

**Effect of Maternal Borderline Personality Disorder on Adolescents' Experience of
Maltreatment and Adolescent Borderline Features**

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Abstract

Borderline Personality Disorder (BPD) is a severe mental illness characterized by dysfunction and instability across a variety of domains including interpersonal relations, behavior, emotion, and cognitions. The current study assessed maltreatment in the adolescent offspring of mothers' with BPD, who may be more at risk for experiencing maltreatment compared to adolescents who do not have a mother with the disorder. Participants were adolescents age 14-18 years ($M = 15.78$, $SD = 1.21$) who were a part of a larger study examining offspring of mothers with BPD. Groups were divided into adolescents whose mothers' were diagnosed with BPD ($n = 28$) compared to adolescents whose mother did not have the disorder ($n = 28$). Adolescent offspring of mothers with BPD experienced more maltreatment overall, more physical abuse, more neglect, more emotional abuse, but not more sexual abuse compared to controls. Those who were sexually abused had higher borderline features of self-harm compared to emotionally abused, neglected, and non-maltreated adolescents. Adolescents who were physically abused reported higher affective instability compared to adolescents who were not maltreated. Additionally, dimensions of maltreatment including severity, multiple subtypes of abuse, and chronicity of abuse were related to borderline features of affective instability, self-harm, and total borderline features. The results conclude with a discussion of the empirical and clinical implications of a developmental understanding of the effect that maltreatment has on borderline personality features in adolescents whose mothers have the disorder.

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CHAPTER I

Introduction and General Information

Borderline Personality Disorder (BPD) is a severe mental illness characterized by dysfunction and instability across a variety of domains including interpersonal relations, behavior, emotion, and cognitions (American Psychiatric Association, 2013). One important etiological factor for BPD is childhood maltreatment. Up to 71% of individuals diagnosed with BPD report maltreatment in childhood (Lieb et al., 1994; Widom, Czaja, & Paris, 2009) and studies have found that childhood maltreatment is significantly associated with adult BPD above and beyond family environment and parental mental illness (Bradley, Jenei, & Westen, 2005).

When compared to a normative sample, we know that infants with mothers with BPD have worse emotional regulation (Gratz et al., 2014) and have disorganized attachment (Hobson et al., 2009), which is an attachment category that is prospectively associated with BPD symptoms in adulthood (Carlson, Egeland, & Sroufe, 2009). We also know that school aged children of mothers with BPD have more behavioral and attention problems (Weiss et al., 1996), increased aggression, anxiety, and depression (Barnow, Spitzer, Grabe, Kessler, & Freyberger, 2006), have more internalizing and externalizing symptoms, and more impulse control and hyperactivity/attention disorders (Weiss et al., 1996). However, although many mothers with BPD have a history of childhood maltreatment, we do not know about the experience of maltreatment in their offspring. This is an important omission because maltreatment may be a key factor in maladaptive outcomes in this already high-risk group, including the possibility they will develop BPD. Given that offspring of individuals with BPD are already biologically at

risk for developing the disorder, it is important to examine whether the offspring also experience more frequent and severe levels of maltreatment compared to children who do not have a biological parent with the disorder to further elucidate the risk factors that offspring may face in order to promote early intervention.

Retrospective studies have found that the rate of intergenerational transmission of maltreatment is moderately high. In one study, Egeland, Jacobvitz, and Sroufe (1988) found that mothers who were maltreated as children, were not emotionally supported during parenting, and also had significant life stressors had higher rates of abusing their own children when compared to mothers who had been maltreated and did have emotional support during parenting. In a review of the literature Kaufman and Zigler (1987) estimated a 25-35% rate of intergenerational transmission in a community sample of adults. In another study, mothers retrospective reports of multitype maltreatment (physical, sexual, emotional, and neglect) predicted multitype maltreatment of their 10-12 year old children at a rate of 43.7%, above and beyond romantic attachment, intimate partner violence and psychological distress (Cort, Toth, Cerulli, & Rogosch, 2011). In the current study we expect adolescents will experience more maltreatment compared to normative comparisons. Additionally, given that mothers with BPD report high rates of maltreatment themselves, it is likely that the intergenerational transmission of physical abuse, sexual abuse, emotional abuse, and neglect in the offspring of mothers with the disorder will occur. In the current study we expect that childhood maltreatment will be transmitted intergenerationally given the high rate of maltreatment in individuals with BPD and the high-risk nature of the current sample.

While it is important to examine the overall experience of maltreatment together with individual subtypes (sexual abuse, physical abuse, emotional abuse, and neglect), it is also critical to examine dimensions such as *severity*, *chronicity*, and *multiple subtypes* experienced (Manly, Cicchetti, & Barnett, 1994). Though there is limited research on the impact of *severity* in maltreatment, some studies have found that children who experience more severe maltreatment have worse outcomes compared to maltreatment that is less severe (Manly, 2005; Manly et al., 1994). Moreover, severity is difficult to measure quantitatively given that how severe an abuse experience is may only be truly interpreted by the maltreated individual. Studies have also examined the effects of *chronic* maltreatment across several developmental periods and found that developmental timing and frequency of maltreatment can more clearly delineate psychological, emotional, and behavioral outcomes of maltreatment (Cicchetti, Rogosch, Gunnar, & Toth, 2010; Manly et al., 1994). Children who experience chronic maltreatment are also less popular with peers, are more aggressive, and are rejected by their peers over time (Bolger & Patterson, 2001; Manly et al., 1994). It is therefore essential to note that different outcomes may emerge for acute, isolated incidents of maltreatment, compared to chronic maltreatment within the functioning of the familial environment. Occurrence of *multiple subtypes* is more common than the incidence of experiencing one subtype of abuse among children (Cicchetti & Manly, 1990; Rogosch, Dackis, & Cicchetti, 2011). To test the impact of each subtype, hierarchical groups of maltreatment based on the severity of childhood outcomes are also useful to help further understand how each subtype may differently affect maltreated individuals (Manly, 2005). Furthermore, given the overlap of subtypes among maltreated children, testing presence/absence of subtype as well as severity and

chronicity of maltreatment in the current study will elucidate the multipart nature of maltreatment experiences among children to further understand the intricate nature of maltreatment outcomes in a high-risk sample of adolescents (Manly et al., 1994).

In addition to assessing maltreatment as categories or along a continuum, BPD can also be assessed as a categorical diagnosis and along a continuum of self-reported features, which are highly correlated with each other (Morey, 1991). BPD features include affective instability, negative relationships, identity disturbance, and self-harm; and we choose to study borderline features in addition to a BPD diagnosis for several reasons. The current study proposes to assess how the experience of maltreatment in adolescent offspring of women with BPD differs from that of normative comparisons, and how it relates to adolescent borderline features. Moreover, because BPD is first diagnosed in early adulthood (American Psychological Association, 2013), adolescence is a key developmental period (ages 13-18) in which to assess the relationship between maltreatment and features of BPD. Only one study has examined self-report of developmentally salient BPD symptoms in maltreated children aged 10-12 (Hecht, Cicchetti, Rogosch, & Crick, 2014). The BPD diagnosis in the mothers for this sample were unknown. These researchers found that physical abuse and neglect were associated with overall borderline features score and subtypes of borderline features (affect instability, identity disturbance, relationship problems, self-harm). The study also found that children who had been chronically abused had a higher rate of overall borderline feature score. Though this study used a different validated measure of borderline features than used in the current study because of younger age group (Sharp, Ha, Michonski, Venta, & Carbone, 2012), the research findings may shed light on the effect of

maltreatment on borderline features of self-harm, negative relationships, identity disturbance, and affective instability. In the current study, we expect that maltreatment in adolescent offspring of women with BPD would be associated with the adolescents' borderline features.

The Current Study

The overarching goal of the current study was examine the experience of maltreatment in the offspring of mothers with BPD and assess how maltreatment was associated with the adolescents' concurrent borderline features. This is the first study that has examined maltreatment and borderline features in a sample of adolescents whose mothers have the disorder. The aims of the present research study were (1) to examine maltreatment subtype, chronicity, and severity and borderline features (affect instability, identity problems, negative relationships, and self-harm) in an adolescent sample whose mothers have BPD and (2) elucidate how different forms of childhood maltreatment may be associated with borderline features in youth whose mothers have been diagnosed with the disorder. Based on this conceptualization, the following hypotheses were generated:

- I. We expected that the adolescent offspring of mothers with BPD would experience more maltreatment overall and more of each subtype of maltreatment (physical abuse, sexual abuse, emotional abuse, and neglect) than normative comparisons
- II. Maltreated adolescents would report more borderline features (affective instability, identity disturbance, negative relationships, self-harm, total) than non-maltreated adolescents

- III. In the sample as a whole, severity, chronicity and number of subtypes of maltreatment would be associated with adolescent borderline features (affective instability, identity disturbance, negative relationships, self-harm, total)

CHAPTER II

Method

Participants

Participants were 56 adolescents age 14-18 years ($M = 15.78$, $SD = 1.21$) who were part of a larger study examining offspring of mothers with BPD. The BPD group and the comparison group were divided evenly, with 50% ($n = 28$) of the mothers of the adolescents meeting criteria for BPD and 50% ($n = 28$) of the mothers of the adolescents free of a current clinical disorder or personality disorder. There were an equal number of adolescent boys and girls within each group (14 girls and 14 boys). The sample was consistent with the demographic characteristics of the surrounding area in which the data was collected, with 89.4% identified as Caucasian ($n = 50$), 7.3% identified as bi-racial ($n = 4$), and 3.3% identified as Hispanic ($n = 2$). See Table 1 for additional demographic information.

Recruitment

We obtained permission from the University's Institutional Review Board (IRB) to contact families whose mothers had been diagnosed with Borderline Personality Disorder as well as controls from the community. Participants were recruited from five different counties in East Tennessee. Two methods were utilized to recruit mothers who met criteria for BPD. Outpatient treatment therapists were notified about the study through team treatment meetings and case conferences within the community, and subsequently were asked to give brochures to patients who showed evidence of BPD symptoms. Additionally, flyers were hung up in the community that contained statements such as "Are you afraid of being abandoned?" and "Do you often make impulsive

decisions?” to attract individuals with the disorder. The comparison group was recruited from local Boys and Girls clubs, Head Start programs, schools, and places that adolescents frequented in the community. The comparison group was also recruited from flyers posted in the community.

Procedures

Two trained research assistants conducted the first visit in the home or in a public setting as requested by the mother. During the initial visit the informed consent/assent and the demographic interview was administered and the mother completed a measure to screen for BPD symptoms. Families then scheduled a laboratory visit with the research assistants. Given the low SES of the sample, many families did not have transportation to come into the lab. If this was the case, two research assistants drove the family to and from the appointment. The mother and adolescent spent up to 4 hours in the lab in which they completed self-report questionnaire packets and participated in a taped child-mother interaction. Mothers also completed a structured clinical interview for BPD diagnosis.

Measures

Demographics. The Mt. Hope Family Center’s Interview (Mt. Hope Family Center, 1995) was administered to collect demographic data on the families. Information includes race, age, ethnicity, gross yearly income, education information, marital status, and number of caretakers. See Table 1.

Borderline Personality Disorder. To diagnose BPD in the mothers, the Structured Clinical Interview for the DSM-IV personality disorders (SCID-II) was administered (First, Spitzer, Gibbon, & Williams, 1997). This measure has adequate interrater reliability ($\kappa = .91$), (Lobbestael, Leurgans, & Arntz, 2011).

Borderline Features. The borderline features (PAI-BOR) portion of the Personality Assessment Inventory (PAI) was administered as a self-report measure to adolescents (Morey, 1991). The measure consists of 24-items rated on a four point Likert scale ranging from “False, not true at all” to “Very true”. This scale measures four features of BPD including affective instability (assessing mood swings and difficulty controlling anger), identity problems (assessing identity instability and lack of sense of self), negative relationships (assessing a history of intense and unstable relationships), and self-harm (assessing impulsivity in potentially harmful areas including risky sexual behavior, drug and alcohol abuse, and self-injury or suicide behaviors). While the PAI-BOR cannot determine a BPD diagnosis, it has been used frequently to assess borderline features in adolescents who are too young to be diagnosed with the disorder (Trull, 1995). This measure has shown good test-retest reliability in a non-clinical sample of undergraduate students with the correlations ranging from .77-.85 (Slavin-Mulford et al., 2012; Trull, 1995). The PAI-BOR and the DSM-IV criteria for BPD are significantly related, with adequate reliability and validity (Stein, Pinsker-Aspen, & Hilsenroth, 2007).

Maltreatment. The Maltreatment Classification System (MCS) (Barnett, Manly, & Cicchetti, 1993) is designed to capture specific maltreatment experiences utilizing a range of sources of information. In the current study we used Child Protective Service records and mother report of maltreatment towards her child during her clinical interview. Trained research assistants and doctoral students conducted coding of the Child Protective Service Records and mother report of maltreatment. Adequate interrater-reliability was obtained (ICC = .87-1.0; Kappas = .88-1.0).

The MCS classifies maltreatment by subtype that each child experienced, severity of each subtype, chronicity of maltreatment, and number of subtypes experienced by each child. Subtypes classified in the MCS include physical abuse, sexual abuse, emotional abuse, and neglect. *Physical abuse* involves intentional physical harm towards the child ranging from bruises, welts, and burns to broken bones. *Sexual abuse* involves attempted or actual sexual contact between the child and perpetrator, including grazing, touching, fondling, or penetration. Sexual abuse also includes exposure to adult or child pornography or adult sexual activity. *Emotional abuse* includes extreme prevention of child's psychological needs including extreme belittling, humiliation, exposure to domestic violence, threatening, and extreme anger and hostility. Finally, *neglect* refers to failing to meet the child's basic physical needs including not providing adequate food, clothing, medical care, and shelter. Neglect also refers to lack of educational and supervision needs provided for the child.

Subtypes of Maltreatment

To measure subtype, the presence or absence of each subtype was ascertained for each of the children. The children were also divided into heterogeneous groups based on the following hierarchical conditions (Manly et al., 1994): (i) children with any report of sexual abuse, regardless of presence of other subtypes of abuse (ii) children with any report of physical abuse, without sexual abuse, and regardless of presence of neglect, (iii) children with any report of emotional abuse, without any report of sexual abuse, or physical abuse, regardless of presence of neglect and (iv) children with any report of neglect without any report of physical, sexual, or emotional abuse.

Multiple Subtypes

Aside from which hierarchical subtype category the child was placed, we also created a group in which rate of multiple subtypes of abuse were accounted for. For instance, while one child may be in the sexual abuse subtype group, that child may also have experienced both physical abuse and neglect, having experienced a total of three subtypes of maltreatment.

Severity

The MCS classifies maltreatment severity by the seriousness of the act committed by the perpetrator and the potential emotional, physical, or psychological harm the act caused the child (Manly et al., 1994). The severity score is classified on a 0-3 rating scale within each subtype, ranging from no maltreatment to extremely severe maltreatment. Descriptions and examples of possible maltreatment for each type of abuse is provided within the system in order to score the severity for each subtype. We created a separate severity scale, with the highest report of severity summed across each subtype for a total severity score, as suggested in other studies utilizing the MCS (Manly, 2005). For example, if an individual had a severity score of “3” for physical abuse, a “0” for sexual abuse, and “2” for emotional abuse, his/her total severity score would be “5”.

Chronicity

To measure chronicity, the total number of developmental periods in which abuse occurred was calculated. For instance, if records and mother report indicated that one or more subtype of maltreatment was present during infancy (0-12 months), toddlerhood (13 months-3 years), and preschool age years (4-6 years) the child’s maltreatment would have occurred for three developmental periods, thus rearing a chronicity rating of 3.

CHAPTER III

Results

Hypothesis I

To test our first hypothesis we used chi-square tests to determine if adolescent offspring of mothers with BPD had experienced more overall maltreatment and subtypes of abuse (physical, sexual, emotional, neglect) compared to adolescents whose mothers did not have BPD. We conducted 5 chi square tests with categorical variables of mother BPD diagnosis [yes/no] and presence/absence [yes/no] of adolescent maltreatment (overall, physical, sexual, emotional, neglect).

Chi-square tests revealed that the adolescent offspring of mothers of BPD experienced more maltreatment overall compared to normative comparisons, $\chi^2(1, N = 56) = 8.11, p < .01$. Offspring of mothers with BPD also experienced more physical abuse $\chi^2(1, 54) = 6.80, p < .01$; more neglect, $\chi^2(1, 54) = 7.30, p < .01$; more emotional abuse $\chi^2(1, 54) = 7.80, p < .01$, but not more sexual abuse $\chi^2(1, 54) = 2.33, p > .05$ compared to normative comparisons. See Table 8 for descriptive information.

Hypothesis II

Five separate analyses of variances (ANOVAs) were conducted to test whether maltreated adolescents differed from non-maltreated adolescents in borderline features of affective instability, identity disturbance, negative relationships, self-harm, and total borderline score. We conducted five ANOVAs with a categorical variable of maltreatment (yes/ no) as the independent variable and adolescent borderline features as five separate dependent variables. Differences were found in borderline feature of

affective instability by maltreatment, $F(1, 54) = 5.50, p < .05$. There were no differences found between overall maltreatment and borderline features of identity disturbance $F(1, 54) = .71, p > .05$, negative relationships. $F(1, 54) = .96, p > .05$, self-harm $F(1, 54) = .81, p > .05$, or total borderline features, $F(1, 54) = 2.54, p > .05$.

Additionally, we conducted Tukey pairwise post hoc comparisons to test whether adolescent borderline features (affect instability, identity disturbance, negative relationships, self-harm, total) differed between maltreatment subtypes. Differences were found in *affective instability* by hierarchical subtypes of maltreatment, $F(4, 51) = 3.25, p < .05$. Tukey post hoc analyses revealed significant differences in mean scores in the physically abused group ($M = 10.63, SD = 3.2$) and the non-maltreated group ($M = 5.15, SD = 3.13; p < .03$). No significant differences were found between sexual abuse, emotional abuse, or neglect in affective instability borderline features. See Table 2.

Differences were found in *self-harm* by hierarchical subtypes of maltreatment, $F(4, 51) = 2.30, p < .05$. Tukey post hoc analyses revealed significant differences in mean scores between sexual abuse group ($M = 9.25, SD = 5.7$) and the non-maltreated group ($M = 4.31, SD = 3.4; p < .05$); sexual abuse group ($M = 9.25, SD = 5.7$) and emotional abuse group ($M = 4.17, SD = 2.7; p < .05$); and sexual abuse group ($M = 9.25, SD = 5.7$) and neglect group ($M = 4.53, SD = 4.1; p < .05$). No significant differences were found between the sexually abused and physically abused group in self-harm borderline features. See Table 2.

Differences were found in *total* borderline features score by hierarchical subtypes of maltreatment $F(4, 51) = 2.50, p < .05$. Tukey post hoc analyses revealed significant differences in mean scores in sexual abuse group ($M = 38.50, SD = 17.0$) and non-

maltreated group ($M = 23.1$, $SD = 8.9$; $p < .05$). No significant differences were found between physical abuse, emotional abuse, and neglect in total borderline features. See Table 2.

There were no significant differences found in borderline features of *identity disturbance* or *negative relationships* between mean differences in the hierarchical subtypes of maltreatment. See Table 2.

Hypothesis III

A series of multiple linear regressions were conducted to test whether the independent variables of severity, chronicity, and number of subtypes of maltreatment were associated with adolescent borderline features (affective instability, identity disturbance, negative relationships, self-harm, total). For each regression, adolescent borderline features (affective instability, identity problems, negative relationships, self-harm, total) served as the separate dependent variable.

Multiple regression analysis was used to test if the severity, multiple subtypes, and chronicity of maltreatment significantly predicted adolescent borderline features of affective instability. The results of the regression indicated *severity* of maltreatment explained 16% of the variance of borderline feature of affect instability $R^2 = 0.16$, $F(1, 54) = 10.92$, $p < .01$, with greater severity significantly predicting higher borderline features of affective instability ($B = 0.40$, $SE = 0.16$, $p < .01$). *Number of subtypes* of maltreatment explained 14% of the variance of borderline feature of affective instability, $R^2 = 0.14$, $F(1, 54) = 8.91$, $p < .01$, with great number of subtypes significantly predicting higher borderline features of affective instability ($B = 0.37$, $SE = 0.41$, $p < .01$). *Chronicity* explained 7% of the variance of borderline feature of affect instability,

$R^2 = .07$, $F(1, 54) = 3.77$, $p < .05$, with greater chronicity significantly predicting higher borderline features of affective instability ($B = 2.56$, $SE = 0.228$, $p < .05$). See Table 3.

Multiple regression analysis was used to test if the severity, multiple subtypes, and chronicity of maltreatment significantly predicted adolescent borderline features of identity problems. There was no significance in any of the characteristics of maltreatment (severity, number of subtypes, chronicity) in predicting identity disturbance. See Table 4.

Multiple regression analysis was used to test if the severity, multiple subtypes, and chronicity of maltreatment significantly predicted adolescent borderline features of negative relationships. There was no significance in any of the characteristics of maltreatment (severity, number of subtypes, chronicity) in predicting negative relationships. See Table 5.

Multiple regression analysis was used to test if the severity, multiple subtypes, and chronicity of maltreatment significantly predicted adolescent borderline features of self-harm. *Severity* of maltreatment explained 8% of the variance of borderline feature of self-harm $R^2 = .08$, $F(1, 54) = 4.81$, $p < .05$, with greater severity significantly predicting higher borderline features of self-harm ($B = 0.29$, $SE = 0.16$, $p < .05$). *Number of subtypes* of maltreatment explained 10% of the variance of borderline feature of self-harm, $R^2 = .10$, $F(1, 54) = 5.70$, $p < .05$, with greater number of subtypes significantly predicting higher borderline features of self-harm ($B = 0.31$, $SE = 0.39$, $p < .05$). There was no significance in the association of chronicity and self-harm. See Table 6.

Multiple regression analysis was used to test if the severity, multiple subtypes, and chronicity of maltreatment significantly predicted adolescent total borderline features. *Severity* of maltreatment explained 7% of the variance of total borderline feature

score $R^2 = .07$, $F(1, 54) = 4.00$, $p < .05$. It was found that greater severity significantly predicted higher total borderline features ($B = 0.26$, $SE = 0.51$, $p < .05$). *Number of subtypes* explained 8% of the variance of total borderline feature score, $R^2 = .08$, $F(1, 54) = 4.53$, $p < .05$. It was found that greater number of subtypes of maltreatment significantly predicted higher total borderline features ($B = .28$, $SE = 1.26$, $p < .05$). There was no significance in chronicity predicting total borderline feature score. See Table 7.

CHAPTER IV

Discussion

The present study investigated whether adolescent offspring of mothers with BPD experience more maltreatment compared to offspring whose mothers do not have the disorder. The study also examined whether maltreatment in all adolescents, regardless of maternal BPD status, significantly impacted adolescents' BPD features. This study contributes to our knowledge of this high-risk population of adolescents and findings have implications for early intervention.

We found that adolescent offspring of mothers with BPD experience more overall levels of maltreatment as well as more physical abuse, emotional abuse, and neglect compared to adolescents who do not have mothers with the illness. Contrary to our hypotheses, however, the offspring of mothers with BPD did not experience more sexual abuse compared to normative comparisons. The feeling of shame is especially prevalent in individuals with high BPD features who are sexually abused (Karan, Niesten, Frankenburg, Fitzmaurice, & Zanarini, 2014), and thus may play a significant factor in whether or not the abuse is reported.

We also found two interesting and important differences in subtypes of maltreatment and their specific association with adolescent borderline features. Those adolescents who had been physically abused reported more affective instability than did non-maltreated adolescents. Those adolescents who had been sexually abused reported more self-harm than did adolescents who were emotionally abused, neglected, or reported no maltreatment, but not than those who were physically abused. Moreover, those adolescents who had been sexually abused also reported more total borderline features

than did non-maltreated adolescents, but not than those who experienced other subtypes of maltreatment. While research supports that childhood maltreatment occurs between 73-82% of adults with BPD (Battle et al., 2004) our study provides information about what subtypes of maltreatment are associated with particular features of the disorder.

We also tested whether dimensions of maltreatment (severity, chronicity, and number of subtypes of maltreatment experienced) had a significant effect on adolescent borderline features. We found that severity and number of subtypes of maltreatment were significantly associated with adolescent affective instability, self-harm, and total borderline features but not with identity disturbance or negative relationships. Interestingly, unlike Hecht et al. (2014) who found that chronicity of maltreatment was significantly associated with total borderline features score, in our study, chronicity was only significantly associated with affective instability.

An interesting finding that emerged within subtypes of maltreatment was that physical abuse was uniquely associated with affective instability. Affective instability is thought by some to be the most common and the driving symptom for BPD in adulthood (Lieb, Zanarini, Schmahl, Linehan, & Bohus, 2004). Several BPD symptoms are related to both affective instability and childhood physical abuse. For example, binge eating are self-damaging behaviors found in some with BPD, and Steiger et al. (2000) found that people with binge eating problems demonstrate greater affective instability and are more likely to have had a history of childhood physical abuse, than are normal eaters. Physical abuse as a child may negatively impact the ability to manage anger and other emotions, thus leading to other maladaptive ways of coping with emotion, such as binge eating. However, prospective longitudinal studies are needed to test these pathways.

Interestingly, adolescent offspring of mothers who have BPD did not experience more sexual abuse than did normative comparisons. However in the sample as a whole, adolescents who were sexually abused reported more self-harm behaviors than did emotionally abused, neglected, and non-maltreated adolescents. Although recent studies examining sexual abuse in relation to BPD features in childhood (ages 10-12) found no associations between sexual abuse and self-harm (Hecht et al., 2014) it may be that the association between self-harm and sexual abuse may not be prevalent in this sample of 10-12 year olds. Indeed, the age of onset of non-suicidal self-injurious behaviors begins on average at 12 years of age (Groschwitz et al., 2015; Voon, Hasking, & Martin, 2014; Yates, 2004) indicating that perhaps our sample had more adolescents engaging in self-harm behaviors who were also being sexually abused. The relationship between self-harm and sexual abuse is an important one. Yates (2004) describes many factors that contribute to the unique relationship between sexual abuse and self-harm, with some data suggesting that self-harm is a tension reducing behavior. As it is, sexual abuse occurs in a localized area of the body, and the body later serves as a target of self-injurious behavior. Moreover, another study consisting of a community sample of adolescents found that sexual abuse prospectively predicted recurrent self injurious behavior, compared to physical abuse which predicted intermittent self-harm (Yates, Carlson, & Egeland, 2008). This study also found that dissociation mediated the relation between sexual abuse and self-harm. Though it is unclear why these associations emerged, it may be that dissociation helps an individual distract from painful experience, or on the contrary, self-harm may reground the person from an dissociative episode after enduring something as traumatic as sexual abuse. Our findings are relevant because determining the occurrence

of sexual abuse early on could perhaps prevent self-harm behaviors in adolescents who are more likely to express their negative emotions by causing themselves physical pain. This finding also indicates that sexual abuse may have a unique factor in contributing to the development of BPD.

Furthermore, given that affective instability is such a prominent feature of BPD, understanding this feature may shed light on how volatile emotions could be better managed within the realm of early intervention. Research has incorporated Linehan's biosocial model of BPD (Linehan, 1993) as well as the DynAffect Theory (Kuppens, Oravecz, & Tuerlinckx, 2010) in order to better understand affective instability in BPD. Linehan (1993) proposes a model that integrates how a person's biological make-up and dysfunctional environment during childhood contribute to emotional regulation over time. The model proposes that affective instability and emotional lability is prevalent among individuals with the disorder and posits that this is largely due to the invalidating environments in which these children grew up. Moreover, in our sample we found that physical abuse was associated with affective instability indicating that physical abuse may contribute to this particular feature of the disorder, and perhaps even the biological make-up of these individuals. The DynAffect theory (Kuppens et al., 2010) proposes that every individual, regardless of their psychopathology, is characterized by an affective home base, and that a person's affect fluctuates based on internal or external experiences over time. This model is congruent with affective instability in individuals with BPD and has been tested in recent literature. Ebner-Priemer et al. (2015) and colleagues found that during a 24-hour time span, individuals diagnosed with BPD when compared to a normative sample had a higher baseline for negative affect, increased variability in mood

over time, more intense response to emotional stimuli, and longer time period returning to baseline mood. Future research should incorporate these models in order to better inform treatment with adolescents who show features of affective instability and have been physically abused.

There were certain limitations to this study that should be taken into account while interpreting the results. First, the design of the study was cross-sectional, and therefore none of the associations reported can be considered causal variables to adolescent borderline features. Longitudinal designs are vital in capturing a more comprehensive picture of the effect maltreatment has on adolescent borderline features, as well as following the nature of maltreatment in adolescents whose mothers have BPD. Moreover, longitudinal studies would be beneficial in understanding how some of these features eventually develop into a disorder in adulthood, which is paramount in early intervention efforts. Additionally, maltreatment in the present study is coded from retrospective reports from mother of the adolescent as well as CPS records. It is possible that other types of maltreatment, especially sexual abuse, were present unbeknownst to the parent. Finally, the study sample is not a heterogeneous sample with regard to race and ethnicity, and therefore future studies should aim to include a more diverse sample in order to generalize the experience of maltreatment in other races and ethnicities with high BPD features.

Overall, findings of this study highlight the multipart nature of maltreatment and how early experiences of maltreatment may impact borderline personality features in adolescents. Adolescent offspring of mothers with BPD represent a high-risk population for maltreatment and thus early intervention efforts should be implemented accordingly

in treatment settings. Given that BPD is prevalent in both men and women equally (Sansone & Wiederman, 2014) future studies could examine maltreatment in offspring of fathers who have the disorder. Additionally, given the challenging nature of treating BPD (Diamond et al., 2013), it is imperative to target specific developmental pathways along with maltreatment that may later lead to a full diagnosis in adulthood. Multilevel modeling such as in the DynAffect model (Ebner-Priemer et al., 2015; Kuppens et al., 2010) could be used to track adolescents range of emotional regulation and self-harm behaviors over time. Elucidating the variability and intensity of these characteristics in adolescents with high BPD features may shed light on differences in emotional regulation and rate of self-harm when compared to a normative adolescent group. Such combination in research will allow us to understand the developmental pathways that lead to this disorder and ultimately aid in development of a treatment module targeting adolescents who both experience childhood maltreatment and have a parent with BPD.

Furthermore, the results from this study contribute to important information practitioners and researches should consider while working with young patients. Our research shows that 90% of adolescents whose mothers have BPD experience maltreatment. Therefore, it is important to assess whether the parent of a child patient meets diagnostic criteria for BPD. For instance, administering the PAI-BOR (Morey, 1991) to parents as apart of a protocol for outpatient treatment settings for children would be an important diagnostic tool to help mental health practitioners screen for a possible BPD diagnosis in the parents of a child patient. Additionally, mental health practitioners working with adults who have BPD should screen whether parents with the disorder also have children in the home. Implementing these precautions while working with

populations who have BPD are important in monitoring and reporting maltreatment towards the children and adolescents whose mothers have the disorder.

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Appendices

Table 1. *Demographic Information*

Variable	BPD Group <i>n</i> = 28 <i>M</i> (<i>SD</i>)	Comparison Group <i>n</i> = 28 <i>M</i> (<i>SD</i>)	<i>t</i> (53)
Family Income (\$)	22,988(12,769)	28,668(16,081)	1.447
Adolescent Age (years)	15.26 (1.13)	15.69 (1.26)	1.345
Number of Adults In the Home	1.70 (0.67)	1.93 (0.77)	1.158
Number of Children In the Home	2.22 (1.37)	2.54 (1.67)	0.775
			χ^2
Minority Ethnic Status of Adolescent	4%	11%	1.002
Female Adolescents	50%	50%	0.019
Mother has GED/ H.S. Diploma	70%	100%	9.708**
Mother has Partner	71%	67%	0.146

** = $p < .01$

Table 2. *Analysis of variance for adolescent borderline features and hierarchical subtypes of maltreatment*

BPD features	Sexual Abuse (<i>n</i> = 8)	Physical Abuse (<i>n</i> = 8)	Emotional Abuse (<i>n</i> = 12)	Neglect (<i>n</i> = 15)	No abuse (<i>n</i> = 13)	
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>F(df)</i>
Affective instability	9.88 (5.05)	10.63 (3.15) ^{NA}	6.33 (3.90)	7.67 (4.50)	5.15 (3.31) ^{PA}	3.24* (4,51)
Negative relationships	10.25 (4.62)	8.00 (2.40)	6.92 (3.50)	8.13 (4.40)	7.15 (3.13)	1.13 (4,51)
Identity disturbance	9.13 (3.70)	7.63 (1.70)	6.00 (3.67)	7.87 (5.11)	6.54 (2.63)	.80 (4,51)
Self-harm	9.25 (5.67) ^{EA, NG,NA}	5.25 (2.12)	4.17 (2.70) ^{SA}	4.53 (4.07) ^{SA}	4.31 (3.37) ^{SA}	2.91* (4,51)
Total score	38.5 (16.76) ^{NA}	31.50 (6.32)	24.00 (11.52)	28.21 (4.54)	23.15 (8.90) ^{SA}	2.50* (4,51)

* = $p < .05$

Note: Initialed superscripts indicate the maltreatment groups that are significantly different from one another; SA: sexual abuse, PA: physical abuse, EA: emotional abuse, NG: neglect, NA: no abuse.

Table 3. *Multiple regression of severity, number of subtypes, and chronicity associated with affective instability*

<u>Affective Instability</u>					
Variable	<i>B</i>	β (SE)	R^2 (adj.)	<i>t</i>	<i>F</i> (<i>df</i>)
Severity	0.52	0.40	0.16 (.14)	3.20	10.92*(1,54)
Number of Subtypes	1.23	0.37	0.14 (.13)	3.00	8.91*(1,54)
Chronicity	0.44	0.26	.07 (.05)	2.00	3.77* (1,54)

* = $p < .05$

Table 4. *Multiple regression of severity, number of subtypes, and chronicity associated with identity disturbance*

Variable	<u>Identity Disturbance</u>				
	<i>B</i>	β (SE)	R^2 (adj.)	<i>t</i>	<i>F</i> (<i>df</i>)
Severity	.06	.05	.02 (-.02)	0.37	0.13 (1,54)
Number of Subtypes	0.22	.08	.06 (-.01)	0.60	0.34 (1,54)
Chronicity	-.01	-.01	-.00 (-.02)	-.05	.03 (1,54)

Table 5. *Multiple regression of severity, number of subtypes, and chronicity associated with negative relationships*

<u>Negative Relationships</u>					
Variable	<i>B</i>	β (SE)	R^2 (adj.)	<i>t</i>	<i>F</i> (<i>df</i>)
Severity	0.10	.08	.01 (-.01)	0.62	0.40 (1,54)
Number of Subtypes	0.31	0.11	.01 (-.06)	0.82	0.67 (1,54)
Chronicity	.02	-.01	.00 (-.02)	0.17	.03 (1,54)

Table 6. *Multiple regression of severity, number of subtypes, and chronicity associated with self-harm/ impulsivity*

Variable	<u>Self-Harm/ Impulsivity</u>				
	<i>B</i>	β (SE)	R^2 (adj.)	<i>t</i>	<i>F</i> (<i>df</i>)
Severity	0.34	0.28	.08 (.10)	2.20	4.81*(1,54)
Number of Subtypes	0.92	0.31	.10 (.08)	2.40	5.70*(1,54)
Chronicity	0.12	.08	.07 (-.01)	0.56	0.31 (1,54)

* = $p < .05$

Table 7. *Multiple regression of severity, number of subtypes, and chronicity associated with total borderline features*

Variable	<u>Total Borderline Features</u>				
	<i>B</i>	β (SE)	R^2 (adj.)	<i>t</i>	<i>F</i> (<i>df</i>)
Severity	1.01	0.26	.07(.05)	2.00	4.0*(1,54)
Number of Subtypes	2.70	0.27	.08(.06)	2.12	4.53*(1,54)
Chronicity	0.58	0.11	.07 (.06)	0.84	0.71(1,54)

* = $p < .05$

Table 8. *Maltreatment characteristics in offspring of mothers with and without borderline personality disorder*

Variable	<u>Mothers with BPD</u>		<u>Healthy Controls</u>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Severity	5.70	3.00	2.50	2.80
Subtypes	2.00	1.00	0.85	0.93
Chronicity	3.30	1.40	1.4	1.22

Table 9. *Bivariate correlations between adolescents' maltreatment experience and adolescents' borderline features and subscales*

Variable	Affective Instability	Identity Disturbance	Negative Relationship	Self-Harm	Total
Physical Abuse	.30*	.01	.01	.11	.01
Sexual Abuse	.21	.22	.25	.42**	.34*
Emotional Abuse	-.15	-.14	-.11	-.13	-.17
Neglect	.29*	.03	.08	-.10	.01
Subtypes	.37	.08	.11	.33*	.29
Severity	.40*	.05	.08	.29*	.26
Chronicity	.44**	-.07	.02	.07	.12

* = $p < .05$; ** = $p < .01$

Vita

Gretchen Kurdziel was born in Connecticut and grew up in New England. She attended the University of Vermont, where she obtained her B.A. in psychology. After graduating, she worked at the University of Maryland under the tutelage of Drs. Carl Lejuez and Laura MacPherson studying risk-taking behavior in children and adolescents who are at risk for contracting HIV. Gretchen is pursuing her Ph.D. in clinical psychology under the mentorship of Dr. Jenny Macfie. She is investigating the role that Borderline Personality Disorder in mothers has on parenting and childhood outcomes. She also researches the effect that mood regulation in BPD has on drug and alcohol use. Gretchen hopes to pursue a research career in academia.