availability

In addition to exploring competing models of social support as a mediator and moderator, this study attempted to acknowledge the complex, dyadic nature of mother-child interactions by using cluster analysis to look at the multiple facets of maternal and child emotional availability simultaneously within the sample. Cluster analysis allowed an opportunity to obtain a more nuanced view of the unique patterns of emotional availability occurring in a sample of mothers with varying levels of borderline features. It was expected that groups reflecting synchronous or asynchronous patterns of emotional availability (that is, groups reflecting either matched or mismatched behaviors between mother and child) would emerge from the sample, and that these groups would be related to individual and contextual factors.

Our findings revealed four distinct clusters of emotional availability; however, contrary to hypothesis, the four clusters did not correspond to synchronicity and asynchronicity in behavior. Rather, the clusters that emerged all reflected synchronous patterns of mother-child

interaction, distinguished by uniquely different types of behaviors: (1) dyads with sensitive mothers and responsive children, (2) dyads with intrusively hostile mothers and resistant children, (3) dyads with passive and disengaged mothers and either under- or over-responsive children, and (4) dyads with mothers who behaved inconsistently and children who displayed moderately nonoptimal engagement.

The results suggest that the disturbances in emotional availability across the various clusters are more strongly related to the mother's borderline features, as assessed along a continuum for all participants, rather than a categorical diagnosis of BPD. Across the sample as a whole, it was the level of borderline features that differentiated maternal behaviors—mothers with higher levels of borderline features demonstrated different kinds of emotionally unavailable behaviors, independent of their diagnosis. This finding, that it is the level of borderline features that corresponds to differences in observed parenting difficulties, rather than BPD diagnosis, has implications for the design of effective parenting interventions and supports, as well as the use of a combination of both categorical and continuous measures of borderline pathology to inform BPD diagnosis.

The domains of maternal sensitivity and hostility significantly differentiated the clusters most often, suggesting that for mothers with borderline pathology, the tasks of affective communication, emotional responsiveness, and the modulation of negative affect may be particularly challenging. The different interactional patterns revealed in the current sample indicated that mothers had difficulties with maintaining consistent authentic and congruent emotional connectedness with her child, and this was often paired with intrusively hostile, passively disengaged, or inconsistently mismatched behaviors. These findings suggest that

mothers with higher levels of borderline features are likely to have difficulties with appropriate emotional boundaries in their interactions with their children, both in terms of being available for emotional connection while still respecting her child's autonomy, and with modulating her own negative emotional responses. This finding is not surprising, considering that individuals with BPD experience core deficits in the domains of emotion regulation and attachment relationships, which are likely to make navigating the emotional terrain of the parent-child relationship more challenging. These results suggest that mothers with features of BPD may stumble when it comes to building a special, emotionally attuned connection with their children for the task of facilitating their social and emotional development.

Particular types of child behaviors also differentiated between the clusters. The variables of child responsiveness and child involvement were significantly different between all the clusters. Cluster 1 contained the children who were positively connected to their mothers, and displayed the highest levels of responsiveness and involvement. In contrast, children in Cluster 2 had significantly lower emotional availability scores, indicating markedly nonoptimal patterns of relating, often characterized by punitive and resistant behaviors. The emotional availability scores of children in Cluster 4, the Inconsistent cluster, hovered around the midpoint range, just over the clinical cutoff differentiating "optimal" from "nonoptimal" behaviors. Most notable, however, was the presence of "over-responsive" and "over-involving" children in Cluster 3. Nearly a third of the children in Cluster 3 demonstrated overly responsive and overly involving behaviors with their mothers. This behavior was paired with maternal behaviors that were passively disengaged, uninvolved, and distant, suggesting that with these possibly depressed mothers, the children have learned to take on the "lion's share" of the responsibility for

maintaining connection and interaction with the mother. Interestingly, Cluster 3 also consisted of the oldest children, and the highest proportion of girls.

Such behavior may conceptually be viewed as similar to compulsive caregiving behaviors, which are thought to be styles of coping with an attachment figure who is frightened, helpless, or frightening in early childhood (Lyons-Ruth & Jacobvitz, 2008; Main & Solomon, 1986); together with controlling and punitive behavior, these patterns may be understood as attempts to placate and manage the interaction with a withdrawn or hostile parent in order to maintain some involvement or physical availability within the interaction (Easterbrooks, Bureau, & Lyons-Ruth, 2012). For these children, then, over-responsive and over-involving behaviors may represent an attempt to take control of the interaction in order to reduce the anxiety of unpredictable interactions. They may have learned to be overly responsive to parental bids and to act as a sort of "cheerleader" in attempting to engage the mother in interaction, as a way to provide structure and maintain connection with an otherwise unavailable parent. Children with controlling punitive, caregiving, and disorganized attachment behaviors in middle childhood are more likely to demonstrate greater externalizing and internalizing behaviors at age eight (Bureau, Easterbrooks, & Lyons-Ruth, 2009), suggesting that the children coded in this sample as displaying nonoptimal over-responsiveness and over-involvement may be at similar risk for later problems in psychological adjustment.

The unexpected gender differences found in the cluster analysis-- that the cluster containing the over-responsive and over-involving children also contained the highest proportion of girls-- has implications for considering girls' risk-related pathways. The results of the present study seem to suggest that girls may be developing different strategies for interacting with

passive, disengaged, and likely depressed mothers than are boys. This finding is consistent with the hypothesis of "risk-exaggerated sensitivity to social cues" (Zahn-Waxler et al., 2008) as it is applied to role reversal. This hypothesis proposes that girls in at-risk environments may develop hypersensitivity to the social cues of others and be more likely to demonstrate controlling caregiving behavior as an attempt to manage difficult environments. Boys, on the other hand, are hypothesized to be more prone to controlling punitive behavior. This pattern has been demonstrated in children's narrative stories, as young girls tend to express more prosocial themes, affiliation, and affection (Zahn-Waxler et al., 1994; Zahn-Waxler, Schmitz, Fulker, Robinson, & Emde, 1996) than boys, who express more aggression (Zahn-Waxler et al., 1994). Whether this strategy of caregiving behavior represents a possible adaptive role and potential for resilient functioning among children with withdrawn caregiver, or may contribute to girls' later risk for internalizing and self-damaging behaviors in adolescence, remains a question for further research.

The differences in patterns of child behaviors found across the different clusters raises the question of child contributions to patterns of parent-child interaction. Aside from observed emotional availability behaviors, the current study does not take other child factors into account; however, a child's temperament has been proposed to be one of the most influential predictors of parenting quality and style (Bryan & Dix, 2009; O'Connor, 2002). The theory of differential susceptibility (Belsky, Bakermans-Kranenburg, & van IJzendorrn, 2007; Belsky & Pluess, 2009) posits that certain individuals are more susceptible to the effects of both positive and negative environmental characteristics. A child's difficult temperament can elicit negative parenting (irritation, harsh, problem-inducing parenting) and inhibit positive parenting (warm, responsive

engaged parenting), particularly within the context of an at-risk environment (Kochanska, Freisenborg, Lange, & Martel, 2004; Neitzel & Stright, 2004). A recent study found that mothers with greater individual and family resources interacted differently with their child according to the child's temperament, whereas mothers with fewer resources interacted with their children in a less warm and responsive manner, regardless of the child's temperament(E. J. Lee, 2013). Within the current study, it is possible that child temperament may have interacted with other contextual variables as a factor in eliciting maternal behavior, such as sensitivity and hostility, such that a temperamentally difficult child may have elicited poor parenting behavior from mother, or exacerbated the mother's level of borderline symptomatology. While it is unclear how child temperament may have been related to the patterns of maternal emotional availability observed in the sample, the results demonstrate the importance of considering child contributions to parenting behavior, and point to the value in using the mother-child dyad as a unit in exploring bidirectional patterns of interaction. Further research is needed in this area.

The four distinct patterns of mothers and children demonstrate the variability among mothers with borderline levels of personality functioning, and the relations between characteristics of the mothers and their parenting behavior. Attempts to understand these kinds of interaction patterns will benefit from considering the additional contexts of their lives. Both mothers' reported borderline features and perceived social support were related to patterns of emotional availability. In particular, maternal reported negative relationships and levels of social support significantly distinguished mothers in Cluster 1 ("Sensitive") from mothers in Cluster 2 ("Intrusively Hostile"). In Cluster 2, mothers endorsed clinically significant histories of intense, ambivalent, and unstable relationships, feelings of exploitation and betrayal, and perceptions that

friends and family were unavailable as dependable supports. This negative relationship history was associated with an intrusive and hostile style of parent-child interaction.

Interestingly, Clusters 1 and 2 were further differentiated in terms of income: mothers in Cluster 1 had the highest reported yearly incomes, compared to mothers in Cluster 2, who reported the lowest income levels. Thus, the mothers with the highest incomes were the highest functioning in terms of emotionally available parenting behaviors, while mothers with the lowest incomes were struggling in terms of intrusive and hostile parenting, higher levels of borderline features, and negative social support. This finding suggests that the inadequate financial and psychosocial resources experienced by these women may be contributing to considerable strain and stresses, thereby increasing the risk of maternal mental health problems and the likelihood that they will have a negative impact on parenting. These results are consistent with studies highlighting the relationship between low socioeconomic status and increased risk of difficulties related to mental health disorders, as well as the importance of social support for mitigating the effects of these stresses (Henly et al., 2005; C. S. Lee et al., 2009; Manuel et al., 2012; Mathiesen et al., 1999). For example, a recent study of low-income urban American women with young children found that stress related to economic hardship, parenting, and poor physical health increased the risk of depression; in this sample, instrumental and partner support were found to be potential protective factors in reducing the negative effects of stress (Manuel et al., 2012). Another study found that the presence of financial hardship, coupled with perceived lack of social support, contributed to a higher prevalence of mental health problems in single mothers (Crosier, Butterworth, & Rodgers, 2007). The income discrepancies in the current study underscore the importance of considering the influence of socioeconomic factors in studies of

parenting stresses and behavior, particularly samples of at-risk mothers, such as this sample of mothers with BPD.

Across the clusters, mothers and children who were functioning the best in terms of borderline features and social support also had the highest emotional availability. Perhaps, then, these mothers had both emotional support for parenting, and are better able to tolerate the emotional highs and lows that come from being a parent. This finding is consistent with Stack and colleagues' (2012) finding of a significant relation between current support, stress, and emotional availability in high-risk dyads: mothers rated as more sensitive had more social support, better quality of the environment, and lower stress, in comparison with mothers rated as hostile, who had less support, poorer quality of home environment, and higher levels of stress. The current study lends further support to the literature placing emotional availability within the family and environmental context and highlights the importance of examining contextual variables and their relationship to patterns of emotional availability.

Developmental Precursors to BPD

The present study is consistent with previous research findings, as well as the long-held view of clinicians, that mothers with BPD have significant problems with parenting (Crandell et al., 2003; Hobson et al., 2005; Hobson et al., 2009; Macfie, 2009; Macfie & Swan, 2009; Newman & Stevenson, 2005; Newman et al., 2007). Of particular note in this sample, mothers with higher levels of borderline features struggled with the domains of sensitivity and hostility in their interactions with their children. Maternal sensitivity is considered a precursor to a secure attachment and a child's emotional and social development (Ainsworth et al., 1978); maternal hostility has been associated with infant difficulties in regulating distress (Little & Carter, 2005),

aggressive classroom behavior in kindergarteners (Biringen et al., 2005), punitive and caregiving controlling attachment behavior in middle childhood (Easterbrooks et al., 2012), and child depressive symptoms at age 8 (Easterbrooks et al., 2012). Thus, the observed difficulties with sensitivity and hostility in mothers with higher reported levels of borderline features are of major concern when child outcomes are considered.

A positive outcome of the current study is the finding that many of the children in the sample—nearly half—demonstrated positive patterns of emotional availability in the ways they responded to and involved their mothers in interaction. However, the 40 children of the remaining mothers in the study displayed nonoptimal patterns of connection and relatedness during the mother-child interaction. Children of intrusively hostile mothers were more punitive and resistant with their mothers, and used negative affect as a primary way of structuring the interactions. In contrast, the children of passive and disengaged mothers were overly responsive to and involving of their mothers, showing evidence of possible role reversal. As stated by DeKlyen and Greenberg (2008), "social relationships both affect and are affected by developing psychopathology in childhood" (p. 637). The current study suggests that children of mothers with higher levels of borderline personality features are already developing maladaptive patterns of interpersonal relatedness with their mothers, as early as age 4, and these relational disturbances may have implications for the development of future maladjustment or disorder.

The current research suggests that children of mothers with BPD are at risk for experiencing disruptions in the parent-child relationship. This is consistent with Linehan and colleagues transactional theory for the development and maintenance of BPD (Fruzetti et al., 2005; Linehan, 1993). It has been theorized that BPD may develop from the combination of

ongoing, mutually exacerbating transactions between an emotionally vulnerable child and an emotionally unsupportive or invalidating environment (Heard & Linehan, 1993). Although emotional vulnerabilities, such as heightened sensitivity and reactivity to emotional stimuli, are in part biologically based, they may be exacerbated through repeated exposure to an invalidating environment-- one in which the valid needs, experiences, and behaviors of an individual are not understood and are instead pervasively invalidated by criticism, inattention, punishment, dismissal, blaming, unresponsiveness, or other erratic, extreme, aversive, or developmentally inappropriate responses (Fruzetti et al., 2005; Heard & Linehan, 1993; Wagner & Linehan, 1999), such as some of the behaviors demonstrated by the mothers in this sample—particularly those in Cluster 2, the "Intrusively-Hostile" group.

Patients with BPD report experiencing caregiver relationships characterized by emotional under-involvement, insensitivity, invalidation, intrusive control, neglect, and conflict (Fruzetti et al., 2005). In addition, individuals with BPD report higher rates of childhood physical, emotional, and sexual abuse. Moreover, they describe their parents as neglectful and under-involved, withdrawing from them emotionally, treating them inconsistently, denying their thoughts and feelings, placing them in the role of the parent, and failing to provide them with needed protection (Zanarini, 2000; Zanarini et al., 1997). These findings suggest that, in addition to other serious factors, individuals with BPD likely failed to experience emotionally available relationships from their caregivers. Furthermore, the results of the cluster analysis are consistent with Linehan's transactional model (Linehan, 1993) reflecting the interaction between an emotionally sensitive child and a mismatched environment, suggesting that certain combinations of mother-child behavior, in combination with at-risk levels of borderline features

and social support, may increase the likelihood that a child might go on to develop pervasive difficulties with emotion regulation, attachment relationships, identity formation, and self-regulation.

It has been proposed that the fundamental aspects of BPD (e.g., unstable and fluctuating interpersonal relationships, feelings of emptiness, bursts of rage and uncontrolled anger, fear of abandonment, intolerance for aloneness, lack of stable sense of self, dangerous impulsivity) may stem from impairments in the underlying attachment organization (Fonagy et al., 2000; Levy, 2005). Core deficits of BPD occur in the domains of attachment, emotion regulation, and representations (of self, others, and relationships), which would normally develop within the context of stable family systems and nurturing attachment relationships (Bradley & Westen, 2005). In contrast, insensitive and unempathic parental interaction during infancy can contribute to impaired emotional development and self-regulation (Newman & Stevenson, 2005). Several patterns of dysfunctional parenting behavior have been associated with the development of BPD, including poor parental emotional sensitivity, hostility, and intrusive control (Melges & Swartz, 1989)—similar to patterns of emotional availability observed in the current sample. Thus, disruptions in the quality of the parent-child relationship, such as deficits in emotional availability, may have implications for the development of BPD. Indeed, the development of borderline personality symptoms in adolescents has been associated with early relational experiences including attachment disorganization, maternal hostility, and family life stress; it has been posited that extreme negative early parenting experiences may initiate the process of disturbance (Carlson et al., 2009).

The current study adds to the relative gap in the literature linking variations in emotional availability with the development of psychopathology. While there has been much research devoted to emotional availability in normative development, there is a great need to understand the relationship between emotional availability and the development of psychopathology, particularly those disorders characterized by emotion regulation and communication, such as BPD (Emde, 2012). The findings in the current study add to a more comprehensive understanding of the difficulties and challenges mothers with BPD are likely to face in parenting their young children. Moreover, they lend support to the utility in using a dimensional perspective in conceptualizing borderline personality disorder, as the findings suggest that mothers with high levels of borderline personality features—individuals who may or may not meet the full diagnostic criteria for BPD—also experience significant disruptions in their interactions with their young children. In particular, the results offer a more nuanced view of the subtle ways in which a mother's level of borderline personality features and her perceptions of her available social supports may interact with her observed parenting behaviors.

Clinical Implications

Individuals with BPD utilize mental health resources at a greater rate than individuals with any other psychiatric disorder, with the exception of schizophrenia (Swartz, Blazer, George, & Winfield, 1990). Given the significant burden that individuals with BPD place on the mental health care system, there is an important need for research to inform preventative interventions. Furthermore, considering the substantial social stigma directed towards individuals diagnosed with BPD, efforts directed towards treating and minimizing the individual, family, and social distress associated with the disorder are crucial (Lenzenweger & Cicchetti, 2005).

Even with recent strides in treatment (Bateman & Fonagy, 1999, 2001, 2008; Gunderson, 2001; Levy et al., 2006; Linehan, 1993), many clinicians continue to recoil at the prospect of treating individuals with BPD. A greater understanding of the etiology and developmental risk factors for BPD is needed to inform the design and implementation of preventive interventions. Results of the current study suggest the importance of interventions with children whose mothers have BPD or elevated borderline personality features—interventions designed to target the quality of the parent-child relationship, as well as help modify the mother's affective instability, negative patterns in relationships, confusions about self-image, identify, and purpose, and impulsivity in areas likely to be dangerous. Furthermore, as the current study has demonstrated, there is a need for such interventions to include an assessment of the mother's perceptions of her available support networks, and help connect the mother with access to useful and dependable supports.

The results of cluster analysis in the current investigation suggests that there are distinct patterns of emotional availability in mothers reporting attributes indicative of borderline levels of personality functioning; moreover, these patterns are associated with different contextual circumstances, including perceptions of available social support, certain child behaviors, income, child age, and child gender. Understanding the contextual variables involved may be key to developing programs and support systems aimed at promoting mother and child well being, as well as improving parenting skills. The data also suggest that it may be important to involve both the mother and her child in efforts to increase emotional availability, as patterns in child emotional availability behaviors (specifically, punitive behaviors, over-responsiveness, and over-involvement) were differentially associated with cluster configurations. Using a relationship-

based approach, with the relationship (in this case, the dyad) as the basic unit for observation and intervention, may be most effective (Easterbrooks et al., 2005).

There are limited reports of parent-child interventions for high-risk populations, and interventions designed specifically for mothers with BPD and their children do not exist (Stepp et al., 2011). Attachment-based psychotherapies, such as dyadic child-parent psychotherapy (Fraiberg, Adelso, & Shapiro, 1975; Lieberman, 1992; Lieberman, Silverman, & Pawl, 2000) have been generally recommended with this population (Macfie, Fitzpatrick, Rivas, & Cox, 2008; Stepp et al., 2011). Dyadic psychotherapy aims to involve a mother and her young child in therapy together, so as to help mothers become aware of the impact of their caregiving behaviors on their child's development and link the mother's attachment themes and experiences in the past with her relationship with her child in the present, thereby improving the security of the mother-child relationship (Lieberman et al., 2000).

Another type of parent-child relationship therapy that may be useful for mothers with BPD and their children is known as "Watch, Wait, and Wonder" (WWW; Muir, Lojkasek, & Cohen, 1999; Newman & Stevenson, 2008) an intervention in which a mother is invited to follow her child's lead in playing with toys, followed by discussion with a therapist about the emotional and relational themes in the child's play. The goal of this intervention is to help the mother understand her child's behavior, as well as provide an opportunity to explore intergenerational issues impacting on her relationship with her child (Newman & Stevenson, 2008; Stepp et al., 2011). By requiring the mother to focus on the child's bids for communication, WWW aims to promote the mother's capacity to observe and reflect on the

meaning of the child's behaviors and emotional communication, theoretically improving dyadic interaction, maternal sensitivity, and reflective capacity (Newman & Stevenson, 2008).

Newman and Stevenson (2008) have described their use of the WWW intervention in a small sample of 6 mothers with BPD and their infants. Although they did not report on the outcome of the intervention, they did highlight the unique issues that should be considered when implementing this type of intervention with mothers with BPD, such as awareness of the complex issues that traumatized mothers bring to therapy and the high degree of maternal anxiety and distress that must be contained by the therapist. The authors concluded that the WWW intervention and other interventions focused on mother-child interaction represent beneficial tools for improving the relationship of mothers with BPD and their children, and should receive further research attention (Newman & Stevenson, 2008; Stepp et al., 2011).

Dyadic therapies may also target the mother's level of borderline personality functioning, such as her symptoms of affective instability, identity problems, negative relationships, and self-harming impulsivity, particularly as they relate to her degree of sensitivity and hostility in her interactions with her child. This may be a useful consideration for mothers demonstrating the nonoptimal patterns of emotional availability (intrusive hostility, passive disengagement, or inconsistency) observed in the current study. Similarly, interventions designed specifically to improve emotional availability in caregiver-child relationships, such as those designed by Biringen and colleagues (Biringen et al., 2012; Biringen et al., 2008) for use with child are professionals, may also be warranted to dyads in which the mothers have BPD or clinically elevated levels of borderline features. Finally, it has also been suggested that interventions that address parenting skills, namely psychoeducation regarding child development, consistency in

scheduling and monitoring, consistency in warmth and nurturance, and application of mindfulness-based parenting strategies, may help mothers with BPD improve their parenting behaviors and promote the positive adjustment of their children (Stepp et al., 2011)

Directions for Future Research

A developmental psychopathology perspective (Cicchetti, 1984; Cicchetti & Cohen, 1995; Sroufe & Rutter, 1984) addresses the mechanisms in the dynamic systems by which children move toward and away from health and disorder. The construct of emotional availability, and the EAS coding system, may be well suited to identify potential aspects of mother-child interaction that influence developmental trajectories (Easterbrooks et al., 2012). Further work in this area then, should look to longitudinal studies of children of mothers with BPD and/or high levels of borderline features in order to gain a better understanding of the mechanisms that may potentially mediate or moderate the pathway towards healthy child development.

Replication of the clusters found in this study is needed, both in larger samples of mothers with BPD and in community samples of women with reported borderline features. Future studies may benefit from a more comprehensive inclusion of variables pertaining to mothers' contextual circumstances, as well as consideration of other types and operational definitions of social support, such as enacted support, instrumental or material support, informational support, appraisal support, or emotional support (Edwards & Benson, 2010).

It might be fruitful to include maternal attachment information in future studies, such as the Adult Attachment Interview. It would be particularly interesting to explore whether differences in mothers' attachment representations are differentially associated with the clusters

of maternal emotional availability found in the current study. Similarly, it would be worthwhile to examine whether additional child variables, such as measures of child internalizing and externalizing behaviors, school adjustment, or child representations of self, other, and relationships are associated with clustered patterns of mother-child emotional availability.

Strengths

This study extends previous findings from Trupe's (2010) study regarding maternal BPD and emotional availability in mother-child interactions, and adds the dimensions of social support and cluster analysis. Strengths of the current study included the use of filmed and reliably coded observational data of mother-child interaction, rather than relying on self- and observer-report measures. Moreover, larger numbers of children were sampled compared with previous studies of children whose mothers have BPD. In fact, the study reported on the largest sample of children of mothers with BPD in the same developmental period to date, providing a more comprehensive overview of the parenting difficulties experienced in this group of women.

Furthermore, in addition to using categorical diagnoses of BPD assessed via clinical interview, continua of maternal borderline features were assessed using a self-report measure. Categorical diagnoses are meaningful to clinicians, but symptoms assessed on a continuum have more statistical power, can be assessed for all participants, and offer greater clinical utility to clinicians. In addition, because mother with BPD were recruited from both clinical referrals and directly from the community, the sample is widely generalizable to low-socioeconomic populations as a whole.

The current study adds to the extant literature comparing and contrasting mediating, or "support deterioration," models of social support with moderating, or "buffering," models. While many studies have examined the impact of social support on the individual functioning and treatment outcomes of women with BPD, fewer studies have examined how social support interacts with the parenting behaviors of women with BPD and maternal borderline features. The results of the present study help to fill a gap in the literature in that respect.

Likewise, the current study represents the first effort to utilize cluster analysis to identify unique dyadic patterns of mother-child emotional availability in a sample of mothers with borderline levels of personality functioning. Cluster analysis of emotional availability has received increased attention in recent years, but the present study represents the first instance of cluster analysis of emotional availability with this particular type of high-risk sample. Using this person-centered approach allowed for the capturing of specific configurations of dyadic emotional availability and their intersections with maternal borderline features and social support that, when observed together, can contribute enormously to our understanding of the ways in which mothers with borderline features engage with their children emotionally.

Limitations

Limitations of the current study include the fact that other risk factors for deficits in emotional availability, such as depression or other psychological disorders, were not controlled for. This study is unable to distinguish the degree to which social support and patterns of emotional availability are impacted by the specific symptoms of borderline pathology, or to the general presence of mental illness. Maternal depression, anxiety, or other Axis II pathology may yield convergent or divergent pathways of influence on the mother-child relationship. Second,

the current investigation relied on brief (10 minute) observations of mother and child behavior in a laboratory context, rather than natural observation of mothers and children interacting at home. Similarly, the use of a storytelling task may have elicited particular types of behaviors from both mothers and children. Thus, the results may not be fully generalizable to patterns of mother-child interaction in a natural context.

Third, the EAS (Emotional Availability Scales) used to code the interactions differs from many other measures used to analyze dyadic synchrony and responsiveness (e.g., Beebe et al., 2010; Beeghly, Fuertes, Liu, Delonis, & Tronick, 2011) by assigning a global rating for maternal and child behaviors, rather than using discrete counts or temporal coordination of behaviors (Beeghly, 2012). It may that the use of a global rating system with this particular sample missed subtle nuances in mother-child interaction or masked aspects of variation in behaviors. While there are many advantages to using the EAS and its usefulness in assessing the emotional quality of the parent-child relationship has been well demonstrated, the use of a different coding system that included specific behavioral coding may have picked up on particular group differences in behavior with these mothers and their children. Similarly, social support was only assessed using a brief (8 item) self-report scale of perceived social support from the recipient's point of view. As social support is a multifaceted construct, the use of multimodal measures of social support--including both observational and self-report data assessing perceptions, availability, and structural information about social networks from multiple perspectives—may not only enhance our understanding of the role social support plays in the lives of women with BPD, but also contribute to the strengths of interpretations made regarding mediation or moderation.

Additionally, to achieve a complete picture of the clusters and the factors associated with variations in patterns of emotional availability requires extensive knowledge about the mothers' lives. While offering some insights into characteristics of these mothers and their lives, the data is, of course, not comprehensive. In particular, further examination of the roles of other family members or partners in the home, socioeconomic stressors, aspects of child temperament, and features of mothers' own developmental history may contribute to a better understanding of the patterns in emotional availability across mothers with varying levels of borderline features.

Conclusion

A developmental psychopathology perspective makes it possible to study development in at-risk samples, such as the children of mothers with BPD, and learn more about pathways both towards and away from various disorders. The development in children of mothers who have BPD may yield insight into understanding the impact of BPD on parenting. Overall, the results of the current study indicate that maternal borderline features are significantly associated with maternal emotional availability, child emotional availability, and social support. Further, social support played both a significant mediating and moderating role in the associations between maternal borderline features and measures of emotional variability. Finally, this study stands as a first effort to highlight the unique relationships of maternal borderline features, social support, and emotional availability on the ways in which mothers with BPD engage with their children emotionally. Patterns of mother-child emotional availability emerged in the sample, demonstrating 4 distinct configurations of maternal and child behaviors depending on whether mothers were sensitive, intrusively hostile, passively disengaged, or inconsistent in interacting

with their children. These cluster structures were differentiated by maternal borderline features, social support, and the presence of significant nonoptimal child behaviors.

The usefulness of using emotional availability to examine the quality of the mother-child relationship was extended to cluster analysis of a sample of mothers with reported borderline levels of personality functioning, allowing for unique characteristics maternal and child emotional availability to be examined simultaneously. Understanding the specific behaviors within the mother-child dyad that contribute to psychopathology may help to illuminate pathways to resilience, inform the development of effective parenting support interventions, and elucidate the etiology of maladaptive interactional patterns in later child development. Following these children over time will help us to better understand the impact of maternal borderline personality features, perceived social support, and patterns of emotional availability on children's emotional and self-development, and under what circumstances problems in these areas might lead to the development of BPD.

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Appendix

Table 1. Demographic Differences between BPD and comparison groups

Variable	Whole Sample *N* = 70 *M (SD)*	BPD *n* = 36 *M (SD)*	Comparisons *n* = 34 *M (SD)*	*t*
Child Age (years)	5.37 (.90)	5.31 (.90)	5.42 (.90)	0.52
Family Yearly Income ($)	31, 841 (27, 855)	30, 018 (19, 192)	33, 664 (34, 633)	0.55
# Adults in Home	1.83 (.78)	1.83 (.79)	1.83 (.79)	.000
# Children in Home	2.47 (1.16)	2.63 (1.26)	2.31 (1.05)	1.13
				λ^2
Child Gender (girls)	50%	54%	46%	0.51
Child Minority Ethnic Background	11%	11%	11%	0.00
Mother Graduated High School	89%	83%	94%	2.26
Mother Has Partner	77%	77%	77%	0.00

Table 2. Descriptive Statistics for Emotional Availability, Maternal Borderline Features, and Nonsupport

Variable	Whole Sample *N = 70*		BPD *n = 35*		Comparisons *n = 35*	
	M (SD)	*Range*	*M (SD)*	*Range*	*M (SD)*	*Range*
Emotional Availability						
Maternal						
Sensitivity	5.23 (2.09)	1.0-9.0	4.97 (2.07)	1.0-9.0	5.54 (2.10)	1.0-9.0
Structuring	3.11 (1.13)	1.0-5.0	2.94 (1.22)	1.0-5.0	3.29 (1.03)	1.0-5.0
Intrusiveness	4.04 (1.03)	1.5-5.0	3.90 (1.09)	1.5-5.0	4.19 (0.96)	1.5-5.0
Hostility	4.08 (1.07)	1.0-5.0	3.81 (1.17)	1.0-5.0	4.34 (0.89)	2.0-5.0
Child						
Responsiveness	4.50 (1.74)	1.0-7.0	4.23 (1.90)	1.0-7.0	4.77 (1.54)	2.0-7.0
Involvement	4.51 (1.71)	1.0-7.0	4.21 (1.84)	1.0-7.0	4.80 (1.54)	2.0-7.0
Borderline Features						
Affective Instability	8.16 (6.16)	0-18	13.00 (4.12)	4-18	3.03 (2.83)	0-12
Identity Problems	7.33 (5.41)	0-18	11.38 (4.17)	4-18	3.03 (2.42)	0-9
Neg. Relationships	9.40 (5.59)	0-18	13.31 (3.38)	6-18	5.26 (4.34)	0-16
Self-Harm/Impulsivity	3.90 (4.34)	0-17	6.69 (4.36)	0-17	0.94 (1.30)	0-5
Total Borderline Features	28.78 (19.48)	1-65	44.38 (13.08)	14-65	12.26 (8.09)	1-32
Nonsupport	6.73 (6.15)	0-24	10.33 (6.26)	0-24	2.91 (2.87)	0-10

Table 3. Bivariate Correlations between Maternal and Child Emotional Availability, Maternal Borderline Features, and Nonsupport, across the sample as a whole (N = 70)

	1	2	3	4	5	6	7	8	9	10	11	12
Emotional Availability												
Maternal												
1. Sensitivity	1	.89**	.41**	.64**	.90**	.90**	-.23†	-.24*	-.33**	-.09	-.26*	-.28*
2. Structuring		1	.25**	.52**	.84**	.84**	-.22†	-.16	-.26*	-.07	-.21†	-.20†
3. Non-Intrusiveness			1	.57**	.37**	.37**	-.15	-.27*	-.24*	-.18	-.23†	-.10
4. Non-Hostility				1	.59**	.58**	-.39**	-.40**	-.48**	-.27**	-.43**	-.51**
Child												
5. Responsiveness					1	.98**	-.27*	-.24*	-.31*	-.16	-.27*	-.28*
6. Involvement						1	-.25*	-.21†	-.29*	-.07	-.24*	-.26*
Borderline Features												
7. Affective Instability							1	.88**	.77**	.73**	.94**	.76**
8. Identity Problems								1	.80**	.73**	.95**	.69**
9. Negative Relationships									1	.59**	.86**	.77**
10. Self-Harm/Impulsivity										1	.82**	.58**
11. Total Borderline Features											1	.78**
Social Support												
12. Nonsupport												1

*$p < .05$; **$p < .01$, † $p < .10$.

Table 4. Indirect Effects of Maternal Borderline Features on Maternal Emotional Availability through Social Support Using Bootstrapping Technique (N = 70; 5000 bootstrapping samples)

Variable	Effect of IV on Nonsupport	Effect of NON on DV	Total Direct Effect	Direct Effect of IV on DV	Indirect Effect, BCa 95% CI		
	a path	*b* path	*c* path	*c′* path	Point Estimate	Lower	Upper
Borderline Features							
Affective Instability	.76***	-.13*	-.10***	-.01	-.10	**-.22**	**-.01**
Identity Problems	.78***	-.11*	-.12**	-.03	-.09	**-.20**	**-.01**
Negative Relationships	.85***	-.07	-.15***	-.09	-.06	-.16	.03
Self-Harm/Impulsivity	.82***	-.14***	-.08†	.03	-.12	**-.23**	**-.05**
Total Borderline Features	.25***	-.11*	-.04**	-.01	-.03	-.06	.00

**p < .05; **p < .01, ***p < .001, † p < .10.* IV = Borderline Features; DV = Maternal Emotional Availability Composite; NON = Mediating Variable of Nonsupport. BCa CI = Bias-corrected and accelerated confidence interval. Confidence intervals containing zero are interpreted as not significant.

Table 5. Indirect Effects of Maternal Borderline Features on Child Emotional Availability through Social Support Using Bootstrapping Technique (N = 70; 5000 bootstrapping samples)

Variable	Effect of IV on Nonsupport	Effect of NON on DV	Total Direct Effect	Direct Effect of IV on DV	BCa 95% CI		
	a path	*b* path	*c* path	*c′* path	Point Estimate	Lower	Upper
Borderline Features							
Affective Instability	.76***	-.05	-.08*	-.04	-.04	-.15	.06
Identity Problems	.78***	-.07	-.08†	-.03	-.05	-.16	.03
Negative Relationships	.85***	-.03	-.11*	-.08	-.03	-.14	.07
Self-Harm/Impulsivity	.82***	-.10*	-.05	.03	-.08	**-.19**	**-.01**
Total Borderline Features	.25***	-.06	-.03*	-.01	-.01	-.05	.02

*$p < .05$; **$p < .01$, ***$p < .001$, † $p < .10$. IV = Borderline Features; DV = Child Emotional Availability Composite. BCa CI = Bias-corrected and accelerated confidence interval. Confidence intervals containing zero are interpreted as not significant.

Table 6. Hierarchical Multiple Regression Analyses Demonstrating the Moderating Effect of Social Support (NON) on Maternal Borderline Features and Maternal Emotional Availability

Predictor Variables	ΔR^2	B	β	*t*	R^2 (Adj.)	F	*df*
1. Affective Instability							
Step 1: BOR-A		-.01	-.02	-.11	.19 (.17)	8.04^{***}	2, 67
NON		-.13	-.43	-2.50^{*}			
Step 2: BOR-A	.03	.02	.06	.35	.23 (.19)	6.37^{***}	3, 66
NON		-.18	-.61	-3.01^{**}			
BOR-A X NON		.01	.22	1.63			
2. Identity Problems							
Step 1: BOR-I		-.03	-.09	-.11	.20 (.17)	8.27^{***}	2, 67
NON		-.11	-.38	-2.50^{*}			
Step 2: BOR-I	.06	-.01	-.04	-.29	.23 (.19)	7.76^{***}	3, 66
NON		-.16	-.54	-3.34^{**}			
BOR-I X NON		.02	.28	2.37^{*}			
3. Negative Relationships							
Step 1: BOR-N		-.09	-.27	-1.62	.22 (.20)	9.65^{***}	2, 67
NON		-.07	-.23	-1.36			
Step 2: BOR-N	.00	-.09	-.26	-1.24	.22 (.19)	6.34^{***}	3, 66
NON		-.07	-.24	-.99			
BOR-N X NON		.00	.01	.07			
4. Self-Harm/Impulsivity							
Step 1: BOR-S		.03	.08	.57	.20 (.17)	8.23^{***}	2, 67
NON		-.14	-.48	-3.61^{***}			
Step 2: BOR-S	.06	-.01	-.02	-.16	.26 (.23)	7.79^{***}	3, 66
NON		-.16	-.54	-4.09^{***}			
BOR-S X NON		.02	.29	2.40^{*}			
5. Total Borderline Features							
Step 1: Total BOR		-.01	-.09	-.54	.20 (.17)	8.21^{***}	2, 67
NON		-.11	-.37	-2.08^{*}			
Step 2: Total BOR	.05	.00	.03	.17	.25 (.21)	7.24^{***}	3, 66
NON		-.18	-.62	-2.96^{***}			
Total BOR X NON		.01	.28	2.11^{*}			

$^{*}p \leq .05$; $^{**}p \leq .01$, $^{***}p \leq .001$. BOR-A = Affective Instability; BOR-I = Identity Problems; BOR-N = Negative Relationships; BOR-S = Self-Harm/Impulsivity; Total BOR = Total Borderline Features; NON = Nonsupport.

Table 7. Hierarchical Multiple Regression Analyses Demonstrating the Moderating Effect of Social Support (NON) on Maternal Borderline Features and Child Emotional Availability

Predictor Variables	ΔR^2	B	β	*t*	R^2 (Adj.)	F	*df*
1. Affective Instability							
Step 1: BOR-A		-.04	-.14	-.75	.08 (.05)	2.91	2, 67
NON		-.05	-.17	-.91			
Step 2: BOR-A	.03	-.02	-.05	-.29	.11 (.07)	2.78*	3, 66
NON		-.11	-.35	-1.63			
BOR-A X NON		.01	.23	1.55			
2. Identity Problems							
Step 1: BOR-I		-.03	-.08	-.47	.08 (.05)	2.73	2, 67
NON		-.07	-.22	-1.34			
Step 2: BOR-I	.07	-.01	-.02	-.14	.14 (.11)	3.69*	3, 66
NON		-.13	-.39	-2.23*			
BOR-I X NON		.02	.30	2.30*			
3. Negative Relationships							
Step 1: BOR-N		-.08	-.22	-1.22	.09 (.07)	3.42*	2, 67
NON		-.03	-.10	-.53			
Step 2: BOR-N	.00	-.07	-.19	-.81	.09 (.05)	2.27	3, 66
NON		-.05	-.15	-.57			
BOR-N X NON		.00	.05	.28			
4. Self-Harm/Impulsivity							
Step 1: BOR-S		.03	.08	.53	.08 (.05)	2.76	2, 67
NON		-.10	-.31	-2.18*			
Step 2: BOR-S	.08	-.02	-.04	-.24	.16 (.12)	4.17**	3, 66
NON		-.12	-.37	-2.67**			
BOR-S X NON		.03	.33	2.56*			
5. Total Borderline Features							
Step 1: Total BOR		-.01	-.11	-.60	.08 (.05)	2.80	2, 67
NON		-.06	-.18	-.96			
Step 2: Total BOR	.06	.00	.02	.12	.14 (.10)	3.46*	3, 66
NON		-.15	-.45	-2.01*			
Total BOR X NON		.00	.30	2.11*			

*$p \leq .05$; **$p \leq .01$, *** $p \leq .001$. BOR-A = Affective Instability; BOR-I = Identity Problems; BOR-N = Negative Relationships; BOR-S = Self-Harm/Impulsivity; Total BOR = Total Borderline Features; NON = Nonsupport.

Table 8. Means of Maternal and Child Emotional Availability by Cluster

Variable	*Cutoff**	Sample M	*ANOVA* F (3, 66)	Cluster 1: High Functioning, Sensitive (n = 30)	Cluster 2: Low Functioning, Intrusively Hostile (n = 6)	Cluster 3: Low Functioning, Passive/Disengaged (n = 17)	Cluster 4: Low Functioning, Inconsistent (n = 17)
				M (SD)	*M (SD)*	*M (SD)*	*M (SD)*
Emotional Availability							
Maternal							
Sensitivity	4	5.23 (2.09)	72.67**	$7.20^{2,3,4}$ (1.03)	$2.08^{1,3,4}$ (0.74)	$3.50^{1,2,4}$ (1.35)	$4.71^{1,2,3}$ (0.69)
Structuring	3	3.11 (1.13)	39.29**	$4.07^{2,3,4}$ (0.69)	$1.75^{1,4}$ (0.61)	$2.09^{1,4}$ (0.69)	$2.94^{1,2,3}$ (0.73)
Non-Intrusiveness	3	4.04 (1.03)	46.85**	$4.58^{2,4}$ (0.53)	$2.33^{1,3}$ (1.13)	$4.68^{2,4}$ (0.39)	$3.06^{1,3}$ (0.64)
Non-Hostility	3	4.08 (1.07)	36.00**	$4.80^{2,3,4}$ (0.43)	$2.00^{1,3,4}$ (0.84)	$4.18^{1,2,4}$ (0.81)	$3.44^{1,2,3}$ (0.81)
Child							
Responsiveness	4	4.50 (1.74)	70.63**	$6.12^{2,3,4}$ (0.76)	$1.92^{1,3,4}$ (0.86)	$3.03^{1,2,4}$ (0.93)	$4.03^{1,2,3}$ (0.98)
Involvement	4	4.51 (1.71)	84.85**	$6.13^{2,3,4}$ (0.74)	$2.00^{1,4}$ (0.84)	$2.97^{1,4}$ (0.89)	$4.06^{1,2,3}$ (0.77)

*Scores at cutoff and below indicate nonoptimal emotional availability.
Note: Numerical superscripts indicate clusters that are statistically different from one another ($p < .05$).
**$p < .01$.

Table 9. Individual and Contextual Variable Means and Frequencies by Cluster.

Variable	F (3, 66)	*Overall Sample* (N = 70)	*Cluster 1:* (*n* = 30)	*Cluster 2:* (*n* = 6)	*Cluster 3:* (*n* = 17)	*Cluster 4:* (*n* = 17)
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Borderline Features						
1. Affective Instability	.91	8.16 (6.16)	6.87 (6.17)	10.00 (7.51)	8.41 (5.34)	9.53 (6.48)
2. Identity Problems	1.21	7.33 (5.41)	6.49 (5.95)	10.67 (5.43)	6.76 (3.70)	8.18 (5.74)
3. Negative Relationships	3.03*	9.40 (5.59)	7.90[2] (5.91)	15.00[1] (3.03)	9.94 (4.88)	9.53 (5.32)
4. Self-Harm/ Impulsivity	1.08	3.90 (4.34)	3.67 (5.15)	6.00 (4.73)	2.76 (2.46)	4.71 (4.04)
5. Total BOR	1.46	28.78 (19.48)	24.93 (21.49)	41.67 (17.66)	27.88 (14.54)	31.94 (19.71)
6. Nonsupport	2.81*	6.73 (6.15)	5.33[2] (6.34)	13.00[1] (7.90)	6.88 (4.65)	6.73 (6.15)
7. Child Age	3.09*	5.37 (0.90)	5.44 (0.91)	5.01 (0.81)	5.78[4] (0.76)	4.95[3] (0.87)
8. Income ($)	2.72†	31, 841 (27, 854)	41, 080[2] (34, 716)	10, 722[1] (5, 654)	27, 484 (22, 552)	27, 347 (16, 552)
	χ^2	*Percent for Total Sample*	*Cluster 1*	*Cluster 2*	*Cluster 3*	*Cluster 4*
7. Child Over-Responsiveness	12.95**	8.6% (*n = 6)*	0	0	29.4% (*n* = 5)	5.9% (*n* = 1)
8. Child Over-Involvement	20.46**	8.6% (*n* = 6)	0	0	35.3% (*n* = 6)	0
9. BPD Diagnosis	1.73	51.4% (*n* = 36)	43.4% (*n* = 13)	66.7% (*n* = 4)	52.9% (*n* = 9)	58.8% (*n* = 10)
10. Child Gender (girls)	6.90†	50% (*n* = 35)	40% (*n* = 12)	50% (*n* = 3)	76.5% (*n* = 13)	41.2% (*n* = 7)
11. Child Minority Ethnic Background	9.16	11.5% (*n* = 8)	10% (*n* = 3)	0	23.5% (*n* = 4)	5.9%% (*n* = 1)
11. Maternal Minority Ethnic Background	1.84	5.7% (*n* = 4)	3.3% (*n* = 1)	0	11.8% (*n* = 2)	5.9% (*n* = 1)

Note: Numerical superscripts indicate clusters that are statistically different from one another ($p < .05$).
*$p < .05$; **$p < .01$, † $p < .10$.

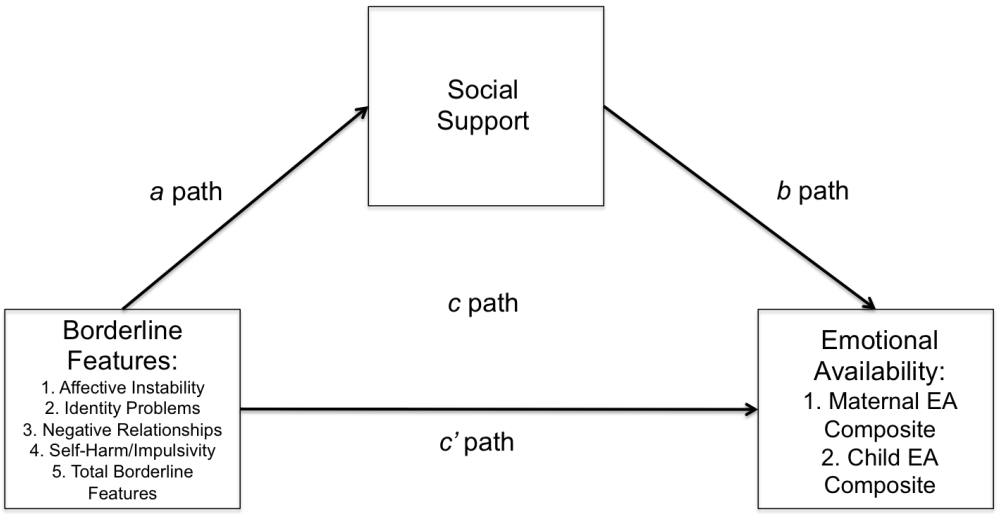


Figure 1. Hypothesized Model Demonstrating the Relationships between Maternal Borderline Features and Maternal Emotional Availability as Mediated by Social Support.

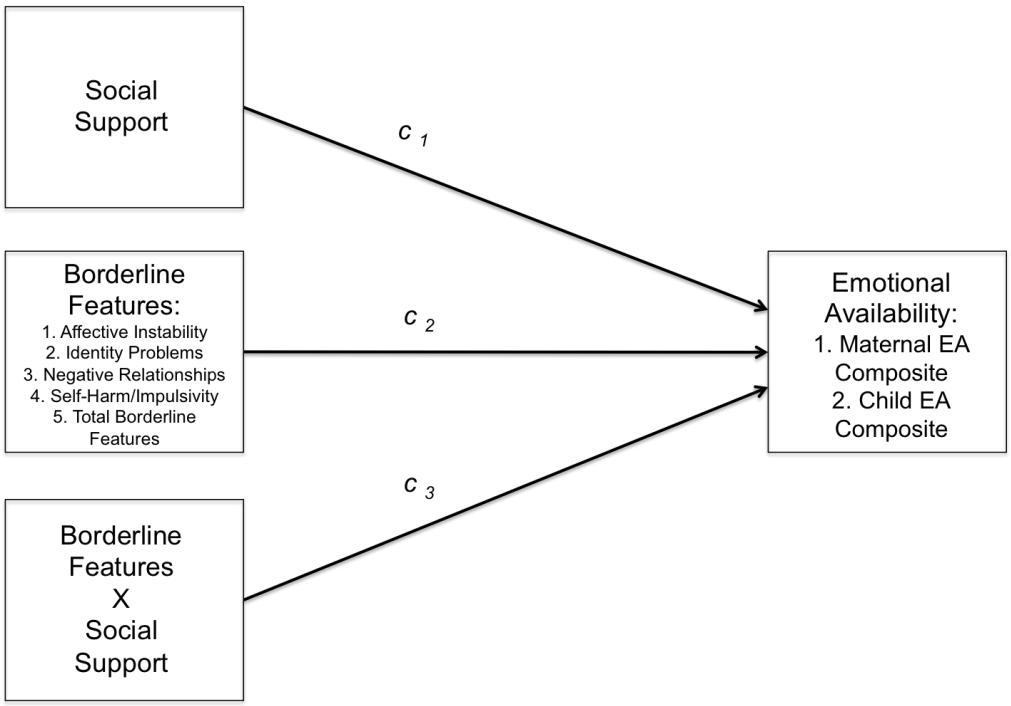
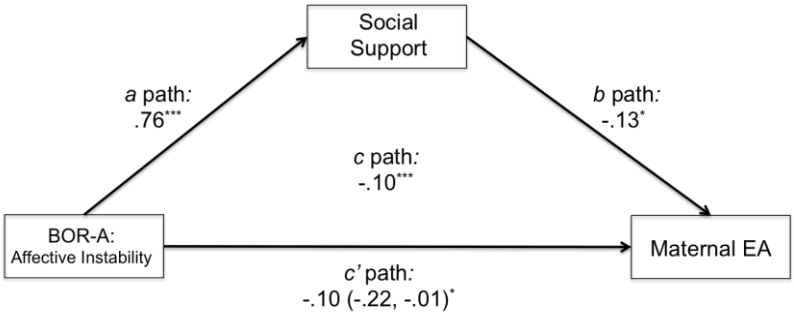
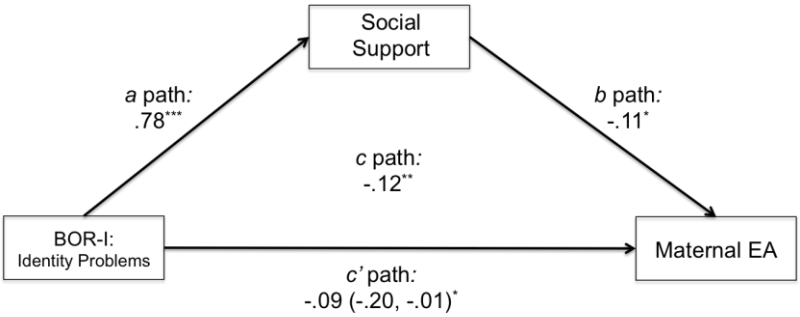


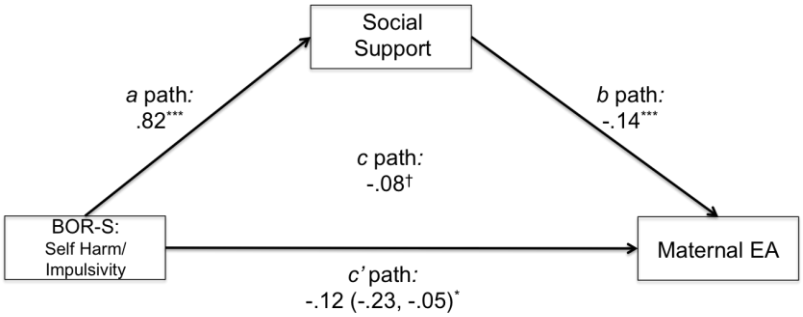
Figure 2. Hypothesized Model Demonstrating the Relationships between Maternal Borderline Features and Maternal Emotional Availability as Moderated by Social Support.



(a) Social support mediating the relationship between maternal affective instability and maternal emotional availability. Path c' displays bootstrapping point estimates with 95% confidence intervals for indirect effects. *p < .05, **p < .01, ***p < .001 † p .10

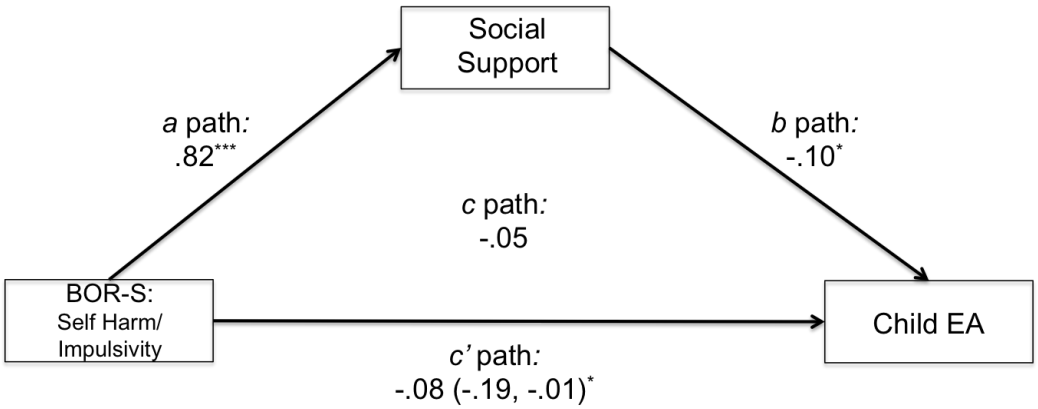


(b) Social support mediating the relationship between maternal identity problems and maternal emotional availability. Path c' displays bootstrapping point estimates with 95% confidence intervals for indirect effects. *p < .05, **p < .01, ***p < .001 † p .10



(c) Social support mediating the relationship between maternal self-harm/impulsivity and maternal emotional availability. Path c' displays bootstrapping point estimates with 95% confidence intervals for indirect effects. *p < .05, ***p < .001 † p .10

Figure 3. Standardized Regression Coefficients Demonstrating the Relationships between Maternal Borderline Features and Maternal Emotional Availability as Mediated by Social Support.



Social support mediating the relationship between maternal self-harm/impulsivity and child emotional availability. Path c' displays bootstrapping point estimates with 95% confidence intervals for indirect effects. *p < .05, ***p < .001 † p .10

Figure 4. Standardized Regression Coefficients Demonstrating the Relationships between Maternal Borderline Features and Child Emotional Availability as Mediated by Social Support.

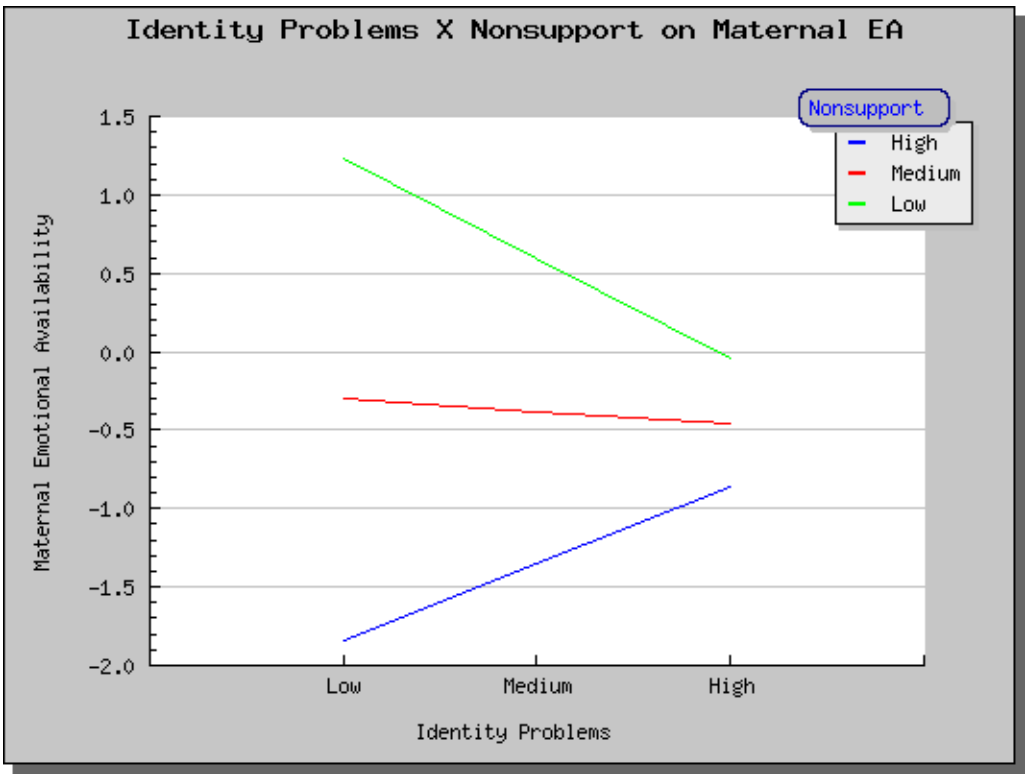


Figure 5. Interaction Effect between Maternal Identity Problems and Social Support on Maternal Emotional Availability.

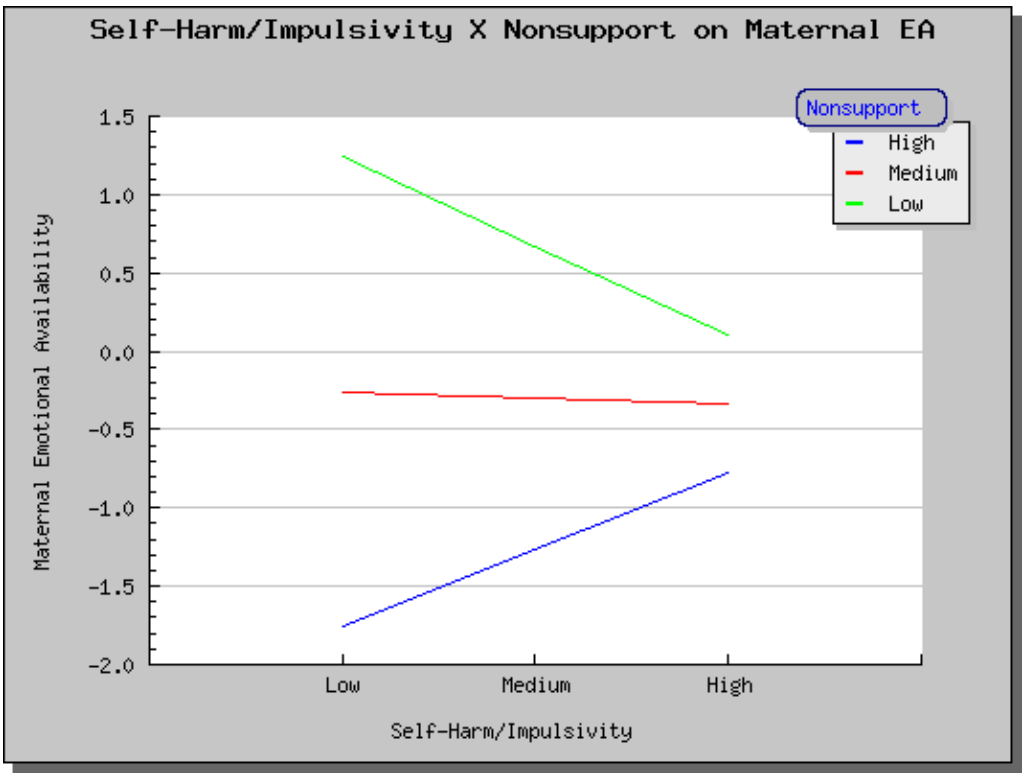


Figure 6. Interaction Effect between Maternal Self-Harm/Impulsivity and Social Support on Maternal Emotional Availability.

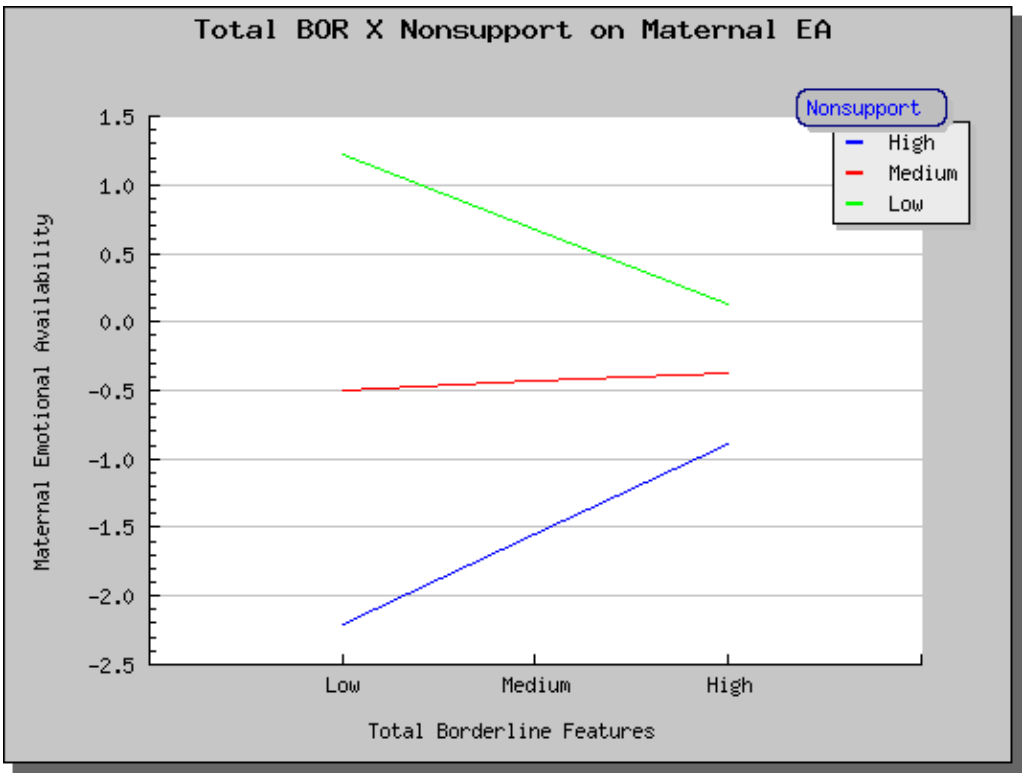


Figure 7. Interaction Effect between Total Maternal Borderline Features and Social Support on Maternal Emotional Availability.

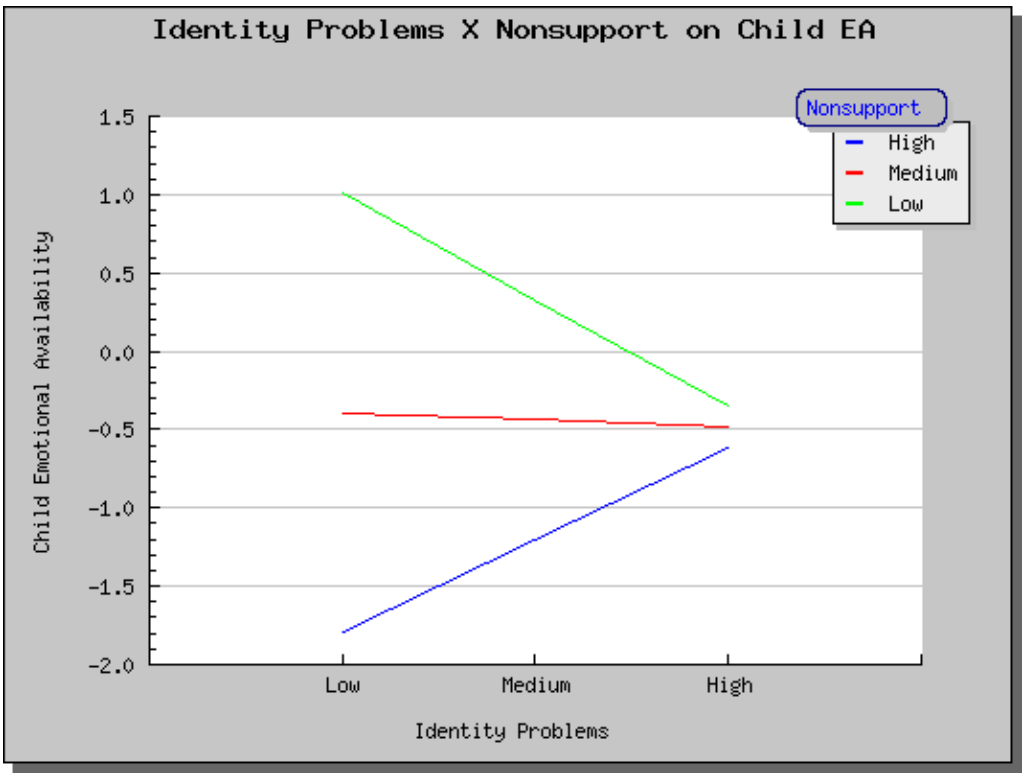


Figure 8. Interaction Effect between Maternal Identity Problems and Social Support on Child Emotional Availability.

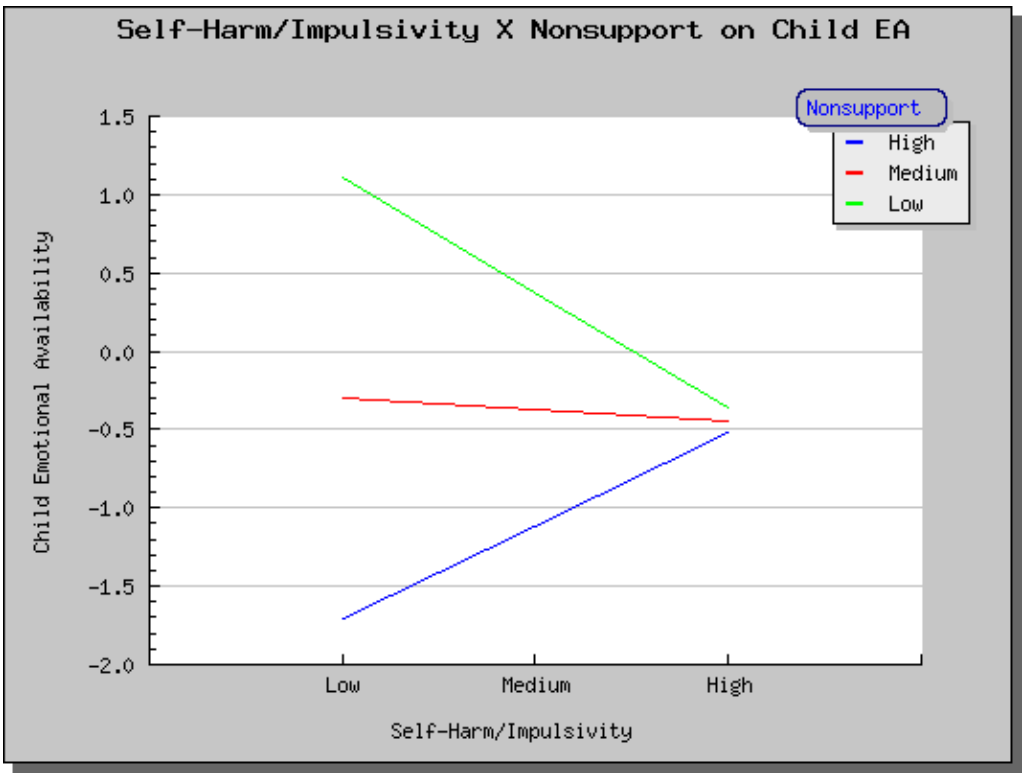


Figure 9. Interaction Effect between Maternal Self-Harm/Impulsivity and Social Support on Child Emotional Availability.

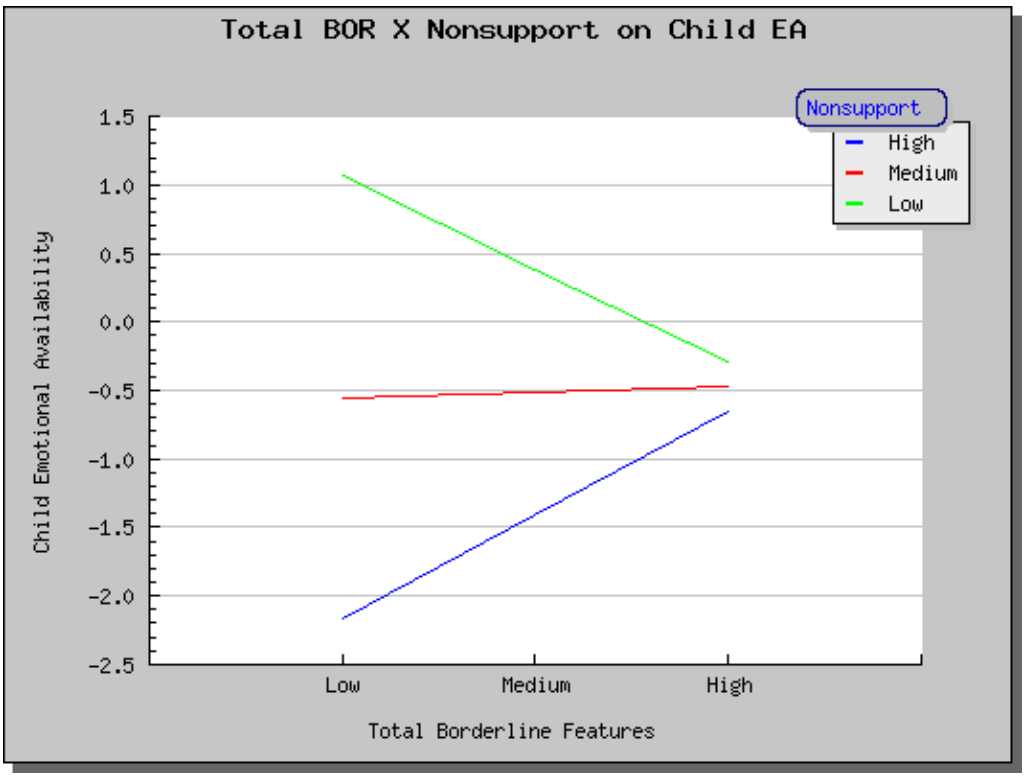


Figure 10. Interaction Effect between Total Maternal Borderline Features and Social Support on Child Emotional Availability.

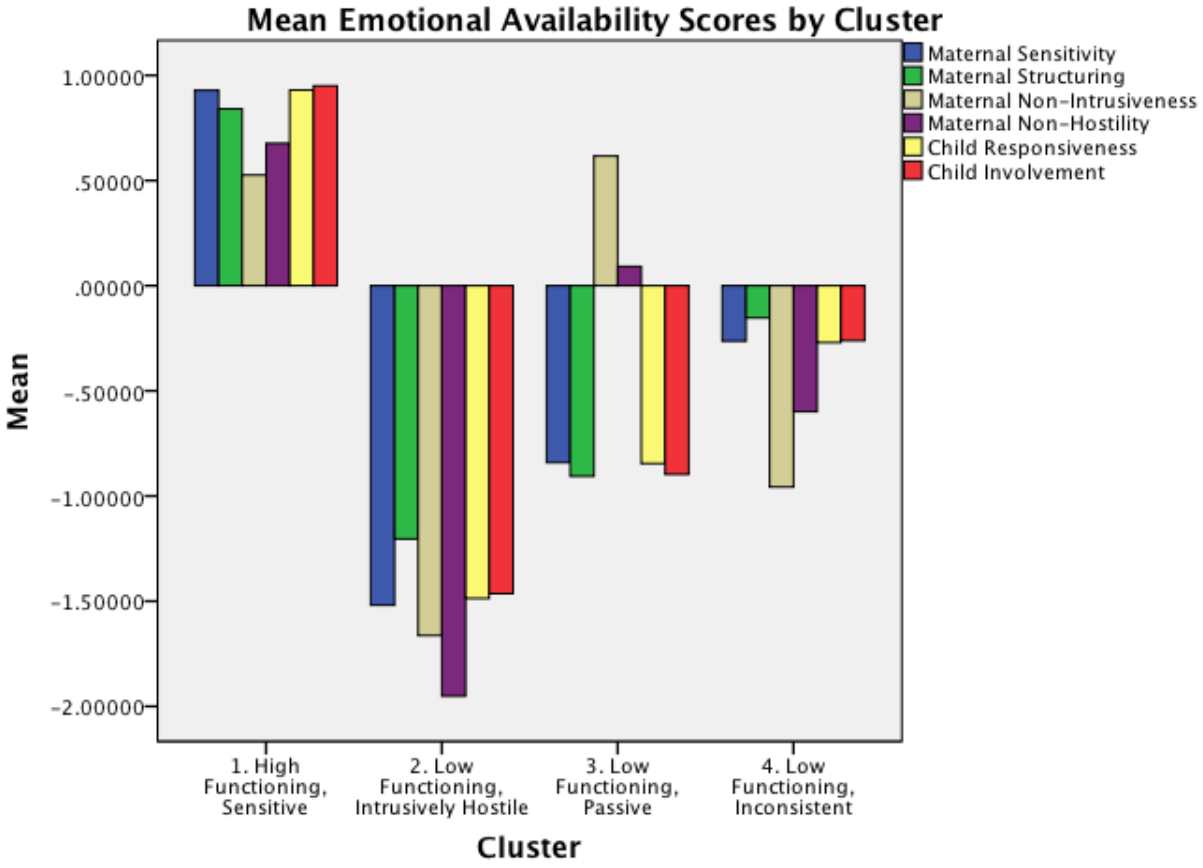


Figure 11. Mean Emotional Availability Scores by Cluster.

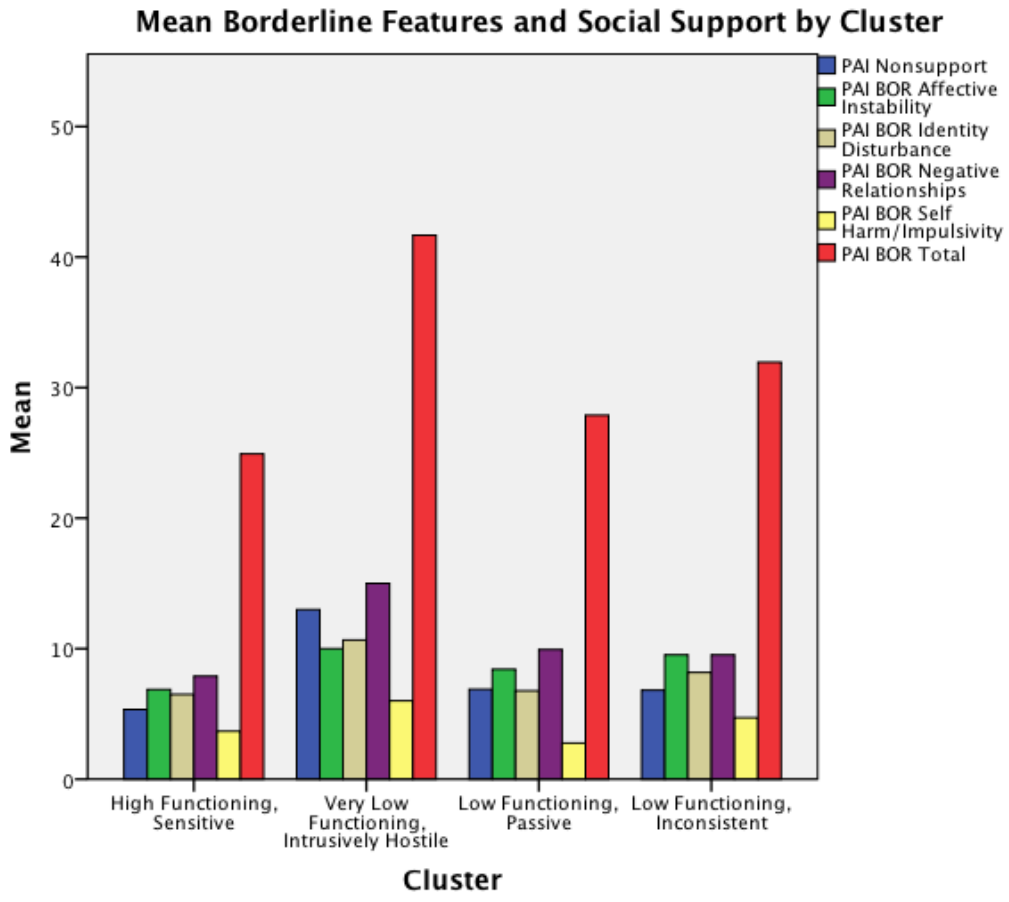


Figure 12. Mean Borderline Features and Social Support by Cluster.

Vita

Rebecca Devan Trupe graduated *summa cum laude* from the University of Georgia in Athens, Georgia in December 2005 and received a B. S. in Psychology as a First Honor Graduate. In the fall of 2006, she entered the doctoral program in Clinical Psychology at the University of Tennessee in Knoxville, TN. Since 2006 she has worked as a graduate research assistant under the supervision of Dr. Jenny Macfie, studying the effect of maternal borderline personality disorder on child development. Rebecca received her Master of Arts degree in Psychology from the University of Tennessee in December 2010. Her master's thesis examined the effect of maternal borderline personality disorder on emotional availability in mother-child interactions. In addition to her research activities, during her tenure at the University of Tennessee Rebecca worked as a graduate student clinician at the University of Tennessee Psychology Clinic, as well as Peninsula Village (an adolescent residential treatment center), and Cherokee Health Systems (an outpatient community mental health center). Rebecca will earn her Ph.D. in December 2013 upon the completion of an APA-approved clinical psychology internship at the Albany Psychology Consortium in Albany, New York.