

MATERNAL BORDERLINE PERSONALITY DISORDER FEATURES AND
MEDIATIONAL PARENTING BEHAVIORS DURING CONFLICT DISCUSSIONS

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ABSTRACT

Mounting evidence supports that mothers with personality pathology, particularly BPD, face significant challenges in parenting and have offspring at high risk for psychosocial problems. Examining how personality pathology affects real-time parent-child interactions could provide valuable implications to intervene with parents and interrupt intergenerational transmission of risk. The current study examined relations between personality pathology in mothers and parenting behaviors during a conflict discussion with children/adolescents oversampled for emotional instability (N = 56, age 10 – 13, 54% female). Using the Observing Mediational Interactions (OMI) system from the Mediational Intervention for Sensitizing Caregivers (MISC), parenting behaviors were coded for attachment-based emotional components and behaviorally anchored cognitive/mediational components. We also developed negative cognitive components to capture insensitive, hostile, intrusive, or invalidating parenting behaviors. Our primary aim was to examine relations between maternal personality pathology (assessed by measures of BPD symptom severity, pathological personality traits, and emotion dysregulation) and OMI parenting variables. While controlling for maternal depression, hierarchical linear regressions revealed that maternal BPD symptom severity was associated with lower ratings on the emotional components and greater use of negative cognitive components. Our secondary aim was to examine whether parenting sense of competence (PSOC) moderates the relation between maternal BPD symptom severity and parenting. We were surprised to find that BPD was associated with less positive mediation and more negative mediation only in mothers with moderate or high PSOC. In response, we developed a new scale by rescoring the PSOC efficacy subscale items to reflect optimal mentalizing and found that BPD was associated

with more negative mediation only in mothers with low or moderate levels of mentalizing. Taken together, findings suggest that attachment-based and negative parenting behaviors present unique challenges for mothers with BPD and should be addressed in treatment. Future research should elaborate and validate our novel negative cognitive components and consider adapting MISC for mothers with personality pathology. Additionally, although our mentalizing measure requires psychometric evaluation, we found preliminary evidence that optimal mentalizing buffers the impact of BPD features on negative parenting practices, further suggesting that interventions that target mentalizing, such as MISC, may be particularly effective for mothers with personality pathology.

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Maternal borderline personality disorder features and mediational parenting behaviors during
conflict discussions

Introduction

Borderline personality disorder (BPD) is a severe psychological disorder defined by patterns of instability in emotions, identity, and interpersonal relationships (APA, 2013). Three major theories describe BPD as a disorder characterized by problems in attachment organization, social cognition, or emotion regulation (Crowell, Beauchaine, & Linehan, 2009; Fonagy & Bateman, 2008; Fonagy, Target, Gergely, Allen, & Bateman, 2003; Linehan, 1993). Interestingly, these core problems parallel important developmental tasks of childhood: attachment formation, the development of social cognitive capacities, and self-regulatory skills. Children first address these tasks in infancy through the preschool years and each task is reworked in adolescence (Macfie, 2009). Therefore, parenting may be particularly demanding for individuals with BPD as their difficulties mirror the skills that they must model and promote in their child. Indeed, evidence supports that mothers with BPD or BPD features experience parenting as very stressful, engage in maladaptive parenting behaviors, and have offspring with high risk for developing borderline personality pathology themselves as well a variety of other psychosocial problems (Eyden et al., 2016). Research examining how parental personality pathology affects parenting and parent-child interactions would provide valuable treatment implications to reduce suffering in the parent, improve the parent-child relationship, and minimize or prevent negative outcomes in offspring. Therefore, the current study examines the relationship between parental BPD features and mediational parenting behaviors during an observed conflict paradigm with their child.

Borderline Personality Pathology in Mothers

It is well established that parental psychopathology negatively impacts parenting behaviors and offspring outcomes. Compared to other parental psychopathology, such as maternal depression, parental BPD has been largely understudied. However, recent findings suggest that parental BPD features have a significant impact on parenting and offspring development, with some evidence of an impact above and beyond comorbid depression (e.g. Abela et al., 2005; Frankel-Waldheter et al., 2015; Huntley et al., 2017; Zalewski et al., 2014). Therefore, researchers have shown increased interest in this area and parental BPD has been the focus of several recent reviews (Eyden et al., 2016; Florange & Herpertz, 2019; Laulik et al., 2013; Petfield et al., 2015; Stepp et al., 2012). In our review of the literature, we will focus on the three domains of deficits in BPD that mirror child development and parenting demands (attachment, social cognition, and emotion regulation) and create unique challenges for parents with BPD, as well as the experiences reported by parents with BPD and the transmission of risk to offspring. We then turn our focus to how borderline personality pathology affects parenting behaviors, the mechanism underlying these relationships that could be targeted in treatment, setting the stage for the current study.

Though fathers can clearly influence their child's development and it is increasingly common for fathers to be involved in childcare, there has been very little research on fathers with BPD. This may reflect gender proportions in treatment-seeking samples: the DSM-5 states that BPD is diagnosed predominantly in women (about 75%; APA, 2013), but epidemiological studies suggest that the gender ratio may be more even in the general population (Grant et al., 2008). This exclusion of fathers also reflects historical tendency of the field to focus solely on mothers. However, paternal depression has been a growing focus

of recent research, and studies report patterns that are broadly similar to those of maternal depression with paternal depression associated with approximately double the risk of child emotional and behavioral problems (Barker et al., 2017). Future research on personality pathology and parenting should examine whether findings with mothers extend to father; however, given that the sample used for the current study was dominated by mothers and we cannot meaningfully examine gender differences, this investigation will focus solely on mothers.

Attachment

Extensive evidence supports the intergenerational transmission of attachment (Verhage et al., 2016), suggesting that parents with maladaptive attachment styles or caregiver representations struggle to form secure attachment with their own offspring. Forming attachment to caregivers is a principal developmental task during the first years of life, and the quality of attachment continues to be shaped and formed by caregiver-child interactions throughout childhood (Bowlby, 1969). While early attachment theory focused on early childhood, research supports that attachment security serves a similar function during adolescence: a secure caregiver base fosters exploration and the development of cognitive, social, and emotional competence (Allen et al., 2003). During adolescence, individuals begin to strive for autonomy and enter a new social-interpersonal phase of life, with increased time spent with peers, decreased time spent with parents, and the development of romantic relationships (Allen et al., 2003). As attachment relationships are reorganized, adolescence may present another period for attachment to affect psychosocial outcomes. Indeed, studies across clinical and non-clinical samples support that attachment security in adolescence is associated with a variety of psychosocial outcomes (Moretti & Peled, 2004). Therefore,

parents who themselves have maladaptive attachment styles or caregiver representations may have particular difficulty supporting offspring through the transition to adolescence.

Given the highly interpersonal nature of the disorder, it has long been theorized that BPD features develop from and are maintained by disruptions in attachment organization (Levy, 2005). This is supported by retrospective evidence that adults with BPD report experiences of attachment disturbance as well as longitudinal findings that attachment disruption in childhood and adolescence predict later BPD symptoms, though findings are mixed when attachment was assessed in infancy (Agrawal et al., 2004; Carlson et al., 2009; Crawford et al., 2009; Lyons-Ruth et al., 2013). As reviewed by Agrawal and colleagues (2004) and consistent with more recent findings, empirical studies of attachment styles in adults with BPD features consistently support an association between BPD and insecure attachment, particularly preoccupied, unresolved, and fearful types (Agrawal et al., 2004; Bakermans-Kranenburg & van IJzendoorn, 2009; Macfie et al., 2014). This disruption in attachment organization likely affects how a parent interacts with their child and the ability to foster secure attachment. Indeed, evidence supports that offspring of mothers with BPD are more likely to display insecure or disrupted attachment as infants, children, and adolescents (Herr et al., 2008; Hobson et al., 2005; Lyons-Ruth et al., 2019; Macfie et al., 2014). This is of great concern considering the variety of poor outcomes associated with attachment disruption (Benoit, 2004). Further, given that offspring of mothers with BPD often display insecure attachment styles, difficult temperament in the child may increase the challenges of parenting. When considering how attachment organization impacts parents with BPD and the attachment they form with their child, it is important to understand underlying mechanisms.

Two of the most likely mechanisms underlying the relationship between attachment and parenting in individuals with BPD are mentalization and emotion regulation.

Mentalization

In order to effectively parent, one needs to read and reflect on their child's thoughts and emotions and then respond appropriately. This can be difficult for any parent under stress but is uniquely challenging for individuals with BPD. The mentalization-based model posits that a core feature of BPD is the reduced or unstable capacity for mentalization, the ability to reflect on one's own and others' mental states and to understand the relationships between mental states and behaviors (Fonagy & Bateman, 2008). Optimal social cognitive abilities are thought to develop from early secure attachment experiences in which the parent treats the child as an individual with a mind and is sensitive to the child's mind, thereby teaching about mental states, the self, and others (Fonagy & Target, 1997). In contrast, disrupted attachment experiences are thought to interfere with the development of social cognitive capacities, which can lead to personality pathology. The nature of social cognitive development differs based on development. During the first years of life, parents support their offspring's acquisition of theory of mind. Adolescence is marked by rapid neural growth and maturation of affective and self-identity systems, which allows for the development of mentalizing capacities. Therefore, adolescence presents another sensitive period in which parents may support or hinder social cognitive growth and affect the offspring's psychosocial development.

Hypermentalizing, defined as the over attribution of mental states to others beyond observable data, is particularly implicated in BPD (Sharp & Vanwoerden, 2015). A parent who engages in hypermentalizing with their child may often "misread" their child's mind and

conflate their own incorrect mental representation of others as reality, which can feel intrusive from the child's perspective (Luyten et al., 2017). Further, given their heightened sensitivity to interpersonal threats, substantial evidence supports that individuals with BPD are more likely to misinterpret mental states as negative, malevolent, or rejecting (Barnow et al., 2009; Domes et al., 2009; Preibler et al., 2010; Sharp & Vanwoerden, 2015; Veague & Hooley, 2014). When interpreting the thoughts and intentions of their child, this bias may lead parents to respond in a non-supportive or insensitive manner.

Recent studies in mother-infant dyads provide preliminary evidence of how mentalizing problems in mothers with BPD manifest specifically within the parenting role. In an infant emotion recognition task, 13 mothers with BPD were less able to recognize the emotions of their own and an unknown infant, and were particularly likely to label neutral faces as sad compared to 13 control mothers (Elliot et al., 2014). Another study coded mind-mindedness, an index of mentalization, during 2-minute free play interactions in a small sample of mothers with BPD ($n = 10$) and 28 healthy controls with year-old children (Marcoux et al., 2017). In that study, mothers with and without BPD referred to their infant's mental states similarly often, but mothers with BPD were 3.6 times more likely to make non-attuned mind-related comments. Therefore, the authors suggest that mentalizing problems in mothers with BPD do not reflect a general incapacity to conceive mental states but rather difficulty accurately interpreting the child's mental states. Similarly, 23 mothers with high levels of BPD symptoms perceived their infants as more angry than 76 mothers with low levels of BPD symptoms despite no actual differences in anger between infant groups (Kiel et al., 2017). Though limited by small samples, taken together, these three studies are consistent with theories of hypermentalizing and suggest that maternal BPD is associated

with tendencies to misinterpret infant's mental states, with a particular bias toward perceiving the infant's emotions as negative.

Studies with preschool-aged children also demonstrate mentalization difficulties in mothers with BPD as well as social cognitive problems in the children themselves. In a sample of 20 mothers with BPD and 20 controls with their 3-5 year old children, maternal BPD associated with fewer references to children's mental states as well as poorer levels of mental state understanding in their children (Schacht et al., 2013). Additionally, a recent study with a sample of 68 mothers oversampled for elevated BPD features and their 3-4 year old children found that maternal BPD features associated with offspring difficulties in affect perspective taking, a social cognitive skill related to mentalization (Zalewski et al., 2019).

These findings are limited by small sample sizes and an exclusive focus on infant and pre-school aged children. Future studies should examine older children, particularly parent-adolescent dyads. The transition to adolescence is a key developmental period characterized by dramatic brain changes and social cognitive growth during which mentalizing can go awry and there is high risk for the onset of psychopathology (Kessler et al., 2005; Mills et al., 2014). Therefore, understanding how mentalization affects the way parents with BPD interact with their adolescent or emerging adolescent offspring could provide important information on intergenerational transmission of social cognitive challenges and psychopathology.

Emotion Regulation

Parents who struggle to regulate their own emotions will find it particularly difficult to manage the emotions of their child and may fail to model or teach self-regulatory strategies. Linehan's biosocial model (1993) posits that BPD is primarily a disorder of

emotion dysregulation. Like mentalization, emotion regulation begins to develop within the context of attachment and supportive parent-child experiences (Cassidy, 2008). Secure attachment allows an infant to express distress freely with the expectation that the caregiver will respond supportively (Gratz et al., 2014). Supportive emotion socialization, the ability to respond adaptively to a child's emotions, requires adaptive parental emotion regulation whereas unsupportive responses to a child's negative emotions associate with maladaptive emotion regulation strategies (Eisenberg, Wetzel, & Harris, 1998; Kim, Capaldi, Pears, Kerr, & Owen, 2009). Therefore, the difficulty that mothers with BPD face in regulating their own emotions may lead to maladaptive responses to their child's emotions. Consistent with this, a recent study found that maternal BPD symptoms indirectly related to unsupportive (putative/minimizing) emotion socialization through maternal emotion dysregulation (Kiel et al., 2017). Like attachment and social cognition, emotion regulation is developed first in early childhood, with behavioral self-regulation skills during the preschool period, and then reworked in adolescence due to the need to manage increased impulsivity and risky behaviors, suggesting key developmental periods for disrupting intergenerational transmission of risk to offspring of mothers with BPD (Macfie, 2009; Sroufe et al., 2005)

Studies with offspring of varying ages suggest that emotion dysregulation plays a role in the maladaptive parenting behaviors of individuals with BPD, as well as the transmission of related difficulties to their offspring. For example, maternal borderline pathology had an indirect effect on emotion regulation difficulties in 12 to 23-month-old infants through maternal emotional regulation (Gratz, 2014). Infants of mothers with BPD appear to be more dependent on self-regulatory behaviors to stabilize their own affect, indicating emotion regulation problems. In a sample with infants that were only 3 months old, offspring of

mothers with BPD displayed more non-autonomic self-regulation in a still-face paradigm, which was hypothesized to result from mother's failure to regulate the child and is consistent with earlier studies using this paradigm (Apter et al., 2017; Crandell et al., 2003). Similar findings extend through childhood and adolescence. Coded puzzle solving interactions of 31 mothers and their 4-7 year old offspring and 31 normative comparisons revealed a significant relationship between maternal BPD and child self-regulatory problems (Macfie et al., 2014). Disrupted self-regulation strategies were also reported in a sample of 28 14-17 year old offspring of mothers with BPD compared to 28 controls (Frankel-Waldheter et al., 2015). In a large community sample of 15-17 year old girls and their biological mothers, maternal BPD associated with low self-control and negative affectivity in daughters and maternal affective and behavioral dysregulation uniquely accounted for maladaptive parenting behaviors (Zalewski et al., 2014).

Parenting Experiences

Parenting can be a stressful and demanding responsibility regardless of psychopathology, but it presents unique challenges for mothers with BPD features given that the demands of parenting mirror their domains of difficulty. The effects of BPD and parenting appear to be bi-directional: the role of parenting exacerbates stress in the parent, while symptoms of BPD negatively affect parenting. Though further research is needed, a few studies document the challenges mothers with BPD face from their own perspective. For example, compared to a community sample of mothers, mothers with BPD reported feeling less competent, less satisfied, and more distressed in their parenting role (Newman et al., 2007). More recently, Zalewski and colleagues (2015) coded qualitative data from focus groups on parenting experiences with 23 mothers in treatment for BPD and found that the

most prominent theme across discussions surrounded worry, guilt, and uncertainty, and that some did not realize that it is normative for all mothers to experience these feelings to some degree. This stress and low self-efficacy further highlights mothers with BPD as a group in need of intervention.

Given the severe functional impairment associated with BPD, these mothers are also likely to be in psychosocial contexts that further inhibit effective parenting (Gunderson, 2011). Women with BPD are more likely to be single, separated, or divorced, and they face higher risk of abuse when married, making them more likely to lack support from a co-parent (Chen et al., 2004; Skodol et al., 2002). Combined with frequent hospitalizations and difficulty in occupational functioning, mothers with BPD may have limited social and financial support that exacerbate parenting difficulties.

Transmission of Risk to Offspring

Offspring of mothers with BPD appear to be at high risk for a variety of negative psychosocial outcomes across development. Studies document intergenerational transmission of BPD features, with associations between maternal and offspring BPD symptoms in adolescents and adults (Barnow et al., 2013; Stepp et al., 2013; Weiss et al., 1996). Additionally, children of mothers with BPD demonstrate heightened risk for other psychopathology including depression (Abela et al., 2005; Barnow et al., 2006; Herr et al., 2008), externalizing problems (Barnow et al., 2006; Bertino et al., 2012), and substance use disorders (Kerr et al., 2018). For example, in a community sample, maternal BPD symptoms assessed when offspring were 15 years old significantly predicted offspring BPD symptoms and general psychopathology at age 20 (Barnow et al., 2013). Maternal BPD exhibits multifinality as a risk factor, meaning that it results in a variety of developmental outcomes.

This makes sense given that insecure attachment, social cognitive challenges, and self-regulatory problems appear early in the development of offspring of mothers with BPD and are each associated with BPD as well as other psychopathology.

Parents do not need to meet the diagnostic threshold of BPD symptoms to infer risk to offspring. Consistent with findings that even low levels of BPD symptoms are associated with significant impairment (Zimmerman, Chelminski, et al., 2012), sub-threshold maternal BPD associates with poor offspring outcomes. For example, in a large sample of outpatient parents with major depression, offspring of parents with at least one BPD feature exhibited significantly greater risk of depression and substance use disorders (Kerr et al., 2018). Though genetics obviously contribute to intergenerational transmission of risk, maladaptive parenting behaviors are another important factor that could be targeted in treatments. This is supported by evidence that mother-child interactions mediate the transmission of BPD features to offspring (Reinelt et al., 2014). As postulated by Zalewski and colleagues (2017), parents with psychopathology may be one of the greatest prevention targets in the field of public health.

This should not be interpreted as blaming parents. It is clear why the symptoms of BPD would make parenting very challenging. Further, there is no evidence that these mothers lack a desire to care for their child. Even when engaging in maladaptive parenting behaviors such as overprotection, mothers with BPD report doing so out of a concern for their child's health and safety (Elliot et al., 2014; Reinelt et al., 2014; Zalewski et al., 2015). These mothers do not lack the intention to parent effectively, they lack the tools to parent effectively. While avoiding blame, researchers and clinicians need to recognize that

maternal BPD is a major risk factor for offspring outcomes and that parenting behaviors are mechanisms of risk that could be addressed in treatment.

Maternal BPD Features and Parent-Child Interactions

Studies of how parental personality pathology affects parenting behaviors provide opportunities to identify mechanisms involved in the transmission of risk as well as targets that can be addressed in treatment. Taken together and withstanding some inconsistencies between studies, findings from self-report and interaction-based studies suggest that mothers with BPD or sub-threshold BPD symptoms are less sensitive, more intrusive, more controlling, more overprotective, more hostile, and less engaged than control mothers, and interactions with offspring are less satisfying and are characterized by higher rates of role-reversal, boundary confusion, and fearful or hesitant behavior (Barnow et al., 2006; Elliot et al., 2014; Frankel-Waldheter et al., 2015; Herr et al., 2008; Reinelt et al., 2014; Zalewski et al., 2014). Inconsistent parenting characterized by oscillations between over involvement (overprotection, psychological control, and inhibiting autonomy) and under involvement (hostility, disengagement, and lack of sensitivity) appear to uniquely characterize parenting styles associated with BPD compared to other disorders (Frankel-Waldheter et al., 2015; Zalewski et al., 2014). We will review findings from studies using interaction paradigms in greater detail as they provide higher ecological validity and opportunities to identify clinically relevant treatment targets than studies using self-report measures. Given the scope of the current study, we focus on parenting behaviors and overall interaction quality, rather than offspring behaviors.

Infants

The majority of studies on parental BPD using interaction paradigms have been with mother-infant dyads. Taken together, mothers with BPD appear to be less sensitive, less structuring, and more intrusive when interacting with their infants. In one of the first studies in this area, a sample of 8 mothers with BPD and 12 control mothers engaged in 2 minutes of face-to-face free play, followed by a 90 second still-face procedure, followed by another 2 minutes of face-to-face play with their 2-month old infants (Crandell et al., 2003). Researchers found that mother-infant dyads in the BPD group displayed more intrusively insensitive behaviors in both free play interactions and that free play interactions following the still-face were rated as less satisfying for the dyad as a whole. Similarly, in dyads with 12-month-old infants, 10 mothers with BPD were rated as more intrusively insensitive during 2-minute free-play than 22 mothers without BPD (Hobson et al., 2005). Newman et al. (2007) coded 10 minute free-play interactions of dyads with infants aged 3-36 months using the emotional availability scale and found that mothers with BPD (n=14) were less sensitive and less structuring in their interactions than 20 healthy community control mothers (n=20). Another study compared free-play mother-infant interactions between mothers with BPD only (n = 17), mothers with both BPD and MDD (n = 20), mothers with MDD only (n = 25), and healthy control mothers (n = 25; White, Flanagan, Martin, & Silvermann, 2011). They found that mothers with BPD (with and without MDD) used less touch, smiled less often, and engaged in less game playing than mothers with only MDD or healthy controls and that mothers with BPD without MDD engaged in less imitation than the other groups.

To examine relationships between maternal BPD features and responses to infant distress, Keil and colleagues (2011) analyzed the most infant distress inducing episode (the second reunion episode) of the Strange Situation paradigm in a sample of 99 mothers (23

with clinically relevant features of BPD) and their 12 to 23-month-old infants. Mothers with high levels of BPD features displayed less positive affect in response to infant distress and behaved increasingly insensitively as infant distress persisted, a pattern that was not observed in mothers without borderline personality pathology. Moreover, infant distress decreased with maternal positive affect and increased with insensitive behaviors, highlighting the impact of maladaptive parenting. Another study analyzed the reunion episode of a still-face paradigm and found that mothers with BPD ($n = 19$) smiled less often and behaved more intrusively with their 3-month old infants when compared to 41 control dyads (Apter et al., 2017).

Studies have also found that mothers with BPD tend to have more disrupted and less coherent communication with their infants. Delavenne and colleagues (2008) used acoustic audio analyses to compare the communication of 17 mothers with BPD and 17 control mothers during one minute of free play. In contrast to prior findings that maternal depression is associated with a fewer vocalizations, they found that mothers with BPD did not differ in quantity of vocalizations but in quality of vocalization. Specifically, they found that mothers with BPD communicated in ways that were less attuned to the infants' needs and to the rhythm of the interaction, with vocalization patterns that appeared incoherent and fragmented by long pauses, interrupting the flow of the interaction (Delavenne et al., 2008). Another study coded maternal behaviors during separation-reunion episodes of the Strange Situation test and found that mothers with BPD ($n = 13$) displayed more disrupted affective communication and frightened/disoriented behavior than mothers with depression ($n = 15$) or healthy controls ($n = 31$; Hobson et al., 2009).

Children and Adolescents

Though results are less consistent, studies of parental BPD using interaction paradigms with older children generally align with infant studies. In a study with parents and preschool aged children with behavioral problems, 182 mother-child dyads completed a play task, a clean-up task, and a forbidden object task (coded for warmth, negative affect, and laxness) and both mother and father-child (n=126) dyads audio-taped “challenging” interactions at home (coded for warmth and negative affect; Harvey, Stoessel, & Herbert, 2011). Maternal BPD symptoms negatively correlated with warmth and positively correlated with negative affect during the video and audio-recorded interactions, but these relationships did not remain after controlling for other maternal psychopathology. In an examination of how personality pathology affects social communication and responsiveness during parent-child interactions, a community sample of mother-child dyads (n = 111) and father-child dyads (n = 113) participated in three 4-6 minute structured tasks with their children aged 3-6 and videos were coded for the quantity and quality of the parents responses to “bids” (an overture or signal that had the potential for response; Wilson & Durbin, 2012). Higher levels of parental borderline personality pathology were associated with lower quality of responses to bids, suggesting that parents with BPD pathology have more difficulty responding appropriately to signals for attention from their child.

Macfie and colleagues (2017) coded 10-minute puzzle solving interactions using the Qualitative Ratings of Parent/Child Interaction at 54 months (Cox, 1997) in 36 mothers with BPD and 36 normative comparisons with children age 4-7. Similar to findings with infants, mothers with BPD displayed less sensitive, more hostile, and more fearful/disoriented behaviors when interacting with their children. Additionally, mothers with BPD were less likely to provide autonomy support and more likely to engage in role reversal during the

puzzle solving task. Another recent study compared levels of emotional availability in 88 mothers with remitted MDD, 28 mothers with BPD and remitted MDD, 8 mothers with only BPD, and 54 healthy controls during 15 minutes of free play followed by a 6-minute puzzle solving task with their 5-12 year old children (Kluczniok et al., 2018). In this study, mothers with BPD showed increased hostility with their children, and hostility mediated maternal BPD and child psychopathology.

Relations between maternal BPD and parenting behaviors in mother-adolescent dyads have recently been examined by coding problem-solving interactions in which the dyads attempt to resolve issues that they identified as conflicts in their relationship. For this research, the sample consisted of 28 mothers with BPD, 28 normative comparisons, and adolescents aged 14 – 18. Frankel-Waldheter and colleagues (2015) coded the problem-solving interactions using the Autonomy and Relatedness Coding System (Allen et al., 2003) and found that while controlling for MDD, mothers with BPD were more likely to inhibit relatedness, less likely to promote relatedness, and more likely to inhibit autonomy, but no differences were found in levels of autonomy promotion. Moreover, their reduced tendency to promote relatedness was driven by a lack of validation of the adolescent, while inhibition of relatedness was driven by hostility, and inhibition of autonomy was driven by an over personalization of disagreements and pressuring the adolescent to agree without providing a rational explanation. Using the same sample, Mahan and colleagues (2018) coded the interactions with the Psychological Control Scale – Observer Report (Barber, 1996) and found that mothers with BPD used more total psychological control and that all maternal BPD features significantly associated with psychological control.

Summary and Limitations

Taken together, studies using interaction paradigms support that mothers with BPD features behave in ways that are less sensitive, coherent, responsive, supportive, and structuring, and more hostile, intrusive, fearful/hesitant, and controlling when interacting with offspring across ages. These findings generally align with self-report studies. Studies using maternal or adolescent report consistently suggest that mothers with borderline personality pathology act in ways that are either overprotective or under-involved with their infant (Elliot et al., 2014) and adolescent offspring (Barnow et al., 2006; Reinelt et al., 2014; Zalewski et al., 2014). Additionally, self-report studies support associations between BPD and hostile parenting, measured by self-report in mothers of infants (Elliot et al., 2014) and adolescent-perceived hostility and harsh punishment (Frankel-Waldheter et al., 2015; Herr et al., 2008; Zalewski et al., 2014). Self-report measures of intrusiveness and warmth have been less consistent with findings from observed interactions: Zalewski et al (2014) failed to find significant associations with maternal intrusiveness reported by adolescent report, Barnow et al. (2006) found that adolescents did not perceive mothers with BPD as less warm than mothers with depression or healthy controls, and no associations were found between adolescent-reported maternal warmth in community samples in unadjusted analyses (Reinelt et al., 2014) and after controlling for demographic covariates (Herr et al., 2008).

Despite growing interest in this area over the past two decades, there are many knowledge gaps to be addressed by future studies. Only two papers examine in-vivo interactions in dyads with adolescent offspring and both were conducted in the same sample (Frankel-Waldheter et al., 2015; Mahan et al., 2018). No studies have examined early or emerging adolescents, which would be particularly valuable considering that adolescence is a

sensitive period for the development of BPD (Sharp et al., 2018). Additionally, studies would benefit from a dimensional rather than categorical approach given that subthreshold BPD features are clinically relevant and associated with offspring risk (Kerr et al., 2018; Zimmerman, Chelminski, et al., 2012), dimensional approaches correlate more highly with indices of external validity, and the shift in PD research toward dimensional conceptualizations. The majority of prior research in this area measured BPD using traditional, DSM-IV based methods. With the introduction of the alternative model of personality disorders (AMPD) in Section III of the DSM-5 (APA, 2013), future work should incorporate modern conceptualizations of personality pathology. Furthermore, some studies contained risk of exposure bias because coders of interaction paradigms were not blind to the mother's diagnosis.

Future research would also benefit from alternative methods for assessing parent-child interactions. Previous studies have largely used either attachment-based (e.g. strange situation paradigm) or coding systems grounded in behaviorist traditions. Though attachment is clearly relevant to studying personality pathology and parent-child variables, representational measures can be susceptible to interpreter bias and do not provide a clear picture of the fine-grained, molar level of the interaction. By coding moment by moment interactions, researchers can more readily identify when and how parents engage in certain parenting behaviors. Therefore, a coding system that integrates attachment as well as moment-to-moment, behaviorally anchored measures would be best suited for this research. Furthermore, the relationship between maternal BPD features and mentalizing is largely understudied, particularly in mothers with older offspring. The mentalization theory of BPD extends to theories of epistemic trust, explaining how openness to learning with your

caregiver is key to the resilience against developing BPD. Therefore, an approach that operationalizes the process of fostering epistemic trust would be a particularly valuable future direction. To enhance ecological validity, the paradigm should reflect a common and naturally occurring interaction rather than behaviors produced by the lab environment. Additionally, researchers should assess parenting in a way that is connected with intervention and able to directly identify treatment targets.

The Current Study

Against the background of the above research, we chose to examine relationships between maternal personality pathology and parenting behaviors during a conflict paradigm with offspring age 10 to 13. This is a particularly important age-group to examine given that pre- and emerging adolescents have been largely unstudied in research on parental personality pathology and that adolescence is a sensitive period for the development of personality pathology (Sharp et al., 2018). Therefore, identifying maladaptive interactions in dyads with pre-adolescent or adolescent offspring may be particularly informative for prevention and intervention.

The Conflict Paradigm

We chose to examine parent-child interactions during conflict discussions due to the salience for parent-child relationships in general and for parents with personality pathology in particular. All families experience conflict and parent-child conflicts increase during early adolescence as teenagers' strive for autonomy (Pinquart & Silbereisen, 2002). Though high rates of parent-child conflict are associated with poor outcomes including child internalizing and externalizing psychopathology (Burt et al., 2005; Marmorstein & Iacono, 2004) and lower psychosocial functioning (Overbeek et al., 2007), parent-child conflict is not inherently

negative. Conflict provides opportunities to express concerns and address problems that one has with the other individual or the parent-child relationship (Laursen & Collins, 1994).

Regarding the relevance of a conflict paradigm to parental personality pathology, symptoms of BPD are reactive to stress, particularly when the stressor is interpersonal (Zimmerman & Choi-Kain, 2009). For example, in young adults with and without BPD and their mothers, the BPD group showed a higher overall cortisol response and this was modulated by their perceived quality of parental protection during an interaction (Lyons-Ruth et al., 2011). Additionally, social stressors can detrimentally affect social cognitive abilities in individuals with BPD, increasing their negative evaluations about others and further increasing the tendency to hypermentalize (Deckers et al., 2015). Interpersonal conflict also relates to emotion regulation. Interpersonal contexts are the most common and most potent triggers of emotions and individuals with BPD likely experience even greater difficulty in regulating their emotions when faced with interpersonal, particularly attachment-related, threats (Eisenberger et al., 2006; Gross et al., 2006). Therefore, parents with borderline personality features who are able to engage in adaptive parenting under some circumstances may exhibit greater challenges during conflict with their child. Lastly, examining conflict discussions could lead to implications for promoting adaptive conflict resolution and improving the parent-child relationship.

Measuring Mediational Parenting Behaviors

The MISC Model

MISC is a semi-structured, video-feedback intervention based on “reading” caregiver-child interactions. MISC stands for both the process (Mediational Intervention for Sensitizing Caregivers) and objective (More Intelligent and Sensitive/Socially Competent Children) of

the intervention. In the MISC framework, intelligence refers to the ability and need to learn readily and easily from experience, also known as flexibility of mind (Klein, 2014).

Sensitivity is described as the capacity to understand one's own and others' emotions and respond in a way that promotes the wellbeing of oneself and others. MISC was originally developed for low-resourced environments and is culturally sensitive and adaptable (Klein, 1996). While most studies have included dyads with children, MISC is transdevelopmental and has been applied and studied across a wide age range (e.g. Lifshitz et al., 2010). The year-long intervention aims to sensitize caregivers (including parents, educators, and older siblings) so that they can relate to the child in a way that will enhance the child's cognitive, socioemotional, and moral development and prepare them for future learning experiences (Klein, 1996). The protocol includes bi-weekly individual video guidance using video recordings of the caregiver-child interactions, monthly "in-service training" in which the MISC "trainer" identifies teachable moments during real-life interactions, and monthly supervision for the trainer.

Through integrating developmental theories of attachment (Bowlby, 1969) with Feuerstein's (1979) theory of cognitive modifiability and Vygotsky's (1978) theory of mediation, Klein developed the MISC model, which is visually represented as the "MISC tree" (see Figure 1). The framework describes emotional and cognitive components of caregiver-child interactions that together create a mediated learning experience (MLE). MLEs occur when the environment is interpreted for a child by a caregiver who "understands the child's needs, interests, and capacities, and who takes an active role in making components of that environment, as well as past and future experiences, compatible with the child" (Klein, Rye, 2004). Guided by attachment theory (Bowlby, 1969), the "roots" of the

MISC tree are made up of emotional and communicational components referred to as “the ABC of love.” These components include physical touch and closeness, turn-taking, eye-contact, smiling, verbal expressions, sharing of joy, reciprocity, mutual attention, and mutual engagement. Through engaging in these attachment-based behaviors, caregivers communicate messages that “it’s worthwhile to act,” “I’m with you,” and “I love you” to the child. However, Klein argues that “attachment is not enough” for learning to take place, and that the “the affectionate bond between a child and caregiver opens the gate to the child’s mental development, but does not, in itself, determine what will pass through the gate” (Klein, 1995, p. 5). The next criteria that determine whether learning will occur are the cognitive or mediational components, which form the tree’s “trunk”: focusing, affecting, expanding, rewarding, and regulating. The interaction must be intentional and reciprocal, transcend immediate needs, and be focused on conveying meaning. Together, the emotional and cognitive components of parent-child interactions affect the child’s need system and approach to future experiences, the tree’s “leaves.”

Observing Mediational Interactions (OMI)

The Observing Mediational Interactions (OMI) is the observational assessment of parent-child interactions used within MISC. The coding system quantifies both the emotional and cognitive components of the MISC framework during naturalistic caregiver-child interactions. Emotional and communicational (affective) components are each rated on a 5-point scale: smiling, physical closeness, touch, eye contact, turn taking, verbal expressions, sharing of joy mutual attention, mutual engagement, sensitivity and responsiveness, empathy, containment, synchrony, validation, adult affect, child affect, and dyad affect. Scores on these components are summed to create an overall score for the dyad. Behaviorally anchored

cognitive components are coded as they occur in each utterance throughout the interaction. Statements by both the parent and child are coded when they are either provided by the individual (provision) or requested from the other individual (request), but the current study focuses on only the parent's mediational behaviors. Each component is described below with examples parents may use during an everyday interaction (the typical setting that the OMI is applied; Klein, 1996; 2014) with their child or adolescent as well as examples that may be used during conflict discussions specifically.

1. **Focusing** (Intentionality and reciprocity): An act or sequence of acts of an adult that appears to be directed toward affecting a child's perception or behavior. The attempt to focus the child must be intentional, not accidental, and the child must show reciprocity.
 - a. *Examples:* Placing oneself in front of the child to obtain eye contact, "Do you hear that?"
 - b. *Conflict discussion examples:* "Look" while pointing to conflict task instructions, "Listen to this"

2. **Affecting** (Provision or request for meaning): A statement or behavior that expresses verbal or non-verbal significance of things, excitement, appreciation, or affect in relation to objects, animals, or people. At least one of the requirements must be met: conveys meaning, expresses excitement, identifies objects or people by name.
 - a. *Examples:* Facial expression of excitement (provision of meaning), "This is a special painting because your grandmother painted it for you" (provision of meaning), "What do you mean by that?" (request for meaning)

- b. *Conflict discussion examples:* “You and your brother have been picking on each other more often recently” (provision of meaning), “Who else gets involved in the arguments you have with your brother?” (request for meaning)
- 3. **Expanding** (Transcendence): A statement or behavior directed toward extending the child’s awareness beyond what is necessary to satisfy the immediate need that triggered the interaction. The act must meet one of the following requirements: attempt to expand the child's awareness beyond the immediate context of the interaction, attempt to connect present, past or future experiences, relate to a general, social or biological principal or process, or "tell" about things not seen or heard at the moment.
 - a. *Examples:* Talking to the child about how the certain nutrients affect your body and health while preparing dinner (provision), “How would you feel if you had been in the other person’s shoes?” (request)
 - b. *Conflict discussion examples:* “I don’t like it when I have to repeat myself over and over because it makes me feel like I am nagging you” (provision), “What do you think was going through your father’s mind when he was upset with you?” (request), “Why do you need to change your behavior at school?” (request)
- 4. **Rewarding** (Mediating feelings of competence): Verbal or nonverbal behavior that expresses satisfaction with a child’s behavior and identifies a specific component or components of the child’s behavior which contribute to the experience of success.
 - a. *Examples.* Smiling and patting child on the shoulder after they finish a difficult homework assignment, “Great job, you remembered to make your bed this morning.”

- b. *Conflict discussion examples:* “You worked really hard on that math assignment; you did really well”, “That’s a good idea! You’re doing a great job thinking through this issue.”
5. **Regulation of behavior:** Behaviors or statements that model, demonstrate, and/or verbally suggest to the child regulation of behavior in relation to the specific requirements of a task, or to any other cognitive process required prior to overt action. Regulation of behavior raises the child's awareness to the possibility of "thinking" before doing and of planning steps of behavior towards a goal.
- a. *Examples:* “First, write a list of what you need, then ask your Dad if he can take you to the store ” (provision), “What is the first thing you need to do to write this essay?” (request), “Please go get ready for school” (provision)
 - b. *Conflict discussion examples:* “ “Now, it’s time for you to tell me your opinion” (provision), “What will you do first when you get home from school?” (request)

Misses and Negative Cognitive Strategies.

Positive mediational behaviors can only be coded when they meet one of the above descriptions and when the parent is guided by the intention to teach. Additionally, reciprocity is required in order to be considered mediation; if the child does not respond to the caregiver’s initiation, the code cannot be assigned and it is instead considered a ‘missed’ opportunity to mediate (Klein, 2014). For example, if the caregiver attempts to get the child to attend to a stimulus by saying, “look here!” but the child does not look, the caregiver’s utterance would be coded as a ‘missed focus.’ The empirical basis for evaluating ‘misses’ is not well established in comparison to the positive mediational behaviors because previous studies have omitted mediational ‘misses’ from analyses. Though misses were coded in the

current study and may be evaluated in secondary analyses of our data, we do not include missed mediation as a measure of parenting behaviors in our primary aims.

In addition to positive mediational behaviors and missed mediation, negative versions of each cognitive component were developed for the current study. This is the first study to apply the OMI to a conflict discussion, rather than an everyday, play, or teaching interaction, and we expect our discussions to include greater opportunities for negative tone and utterances. Additionally, youth were oversampled for clinically significant levels of emotional instability and research supports greater use of negative parenting practices in dyads with personality pathology (Eyden et al., 2016). Negative versions of each cognitive component were assigned when a mother's utterance was insensitive, hostile, intrusive, or invalidating toward the child, aligning with previous research on parenting practices associated with BPD (Apter et al., 2017; Frankel-Waldheter et al., 2015; Kluczniok et al., 2018; Macfie et al., 2017; Zalewski et al., 2017). Though they may appear similar in structure to mediational behaviors, the tone and intention underlying negatively coded cognitive strategies create an interaction that inhibits or discourages the child from learning. For example, negative affecting could be "Obviously, you did not to finish your chores because you just don't care," "You're really making me angry [said with hostile tone]," "What did you think was going to happen? [said with hostile tone]?" These statements provide or request meaning in a way that is intrusive, insensitive, or assumes the meaning that the child would provide. Similarly, a request for expansion may ask the child "why" but in a closed way that is intrusive, presumptive, and without the intent to extend the child's awareness or learn what the child thinks (e.g. "so why does it matter to you then? [said with accusing tone].") Negative regulation often consists of harsh, insensitive commands or

demands such as “Stop bothering me”, “Chill out, don’t say that,” or “just calm down already.” Often it is necessary to assess tone and affect in addition to the statement itself to determine a negative code.

Relevance to the Current Study

Recalling our review on the roles of attachment, mentalization, and emotion regulation in personality pathology and parenting, the OMI coding system provides a clearly relevant measure for the current study. While the emotional components summarize attachment-related qualities of the interaction, the mediational components align with mentalization and emotion regulation and allow for moment-to-moment behaviorally anchored measurement of these constructs. In order to mediate a child’s learning, the parent must be aware of what the child knows and does not know and structure the interaction in a way that is matched to the child’s capacities, mental states, and needs (Sharp et al., in press). This requires the parent to step into the child’s shoes and view the child as their own psychological agent. Therefore, individuals who have problems with mentalization will likely have difficulty mediating their child’s experience. The cognitive components can also be mapped onto emotion regulation: engaging in mediated parenting behaviors requires the parent to regulate their own emotions, slow down, and match the pace of the interaction. For example, the parent must be able to *focus* themselves in order to focus their child and *regulate* their own behavior in order to model and suggest regulation to their child. Additionally, a parent who is emotionally overwhelmed during conflict will have difficulty *expanding* or transcending from their immediate situation, senses, and perspective.

In summary, we chose to measure parenting using the OMI because it is grounded in attachment but also quantifies observable parenting behaviors that support the child’s

learning. By mediating experiences with the child, which is done best from a secure attachment base, the parent establishes themselves as trustworthy, recognizes the child's subjectivity and agency, and fosters collaboration and cooperation. OMI components thereby build epistemic trust, which creates an openness to learning and mental flexibility that will allow the child to continue to adapt and learn from their social environment, protecting them from the development of psychopathology (Sharp et al., in press). This is particularly important given that children of parents with personality pathology are at high risk for developing personality pathology and a variety of other poor outcomes (Eyden, 2016). Additionally, the OMI not only provides a method to identify and understand parenting behaviors but also serves as a feedback tool in clinical settings. By using a measure with this direct connection to intervention, our research could hold great implications for treatment with this high-risk population.

Aims and Hypotheses

Aim 1. Relations between Maternal BPD Features and Observed Mediation Parenting Behaviors

The primary aim of our study was to examine associations between maternal BPD features and parenting behaviors during conflict discussions with 10 to 13-year-old children. We also tested whether maternal personality pathology negatively impacts parenting behaviors above and beyond maternal depression.

Our primary measure of maternal BPD features was the continuous symptom severity scores on the Structured Interview for DSM-IV Personality (SIDP-IV). We also measured maternal personality pathology using the Personality Inventory for DSM-5-Brief Form (PID-5-BF), which is consistent with the trait perspective and Criterion B of the Alternative Model

for Personality Disorder (AMPD; APA, 2013), and the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) given the centrality of emotion dysregulation to BPD. Parenting behaviors were measured using OMI emotional and cognitive components.

Given evidence that mothers with BPD are more likely to show disrupted attachment with offspring and interact in ways that are less sensitive, positive, and responsive, and more hostile (Kiel et al., 2011; Lyons-Ruth et al., 2019; Macfie et al., 2014, 2017; Wilson & Durbin, 2012; Zalewski et al., 2014), we hypothesized that maternal BPD features would be associated with lower scores on emotional components of the OMI. Against the background of difficulties in mentalization and emotion regulation associated with BPD, we also expected that mothers with BPD features would struggle to create mediated learning experiences with their child, indexed by their scores on the cognitive components. We hypothesized that maternal BPD features would be negatively associated with positive mediational behaviors and positively associated with the negative mediational behaviors.

Depression is highly comorbid with BPD and the associations between maternal depression and maladaptive parenting have been well-established (Letourneau et al., 2010). However, even when comparing to or controlling for maternal depression, previous research has found that maternal BPD remains associated with a variety of negative parenting behaviors (Frankel-Waldheter et al., 2015; Hobson et al., 2009; White et al., 2011; Zalewski et al., 2014) and offspring risk (Abela et al., 2005; Huntley et al., 2017). Although depression may also correlate with parenting as measured by the OMI, we expected maternal BPD to associate with the components above and beyond maternal depression because the OMI maps onto domains that are particularly implicated in BPD: attachment, emotion regulation, and mentalization.

Aim 2. Relations between Maternal BPD Features, Parenting Sense of Competence, and Mediation Parenting Behaviors

Previous studies support that mothers with BPD experience lower feelings of competence as parents, expressing guilt, uncertainty, and worry about the parenting role (Newman et al., 2007; Zalewski et al., 2015). Fostering feelings of competence and self-efficacy regarding parenting is one of the primary objectives of MISC and is thought to be integral for long-term treatment gains. The intervention includes specific strategies to ‘mediate feelings of competence’ in the caregiver including focusing only on the positive aspects of the interaction and beginning sessions by emphasizing relative strengths rather than weaknesses (Klein, 1996, p. 44). Mothers who complete MISC report feeling more competent and capable as a parent, which is thought to be crucial in determining whether a mother will continue with positive parenting strategies long term (Klein & Alony, 1993; Klein, 1996). This led us to consider whether the relation between maternal BPD features and use of OMI components differs based on the mother’s sense of competence. If this were the case, it would underscore the importance of targeting feelings of competence and self-efficacy in treatment. This would be consistent with related findings that maternal sense of competence acted as an important mechanism between personality (measured by the Five Factor Model) and parenting (de Haan et al., 2009) and as a buffer against the negative impact of maternal depression on offspring outcomes (Knoche et al., 2007). Therefore, we examined whether parenting sense of competence moderates the relation between maternal BPD features and OMI parenting variables.

Methods

Participants

Participants included 56 youth and their primary female caregivers recruited from psychiatric clinics in Pittsburgh, PA. Youth were oversampled for clinically significant levels of emotional instability. Youth were about 12 years old on average (range = 10 – 13, $M = 12.07$, $SD = .89$), and were split about evenly by gender ($n = 30$, 53.6% girls, $n = 26$, 46.4% boys). The ethnic/racial breakdown of the children was as follows: 41.1% ($n = 23$) white, 37.5% ($n = 21$) Black/African American, 3.6% ($n = 2$) Hispanic, and 21.4% ($n = 12$) multiracial.

Mothers ranged in age from 26 – 60 years old ($M = 40.11$, $SD = 7.29$). The vast majority were biological mothers (96.4%, $n = 54$) and two were adoptive parents (3.6%). Most mothers were either married/living with someone as if married (37.5%, $n = 20$) or never married (37.5%, $n = 20$), 19.6% ($n = 11$) were divorced, 5.4% ($n = 3$) were separated, and one (1.8%) was widowed. Mothers were about 58.9% White ($n = 33$), 33.9% ($n = 19$) Black/African American, 3.6% ($n = 2$) Hispanic, 1.8% ($n = 1$) Asian, and 5.4% ($n = 3$) multiracial. The breakdown of the mothers' highest level of education was as follows: 12.5% ($n = 7$) less than high school, 36.4% ($n = 20$) high school or GED, 18.2% ($n = 10$) associate's degree, 20% ($n = 11$) bachelor's degree, and 12.7% ($n = 7$) graduate degree. Regarding socioeconomic status, 31.5% ($n = 17$) of mothers reported earning a combined household income of less than \$20,000, 18.5% ($n = 10$) reported earning \$20,000 – 39,000, 22.2% ($n = 12$) reported earning \$40,000 – \$59,000, and 27.8% ($n = 15$) reported earning greater than \$60,000.

Procedure

Participants were recruited from psychiatric clinics in Pittsburgh as part of a larger study. After parents demonstrated interest in the study, youth completed self-report screeners

over the phone including the Emotional Instability (EI) subscale from the Personality Assessment Inventory-Adolescent version (PAI-A; Morey, 2007) and the McClean Screening Instrument for Borderline Personality Disorder (MSI-BPD; Zanarini et al., 2003). To ensure oversampling of severe and clinically significant levels of emotional instability, youth with scores of at least 12 on the EI screener and at least 7 on the MSI-BPD were deemed eligible for the study.

The data for the present research was collected during a 4 to 5-hour study appointment. Parents and youth completed self-report measures of psychopathology, parenting practices, and other family-related variables. Trained study staff administered structured clinical interviews individually with both the parent and child. Prior to the conflict task, youth individually reviewed common stressful topics (e.g., peer relationship problems, academic difficulties) on the Areas of Adolescent Stress Form and identified a personally relevant topic. Dyads were then reunited and asked to discuss the topic for 8 minutes while being video recorded. After the conflict discussion, dyads were asked to engage in a 5-minute debriefing discussion and plan a family vacation to end the session on a positive note.

Measures

Maternal BPD Features

Structured Interview for DSM-IV Personality (SIDP-IV) – BPD.

The BPD section of the SIDP-IV is a semi-structured interview with questions pertaining to each of the 9 DSM-IV criteria for BPD (Pfohl, Blum, & Zimmerman, 1995). Each criterion is rated on a scale from 0 - 3 (0 = not at all present, 1 = subthreshold/some evidence, 2 = present for the majority of the past 5 years, 3 = strongly present/associated with subjective distress). BPD diagnoses are obtained when at least 5 criteria are rated with a '2'

or ‘3.’ For all analyses, we used the continuous BPD severity score calculated by summing the 0 – 3 ratings for each criterion. Interrater reliability of the SIDP-IV BPD has been established in non-treatment seeking adults (Jane et al., 2006) and in clinical samples (Damen et al., 2005), with the highest estimates for continuous severity scores (e.g. $\kappa = 0.85$, ICC = .97). Validity has been supported by diagnostic correspondence with SCID-II diagnoses (Zimmerman, Dalrymple, et al., 2012), convergence with theoretically related symptom and trait measures (Glenn & Klonsky, 2013; Whiteside & Lynam, 2001), and associations of dimensional scores with suicidal ideation, hospitalization, employment, and global functioning (Zimmerman et al., 2013).

Personality Inventory for DSM-5–Brief Form (PID-5-BF).

The PID-5-BF is a brief version of the 225-item PID-5, an assessment of the pathological personality trait domains described by Criterion B of the Alternative Model of Personality Disorders in Section III of the DSM-5 (APA, 2013). The dimensional domains and respective facets are negative affect (emotional lability, anxiousness, and separation insecurity), detachment (withdrawal, anhedonia, and intimacy avoidance), antagonism (manipulativeness, deceitfulness, and grandiosity), disinhibition (irresponsibility, impulsivity, and distractibility), and psychoticism (unusual beliefs & experiences, eccentricity, and perceptual dysregulation). Participants rate how well 25 items capturing these domains describe them on a 4-point scale ranging from 0 (very false or often very false) to 3 (very true or often true). Studies show favorable psychometric properties of the full length 225-item PID-5 with appropriate internal consistency, test-retest reliability, and convergent validity with other measures of personality and other psychopathology (see Al-Dajani et al., 2016 for a review). Less is known regarding the psychometric properties of the

PID-5-BF but existing studies suggest reliability and validity estimates that are comparable to the full length PID-5 and support its use as a screening measure for maladaptive personality traits (Anderson et al., 2018; Bach et al., 2016; Fossati et al., 2017). Since the PID-5-BF does not assess at the facet-level, it does not inform specific categorical diagnoses but instead broadly describes areas of personality dysfunction. Negative affect and disinhibition are thought to be most central to BPD, but findings have been mixed using the brief version (Anderson et al., 2018). We used the total PID-5-BF average score as a secondary measure of maternal personality pathology. In the current sample, Cronbach's alpha indicated excellent internal consistency ($\alpha = .92$).

Difficulty in Emotion Regulation Scale (DERS). The DERS (Gratz & Roemer, 2004) is a 36-item self-report measure of emotion regulation. Participants rate how often each item applies to them on a scale from 1 (almost never/0-10% of the time) to 5 (almost always/91-100% of the time). The measure yields six separate subscales (nonacceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity) as well as an overall score of emotion dysregulation. The initial study of its psychometric properties support high internal consistency ($r = .93$), good test-retest reliability ($r = .88$), and adequate construct and predictive validity (Gratz & Roemer, 2004). For our analyses, we used the DERS total score, which has been shown to account for unique variance in BPD even after controlling for depression, anxiety, and negative affect (Glenn & Klonsky, 2011). In the current sample, Cronbach's alpha indicated excellent internal consistency ($\alpha = .93$).

Maternal Depression

Brief Symptom Inventory (BSI) – Depression Subscale. The BSI (Derogatis, 1982) is a short version of the Symptom Checklist 90-Revised (SCL-90-R; Derogatis, 1977) that consists of 53 items. Like the SCL-90-R, the BSI assesses 9 symptom areas: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. For each item, participants rate symptoms during the last week on a 5-point scale from 0 (not at all) to 4 (extremely). We used the depression subscale in our analyses, which is calculated as the average of 6 items that assess depressed mood, loss of interest, loneliness, suicidal thoughts, feelings of hopelessness, and feelings of worthlessness. The BSI is a widely used and well-accepted measure, with established reliability and validity (Derogatis, 1983; Derogatis & Melisaratos, 1983). The BSI depression subscale shows acceptable receiver operating curve performance for diagnosing depression with sensitivity of .76 and specificity of .77, which is comparable to the Beck Depression Inventory and the Hamilton Rating Scale for Depression (Stukenberg, Dura, & Kiecolt-Glaser, 1990). In the current sample, the depression subscale exhibited good internal consistency ($\alpha = .85$).

Parenting

Observing Mediational Interactions (OMI). The OMI (Klein, 2014) was developed to be appropriate across cultures and contexts and has been applied to dyads of a variety of child ages including infants (Klein et al., 1984; Klein, Wieder, & Greenspan, 1987; Klein, 1988), preschool children (Boivin et al., 2013a, 2013b), school-aged children (Isman & Tzuriel, 2008; Tzuriel, 1998), 9-12 year olds (Nyborg, 2011), and adults with developmental disabilities (Lifshitz et al., 2010). The reliability and validity of the OMI are supported by

high inter-rater reliability (coefficients ranging from .42 - .99), associations with cognitive abilities (Klein et al., 1987; Klein et al., 1984; Klein & Alony, 1993; Tzuriel, 1999) and, though less studied, socioemotional functioning (Shuper Engelhard, Klein, & Yablon, 2013).

For the current study, the 8-minute videos conflict discussion videos were assessed by trained raters using the OMI manual scoring guidelines (Klein, 2014). After first watching and becoming acquainted with the interaction, raters watched the interaction again with attention to emotional and affective components and scored each on a 5-point scale: smiling, physical closeness, touch, eye contact, turn taking, verbal expressions, sharing of joy mutual attention, mutual engagement, sensitivity and responsiveness, empathy, containment, synchrony, validation, adult affect, child affect, and dyad affect. These components are summed to create a total emotional component score. For the current study, we remove physical closeness and touch from the total score because dyads were instructed to sit across from each other.

Raters then watched the interaction with focus on the mediational components and tallied each positive cognitive component (focusing, affecting, expanding, rewarding, and regulating) as they occurred throughout the interaction. For the current study, negative versions of each cognitive strategy were developed and applied to statements that may seem like the respective mediational strategy but are insensitive, hostile, intrusive, or invalidating. These negative mediational strategies were also tallied for each interaction.

The OMI has been used in a variety of settings to assess every day and teaching interactions (e.g. bathing, feeding, reading, play with toys, puzzles), but has never been applied to an emotionally charged discussion. Given that this is a novel application of the measure and we do not know how often parents will use each component, our scoring

approach was guided by the frequencies of each component and only components that occur throughout a substantial portion of the interactions were included in the analyses. While most studies have examined the cognitive components separately, some created global scores by summing across components (Boivin et al., 2013; Klein et al., 2002). For aim 1, we planned to examine either individual component variables or create composite variables depending on the frequencies of each component. For aim 2, we planned to create composite variables for mediation scores to limit the number of comparisons.

Sense of Competence

Parenting Sense of Competence Scale (PSOC). The PSOC (Johnston & Mash, 1989) is the most widely used measure of parenting self-evaluations. Participants rate 17 items on a scale from 1 (strongly agree) to 6 (strongly disagree) regarding the pleasure, enjoyment, interest and sense of achievement they receive from being a parent. The measure yields a total score of parenting sense of competence as well as two subscales: efficacy and satisfaction. Studies support the psychometric qualities of the PSOC, with reports of good internal consistency ($\alpha = .75 - .80$; e.g. Janisse et al., 2009; Knoche et al., 2007), test–retest reliability (.73-.74; Gibaud-Wallston, 1977), and convergent and discriminant validity (Ohan et al., 2000). We used the PSOC total score in our analyses. In the current sample, internal consistency was good for the total PSOC score ($\alpha = .82$).

Data Analytic Strategy

All analyses were conducted in SPSS Version 25.0 (IBM Corp, 2016). To inform subsequent analyses, we first examined how often each cognitive component was coded throughout the 56 interactions. We conducted intraclass coefficients to examine interrater reliability of the OMI variables in a subset of 8 (14.3%) interactions that were coded by two

independent raters. Additionally, we examined descriptive statistics and bivariate relations among main study variables and possible demographic covariates including parent age, child age, and child gender. Pearson's correlations were conducted to examine relations among continuous variables and t-tests were used to examine differences in the OMI variables based on child gender.

Aim 1. Relations between Maternal BPD Features and Observed Mediation Parenting Behaviors

We conducted hierarchical linear regressions to examine relations between maternal BPD features and OMI parenting components after controlling for relevant demographic variables and maternal depressive symptoms. Demographic variables (parent age, child age, child gender) that were significantly related to parenting in the bivariate analyses were entered at Step 1, maternal depressive symptoms at Step 2, and maternal BPD features at Step 3. Dependent variables included the OMI emotional component sum and positive and negative cognitive variables. Only cognitive components that occurred throughout a substantial portion of the interactions were included in analyses. Given the low sample size and the potential for multiple testing, our inclusion of outcome variables was also guided by the results of bivariate analyses, such that we did not include any dependent variables that did not show associations with independent variables at the bivariate level.

Aim 2. Relations between Maternal BPD Features, Parenting Sense of Competence, and Mediation Parenting Behaviors

Moderation models were tested in PROCESS version 3.4 macro for SPSS (Hayes, 2016). The PROCESS macro uses a regression framework that bootstraps both the regression coefficient distributions and products to estimate direct and indirect effects. This has

advantages over other approaches including robustness to non-normal data. Our primary measure of maternal BPD features (SIDP symptom severity) was entered as the independent variable, parenting sense of competence was entered as a moderator, and the OMI emotional component sum and cognitive variables were tested as dependent variables. We planned to create composite scores for positive and negative mediation by summing across the categories (Boivin et al., 2013; Klein et al., 2002) if at least two categories of cognitive components were present in a substantial number of interactions. Relevant demographic covariates (parent age, child age, child gender) were included depending on bivariate relations. All predictor variables were centered.

Results

Frequencies and scoring of cognitive components

We first examined the frequencies of each cognitive component to determine which components to analyze and include in composite variables. Regarding the positive cognitive components, focusing was present (coded at least once) in 10 of the 56 interactions, affecting was present in all 56 interactions, expanding was present in 54 interactions, rewarding was present in 7 interactions, and regulating was present in 51 interactions. Therefore, only positive affecting, expanding, and regulating components were analyzed and the positive mediation composite was calculated by summing these three components. For the negative versions of the cognitive components, negative focusing was present in only 1 of the 56 interactions, negative affecting was present in 38 interactions, negative expanding was present in 10 interactions, negative rewarding was not coded in any interaction, and negative regulating was present in 22 interactions. Therefore, only negative affecting and regulating were analyzed and included in the composite variable.

Interrater reliability of OMI variables

We computed intraclass coefficients (ICC) to examine interrater reliability in a subset of 8 (14.3%) double coded interactions. Based on guidelines provided by Koo and Li (2016), analyses revealed good to excellent interrater reliability for the emotional component sum (ICC = .76, $p < .05$), positive expanding (ICC = .89, $p < .01$), and positive regulating (ICC = .92, $p < .01$). Positive affecting demonstrated moderate interrater reliability, but was not statistically significant (ICC = .62, $p = .113$). Interrater reliability was not acceptable for negative affecting (ICC = -.14, $p = .568$) and was on the cut-off point for moderate reliability, but nonsignificant, for negative regulating (ICC = .50, $p = .194$). Given these low reliability estimates, particularly for the negative components, a third independent rater was added to the study and coded each of the 8 interactions. With the inclusion of the third rater, interrater reliability remained good to excellent for the emotional component sum (ICC = .74, $p < .05$), positive expanding (ICC = .95, $p < .001$), and positive regulating (ICC = .92, $p < .001$), and increased substantially for positive affecting (ICC = .87, $p < .01$). Both negative cognitive components increased to be within acceptable to good limits with the addition of the third rater (negative affecting: ICC = .69, $p < .05$; negative regulating ICC = .82, $p < .01$).

Bivariate relations among study variables

Descriptive statistics and Pearson's correlations among main study variables are presented in table 1. The three measures of maternal personality pathology were highly correlated. BPD symptom severity as measured by the SIDP-IV showed a moderate negative correlation with the emotional component sum and moderate positive correlations with the negative cognitive composite and negative affecting but was not significantly associated with negative regulating or any positive mediation variable. Regarding secondary measures of

maternal personality pathology, neither the PID-5-BF score DERS were significantly associated with any of the OMI parenting variables. Maternal depression exhibited moderate positive correlations with all three measures of maternal personality pathology but no significant associations with any OMI parenting variables. Parenting sense of competence exhibited moderate to strong negative correlations with all three measures of maternal personality pathology and with maternal depression, as well as moderate positive correlations with the positive mediation composite and positive regulating. Older mothers were significantly more likely to engage in positive affecting, but no other significant relations were found with mother or child age. T-tests revealed no significant differences on the OMI parenting variables between dyads with male or female children (emotional component sum: $t(54) = -.43, p = .668$, positive composite: $t(54) = -1.12, p = .273$, affecting: $t(54) = -1.21, p = .231$, expanding: $t(54) = .75, p = .460$, regulating: $t(54) = -.460, p = .647$, negative composite: $t(30.56) = 1.97, p = .06$, negative affecting: $t(30.18) = 1.72, p = .100$, negative regulating: $t(37.16) = 1.91, p = .064$).

Relations between Maternal BPD Features and Observed Mediation Parenting Behaviors

We ran two hierarchical linear regression models to test relations between maternal BPD symptom severity and OMI parenting variables that were significant at the bivariate level, while controlling for maternal depression and relevant demographic variables.

Secondary measures of maternal personality pathology (PID-5-BF and DERS) were not tested as independent variables because they did not show significant associations with any of the parenting variables at the bivariate level. For both models, tolerance and the variance inflation factor (VIF) were estimated as measures of multicollinearity and were within

acceptable limits (tolerance: .71 – 1.0; VIF 1.00 – 1.40). The results of both models are presented in Table 2.

The first model predicted the emotional component sum, with maternal depression entered at Step 1 and maternal BPD at Step 2. We did not include demographic covariates because they were not significant with the emotional component sum at the bivariate level. In Step 1, the overall model was not significant, and depression did not show a significant relationship with the emotional component sum. In Step 2, the overall model was significant, and depression exhibited a significant positive relationship with the emotional component sum, while BPD exhibited a significant negative relationship with the emotional component sum. The change in adjusted R^2 values indicates a 32.5% change in the explained variance in the emotional component sum due to the addition of maternal BPD to the model, and this change was significant ($F(1,46) = 22.95, p < .001$).

For the second hierarchical linear regression, negative affecting was entered as the dependent variable, with maternal depression entered at Step 1 and maternal BPD at Step 2. Again, demographic covariates were not included due to a lack of associations with the dependent variable at the bivariate level. In Step 1, the overall model was not significant, and depression did not show a significant relationship with negative affecting. In Step 2, the overall model was significant, with a significant negative relationship between depression and negative affecting and a significant, positive relationship between BPD and negative affecting. The change in adjusted R^2 values indicate a 27.4% change in the explained variance in negative affecting due to the addition of maternal BPD to the model, and this change was significant ($F(1,46) = 18.63, p < .001$).

Parenting Sense of Competence as a Moderator

We evaluated the moderating effect of parenting sense of competence on the relations between BPD symptom severity and OMI parenting variables (emotional component sum, positive mediation composite, and negative mediation composite) through three regression models using PROCESS version 3.4 macro for SPSS (Hayes, 2016). All predictor variables were mean centered to avoid potentially high multicollinearity. No demographic variables were included as covariates due to a lack of significant associations at the bivariate level. Results of each model are presented in Table 3.

In the first model, we evaluated the moderating effect of PSOC on the relation between BPD symptom severity and the OMI emotional component sum. The overall model was significant as independent variables accounted for a significant amount of variance in the emotional component sum. Maternal BPD and PSOC both exhibited significant negative relationships with the emotional component sum but there was no significant interaction between BPD and PSOC.

The second model was identical to the first but tested the positive mediation composite as the dependent variable. Independent variables accounted for a significant amount of variance in the positive mediation composite. Neither BPD or PSOC demonstrated a significant effect but there was a significant interaction between BPD and PSOC. To understand this interaction, we conducted follow-up simple slope analyses. Figure 2 displays the relations between BPD and the positive mediation composite at low (16th percentile), moderate (50th percentile), and high (84th percentile) levels of PSOC. At low levels of PSOC, there was no significant relationship between BPD and positive mediation ($\beta = .19$, p

= .27). However, there was a significant negative relationship between BPD and positive mediation at moderate levels ($\beta = -.30, p < .05$) and high levels ($\beta = -.72, p < .01$) of PSOC.

In the third model, independent variables accounted for a significant amount of variance in the negative mediation composite. Results revealed significant positive effects of both BPD and PSOC on the negative mediation composite, as well as a significant interaction between BPD and PSOC. Follow-up simple slope analyses (see Figure 3) revealed no significant relationship between BPD and negative mediation at low levels of PSOC ($\beta = .06, p = .70$) but significant positive relations between BPD and negative mediation at moderate ($\beta = .67, p < .001$) and high levels ($\beta = 1.20, p < .001$) of PSOC.

Additional Analyses on the Moderating Role of Parenting Sense of Competence

Given the surprising results of the above moderation analyses, we chose to additionally score and analyze the two PSOC subscales: satisfaction and efficacy. For both subscales, items are each scored or reverse-scored and then summed so that higher values reflect optimal levels of satisfaction and self-efficacy in the parenting role. Upon further examination of the items within the efficacy subscale, we theorized that both high and low levels of self-efficacy as scored on this scale reflect maladaptive mentalizing, while optimal mentalizing is reflected by moderate (“somewhat disagree” or “somewhat agree” responses to items) scores on the scale. The items on the efficacy subscale include: “The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired”, “I would make a fine model for a new mother to follow in order to learn what she would need to know in order to be a good parent, “Being a parent is manageable, and any problems are easily solved,” “I meet my own personal expectations for expertise in caring for my child,” “If anyone can find the answer to what is troubling my

child, I am the one,” “Considering how long I’ve been a mother, I feel thoroughly familiar with this role,” and “I honestly believe I have all the skills necessary to be a good mother to my child.” Since only 33 (68.8%) mothers responded to item 15 (“I honestly believe I have all the skills necessary to be a good mother to my child”), we excluded this item from the subscale score. We created a mentalization-based score by recoding the remaining 6 items with “strongly disagree” and “strongly agree” as a 1, “disagree” and “agree” as a 2, and “somewhat disagree” and “somewhat agree” as a 3. We propose that higher scores on this scale reflect more optimal mentalizing. This is consistent with other measures of mentalizing that use mid-range responses of certainty to operationalize optimal reflective function including the Reflective Function Questionnaire (RFQ; Fonagy & Ghanai, unpublished manuscript) and the Reflective Function Questionnaire for Youths (RFQY; Ha et al., 2013). Descriptive statistics of the satisfaction, efficacy, and mentalizing-based scored efficacy subscales and Pearson’s correlations with other main study variables are presented in table 1. Internal consistency was acceptable for the satisfaction subscale ($\alpha = .78$) and the efficacy subscale ($\alpha = .71$) but below acceptable for the mentalization scale ($\alpha = .65$) according to guidelines by Nunnally (1978).

We first examined the moderating role of the parenting satisfaction subscale (see table 4). In predicting the emotional component sum, the overall model was significant, and results revealed a significant negative effect of BPD as well as a significant interaction between BPD and satisfaction. Follow-up simple slope analyses revealed no significant relationship between BPD and emotional components at low levels of satisfaction ($\beta = -.20$, $p = .34$) but significant negative relations between BPD and the emotional component sum at moderate ($\beta = -.61$, $p < .001$) and high levels ($\beta = -.998$, $p < .001$) of satisfaction. The model

predicting the positive mediation composite was also significant, and results revealed no significant effects of BPD or satisfaction but a significant interaction between BPD and satisfaction. Similar to results with the total PSOC score, follow-up simple slope analyses revealed no significant relationship between BPD and positive mediation at low ($\beta = .28, p = .17$) or moderate levels ($\beta = -.22, p = .13$) of satisfaction but a significant negative relation at high levels ($\beta = -.69, p < .05$) of satisfaction. Lastly, in predicting the negative mediation composite, the model was significant, and results revealed significant positive effects of BPD and satisfaction, as well as a significant interaction between BPD and satisfaction. Parallel to our findings using the total PSOC score, follow-up simple slope analyses revealed no significant relationship between BPD and negative mediation at low ($\beta = .12, p = .53$) levels of satisfaction, but significant positive relations at moderate ($\beta = .62, p < .001$) and high levels ($\beta = 1.08, p < .001$) levels of satisfaction.

We then examined the moderating role of the efficacy subscale as it is typically scored for the PSOC (see table 5). The model predicting the emotional component sum was significant, and results revealed a significant negative effect of BPD but no significant effect of efficacy or interaction between BPD and efficacy. The model predicting the positive mediation composite was not significant and included a significant negative effect of BPD but no significant effect of efficacy or interaction between BPD and efficacy. Lastly, in predicting the negative mediation composite, the model was significant and results revealed significant positive effects of BPD but not efficacy, and a significant interaction between BPD and efficacy. Again parallel to our original findings using the total PSOC score, follow-up simple slope analyses revealed no significant relationship between BPD and negative

mediation at low ($\beta = -.04$, $p = .82$) levels of efficacy, but significant, positive relations at moderate ($\beta = .48$, $p < .001$) and high levels ($\beta = 1.07$, $p < .001$) levels of efficacy.

Finally, we examined the moderating role of mentalizing scale we created by rescored the items on the efficacy subscale. The model predicting the emotional component sum was significant, and results revealed a significant negative effect of BPD and significant positive effect of mentalizing, with no significant interaction between BPD and mentalizing. In predicting the positive mediation composite, the model was not significant, and results revealed no significant effects of BPD or mentalizing, and no significant interaction. Lastly, the model predicting the negative mediation composite was significant, and results revealed a significant positive effect of BPD and a significant negative effect of mentalizing, as well as a significant interaction between BPD and mentalizing. As shown in figure 4, follow-up simple slope analyses revealed a pattern opposite to the results using the PSOC total score: a significant, positive relationship between BPD and negative mediation at low ($\beta = .68$, $p < .001$) and moderate ($\beta = .06$, $p < .01$) levels of mentalizing, but a no significant relation at high levels of mentalizing ($\beta = -.16$, $p = .33$).

Discussion

Mounting literature suggests that mothers with personality pathology, particularly BPD, experience significant challenges in parenting, engage in a range of maladaptive parenting behaviors, and have offspring at high risk for psychosocial problems (Eyden et al., 2016). Understanding how parental personality pathology affects parenting during real-time, in-vivo parent-child interactions could provide valuable treatment implications to reduce suffering in the parent, improve the parent-child relationship, and interrupt the intergenerational transmission of risk. The current study examined relationships between

maternal personality pathology and mediational parenting behaviors during a conflict discussion with 10 to 13-year-old offspring. We used the Observing Mediational Interactions (OMI) coding system to operationalize parenting based on the argument that the measure captures the core challenges and parenting demands for mothers with BPD: attachment, mentalizing, and emotion regulation. Using the OMI, parent-child interactions are rated on attachment-based emotional variables and behaviorally anchored cognitive or mediational components (focusing, affecting, expanding, rewarding, and regulating). Together, these components create ‘mediated learning experiences,’ which fosters openness to learning, mental flexibility, and resilience in the child (Sharp et al., 2020). Additionally, we developed negative versions of each cognitive component for the current study and coded them when the caregiver’s statement or behavior appeared similar in structure to positive cognitive components but was insensitive, hostile, intrusive, or invalidating, thereby inhibiting learning and mediational experiences for the child.

Against this background, our primary aim was to examine associations between maternal personality pathology and OMI parenting behaviors. We hypothesized that maternal BPD would be negatively associated with the emotional components and the positive cognitive components, and negatively associated with the negative cognitive components, and that these associations would remain while controlling for maternal depression. Based on evidence that mothers with BPD experience lower feelings of competence as parents (Newman et al., 2007; Zalewski et al., 2015) and that MISC considers promoting competence and self-efficacy to be critical mechanisms for improving parenting, our second aim was to examine whether parenting sense of competence moderates the relation between maternal BPD features and OMI parenting variables.

While the OMI is transdevelopmental and can be applied across a variety of interactions, most studies have been conducted with young children and have examined everyday, play, or teaching interactions. Therefore, we were unsure which cognitive variables would be commonly used by parents during conflict discussions with adolescents. We found that affecting, expanding, and regulating were the most frequently used positive components during the conflict paradigm and that focusing and rewarding were rarely used. Based on these frequencies, only positive affecting, expanding, and regulating were analyzed, and the positive mediation composite was calculated by summing these three components. The lack of focusing may suggest parents of adolescents are more likely to use statements that contain instructions or sequencing of behaviors, which would be coded as regulation (e.g. “Tell me about the arguments with your sister”) and that simple calls for attention that may be more common with young children (e.g. “Look at this,” “listen”). In addition, the fact that parents and adolescents are already focused through participation in an experimental task (conflict paradigm) probably precludes the need for the parent to focus the adolescent. Rewarding competence may be more common when the child is working on a more concrete task, such as in a teaching or play interaction, rather than having a discussion. Parents may also be more likely to reward competence during discussions that are not centered on conflict or in community samples without psychopathology. Regarding the newly developed negative versions of the cognitive components, negative affecting and negative regulating were most commonly used and were therefore analyzed and included in the composite variable. Negative expanding occurred in 10 interactions and negative focusing and rewarding were absent or nearly absent.

Relations between Maternal BPD Features and Observed Mediation Parenting Behaviors

At the bivariate level, maternal BPD symptom severity as measured by the SIDP-IV was negatively associated with the emotional component sum and positively associated with negative affecting. Neither the PID-5-BF nor the DERS were associated with any of the OMI parenting variables. While the SIDP-IV assesses BPD as defined by DSM-IV section II traits, recent research suggests Section II BPD traits are a strong indicator of self and interpersonal dysfunction (Clark et al., 2018) and that of all Section II PDs, BPD most strongly reflects a general personality pathology dimension (Sharp et al., 2015; Williams et al., 2018). Therefore, it is surprising that the general personality pathology measured by the PID-5-BF did not show similar results. The PID-5-BF is a relatively novel measure and has only been examined in relation to parenting variables in one recent study: Steele et al. (2020) found that in a sample of mothers oversampled for personality pathology, PID-5-BF severity was associated with greater parenting stress, lower sense of competence, and maladaptive parental reflective function, aligning with their results when using a BPD-specific measure, the McLean Screening Instrument for BPD (MSI-BPD; Zanarini et al., 2003). While research supports that emotion dysregulation is associated with maladaptive parenting behaviors in mothers with BPD (e.g. Gratz et al., 2014; Zalewski et al., 2014), the DERS may reflect trait like emotion dysregulation that does not necessarily manifest during real-time interactions, aligning with the low correlations between self-report and behavioral measures found across a variety of constructs (Dang et al., 2020). Additionally, it is possible that we would have found significant relations with a larger sample or sample with higher levels of parental personality pathology.

Consistent with our hypotheses, regressions revealed that SIDP-IV symptom severity explained a significant amount of variance in the emotional components and negative affecting beyond maternal depression. It is surprising that maternal depression did not correlate with any OMI parenting variables given the well-established associations between maternal depression and maladaptive parenting (Letourneau et al., 2010). In fact, when controlling for BPD features in regression analyses, maternal depression was associated with more adaptive parenting (i.e. higher scores on the emotional components and less use of negative affecting). However, these findings should be interpreted with caution given that it deviates from existing literature and we used a brief self-report measure of depression. Further, as our sample was not selected based on maternal psychopathology, results may differ in samples with mothers exhibiting clinically significant depression. While we do not believe that maternal depression improves parenting, low levels of maternal depression may be associated with a tendency to withdraw and show neutral rather than negative affect, thereby inhibiting the reactive, intrusive, and hostile behaviors associated with maternal BPD that may more directly impact scores on OMI parenting components. Indeed, research supports that while maternal depression is sometimes associated with excessive reactivity, it is also often associated with low reactivity, flat affect, and unresponsiveness in an effort to withdraw and avoid conflict with the child rather than suppress the child's behaviors (Dix et al., 2014).

Taken together, results suggest that the OMI, and particularly its emotional and negative cognitive components, capture aspects of parenting that are uniquely challenging for mothers with personality pathology. This aligns with our review of the existing literature and highlights attachment-based and negative (hostile, intrusive, and insensitive) parenting

behaviors as important treatment targets. While there was a negative relationship between positive affecting and BPD, it was nonsignificant, suggesting that while mothers with BPD engage in significantly more negative parenting practices, they may not engage in significantly fewer positive parenting practices. However, given that these mediational behaviors rely on a strong attachment base to create mediated learning experiences and that mothers with BPD features scored lower on the emotional components, their use of positive cognitive strategies may have a weaker impact on the child. Additionally, future research should examine whether the use of positive components differs during interactions that are less structured, such as everyday play interactions, that may not prompt the cognitive strategies as directly.

Parenting Sense of Competence as a Moderator

We found that parenting sense of competence (PSOC) moderated relations between BPD and both the positive and negative mediation composites. However, this moderation occurred in a surprising direction: BPD was associated with less positive mediation and more negative mediation only in mothers with moderate or high levels of PSOC. Mothers with low sense of competence showed a positive, though nonsignificant, relation between BPD and positive mediation, and generally less use of positive mediation. Mothers with low PSOC generally used little negative mediation regardless of BPD severity. Given these surprising results, we additionally analyzed the two PSOC subscales: satisfaction and efficacy. We found that satisfaction moderated relations with the emotional component sum, positive mediation, and negative mediation, and that efficacy moderated the relation with negative mediation with patterns that each mirrored the findings using the total score: BPD was only related to parenting when mothers with higher levels of satisfaction and self-efficacy.

In an effort to explain these results, we more closely examined the items of the PSOC and noticed that while higher scores on items on the efficacy subscale are intended to capture more adaptive perceptions of oneself as a parent, they appear to reflect a level of certainty that suggests absolutist reasoning. For instance, it is probably not realistic or adaptive for any parent to “strongly agree” with the item “being a parent is manageable, and any problems are easily solved.” At the same time, responding with “strongly disagree” would suggest a concerning lack of efficacy in the parenting role. Therefore, we developed a mentalization-based scale using the efficacy subscale items in which high and low ratings reflect maladaptive mentalizing, while optimal mentalizing is reflected by moderate ratings (“somewhat disagree” or “somewhat agree”). We found that maternal mentalizing as measured by this scale was associated with less negative mediation and the opposite pattern of moderation: mothers with low and moderate levels of mentalizing showed a significant positive relation between BPD and negative mediation, while mothers with high levels of mentalizing showed generally low levels of negative mediation and no relation with BPD. Therefore, it appears that optimal mentalizing may buffer the impact of BPD features on negative parenting practices. Regarding the surprising findings with satisfaction as a moderator, we believe that high levels of satisfaction may also stem from unrealistically certain or positive views of parenting. This is supported by the strong correlation between the efficacy and satisfaction subscales and by the negative, albeit nonsignificant, correlation between the mentalization-scored subscale and satisfaction. Parents who report unrealistic confidence may also report superficial satisfaction, rather than honest acceptance of the inherent difficulties faced by all parents. A mentalization-based therapeutic approach would

aim to move mothers away from this overly certain and defensive stance to instead openly reflect on and accept their insecurities and challenges as a parent.

Recently, Steele et al. (2020) examined relations between parenting sense of competence and reflective function measured by the parental reflective function questionnaire (PRFQ; Luyten et al., 2017) in parents oversampled for BPD. While controlling for personality pathology (PID-5-BF, MSI-BPD), psychological wellbeing, trauma history, and attachment style, they found that PRFQ subscales measuring pre-mentalizing/non-mentalizing (i.e. inability to enter the subjective world of the child) and overly certain views about the child's mental states (i.e. hypermentalizing) were both associated with lower levels of PSOC efficacy and satisfaction. In this study, the certainty subscale was scored on a continuum from low to high certainty, with low certainty defined as optimal mentalizing. However, the preliminary validation study of the PRFQ (Luyten et al., 2017) suggests that average levels of the certainty subscale may be most adaptive, while both high and low levels are related to maladaptive parenting. The PRFQ is a relatively new measure and future research should continue to investigate how the PSOC relates to reflective functioning or mentalizing, and whether the widely used PSOC scale captures the optimal qualities of parenting that it intends to.

Limitations and Future Directions

The current study contains a number of limitations. First, our relatively small sample size of 48 – 56 dyads may have resulted in low power to detect effects. With a larger sample size, it is possible that we would have found significant relations between the secondary measures of personality pathology and parenting variables or between SIDP-IV BPD severity and the positive cognitive components. Moreover, we limited our study to mothers because

the composition of our sample precluded us from meaningfully examining gender differences, and future research should examine whether findings extend to fathers. Additionally, our sample was selected based on clinical features of the child and results may differ in samples selected based on the parent's clinical status. For instance, we discussed the possibility of different results in mothers with clinically significant levels of depression. The frequency and pattern of cognitive components may also differ in samples without psychopathology or during different types of interactions or discussions that are not focused on conflict. Relatedly, we were not able to compare using BPD diagnosis because only 9 (16.1%) of mothers met diagnostic criteria. However, research on personality pathology, and psychopathology more generally, has shifted toward a dimensional approach and evidence supports the clinical significance of subthreshold BPD criteria (Zimmerman, Chelminski, et al., 2012). While we included a DSM-5 Section III Criterion B measure (PID-F-BFD), future research would also benefit from including a Criterion A measure that may better capture the underlying processes in self and interpersonal function that are shared across personality pathology and may impact parenting. Lastly, the lack of significant relations between maternal depression and OMI parenting variables may reflect limitations of the brief, self-report measure of depression and future studies should examine how maternal depression measured by interview or multi-method approaches relates to parenting on the OMI.

The novel nature of our methodology is responsible for both the greatest strengths and weaknesses of the current study. We expanded the OMI coding system by developing negative cognitive components, which appear to capture an important dimension of parenting that is specifically related to maternal personality pathology. However, while the emotional components and most of the positive mediational components exhibited good to excellent

interrater reliability in a subset of double coded interactions, both of the negative cognitive components exhibited concerning low levels of reliability. Therefore, a third independent rater was added which raised interrater reliability to be acceptable across all domains. This suggests that further work is required to elaborate, clarify, and define the negative coding system to ensure that training results in consistent coding across raters. Additionally, the psychometric properties of the novel negative components should be evaluated, including concurrent and discriminatory validity with other parent-child interaction coding systems. The current study also introduced a new scoring system of the PSOC efficacy subscale intended to operationalize mentalizing. The PSOC has been widely used across a variety of populations and research areas and this novel perspective on the scale contains great opportunities for future research. While our mentalization-based scoring system resulted in interesting findings, these findings somewhat contrast with other recent research (Steele et al., 2020) and studies should psychometrically evaluate the scale and examine concordance with other measures of mentalizing or reflective function. Moreover, internal consistency was below suggested limits for acceptability in our sample and the items may need to be adjusted or developed further.

Conclusions

Withstanding limitations, the current study makes significant contributions to the literature on maternal personality pathology and parenting. Our findings add to only two existing studies examining in-vivo interactions with adolescent offspring (both from the same sample; Frankel-Waldheter et al., 2015; Mahan et al., 2018). Moreover, this is the first study to examine early/emerging adolescents, which is a critical period to interrupt intergenerational transmission as personality pathology usually onsets during adolescence

(Chanen & Thompson, 2019). While previous studies have largely used attachment-based (e.g. strange situation) or behaviorist coding systems, we used the OMI because it integrates an attachment framework with moment-to-moment behaviorally anchored assessment of parenting behaviors. Additionally, the OMI serves not only as a research measure but also as the clinical feedback tool in MISC and therefore our findings can be directly applied to interventions. Taken together, results suggest that attachment-based aspects of parent-child interactions and negative (i.e. insensitive, intrusive, or hostile) parenting behaviors are uniquely related to maternal personality pathology and should be addressed in treatment. While further elaboration and validation of the negative cognitive components is needed, researchers should consider adapting MISC for mothers with personality pathology and incorporating negative cognitive components as a treatment target. Additionally, while our measure of mentalizing requires further psychometric evaluation, we found preliminary evidence that optimal mentalizing may buffer the impact of BPD features on negative parenting practices, further suggesting that interventions that target mentalizing, such as MISC, may be particularly effective in reducing negative parenting practices in mothers with personality pathology.

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Tables and Figures

Table 1

Descriptive Statistics and Pearson's Correlations Among Continuous Variables (N = 56)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
Maternal personality pathology																		
1. SIDP-IV BPD symptom severity																		
2. PID-5-BF mean	.56**																	
3. DERS total	.64**	.72**																
OMI emotional components																		
4. Emotional sum	-.43**	-.26	-.18															
OMI positive cognitive components																		
5. Composite	-.24	-.16	-.15	.41**														
6. Affecting	-.23	-.19	-.12	.45**	.94**													
7. Expanding	-.06	.09	-.04	.06	.26	.07												
8. Regulating	-.04	.01	-.13	-.02	.36**	.06	.09											
OMI negative cognitive components																		
9. Composite	.34*	.08	-.04	-.43**	-.41**	-.44**	-.11	.02										
10. Affecting	.38**	.12	-.03	-.46**	-.42**	-.44**	-.11	-.02	.98**									
11. Regulating	-.01	-.15	-.08	-.03	-.13	-.18	-.06	.16	.52**	.337*								
Maternal depression																		
12. BSI depression	.55***	.56***	.69***	.02	-.02	-.03	.06	-.004	-.14	-.13	-.09							
Sense of Competence (PSOC)																		
13. Total	-.42**	-.37**	-.60**	-.02	.31*	.21	.22	.31*	.07	.11	-.13	-.55**						
14. Satisfaction	-.41**	-.53**	-.62**	.11	.37**	.29**	.29**	.24	.11	.11	.04	-.56**	.81**					
15. Efficacy	-.21	.02	-.21	-.14	.07	.02	-.03	.19	-.03	.02	-.24	-.23	.67**	.11				
16. Efficacy-MZ scored	-.05	-.06	.20	.28	.04	.13	-.08	-.27	-.34*	-.33*	-.19	.15	-.46**	-.26	-.43**			
Demographics																		
17. Mother age	-.19	-.18	-.07	.20	.26	.37**	-.10	-.23	-.11	-.13	.02	.10	-.02	.09	-.11	.16		
18. Child age	-.13	-.07	.11	.10	.19	.19	-.10	.10	-.11	-.13	.04	.07	-.10	-.08	-.03	.23	.21	
n	56	50	50	56	56	56	56	56	56	56	56	49	48	48	48	48	56	56
Mean	5.73	.59	74.24	37.82	64.23	53.21	5.16	5.86	7.23	6.13	1.11	.66	69.5	36.08	28.27	14.77	40.11	12.07
SD	6.01	.51	21.29	4.53	10.87	19.00	3.52	5.94	10.05	9.15	2.10	.82	10.89	7.99	5.84	3.78	7.29	.89
Skew	1.25	.34	.58	.13	.00	.19	.63	1.94	2.21	2.45	2.75	1.38	.23	-.09	-.25	-.55	.48	-.62
Kurtosis	1.05	3.5	.34	-.20	1.45	1.55	-.60	3.97	5.41	6.73	8.22	1.20	-.32	-.31	-.78	-.197	.18	-.43

Note: * $p < .05$, ** $p < .01$

Table 2*Hierarchical Linear Regressions (N = 49)*

	b	SE	β	t	p	Adj. R ²	Δ Adj. R ²
DV = Emotional component sum							
Step 1 ^a						-.021	
BSI Depression	.14	.84	.02	.16	.874		
Step 2 ^b						.304	.325***
BSI Depression	2.33	.83	.40	2.80	.007		
SIDP-IV BPD	-.53	.11	-.69	-4.79	< .001		
DV = Negative affecting							
Step 1 ^c						-.004	
BSI Depression	-1.54	1.70	-.13	-.91	.369		
Step 2 ^d						.270	.274***
BSI Depression	-5.67	1.74	-.48	-3.27	.002		
SIDP-IV BPD	.99	.23	.64	4.32	<.001		

Note: *p<.05, **p<.01, ***p<.001; ^a model not significant, F(1, 47) = .026, p = .874; ^b model significant, F(2, 46) = 11.49, p < .001; ^c model not significant, F(1, 47) = .824, p = .369; ^d model significant, F(2, 46) = 9.88, p < .001

Table 3*PSOC Total Score as a Moderator*

	β	SE	t	p	R ²
DV = Emotional component sum					
BPD	-.68	.11	-4.71	<.001	.339 ^a
PSOC	-.32	.06	-1.1	.033	
BPD x PSOC	-.26	.01	-1.92	.061	
DV = Positive mediation composite					
BPD	-.27	.50	-1.93	.060	.281 ^b
PSOC	.19	.28	1.29	.204	
BPD x PSOC	-.44	.04	-3.22	.002	
DV = Negative mediation composite					
BPD	.67	.20	5.52	<.001	.491 ^c
PSOC	.37	.11	3.04	.004	
BPD x PSOC	.56	.02	4.86	<.001	

Note: ^a model significant, F(3, 44) = 7.51, p < .001; ^b model significant, F(3, 44) = 5.74, p = .002; ^c model significant, F(3, 44) = 14.16, p < .001

Table 4*PSOC Satisfaction Subscale as a Moderator*

	β	<i>SE</i>	<i>t</i>	<i>p</i>	R^2
DV = Emotional component sum					.307 ^a
BPD	-.62	.15	-4.21	<.001	
Satisfaction	-.20	.15	-1.22	.230	
BPD x Satisfaction	-.37	.17	-2.16	.036	
DV = Positive mediation composite					.269 ^b
BPD	-.23	.14	-1.59	.120	
Satisfaction	.23	.15	1.57	.125	
BPD x Satisfaction	-.45	.17	-2.67	.011	
DV = Negative mediation composite					.353 ^c
BPD	.63	.14	4.57	<.001	
Satisfaction	.43	.14	3.05	.004	
BPD x Satisfaction	.45	.16	2.80	.008	

Note: ^a model significant, $F(3, 44) = 6.50$, $p = .001$; ^b model significant, $F(3, 44) = 5.41$, $p = .003$; ^c model significant, $F(3, 44) = 8.00$, $p = <.001$

Table 5*PSOC Efficacy Subscale as a Moderator*

	β	<i>SE</i>	<i>t</i>	<i>p</i>	R^2
DV = Emotional component sum					.291 ^a
BPD	-.55	.14	-4.08	<.001	
Efficacy	-.26	.14	-1.90	.063	
BPD x Efficacy	-.06	.13	-.50	.520	
DV = Positive mediation composite					.138 ^b
BPD	-.30	.14	-2.09	.042	
Efficacy	.04	.15	.25	.806	
BPD x Efficacy	-.27	.14	-1.97	.056	
DV = Negative mediation composite					.400 ^c
BPD	.50	.12	4.17	<.001	
Efficacy	.01	.12	.10	.919	
BPD x Efficacy	.49	.12	4.25	<.001	

Note: ^a model significant, $F(3, 44) = 6.01$, $p = .002$; ^b model not significant, $F(3, 44) = 2.34$, $p = .086$; ^c model significant, $F(3, 44) = 9.76$, $p = <.001$

Table 6*Mentalization (MZ) Based Scoring of PSOC Efficacy as a Moderator*

	β	<i>SE</i>	<i>t</i>	<i>p</i>	R^2
DV = Emotional component sum					.309 ^a
BPD	-.46	.13	-3.62	<.001	
MZ	.29	.13	2.16	.036	
BPD x MZ	-.12	.12	1.03	.311	
DV = Positive mediation composite					.108 ^b
BPD	-.23	.14	-1.64	.11	
MZ	.05	.14	.32	.75	
BPD x MZ	.20	.13	1.51	.14	
DV = Negative mediation composite					.478 ^c
BPD	.34	.11	3.16	.003	
MZ	-.38	.11	-3.38	.002	
BPD x MZ	-.44	.10	-4.36	<.001	

Note: ^a model significant, $F(3, 44) = 6.55, p < .001$; ^b model not significant, $F(3, 44) = 1.78, p = .164$;
^c model significant, $F(3, 44) = 13.43, p = <.001$

Figure 1
The MISC Tree



Figure 2

Simple slope analyses of the relation between BPD and positive mediation at low (16th percentile), moderate (50th percentile), and high (84th percentile) levels of PSOC

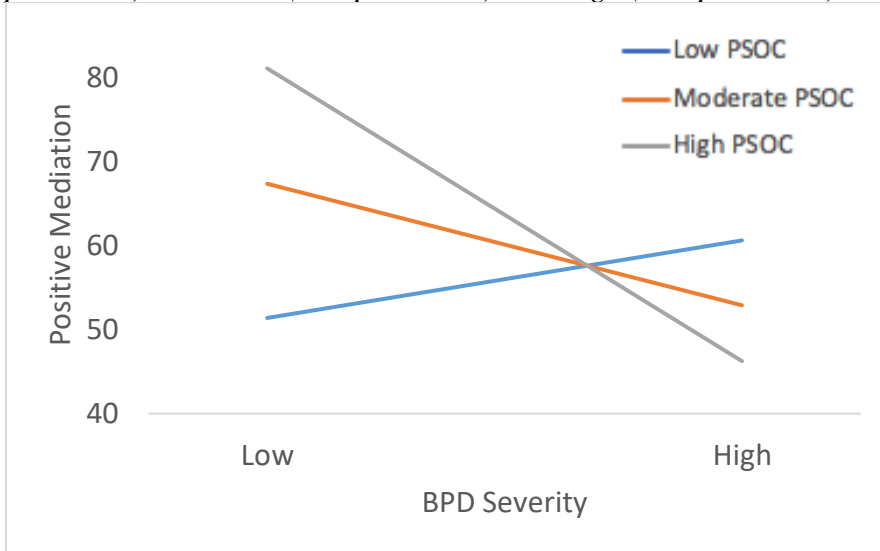


Figure 3

Simple slopes analyses of the relation between BPD and negative mediation at low (16th percentile), moderate (50th percentile), and high (84th percentile) levels of PSOC

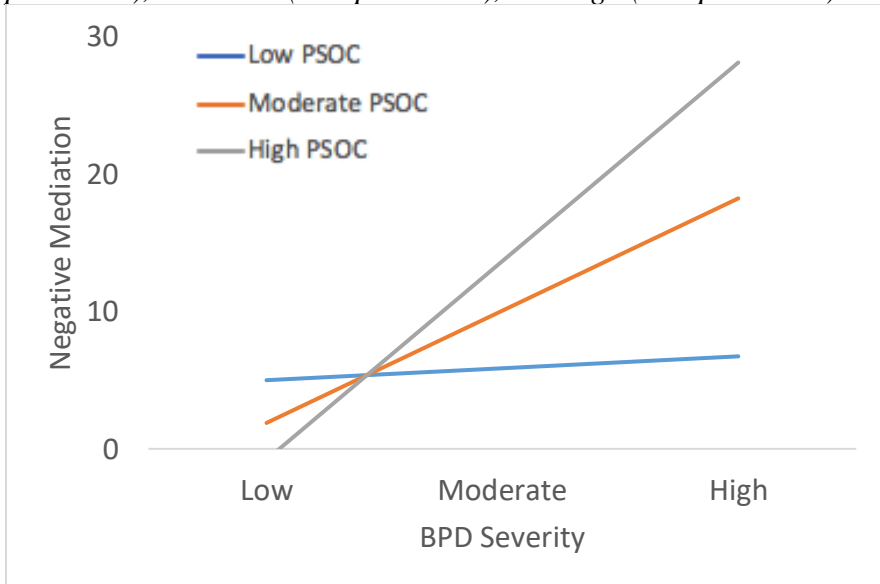


Figure 4

Simple slopes analyses of the relation between BPD and negative mediation at low (16th percentile), moderate (50th percentile), and high (84th percentile) levels of mentalizing (mentalization-based score on PSOC efficacy subscale)

