

Associations of Maternal Borderline Personality Disorder  
Symptoms with Parenting Stress, Maternal Warmth, and Child  
Externalizing Problems

by

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Parenting Stress, Maternal Warmth, and Child Externalizing Problems

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Borderline personality disorder (BPD) is a psychological disorder characterized by impulsivity, negative affect, and emotional and interpersonal dysregulation, all of which can directly impact the experience of being a parent. The purpose of this study was to further understand the pathway through which elevated symptoms of maternal BPD are associated with higher levels of externalizing problems in their children. Specifically, we investigated whether maternal warmth and parenting stress mediated this relationship to transfer risk of mental health difficulties. The participants in this study included 68 mothers and their 3-4 year old children ( $M= 48$ ,  $SD= 7.6$  months). Maternal BPD symptoms, parenting stress, and child externalizing problems were assessed through maternal report, while maternal warmth was assessed using observational measures during a dyadic stressor task. Results support that elevated maternal BPD symptoms are associated with higher levels of child externalizing problems, as well as with higher levels of parenting stress. However, elevated maternal

BPD symptoms were not associated with lower levels of maternal warmth.

Additionally, higher levels of parenting stress did not explain the association between maternal BPD symptoms and child externalizing problems. These findings suggest that maternal BPD symptoms confer risk of mental health difficulties in children, and that interventions targeting maternal BPD symptoms may be more effective in mitigating this risk than parenting interventions designed to improve warmth.

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## **Introduction**

Borderline personality disorder (BPD) affects roughly 6 million women in the United States of America, many of whom may be mothers (Friedel, 2004). Common symptoms of this disorder include impulsivity and emotional dysregulation, both of which can create significant barriers to effective parenting such as increased parenting stress and decreased levels of warmth (Florange & Herpertz, 2019). Both high stress and low warmth lead to poor long-term outcomes for children, such as increased levels of behavior problems (Barroso, Mendez, Graziano, & Bagner, 2018; Hipwell, et al., 2008). Understanding the pathway by which BPD symptoms affect children will allow for more effective targeted interventions to help parents as well as their children.

## **Literature Review**

Borderline personality disorder (BPD) is a common personality disorder characterized by instability of emotional responses, interpersonal relationships, self-image, and impulsive behaviors (American Psychiatric Association, 2013). Individuals with BPD experience emotional responses that are highly reactive, with episodes of depression, anxiety, or irritability lasting from a few hours to a few days (Linehan, 2008). The lifetime prevalence of BPD in the U.S. general population is around 5.9%, of which 75% are female, and many of whom are likely mothers (Gunderson et al., 2018; Skodol, A. & Bender, D., 2003).

Parenting stress can be thought of as a negative psychological reaction to the normal actions and responsibilities that come with being a parent, leaving parents feeling tired, frustrated, or confused (Barroso et al., 2018). Parents who already experience negative affectivity are at risk of higher levels of parenting stress, and tend

to perceive stressors in their life as threats rather than as challenges to overcome (Le, Fredman, & Feinberg, 2017). Additionally, higher levels of parenting stress have been shown to lead to increased emotion-based coping methods, and dysregulated negative emotions that are directed towards children (Le et al., 2017). This often manifests as a harsh or hostile parenting style, which is then indicative of lower levels of warmth (Le et al., 2017).

Warmth as a parenting dimension is often conceptualized as a combination of high levels of interactivity and positive affect during interactions with a child (Alegre, Benson, & Pérez-Escoda, 2014; Lengua et al., 2013). Pinquart (2017) defines warmth as being accepting, nurturing, supportive, and sensitive towards children, whereas a lack of warmth would be insensitive, unresponsive, or rejecting. Other researchers have conceptualized warmth as acceptance, demonstrations of affection and love, involvement in children's lives and activities, as well as behaviors such as smiling and warm physical contact (Alegre et al., 2014; Burt, Klahr, Neale, & Klump, 2013). Lower levels of parental warmth, as indicated through harsh reactions to children's negative emotions, have been shown to predict intense expressions of emotion and lowered social competence in children (Fabes, Leonard, Kupanoff, & Martin, 2001). Low levels of parenting stress and high levels of warmth are crucial to healthy child development.

The most severe phase of BPD symptoms often occurs during child-rearing years (Florange & Herpertz, 2019). When combined with the variety of risk factors that mothers with symptoms of BPD are frequently exposed to, such as depression, substance abuse, and low support, it is unsurprising that parenting stress is commonly elevated among this population (Florange & Herpertz, 2019; Petfield, Startup, Droscher,



& Cartwright-Hatton, 2015; Zalewski et al., 2015). Mothers with higher levels of BPD symptomatology self-report higher levels of stress, lower competence, and lower satisfaction with parenting roles than control group mothers do, and often feel as though parenting is a burden (Petfield et al., 2015; Zalewski, Stepp, Whalen, & Scott, 2015). Due to an elevated negativity bias, mothers with symptoms of BPD tend to view their infants as more stressful, angry, and often interpret neutral facial expressions as sad (Florange & Herpertz, 2019).

In addition to increased parenting stress, BPD symptoms in mothers are often correlated with low levels of warmth. Mothers with higher levels of BPD symptoms often have interactions with their children that are characterized by low sensitivity and high intrusiveness, creating a hostile and incohesive family environment (Florange & Herpertz, 2019; Petfield et al., 2015). BPD symptoms have also been associated with psychological and behavioral control of children, which may manifest as invalidating responses, coercive behaviors, or harsh punishment, all of which indicate a lack of warmth (Zalewski et al., 2014). The severity of parental hostility and overprotective behaviors has been positively correlated with BPD symptom severity (Florange & Herpertz, 2019). Additionally, when confronted with infant's negative emotions, mothers with elevated symptoms of BPD displayed more intolerant, impatient, minimizing, and invalidating parenting behaviors (Florange & Herpertz, 2019).

Externalizing problems are behavior problems which often present early in childhood or adolescence, and include disinhibited or externally focused problem behaviors, including aggression, conduct problems, delinquency, hyperactivity, and attention problems (Petersen, Bates, Dodge, Lansford, & Pettit, 2014; Wilner, Gatzke-

Kopp, & Bray, 2016). Risk factors for externalizing disorders include parental stress as well as low maternal warmth or harsh parenting (Alegre, et al., 2014; Barroso et al., 2018; Binion & Zalewski, 2018; Piquart, 2017). Externalizing problems, specifically physical aggression in boys and hyperactive behavior in girls, have been shown to be predictive of poor mental health outcomes, juvenile delinquency, adult criminality, and later internalizing symptoms (Ahmad & Hinshaw, 2016; Broidy et al., 2003; Willner et al., 2016). Due to these poor outcomes, it is highly important to deeply understand the pathways of influence leading to the development of externalizing problems in children.

High levels of parenting stress can disrupt the parent-child bond and create risk for later psychopathology (Jarvis & Creasey, 1991). Parenting stress is more strongly related to externalizing problems than internalizing problems, and has been associated with attention problems such as ADHD, regulatory problems, behavior problems such as conduct disorder or risky and disruptive behaviors, as well as withdrawn problem behaviors (Barroso et al., 2018). Additionally, parenting stress creates an unstable, risky, or incohesive home environment, which has been associated with children's insecure attachment styles, as well as emotional dysregulation (Streisand, Kazak, & Tercyak, 2003).

It is widely recognized that low parental warmth is associated with both conduct problems and depressive disorders, and that high parental warmth is associated with lower rates of externalizing problems (Alexandra Burt, Klahr, Neale, & Klump, 2013; Hipwell et al., 2008; Piquart, 2017). Characteristic low-warmth parental behavior patterns displayed towards children can impede the formation of a healthy parent-child bond, and disrupt psychological functioning (Florange & Herpertz, 2019). Outside

environmental influences on the development of externalizing problems have been shown to be more prominent when a child is experiencing colder, less directive, and less engaged mothering (Alexandra Burt et al., 2013).

Children of mothers with symptoms of BPD have been shown to be at greater risk of developing some form of psychopathology themselves (Eyden et al., 2016; Florange & Herpertz, 2019; Petfield et al., 2015; Zalewski et al., 2014; Zalewski et al., 2015). Roughly 9% of 11-18 year old children whose mothers show symptoms of BPD had already attempted suicide, compared to only 2% of children of healthy mothers (Petfield et al., 2015). The psychological control and behavioral control that is commonly exhibited by mothers with higher levels of BPD symptomatology has been positively associated with higher rates of externalizing problems in their children (Florange & Herpertz, 2019; Petfield et al., 2015; Zalewski et al., 2014). Additionally, there may be some genetic transmission of BPD symptomatology; heritability estimates range between 42-69% for features such as difficult temperament, emotional reactivity, and impulsivity (Distel et al., 2008; Torgersen, 2000). Finally, maternal emotional dysregulation has been associated with deviant child behavior and emotional responses (Binion & Zalewski, 2017). Overall, children whose mothers experienced elevated symptoms of BPD experienced worse mental health outcomes than children of mothers without BPD symptoms, even when these mothers had other significant psychological difficulties (Petfield et al., 2015).

In this thesis, we will be investigating how elevated maternal BPD symptomatology is associated with child externalizing problems, and if maternal warmth and parenting stress mediate the relationship. We are hypothesizing that 1)

elevated symptoms of BPD in mothers will be a) associated with higher levels of parenting stress and b) associated with lower levels of warmth towards their children. Additionally, we are hypothesizing that 2) elevated symptoms of BPD in mothers will be associated with higher levels of behavior problems in children. Finally, we are hypothesizing that 3) maternal BPD symptoms will indirectly influence child behavior problems through their associations with a) parenting stress and b) maternal warmth.

## Methods

### Participants

The participants in this study were 68 mothers and their 3-4 year old children ( $M= 48$ ,  $SD= 7.6$  months). Participants were recruited from sources including a developmental database maintained by the University of Oregon psychology department, Craigslist, as well as fliers distributed at local mental health clinics. Recruitment advertisements were targeted towards mothers with elevated BPD symptoms by asking for participants who experienced fear of abandonment, difficulty controlling anger, impulsivity, relationships with extreme ups and downs, or individuals who hurt themselves. Mothers with low income and low BPD severity were over-sampled in order to offset an anticipated correlation of low income with BPD symptoms. The distribution of the total family annual income of this sample represented in quartiles is: (1) less than \$17,000, (2) \$17,000 -\$29,000, (3) \$29,001-\$50,000 and (4) \$50,000 or more.

Families in which a child had a known developmental disability were excluded. Participants included 46% ( $n= 31$ ) girls. The racial and ethnic composition of the sample of children included 63.2% European American, 5.9% Latino or Hispanic, 1.5% African American, 29.4% multiple racial and ethnic backgrounds including individuals who identified their children as Asian American, American Indian, Native Hawaiian or Pacific Islander. The distribution of mothers' educational level included 6% mothers with some high school attainment, 4.5% completed high school, 35.8% with some college, 14.9% technical school or professional school, 26.9% college graduates, and

12% with post-graduate education. Sixty-two percent of mothers were married or had long-time partners, 25% were never married, 13% were separated, divorced or widowed and were single heads-of-household.

### **Procedure**

The 2.5 hour assessment sessions took place in offices on the University of Oregon campus. With approval by the Institutional Review Board (IRB), both the mother's informed consent and child's assent were obtained before they participated in the laboratory session. Children completed assessments while mothers completed the questionnaires in an adjacent room. Next, mothers and children completed the parent-child interaction task together. Mothers were compensated \$50 for the laboratory visit, and the children took home several toys from the tasks.

### **Measures**

#### *Maternal BPD symptoms.*

BPD symptoms were assessed via self-report on the Personality Assessment Inventory, Borderline Subscale (PAI-BOR; Morey, 1991). The subscale included 24 items such as "My mood can shift quite suddenly", "I worry a lot about other people leaving me", and "When I'm upset, I typically do something to hurt myself". Possible answers included 0= False, not true at all, 1= Slightly true, 2= Mainly true, and 3= Very true. Possible scores ranged from 0-72 with higher scores on the PAI-BOR indicating higher levels of BPD symptoms. Our sample scores ranged from 0-56 ( $M= 22.12$ ,  $SD= 12.41$ ). As the community average is 18 and the clinical cutoff score is 38, this sample

represents a non-clinical level on average, but with a large range of BPD symptomatology included.

#### *Parenting stress.*

Parenting stress was measured using the Parental Stress Scale (PSS; Berry & Jones, 1995) self-report questionnaire, which included 16 items, such as “Having child(ren) leaves little time and flexibility in my life”, “If I had to do it over again, I might decide not to have child(ren), and “Caring for my child(ren) sometimes takes more time and energy than I have to give”. Possible answers ranged from 1 to 5, where 1 meant “strongly disagree” and 5 meant “strongly agree”. Possible scores ranged from 16-80, with higher scores on the PSS indicating higher levels of parenting stress. In our sample, parenting stress scores ranged from 21 to 68 ( $M= 38.78$ ,  $SD= 10.20$ ), indicating normative levels of parenting stress.

#### *Maternal warmth.*

Maternal warmth was measured using observer ratings of positive affect and interactiveness during a 7-minute task where the mother was verbally coaching her child on constructing a difficult figure out of Legos. Positive affect was coded by the frequency and level of behavioral and verbal expressions of happiness, comfort, connection, and warmth towards the child. Interactiveness was coded by the frequency of verbal and non-verbal engagement with the child. Positive affect and interactiveness were then combined into a measure of warmth.

The ratings were an average for each variable (positive affect and interactiveness), rated from 0 to 5 (0=absent/lowest, 5=highest), across 1 minute

intervals during the task. These ratings were combined to form a variable average across all 7-minutes. The averages for each variable were then added together to form the final variable “maternal warmth”, with a possible range of scores from 0-10. In our sample, maternal warmth scores ranged from 4.57 to 9.86 on a 10 point scale ( $M= 8.20$ ,  $SD= 1.30$ ), exhibiting moderate to high levels of warmth overall. Interrater reliability was ensured by training coders to an accuracy of 80% agreement with a master coder. 20% of the videos were randomly assigned to estimate interrater reliability.

#### *Child externalizing behaviors.*

Child externalizing behaviors were assessed via maternal report on the Child Behavior Checklist (CBCL; Achenbach, & Rescorla, 2000), externalizing subscale. The subscale included 24 items from 100 total items on the CBCL. Items on the subscale included “Can’t sit still, restless, or hyperactive”, “Disobedient”, and “Screams a lot”. Possible answers included 0= Not true (as far as you know), 1= Somewhat or sometimes true, and 2= Very true or Often true. Higher scores indicated higher levels of child externalizing behaviors. Child externalizing symptoms ranged from a score of 0 to a score of 43 on the CBCL externalizing subscale ( $M= 16.28$ ,  $SD= 9.49$ ) indicating non-clinical levels of behavior problems on average.

#### **Analysis**

All analyses were conducted in SPSS (ver. 26, IBM Chicago, IL, USA). Hypothesis 1a was analyzed using a linear regression with two continuous variables, modeling BPD symptoms predicting parenting stress. Hypothesis 1b was analyzed using a linear regression with two continuous variables, modeling BPD symptoms



predicting maternal warmth. Hypothesis 2 was analyzed using a linear regression with two continuous variables, modeling BPD symptoms predicting child externalizing behaviors. Hypothesis 3 was analyzed using bias corrected bootstrapping to determine the extent to which parenting stress and maternal warmth explain the influence of BPD symptoms on child externalizing behaviors.

Income, child age, and child gender were tested as covariates for potential inclusion, given their association with the outcomes of interest. Pearson's correlational analyses demonstrated that income and age were significant covariates and were included in all analyses. Gender was not a significant covariate ( $t = -0.516-1.350$ ,  $p = .180-.723$ ), so was not included in subsequent analyses.

## Results

In this study, we hypothesized that 1) elevated symptoms of BPD in mothers would be a) associated with higher levels of parenting stress and b) associated with lower levels of warmth towards their children. Additionally, we hypothesized that 2) elevated symptoms of BPD in mothers would be associated with higher levels of behavior problems in children. Finally, we hypothesized that 3) maternal BPD symptoms will be indirectly associated with child behavior problems through their associations with a) parenting stress and b) maternal warmth.

### **Hypothesis 1: Associations of elevated maternal BPD symptoms with parenting stress and maternal warmth.**

A series of parallel regressions were conducted in order to test the relationship between maternal BPD symptoms and parenting stress, as well as maternal BPD symptoms and warmth.

The overall model significantly predicted 19.9% of the variance in parenting stress,  $R^2 = 0.199$ ,  $F(3, 64) = 5.300$ ,  $p = .003$ . Consistent with Hypothesis 1a, when controlling for age and income, elevated BPD symptoms were significantly associated with levels of parenting stress, such that as the level of BPD symptoms increased, the level of parenting stress also increased ( $B = 0.343$ , 95%CI [0.141, 0.545],  $t(64) = 3.395$ ,  $p = 0.001$ ).

The overall model predicted 8.3% of the variance in maternal warmth,  $R^2 = 0.083$ ,  $F(3, 59) = 1.783$ ,  $p = 0.160$ . When controlling for age and income, elevated BPD symptoms were not significantly associated with levels of maternal warmth ( $B = -0.019$ ,

95%CI [-0.048, 0.009],  $t(59) = -1.334$ ,  $p = 0.187$ ). This result was not supportive of Hypothesis 1b. Given that BPD symptoms did not significantly predict levels of maternal warmth, a mediation model including BPD symptoms, maternal warmth, and child externalizing behaviors was not tested.

### **Hypothesis 2: Associations of elevated maternal BPD symptoms with child externalizing problems.**

The relationship between BPD and child externalizing behaviors was tested using a linear regression. The overall model significantly predicted 33.7% of the variance in child externalizing problems,  $R^2 = 0.337$ ,  $F(3, 62) = 10.524$ ,  $p < 0.001$ . Supporting Hypothesis 2, the results of this analysis show that when controlling for age and income, elevated maternal BPD symptoms were significantly associated with levels of child externalizing behaviors, such that as the number of BPD symptoms increased, the level of child externalizing behaviors also increased ( $B = 0.373$ , 95%CI [0.202, 0.544],  $t(62) = 4.358$ ,  $p < 0.001$ ).

### **Hypothesis 3: The indirect pathway of maternal BPD symptoms on child externalizing problems through parenting stress.**

Parallel regression analyses showed that when controlling for child age and family income, maternal BPD symptoms predicted levels of parenting stress ( $B = 0.343$ , 95%CI [0.141, 0.545],  $t(64) = 3.395$ ,  $p = 0.001$ ) and child externalizing problems ( $B = 0.373$ , 95%CI [0.202, 0.544],  $t(62) = 4.358$ ,  $p < 0.001$ ), and parenting stress also significantly predicted child behavior problems ( $B = 0.292$ , 95%CI [0.080, 0.504],  $t(62) = 2.753$ ,  $p = 0.008$ ). It was therefore plausible to test the indirect path of elevated

levels of BPD symptoms on child externalizing problems through their association with parenting stress levels, using a bias corrected bootstrapping method of 5,000 samples (see Figure 1). The 90% confidence interval for the indirect association of elevated BPD symptoms on child externalizing problems through its influence on parenting stress levels was not significant (90%CI [-0.0307, 0.1250]). Contrary to hypothesis 3, this means that although elevated BPD symptoms are predictive of child externalizing problems, the indirect pathway through parenting stress did not significantly predict child externalizing behaviors. See Figure 1 for a representation of the relationships discussed above.

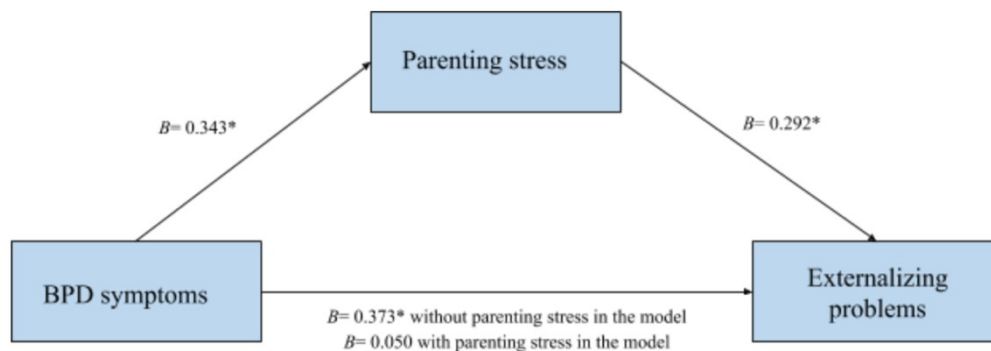


Figure 1.

A mediation model of BPD symptoms, parenting stress, and child externalizing problems, controlling for child age and family income. Non-standardized coefficients are presented.

## Discussion

Our results demonstrated that elevated levels of BPD symptoms were associated with higher levels of parenting stress, but not with levels of maternal warmth. Additionally, we found that elevated levels of BPD symptoms were associated with higher levels of externalizing problems in children. However, a mediation model testing the indirect association of BPD symptoms with externalizing problems through parenting stress demonstrated that this pathway was not significant.

We found that elevated levels of BPD symptoms significantly predicted higher levels of parenting stress. This means that mothers with BPD symptoms are more likely to feel more stress related to the daily activities and responsibilities of being a parent than mothers without BPD symptoms. Florange & Herpertz (2019) found that in many cases, the most severe phase of BPD symptoms coincides with childbearing years, which is already a stressful time in a woman's life. Mothers with symptoms of BPD also experience stress from difficulty in regulating their emotions, intense and unstable interpersonal relationships, and can experience stress related to understanding their own and others emotions, including those of their children (Petfield et al., 2015). Additionally, affective instability is a core symptom of BPD, and parents who experience higher levels of negative affectivity also tend to experience higher levels of parenting stress (Le et al., 2017). When added on to the normally expected stresses of raising a child, it is not surprising that mothers with BPD symptoms would experience elevated levels of parenting stress.

Although our results support that mothers with BPD symptoms experience elevated levels of parenting stress, we did not find evidence that elevated levels of

maternal BPD symptoms were associated with the level of maternal warmth displayed. While this finding does not support our hypothesis, it demonstrates that even when struggling with their own mental health and stress, mothers with BPD symptoms are still able to show warmth towards their children, which has been found to be crucial for optimal child outcomes (Alexandra Burt, Klahr, Neale, & Klump, 2013; Hipwell et al., 2008; Pinquart, 2017). In agreement with the results found in this study, a 2016 review article found that elevated maternal BPD symptoms were not consistently associated with lower levels of warmth in clinical or community samples (Eyden et al., 2016). Specifically, BPD symptoms did not predict lower levels of warmth when controlling for other forms of maternal psychopathology such as depression and anxiety. Further, adolescent children of mothers with BPD symptoms did not report feeling that their mothers were less warm than adolescents of control mothers did, and BPD symptoms were not associated with lower levels of warmth in two community samples (Eyden et al., 2016). However, it is important to note that because all of the mothers in our sample showed relatively high levels of warmth, there may have been a ceiling effect such that small associations between BPD symptoms and warmth were obscured. While the use of an observational measure of warmth was a strength of this study, future research should use a multi-method approach to measure warmth in order to provide a more nuanced understanding of the relationship between BPD symptoms and parenting quality.

Our results support that elevated levels of maternal BPD symptoms are associated with higher levels of externalizing problems in their children. This is consistent with previous studies, which have largely found that children of mothers with

BPD experience an array of psychological challenges, including externalizing problems (Florange & Herpertz, 2019; Petfield et al., 2015; Zalewski et al., 2014; Zalewski et al., 2015). This finding may be due to a modeling effect, such that when children see their parents acting in an impulsive, emotionally dysregulated way, they learn to do the same. For young children, this often manifests through the aggressive, disinhibited behaviors which characterize externalizing problems. Additionally, these behaviors may be an attempt to draw their mother's attention. Since we found that mothers with elevated symptoms of BPD also experience higher levels of parenting stress, they may become overwhelmed by the number of stressors present in their life, inhibiting them from showing appropriate attention towards their child. Thus, the child could exhibit higher levels of behavior problems in the hopes of getting attention from their mother.

Although we found evidence for the direct pathways between elevated BPD symptoms, parenting stress, and child externalizing problems, our results do not support that parenting stress was the indirect pathway through which elevated BPD symptoms are associated with higher levels of child externalizing problems. There may be an alternative pathway through which higher levels of BPD symptoms affect child externalizing problems. For example, BPD symptoms have been shown to have some genetic transmission, with heritability estimates ranging between 42-69% in twin studies (Distel et al., 2008; Torgersen, 2000). This finding suggests the possibility of gene-environment interactions leading to the development of externalizing problems in children. Children of mothers with BPD symptoms may already be vulnerable to developing features of BPD. Features such as impulsivity, emotion dysregulation, and interpersonal insecurity in children would likely present as disinhibited, aggressive

behaviors. When combined with environmental influences such as maternal BPD symptoms, parenting stress, or other risk factors that might be present, the resulting gene-environment interactions could lead to the development of psychopathology, such as externalizing problems.

Another factor which might influence the association between elevated levels of maternal BPD symptoms and child externalizing problems is unpredictable parenting. A core feature of BPD symptoms is impulsivity (American Psychiatric Association, 2013). This would make it challenging for a child to ever predict their mother's mood or behavior, which could cause them to act out in response. Additionally, previous research has shown that mothers with BPD tend to have a more hostile parenting style (Florange & Herpertz, 2019; Petfield et al., 2015), however we found no association between lower levels of warmth and elevated symptoms of BPD in mothers. This may signify that mothers with symptoms of BPD can display both hostile and warm parenting towards their child, which would likely be very unpredictable and confusing for the child, possibly leading to the development of externalizing problems. Therefore, unpredictability in parenting style and behavior could be another pathway through which elevated BPD symptoms are associated with child externalizing problems.

### **Strengths and Limitations:**

One strength of this study is that the sample included a full range of BPD symptoms. Since a clinical diagnosis of BPD was not an inclusion criteria for this study, a full range of BPD symptomology was represented, including mothers with no BPD symptoms as well as mothers with more elevated symptoms. Another strength of this study was the use of observed maternal warmth in order to more closely capture the



displayed level of warmth expressed during a dyadic interaction task. Additionally, the age range of the children in this sample (3-4 years old) is consistent with the developmental period during which externalizing problems begin to present. Finally, although there are many studies which have examined the impact of BPD symptoms on parenting and child outcomes, this is the first study which has looked at how BPD symptoms, parenting stress and maternal warmth, and child externalizing problems interact together.

A limitation to this study is that the relatively small sample size may have limited the power to detect small effects. Further, this was a cross-sectional study, so we are unable to determine causal relationships between these variables. While the model we tested examined BPD symptoms as predictors of parenting stress, warmth, and child behavior problems, the associations between harsh parenting and behavior problems in children are often bidirectional and interactive, so alternative models are plausible. For example, Barroso et al. (2018) found that levels of parenting stress tend to be higher for parents of children at risk for behavior problems. Other research findings have shown that associations of externalizing problems with maternal warmth are bidirectional, such that initial levels of externalizing behaviors predict lower levels of warmth over time (Hipwell et al., 2008; Pinquart, 2017). Additionally, since mothers with BPD are already prone to impulsivity and emotional dysregulation, it is likely that these symptoms would be exacerbated by externalizing problems in their children. Therefore, as our study was unable to determine causality, future research should focus on a longitudinal design to test the temporal relationships between these variables.

**Clinical implications:**

Our results suggest that elevated levels of maternal BPD symptoms are directly associated with child behavior problems, while the relationship between BPD symptoms and warmth are unclear. Future clinical interventions could therefore benefit from directly targeting maternal BPD symptoms themselves or children's behaviors. Targeting BPD symptoms may also effectively reduce levels of parenting stress, which were also predictive of child externalizing problems.

BPD is a common psychological disorder, with symptoms that can impact both parents and their children. In this study, we found that elevated levels of BPD symptoms were associated with higher levels of both parenting stress and child externalizing problems, but not levels of maternal warmth. Although this finding does not support our hypothesis, it demonstrates that even when struggling with their own mental health, mothers with BPD symptoms are still able to give warm, high quality parenting, which in turn has been shown to lead to the best outcomes for their children. Additionally, we found that parenting stress was not a significant indirect pathway through which elevated maternal BPD symptoms impact child externalizing problems. These results will help inform mothers, clinicians, and allow for better treatment strategies in the future in order to best support mothers with BPD, as well as their children.

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