Type and Timing of Childhood Maltreatment and the Impact on Trajectories of Borderline Personality Disorder

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Abstract

Borderline personality disorder (BPD) is a chronic and debilitating condition characterized by affective instability, impulsivity, and interpersonal difficulties. Although childhood maltreatment is a known risk factor for BPD, few studies have examined the combined impact of the type (sexual or physical) and timing (pre-elementary, elementary, or high school) of maltreatment on the longitudinal development of BPD symptoms. This gap in knowledge was addressed by analyzing trajectories of BPD symptoms across early adulthood (ages 20 to 26) using data from the McMaster Teen Study, a longitudinal cohort of 701 participants. A two-class latent trajectory model revealed low stable (78%) and moderate stable (22%) symptom groups. Hierarchical logistic regressions indicated that both sexual and physical maltreatment were significant predictors of moderate BPD symptom trajectories, with sexual maltreatment demonstrating a stronger effect. Additionally, maltreatment experienced during pre-elementary and elementary school significantly predicted categorization into the moderate stable BPD symptom trajectory, while high school maltreatment did not. Gender and bullying victimization were also significant covariates, with women more likely to fall into the moderate stable group. These findings emphasize the importance of early prevention and intervention efforts, specifically, targeting children exposed to early-life adversity, and highlight developmental timing as a key factor in the etiology of BPD.

Keywords: borderline personality disorder symptoms, childhood maltreatment, sexual abuse, physical abuse, developmental timing

Introduction

Mental disorders contribute significantly to the disease burden for individuals aged 5 to 24, accounting for 20.27% of years lived with disability (Kieling et al., 2024). Borderline personality disorder (BPD) is a common mental health disorder (1.4– 5.9% prevalence rate overall, 10% of mental health outpatients, and 20% of psychiatric inpatients; American Psychiatric Association [APA], 2022) characterized by instability in affect, impulsivity, interpersonal relationships, and identity formation (APA, 2022; Leichsenring et al., 2011). BPD is associated with high rates of suicide, severe functional impairments, and is highly comorbid with other mental health disorders, most often mood disorders, anxiety disorders, or substance use disorders (Leichsenring et al., 2011).

Extensive research on the development of BPD suggests a significant relation with early experiences of childhood maltreatment (Sharp & Fonagy, 2015). Although several studies have been conducted on the link between childhood maltreatment and BPD, few have examined BPD symptoms over time, especially across early adulthood (Bornovalova et al., 2013; Pietrek et al., 2013; Winsper et al., 2012). For my thesis, I examined the timing of physical and sexual abuse in childhood and adolescence in predicting BPD symptom trajectories assessed yearly from age 20 to 26.

Theoretical Background

Attachment Theory

The link between childhood maltreatment and BPD has been explained using John Bowlby's (1973) attachment theory. According to Bowlby, there is a universal need for humans to form close affectionate bonds, specifically starting in early life. Infants form these attachments through behaviour such as closeness seeking, smiling, and crying, which are reciprocated by the caregiver(s) through touching, soothing, and holding (Ainsworth, 1989; Bowlby, 1973; Fonagy et al., 2000). Attachment aids in the process of emotion regulation; when infants signal changes in their state (e.g., they are hungry or need to be changed), these cues are understood and responded to accordingly by caregivers (Fonagy et al., 2000). Although an individual's attachment system is built throughout their life, this system begins as an infant and secure attachment is developed through predictable caregivers (Ainsworth, 1989; Bowlby, 1973). In the first year of life, an infant begins to build expectations of regularly occurring events such as

sleep-wake cycles or feeding times, which, over time, become internalized as working models of the environment around them (Ainsworth, 1989; Bowlby, 1982). When attachment behaviour is reciprocated or acted upon by caregivers, this reinforces a secure attachment bond between infant and caregiver. However, when not reciprocated or acted upon, it strengthens the development of an insecure or unresolved attachment (Fonagy et al., 2000).

There are at least four styles of attachment: secure/autonomous, insecure/dismissing, insecure/preoccupied, and/or unresolved (Bowlby, 1982; Fonagy et al., 2000). Given the lack of nurturance and predictability, maltreated children are more likely to be insecurely attached to their caregivers than non-maltreated children (Cicchetti & Barnett, 1991). Individuals with BPD are most often categorized as having an insecure/preoccupied attachment style which reflects "an emotional template of intimacy anxiety/anger" (Fonagy et al., 2000, p. 106). Not surprisingly, many symptoms of BPD, such as intense interpersonal relationships or chronic fear of abandonment, are similar to this attachment style (Godbout et al., 2019; Hill et al., 2011). Early attachment experiences may be indicative of later borderline features or symptoms and have an influence on development of personality based on the internalized cognitive schemas created (Carlson et al., 2009; Godbout et al., 2019). Although many studies identify individuals with BPD as having one particular attachment style (most often insecure or preoccupied), Levy (2009) found in their systematic review that there are inconsistencies in labeling those with BPD with any one style of attachment. More recent studies suggested BPD is not related to one specific attachment pattern.

Biosocial Theory

BPD is also thought to arise from the combination of biological irregularities and dysfunctional environments (Linehan, 1993). Specifically, BPD is characterized by dysfunction in one's emotion regulation system, and in invalidating environments, wherein caregiver(s) often fail to teach their children how to regulate or label arousal, tolerate emotional distress, or when to trust their own emotional responses to their interpretations of events. These emotionally invalidating environments tend to reinforce extreme emotional expressions in people with BPD (Crowell et al., 2009). As adults, many people with BPD replicate the invalidating dynamics, undermining their own emotional responses and seek validation from others. For example, individuals with BPD tend to oversimplify solving problems, leading to unrealistic goals and an

inability to use rewards as motivation in place of punishment. Moreover, self-hate often follows failure in attaining these goals which often perpetuates a cycle of shame. The shame reaction following failure in those with BPD is a natural occurrence as their social environment tends to shame emotional vulnerability that may follow failure which can trigger a self-shaming cycle. This shame response is described as "a characteristic response to uncontrollable and negative emotions among borderline individuals" (Linehan, 1993, p. 42). Linehan (1987) noted that most behavioural patterns that are found in suicidal people with BPD could be accounted for by their emotional over-reactivity and dysregulation in an invalidating environment.

Literature Review

Childhood Maltreatment

Researchers have investigated various pathways associated with the development of BPD or BPD symptoms and have found two common pathways to BPD—childhood maltreatment (Ibrahim et al., 2018) and bullying victimization (Erazo et al., 2023; Wolke et al., 2012). The focus of my thesis is on the role of childhood maltreatment, which includes physical and/or emotional abuse, sexual abuse, neglect, negligence, or other forms of exploitation inflicted upon individuals under the age of 18 years old (WHO, 2022). These acts, perpetrated by someone in a relationship of responsibility, power, or trust, result in potential or actual harm to the survival, dignity, and/or development of the targeted individual (WHO, 2022). The Government of Canada (2024) defines four specific forms of abuse including physical, emotional, sexual, and neglect. Physical abuse refers to the intentional use of force against someone without their consent that may result in physical pain or injury. Emotional abuse is when someone uses words or actions to harm a person's self-respect, isolate, control, or scare them; this type of abuse is also referred to as psychological abuse. Sexual abuse is sexual contact without consent, which, may include unwanted sexual touching or activity, continued sexual contact after being asked to stop, and/or pressuring someone to take part in degrading or harmful sexual acts. Neglect is the failure of caregiver(s) to provide basic needs such as food or warm clothing, adequate health care, medication, personal hygiene, safety from physical harm, or proper supervision. Results from the 2019 Canadian General Social Survey, a study of approximately 20,000 Canadians aged 15 and over, indicated that 22% of Canadians had experienced physical abuse by an adult before the age of 15, and 6% had experienced sexual abuse (Bader & Frank, 2023; Cotter, 2021). In another representative study of Ontario residents, MacMillian et al. (2013) found that the prevalence of

child physical abuse was 33.7% and the prevalence rate for sexual abuse was 22.1% for girls and 8.3% for boys.

The lasting negative impacts of childhood maltreatment have been documented extensively. Exposure to violence in childhood and adolescence has been found to affect physical health (Dube et al., 2003; Fonzo, 2019; Herzog et al., 2020; Teicher & Samson, 2016) and mental health (Chapman et al., 2004; Johnson et al., 1999; Kessler et al., 1997; Lippard & Nemeroff, 2020). Furthermore, it has been established that the effects of childhood maltreatment extend beyond childhood, influencing mental health later into adulthood (Benjet et al., 2010; MacMillan et al., 2013; Pietrek et al., 2013). Of relevance to my thesis is the association between physical and sexual child abuse and the development of BPD symptoms across early adulthood (Bornovalova et al., 2013; Font & Berger, 2015).

Borderline Personality Disorder

Individuals with BPD often attempt to avoid real or perceived abandonment, separation or rejection, and loss of an external structure (i.e. relationships or changes in plans), as these can lead to "changes in self-image, affect, cognition, and behavior" (APA, 2022, p. 753). These individuals internalize feelings of inadequacy leading to an intolerance of being alone, which is associated with self-harm, suicide, or threats (APA, 2022; Goodman et al., 2017). Over 90% of individuals with BPD (adolescents and adults) reported self-harm and over 75% reported a prior suicide attempt (Goodman et al., 2017). Most individuals with BPD engaged in more than one episode of self-mutilation (over 88%) and had made more than one suicide attempt (over 50%; Goodman et al., 2017). These high rates of self-harm stand in contrast to those in the general population. In the general population, there are 10.9 deaths by suicide per 100,000 people, 61.0 hospitalizations from self-harm per 100,000 people (Public Health Agency of Canada, 2024), 3.1% of people attempt suicide in their lifetime, 4.2% make suicide plans in their lifetime, and 12% had serious thoughts of suicide in their lifetime (Government of Canada, 2023). Given the extreme harm associated with BPD, it is pertinent to understand its developmental causes and trajectories.

Childhood Maltreatment and Borderline Personality Disorder

Type of Childhood Maltreatment

The prevalence of childhood maltreatment is increasingly acknowledged as a significant risk factor for the development of BPD (Widom et al., 2009). As a follow-up to a larger prospective cohort study that followed children into adulthood, Widom et al. (2009) examined children who had experienced physical or sexual abuse and/or neglect under 11 years old (exclusively court-verified cases of abuse were included), along with children who had not experienced abuse. Results revealed that 14.9% of the maltreated group met the criteria for a BPD diagnosis, compared to 9.6% of the control group. Notably, physical abuse and neglect, but not sexual abuse, increased the risk for a later BPD diagnosis. In another study, Winsper et al. (2012) examined a cohort of mothers and their children where maternal family adversity was assessed during pregnancy alongside punitive parenting behaviour (hitting, shouting, hostility, or conflict) across childhood, from birth to age 11. At age 11, the children were assessed for BPD symptomology. Results indicated that maternal family adversity had a direct influence on BPD symptomology at age 11.

Researchers have also found mixed results between sexual abuse and the development of BPD. In their systematic review, Ibrahim et al. (2018) reported that three out of the six studies included found an independent association between sexual abuse and BPD and/or BPD symptoms. Other studies within the review suggested that the prevalence of sexual abuse in individuals with BPD was not statistically greater than those who had experienced other types of abuse. Furthermore, two studies found that even individuals with more severe traits of BPD did not reveal higher levels of sexual abuse than other forms of abuse (Ibrahim et al., 2018). Hengartner et al. (2013) examined 512 participants of the epidemiology survey of the Zurich Programme for the Sustainable Development of Mental Health Services in Switzerland which is a population-based study using random selection. Participants were those who had completed face-to-face interviews on personality disorders and completed all questionnaires. In this study, a relation between childhood sexual abuse and BPD in adulthood was found, although the effect size was small.

There is limited consensus on the roots of BPD despite extensive research on the interconnectedness of childhood maltreatment and BPD. The lack of agreement centres on

whether child maltreatment is the primary cause of BPD or if there are additional factors influencing the relation. For example, in a systematic review by MacIntosh et al. (2015), inconsistencies within the existing BPD literature regarding specific types of childhood trauma (such as sexual abuse, physical abuse, neglect, or emotional abuse) were found. This highlights the need for more comprehensive, large-scale studies to examine the complex pathways contributing to BPD development in adulthood. Complex pathways are best examined using a longitudinal analytic approach that allows for the examination of change over time (Brittain & Vaillancourt, 2023).

Timing of Childhood Maltreatment

Researchers have moved beyond the different forms of maltreatment to examine the influence of timing (age of onset), severity, recency, and chronicity of childhood maltreatment in the prediction of BPD and BPD symptoms. Chronicity is conceptualized as the examination of patterns of maltreatment over time to assess acute, episodic, and chronic experiences throughout child development (Manly, 2005). Although chronicity will not be examined in this study directly due to a power issue, it is important to understand the nuances of terminology used, because some researchers use chronicity and timing interchangeably, whereas others use different operational definitions of the term.

Although childhood maltreatment has established associations with BPD, what has not been adequately explored is the timing of maltreatment and its relation to BPD symptomology. In one rare study on this topic, Hecht et al. (2014) examined how maltreatment subtype (neglect, physical, emotional, or sexual abuse), developmental timing, and chronicity of childhood maltreatment affected different borderline personality features in children. *Borderline personality features* is a term applied to characteristics of BPD that may describe an individual that has not yet been assessed or diagnosed with BPD (Crick et al., 2005). Hecht et al. focused on 10–12-year-olds in low-income families using data from the Department of Human Services, which included records from previous incidents of maltreatment. Greater chronicity predicted higher borderline personality feature scores (Hecht et al., 2014). However, no significant differences in the mean of borderline features scores were found when examining the onset of maltreatment or the recency of maltreatment. In this study, physical abuse and neglect were associated with higher borderline personality features whereas sexual abuse was not. However, this may

potentially reflect an issue with statistical power, given that the study sample size was comprised of 27 participants who were sexually maltreated in childhood. Hetch et al. (2014) examined childhood maltreatment using records from the Department of Human Services, which would only include records of children who had reported maltreatment occurring in the home, this would not include children where the maltreatment goes unreported. A large proportion of childhood maltreatment goes unreported to police or other services. Statistics Canada (2021) found in the 2019 General Social Survey that 93% of people who had experienced physical or sexual abuse in childhood stated the maltreatment did not get reported to police, child protection services, or other agencies. Thus, there is a need to use self-reports of abuse in studies as only using other-reported maltreatment misses a large number of abuse cases.

Childhood maltreatment occurring across different developmental stages has been researched regularly when trying to understand different cognitive, social, and overall developmental repercussions. Few researchers agree on the developmental period (also known as a 'sensitive period') that is most predictive of problematic outcomes. For example, Jaffee and Maikovich-Fong (2011) found that maltreatment chronicity compared to situational maltreatment (maltreatment in one developmental period) was less strongly associated with the outcomes of children when measuring behavioural (externalizing symptoms), cognitive (internalizing symptoms), prosocial behaviour, and IQ. This was found irrespective of whether maltreatment started in infancy or later in development.

Although not specific to BPD or its features, Capretto (2020) found that severity and timing of childhood maltreatment were greater predictors of depression and post-traumatic stress disorder (PTSD) than the frequency of maltreatment incidents. Specifically, in early childhood (5 and under) and late childhood (13 and above), sexual maltreatment was a stronger predictor than abuse in middle childhood for adult depression and PTSD. Furthermore, Kaplow and Widom (2007) found that early onset of childhood maltreatment was more predictive of anxiety and depression, whereas later onset in childhood was more predictive of behaviour problems (externalizing symptoms). Participants who had been maltreated earlier in life (under 5) reported higher levels of psychological distress in adulthood compared to participants who had been maltreated later in childhood (age 6–11). Conversely, Russotti et al. (2021) found that those who had experienced maltreatment exclusively before age 5 did not exhibit greater internalizing or

externalizing symptoms in childhood (ages 10 to 12), or emerging adulthood (ages 18 to 22), similar to non-maltreated children. According to Russotti et al., those who experienced maltreatment exclusively in early development may have had a chance to bounce back through tendencies that redirect development toward healthier outcomes, particularly when early interventions occur. In contrast, those maltreated in childhood (6 to 7 years) were at greater risk for externalizing symptoms during childhood, which in turn predicted a higher risk of anti-social personality disorder and substance dependence disorder during emerging adulthood.

Font and Berger (2015) examined how childhood maltreatment influences a child's developmental trajectory, focusing on one cognitive outcome (vocabulary skills) and three socio-emotional outcomes (depressed and anxious, withdrawn, and/or aggressive behaviour). Results suggested a strong association between early childhood maltreatment (before age 3), poorer verbal skills, and greater behavioural problems at around age 3. Moreover, moderate associations were found between maltreatment between ages 3 and 9 and cognitive abilities and behavioural trajectories during those ages. Notably, both physical and emotional abuse were strongly inversely associated with socio-emotional well-being, suggesting that this finding is consistent with literature that physical abuse may impact parent-child attachment and therefore impact the emotional and behavioural development of the child (Font & Berger, 2015). In another study, Cowel et al. (2015) found that children who had been maltreated in infancy compared to those who had been maltreated in childhood (8 to 9 years of age) demonstrated poorer cognitive functioning, particularly in inhibitory control and working memory. Cowel et al. (2015) argued that infancy may be a vulnerable period for children to be maltreated because of the rapid creation of neural connections during this developmental stage. This exposure may create a cycle where maltreatment adversely affects brain structure leading to distortion of cognition or social experiences, subsequently intensifying pathological experiences presumably in childhood and adulthood. Furthermore, early onset of maltreatment was found to significantly predict poor inhibitory control and working memory performance, while the chronicity of maltreatment also predicted cognitive outcomes. Children who experienced maltreatment exclusively in one developmental period performed the same as children who had not been maltreated. In contrast, children who experienced maltreatment in three or more developmental periods performed significantly worse cognitively. These findings highlight that there may be sensitive periods during which maltreatment may cause more harm than at other periods.

Sensitive periods in developmental psychology have been widely researched regarding its existence and extent. Dunn et al. (2018) examined different developmental time periods including early childhood (ages 0–5), middle childhood (ages 6–10), adolescence (ages 11–18), and adulthood (ages 19+) in relation to emotion regulation. Childhood maltreatment beginning in middle childhood was found to be most associated with adult emotion dysregulation in comparison to other time periods, a finding that persisted even when controlling for frequency of maltreatment, socioeconomic status, and current post-traumatic and depressive symptoms. Furthermore, research by Kim and Cicchetti (2010) highlighted the associations between the timing and type of maltreatment and later emotion dysregulation and found that multiple subtypes of maltreatment (neglect, physical, and sexual abuse), along with earlier onset, were linked to emotion dysregulation, which then contributed to later externalizing and internalizing symptoms. Of note, poor emotional self-regulation is a core feature of BPD and BPD symptoms (APA, 2022).

Some researchers have examined the relation between childhood maltreatment and BPD. Bornovalova et al. (2013) examined BPD traits at age 24 for both cohorts included in the study and prior experiences of sexual, emotional, and physical abuse using a longitudinal twin design study. Internalizing and externalizing symptoms were assessed at age 11 for one cohort of the study and age 17 for the other cohort using interviews and self-report measures administrated to the twins in the study, their mothers, and teachers. Externalizing symptoms were measured from ratings on attention deficit/hyperactivity disorder, conduct disorder, and oppositional defiant disorder measures. Internalizing symptoms were calculated from ratings on major depressive disorder (MDD), social phobia, and specific phobia (also called simple phobia). Findings indicated a relation between childhood maltreatment, BPD traits, and internalizing and externalizing symptoms, but the relation between childhood abuse and the development of BPD traits was not found to be causal. However, type of abuse by timing effects on BPD development were not examined within the study.

Despite extensive research on the influence of childhood maltreatment, there is little common ground among experts regarding the timing and form of child abuse in the prediction of BPD and BPD symptoms. In fact, the type by timing of child maltreatment in relation to BPD has only been examined in two studies. Pietrek et al. (2013) examined the type, frequency, and

developmental period of child maltreatment in relation to BPD, MDD, and schizophrenia, with symptoms assessed at one time point and therefore, was cross-sectional in nature. Regression analyses identified early adverse experiences as a predictor of BPD with a stronger association found for BPD than MDD. Hetch et al. (2014) examined childhood maltreatment by subtype, timing, and chronicity in relation to BPD features in childhood, specifically in children aged 10- to 12-years-old. To date, there are no published studies, to my knowledge, on type and timing of child maltreatment in the prediction of adult BPD symptoms assessed at more than one time point. Accordingly, my thesis fills this gap in knowledge by examining the timing (before elementary school, during elementary school, and during high school) of child physical and sexual maltreatment in the prediction of BPD symptoms in adulthood (age 19–26).

Trajectories of BPD Symptoms

Examining trajectories of BPD symptoms is important because BPD is known for its instability (APA, 2022). BPD has been found to have low diagnostic stability with psychiatric inpatients at 1–3-year follow-ups, with only about a third meeting criteria at follow-up (Paris et al., 1987; Shea et al., 2002). However, the low temporal stability may be due to a dichotomous absence versus presence view of the disorder rather than looking at the symptomology (Bornovalova et al., 2009; Clark, 2009). Specifically, those with BPD often are consistent on their rank order of features, but there is variability in the presentation of severity of symptomology (Shea et al., 2002). BPD is a chronic disorder that can remit over time and may have fluctuations in presentation brought on by environmental or interpersonal influences (McDavid & Pilkonis, 1996; Videler et al., 2019) and tends to lessen in severity into adulthood (30–40 years old), with remissions between 1–8 years being common (APA, 2022). Due to the waxing and waning of BPD symptoms, there is a need to look at symptomology over time to accurately assess BPD. An assessment may be completed in a period of remission or recovery or may occur when symptoms are at their highest for that individual, therefore symptoms should be assessed at multiple time points. Those with BPD may often remit, then fall out of remission throughout 2- to-10-year periods (Alvarez-Tomás et al., 2017; Zanarini et al., 2012). Due to the instability of BPD symptoms over time, many researchers have used trajectories (latent class analysis) to analyze symptomology and gain an understanding of symptom groups over time.

Although many researchers have examined BPD symptoms using latent class analysis, there is little agreement on the number of classes identified. Researchers examining latent class groupings of BPD symptoms have typically found at minimum two classes: a high and a low symptom endorsement trajectory group (Clifton & Pilkonis, 2007), with some researchers finding three class groups (Fossati et al., 1999; Thatcher et al., 2005), and other studies finding four class groups (Bornovalova et al., 2010; Hallquist & Lenzenweger, 2013; Shevlin et al., 2007). Most of these studies have been conducted on adolescents or were cross-sectional rather than longitudinal. In fact, to my knowledge, only one study has examined BPD symptomology in adulthood over time (Hallquist & Lenzenweger, 2013). Hallquist & Lenzenweger (2013) followed 258 undergraduate students with a mean age of 18.85 at the start of the study over four years and found that a four-class growth mixture model best fit the BPD symptomology. Of the 258 students followed, 129 fit the criteria of at least one personality disorder, and 129 student data were used for trajectory modelling. The four trajectories were characterized by zero to one BPD symptom (class one, $n = 57$), mild to subclinical symptoms that did not change over four years (class two, $n = 39$), and clinical BPD symptoms at the time of intake that in most cases significantly remitted by the time of the final follow-up to subclinical symptoms (class three, $n = 17$). The fourth class was characterized by subclinical-to-clinical symptoms that remitted rapidly after the time of intake, with all participants in this class having two or fewer symptoms at the final time point. However, when examining sex differences, Hallquist and Lenzenweger (2013) found no sex differences in the trajectories in their four-class model.

Researchers have found mixed results when examining gender differences between latent class groups. Bornovalova et al. (2010) examined 382 inpatient residents of a drug- and alcohol-abuse treatment centre ($M_{age} = 41.57$ years, 68.3% men). Gender was included as a covariate, and it was found that more women than men fell into classes with higher endorsement of more severe BPD symptoms of their four-class model. However, Bornovalova et al., (2010) found that the latent class conditional probabilities or proportions did not differ significantly between the original model (without gender as a covariate) and the models ran with gender included. Shevlin et al. (2007) used data from the second National Survey of Psychiatric Morbidity in Great Britain, which included $n = 8,383$ adults aged 16 to 74 years. In their four-class model women tended to be in classes characterized by intermediate or high endorsement of BPD symptoms, rather than in the baseline class characterized by almost no endorsement of criteria. Thatcher et

al. (2005) examined 167 participants from a longitudinal study on alcohol use disorder with first assessment occurring at a mean age of 16, with an average age of 22 years when BPD symptoms were assessed at the young-adult follow-up. Using gender as a covariate, the authors found that the number of men and women did not differ between severe and moderate class association, however, more men endorsed impulsivity and anger. Clifton and Pilkonis (2007) included 411 participants with a mean age of 37.1 years and found more female participants in the borderline latent class (class one) than male participants in their two-class model. These differing results among researchers highlight the need to examine sex differences in trajectory group analyses.

Clinically, women are far more likely to be diagnosed with BPD (75% women versus 25% men; APA, 2022). Although this remains true for clinical populations with women in outpatient settings being diagnosed with BPD (71.1%) more than men (28.3%; Zimmerman & Becker, 2022), there is less of a gap in community samples, with no difference in prevalence (APA, 2022), and researchers finding prevalence rates of 3.0% in women and 2.4% in men (Tomko et al., 2014). Women and men, however, have been found to differ in trait presentation with higher rates of externalizing behaviour in men and internalizing behaviour more common in women (APA, 2022). Men with BPD have been found to present with more of an 'explosive' temperament, endorse higher novelty seeking (Barnow et al., 2007), and endorse criteria of intense or inappropriate anger and impulsivity (Bozzatello et al., 2024). Conversely, women with BPD often endorse chronic feelings of emptiness, affective instability (Bozzatello et al., 2024), and identity disturbance (Johnson et al., 2003). Moreover, women are more likely than men to be sexually maltreated in childhood and adolescence and men are more likely to be physically abused than women (MacMillan et al., 2013). Given these differences, it is important to control for gender when assessing the timing and form of maltreatment in the prediction of BPD symptoms across early adulthood. Finally, because bullying victimization is associated with an increased risk of developing BPD symptoms (Erazo et al., 2023; Wolke et al., 2012), it was also statistically controlled for in my analyses.

Taken together, most of what is known about the association between childhood maltreatment and BPD is lacking nuance. Little research has been conducted on BPD symptoms over time using latent class trajectory analysis in early adulthood (e.g., Hallquist et al., 2013), and even fewer studies examined the associations between sexual and physical abuse in

childhood and BPD development in early adulthood (Bornovalova et al., 2013; Font & Berger, 2015). Although extensive research has been conducted on childhood maltreatment, only two studies to my knowledge have been conducted on the type and timing of childhood maltreatment and the influence on BPD features (Hetch et al., 2014; Pietrek et al., 2013). Hetch et al. (2014) examined BPD features specifically in childhood (age 10- to 12-year-olds) in relation to the type and timing of childhood maltreatment. Pietrek et al. (2013) examined the type, frequency, and developmental timing of maltreatment in relation to BPD developed in adulthood (mean age of those with BPD was 25.4 years old) with only one time point of assessment. The current literature brings a limited understanding of the effects of childhood maltreatment type (i.e., physical and sexual abuse) and timing (i.e., before elementary school, during elementary school, or in high school) on BPD development in adulthood. In my thesis I examined the gaps in the literature regarding the timing of when maltreatment occurs (including maltreatment in adolescence) and BPD development in emerging adulthood, with BPD assessed over multiple time points.

Present Study

Research Objectives

The aim of my thesis was to explore the connections between the type and timing of childhood maltreatment and BPD symptom development across early adult development. My thesis includes maltreatment that occurs from age 0 to 16, using retrospective accounts of maltreatment to include maltreatment that may not have been reported to the authorities. The timing and form of child maltreatment was then used to predict trajectories of BPD symptoms from age 19 to 26.

My overarching research question is: What time in childhood, and type of maltreatment, is most predictive of BPD symptom trajectories in adulthood?

Hypotheses

Based on existing literature, it was expected that there would be at least a high and low trajectory of BPD symptoms. It was expected that any type of exposure to maltreatment (sexual or physical) would predict a high symptom trajectory group association, with stronger associations for sexual maltreatment than physical maltreatment. I explored the timing effects

and type of maltreatment on trajectory group association because the literature is too inconsistent for any a priori predictions to be made.

Methods

Participants and Procedures

Data from the McMaster Teen Study, a longitudinal study that assesses mental health, bullying, and relationships utilizing a multi-method, multi-informant approach was used. Participants were in grade five (age 10–11) at the beginning of the study and were recruited from 51 randomly selected schools within one Ontario school board. Ethics approval was obtained each year of the study from the associated university ethics boards. Each year parental consent and student assent/consent were obtained. The study was primarily completed online and participant compensation ranged from $10 to $100 gift cards or e-transfers depending on the year of the study.

Participants include 701 youth followed annually for 16 years (1 year missing at age 25 due to the COVID-19 pandemic). For the current study data was used from ages 20 to 26 when BPD symptoms were assessed in adulthood alongside retrospective childhood maltreatment, information that was obtained from participants when they were 18 and 19 years of age.

Measures

Borderline Personality Disorder Symptoms

The Borderline Symptom List-23 (BSL-23; Bohus et al., 2008) was used to assess BPD symptoms. The BSL-23 was developed from the original BSL, now labelled the BSL-95 (Bohus et al., 2007) and is based on DSM-IV BPD criteria as well as the opinions of clinical experts and BPD patients themselves. The BSL-23 consists of 23 questions using a 5-point Likert scale with answers ranging from 0 to 4 with response options as follows: (0) ‘not at all’, (1) ‘a little’, (2) ‘rather’, (3) ‘much’ and (4) ‘very strong’. The BSL-23 asks participants to consider the past week when answering (Bohus et al., 2007). BSL-23 includes questions such as “In the course of the last week… I suffered from shame”, “My mood rapidly cycled in terms of anxiety, anger, and depression”, or “Criticism had a devastating effect on me” (Bohus et al., 2008). The current sample was found to have excellent internal consistency (Age 20 $\alpha = .97$, Age 21 $\alpha = .96$, Age 22 $\alpha = .96$, Age 23 $\alpha = .95$, Age 24 $\alpha = .96$, Age 26 $\alpha = .96$) thus supporting reliability for this scale.

Childhood Maltreatment

Childhood maltreatment was assessed using the Childhood Experiences of Violence Questionnaire- Short Form (CEVQ-SF; Tanaka et al., 2012; Walsh et al., 2008). The CEVQ-SF is a brief, self-report measure derived from the CEVQ and is comprised of seven stem questions about physical and sexual abuse, with seven context questions regarding the developmental timing of occurrences (Tanaka et al., 2012; Walsh et al., 2008). Questions pertaining to the frequency of abuse are assessed on a 5-point scale ranging from never, 1–2 times, 3–5 times, 6–10 times, and more than 10 times. Questions on when the experience happened (if the first question was answered as 1 to 2 times or more) follow (Tanaka et al., 2012; Walsh et al., 2008). Participants are asked, "How many times before age 16 did an adult… spank you with their hand on your bottom (bum), or slapped you on your hand" or "kick, bite, punch, choke, burn you, or physically attack you in some way" or "do any of the following things when you did not want them to: touch the private parts of your body or make you touch their private parts, threaten or try to have sex with you, or sexually force themselves on you?". Following each question, participants were asked the time period this occurred, whether it was before elementary school, during elementary school, or in high school. Responses are considered severe physical abuse if they report having occurrences between 3 to 5 times, and severe sexual abuse if they report it occurring 1 to 2 times (Tanaka et al., 2012; Walsh et al., 2008). The CEVQ-SF was assessed for agreement with the CEVQ for physical abuse $\kappa = 0.82$, 95% CI [0.66, 0.97], severe physical abuse $\kappa = 0.81$, CI [0.66, 0.97], and sexual abuse $\kappa = 0.65$, CI [0.42, 0.88] which has moderate-to-good reliability when measuring physical abuse ($\alpha = .85$) and sexual abuse.

The CEVQ-SF was administered to participants at age 19 as a retrospective measure for participants to report on maltreatment that had occurred in their childhood. It was administered again at age 20 to only those who had not previously reported on this measure. Retrospective accounts of child abuse have been found to have some bias and less accuracy when reporting on subtle details such as family life and relationships (see review Hardt & Rutter, 2004). Specifically, that recall of experiences that rely more heavily on the interpretation of events, or the question have less validity. Retrospective accounts are often called into question regarding memory (Maughan & Rutter, 1997). Specifically, that those recalling events in childhood will remember events that had not happened (Maughan & Rutter, 1997) or have issues recalling these memories due to infantile or traumatic amnesia or normal processes of forgetting (Maughan &

Rutter, 1997). However, retrospective accounts still have their place in research as the recall can be made valid with precautions in place such as proper definitions (De Tychey et al., 2015). With these limitations in mind, the CEVQ-SF has shown that even as adults, many do not falsely report abuse occurrences; in fact, most answer with "I don't know" or underreport occurrences (Goldfarb et al., 2019). Moreover, retrospective accounts of abuse, have been shown to provide reliable and valid data (Hardt & Rutter, 2004; Hardt et al., 2006; Hardt et al., 2010).

Bullying Victimization

Bullying victimization was assessed using the adapted version of the Olweus Bully Victim Questionnaire (Olweus, 1996; Vaillancourt, 2010). A definition of bullying was provided to participants as it has been shown to aid in the accuracy of reporting bullying and to ensure researchers and participants are using the same definition (Vaillancourt et al., 2008). The definition provided for bullying was: "There are lots of different ways to bully someone but a bully wants to hurt the other person (it's not an accident) and does so repeatedly and unfairly (the bully has some advantage over the victim). Sometimes a group of students will bully a student. It is not bullying when two students of the same strength quarrel or fight." The participants were then asked "Since the start of the school year (September)… How often…" on a 5-point scale of *not at all*, *only a few times*, *every month*, *every week*, and *many times a week* have different forms of bullying occurred (Vaillancourt et al., 2008). The forms of bullying included examples such as being physically bullied (hit, kicked, shoved, etc.), being verbally bullied (insults, put down, or threats), bullied by exclusion (being left out, rumours, or someone getting others not to like you), or through cyberbullying (text messages, email messages/pictures to threaten or make you look bad).

Bullying victimization was assessed from grade five through grade 12 at every timepoint. Data from grade five to grade 12 was included and a composite score was created to use as a control. The current sample was found to have acceptable to good reliability (Age 11 $\alpha = .79$, Age 12 $\alpha = .80$, Age 13 $\alpha = .82$, Age 14 $\alpha = .82$, Age 15 $\alpha = .78$, Age 16 $\alpha = .80$, Age 17 $\alpha = .81$, Age 18 $\alpha = .78$).

Analytic Plan

Semi-parametric group-based modeling using latent class growth analysis was used to identify the trajectory models of adult BPD symptoms based on the BSL-23 using MPlus version

8.3 (Muthén & Muthén, 1998–2017). Latent class growth modelling was used as it is a technique that analyzes change over time and assumes there may be groupings of distinct developmental trajectories (Naggin, 2005). The number and shape of the trajectory groups were determined based on fit indices including Bayesian information criterion (BIC), Lo-Mendell-Rubin adjusted likelihood ratio test (LMR-LRT), bootstrap resampling method (BLRT), and entropy, which are standard conventions (Nagin, 1999). The trajectories were examined between the ages of 20 and 26 using data from 6 timepoints (data were not collected at age 25 due to the pandemic). The BIC favours parsimony and will be better fit for fewer groups, the lower the number (closer to 0) the better fit the model (Naggin, 1999). LMRT-LRT is a likelihood-ratio-based fit index that determines the number of classes based on a low *p*-value (< .05) where *k* number of classes should be chosen compared to the *k* – 1 model (Naggin & Odgers, 2010). Entropy is used to assess classification accuracy through averaging posterior probabilities, the closer to 1 the entropy is, the more accurate the classification (with values ranging from 0 to 1). Once trajectory groups were identified based on the best fit indices, the low trajectory group was selected as the reference group to create contrast codes between the other groups for the regression analysis. The effect of childhood maltreatment on BPD symptom trajectories in adulthood was assessed using two hierarchical logistic regressions separated by type of maltreatment (physical or sexual) at any time point, and timing (pre-elementary school, elementary school, or secondary school) of any maltreatment (physical or sexual) in step 2, and gender and bully victimization was added in step 1.

Results

Missing Data

The analytic sample included participants with data on BPD symptoms from T10 through T15 which results in a sample size of 468 (i.e., the analytic sample). The analytic sample was then compared for missing data using Little's MCAR (missing completely at random) test to examine whether data were randomly missing for the predictors and outcome variables. Those who are in the longitudinal sample but not selected for the analytic sample are the comparison group. Little's MCAR test was not significant $\chi^2(201) = 213.10$, $p = .27$, therefore, failed to reject the null hypothesis suggesting the data were missing completely at random.

T-test and crosstabulations were also used to compare missing data in the analytic sample to the overall sample. A significant association was found between the analytic sample and the overall sample $\chi^2(706) = 16.86$, $p < .001$ (standardized residual = 2.4), with boys/men being overrepresented in those excluded from the analytic sample compared to girls/women (standardized residual = -2.3). There was no significant association in race/ethnicity between participants in the overall sample and those in the analytic sample $\chi^2(649) = .03$, $p = .87$, 82.3% of our sample was White and 17.7% non-White. A significant association was found in household income between those in the overall sample and participants in the analytic sample $\chi^2(655) = 23.8$, $p = .001$. Participants from higher income households (>$80,000, standardized residual = 1.7) were more likely to be in the analytic sample than those in the overall sample. Those in lower income households (<$30,000, standardized residual = -1.3 to -1.7) were more likely to be excluded from the analytical sample. A significant association was found between parental education level between those included in the analytic sample and those in the overall sample $\chi^2(680) = 35.20$, $p < .001$. Participants whose parents hold university degrees (undergraduate or graduate) were more likely to be included in the sample, whereas those with lower education levels (non-completion of high school) were more likely to be excluded (standardized residual = 3.3) and were underrepresented in the analytic sample (standardized residual = -2.3). A t-test was completed to examine the difference in bullying victimization between the overall sample and the analytic sample. A small difference in reported bullying victimization was found $t(651) = 1.82$, $p = .07$. Participants not included in the analytic sample ($M = 0.92$, $SD = 0.79$) reported slightly higher levels of bully victimization than those included in the analytic sample ($M = 0.80$, $SD = 0.74$), with a small, non-significant effect size (Cohen's $d = 0.15$, 95% CI [-0.01, 0.32]).

Chi-square tests were conducted to examine whether participants with presence of maltreatment data within the analytic sample was associated with demographic variables including gender, ethnicity, parental income, and parental education. Gender was the only variable with a significant association with presence of maltreatment data $\chi^2(468) = 6.18$, $p = .01$, with men more likely to be missing data on maltreatment (57.7%) compared to women (42.3%).

Descriptive Statistics

Descriptive statistics including means, standard deviations, and sample sizes for BPD symptoms and bullying victimization across time points are presented in Table 1. Correlations between BPD and bullying victimization are presented in Table 2. BPD symptoms and bullying victimization were significantly correlated with themselves at all time points (*Min*: $r = .13$, $p = <.05$, *Max*: $r = .75$, $p = <.01$). BPD symptoms and bullying victimization were significantly correlated with each other at each time point except for bullying victimization T2 with BPD symptoms T10, T11, and T12.

Table 1

Descriptive and Frequency Statistics

Variables	n	Min	Max	M	SD
BPD Symptoms					
T10 (Age 20)	387	0.00	3.91	0.66	0.81
T11(Age 21)	391	0.00	3.52	0.64	0.75
T12 (Age 22)	375	0.00	3.74	0.58	0.71
T13 (Age 23)	364	0.00	3.30	0.61	0.70
T14 (Age 24)	383	0.00	3.52	0.69	0.77
T15 (Age 26)	355	0.00	3.74	0.59	0.69
Bullying Victim					
T1 (Age 11)	438	0.00	3.40	0.80	0.74
T2 (Age 12)	420	0.00	3.20	0.65	0.67
T3 (Age 13)	421	0.00	3.40	0.61	0.67
T4 (Age 14)	419	0.00	3.60	0.59	0.62
T5 (Age 15)	412	0.00	2.80	0.41	0.48
T6 (Age 16)	399	0.00	3.20	0.39	0.52
T7 (Age 17)	393	0.00	3.60	0.30	0.45
T8 (Age 18)	404	0.00	2.80	0.29	0.41
T1-8 (Ages 11-18)	468	0.00	3.10	0.52	0.43

Table 2

Correlations Among BPD Symptoms and Bullying Victimization

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. T10 BPD	-	.66**	.61**	.63**	.62**	.49**	.16**	.08	.13*	.15**	.13*	.25**	.21**	.24**
2. T11 BPD		-	.64**	.65**	.57**	.53**	.16**	.08	.14**	.15**	.25**	.29**	.21**	.20**
3. T12 BPD			-	.72**	.69**	.63**	.18**	.04	.13**	.18**	.20**	.27**	.13**	.20**
4. T13 BPD				-	.75**	.70**	.25**	.13*	.24**	.26**	.33**	.33**	.28**	.26**
5. T14 BPD					-	.69**	.27**	.14*	.22**	.29**	.27**	.36**	.28**	.24**
6. T15 BPD						-	.31**	.12*	.22**	.33**	.34**	.35**	.30**	.24**
7. T1 BVIC							-	.50**	.43**	.33**	.32**	.39**	.32**	.25**
8. T2 BVIC								-	.64**	.42**	.30**	.31**	.26**	.23**
9. T3 BVIC									-	.54**	.36**	.37**	.35**	.23**
10. T4 BVIC										-	.46**	.49**	.47**	.31**
11. T5 BIVC											-	.56**	.53**	.37**
12. T6 BIVC												-	.57**	.46**
13. T7 BIVC													-	.54**

14. T8 BIVC		-

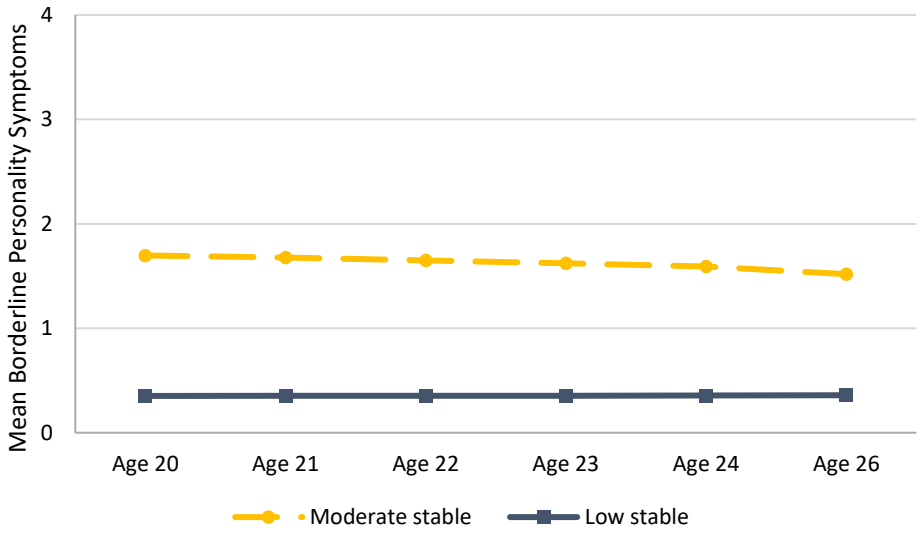
Note: *$p < .05$. **$p<.01$. BPD = borderline personality disorder symptoms. BVIC = bullying victimization. T1 = Age 11, T2 = Age 12, T3 = Age 13, T4 = Age 14, T5 = Age 15, T6 = Age 16, T7 = Age 17, T8 = Age 18. T10 = Age 20, T11 = Age 21, T12 = Age 22, T13 = Age 23, T14 = Age 24, T15 = Age 26.

BPD Symptom Trajectories

Semiparametric group-based modeling using latent class growth analysis (LCGA) was used to identify the trajectory models of adult BPD symptoms based on the BSL-23 using MPlus version 8.3 (Muthén & Muthén, 1998–2017). After testing up to five possible classes, a two-class solution was selected. Table 3 shows the fit indices associated with the different class solutions. Figure 1 illustrates the two trajectory groups of BPD symptoms from T10 (age 20) to T15 (age 26).

Figure 1

Trajectories of BPD Symptoms (ages 20 to 26)



Note: Moderate stable ($N = 103$, 22%); low stable ($N = 365$, 78%).

Although the three-class solution had the best fit indices the number of participants within each group was too small to move forward with a logistic regression based on their

maltreatment data. Therefore, a two-class trajectory model was chosen based on fit indices and power.

Table 3

Fit Indices for Latent Class Trajectory Models for BPD Symptoms

No. of Groups	BIC	LMR-LRT	BLRT	Entropy
1 Class	5078.562	-	-	-
2 Class	3981.586	$p = 0$	<.001	0.934
3 Class	3621.036	$p = 0.0004$	<.001	0.924
4 Class	3555.008	$p = 0.3641$	<.001	0.907
5 Class	3470.505	$p = 0.552$	<.001	0.88

Note. BIC = Bayesian information criterion; LMR-LRT = Lo-Mendell-Rubin likelihood ratio test; BLRT = bootstrapped likelihood ratio test.

Most participants followed a BPD symptom trajectory that was low stable (78%, $n = 365$) and had a statistically significant intercept (I: .35, $p < .001$) with a non-significant slope and quadratic (S: .001, $p = .95$; Q: 0.00, $p = .99$). The other participants were in the moderate stable symptom trajectory group (22%, $n = 103$), with a significant intercept (I: 1.70, $p < .001$), and a non-significant slope and quadratic (S: -.02, $p = .77$; Q: -0.002, $p = .86$). Neither trajectory group had a significant slope or quadratic; there were no significant linear changes or curvatures observed over time. Posterior probabilities showed a high degree of class membership classification accuracy (low stable= .99, moderate stable= .96). A chi-square test was conducted to examine the relation between gender and BPD symptom class trajectory. The association was found to be statistically significant $\chi^2 = (1, N = 468) = 12.98$, $p < .001$, with standardized residuals indicating that women were significantly more likely to be classified into the moderate stable BPD symptom trajectory (standardized residual = 2.1) and men were less likely than expected to be associated with the moderate stable BPD symptom trajectory (standardized residual = -2.4). Among women, 27.8% were categorized into the moderate stable BPD symptom trajectory group, with 72.2% of women being categorized into the low BPD symptom trajectory. Alternatively, 86.2% of men were categorized into the low stable BPD symptom trajectory group, with 13.8% of men being categorized into the moderate stable BPD symptom trajectory.

The strength of gender and BPD symptom trajectory association was small to moderate (Cramer's V = 0.17, $p < .001$).

BPD Symptom Trajectory Predicted by Childhood Maltreatment Type and Timing

Timing of Childhood Maltreatment

A hierarchical logistic regression was used to examine timing (pre-elementary school, elementary school, or high school) of childhood maltreatment as a predictor of BPD symptoms in young adulthood (ages 20 to 26), while controlling for gender and bullying victimization. The low stable trajectory group was selected as the reference group. Analyses were conducted using SPSS version 30. In step 1, bullying victimization and gender were statistically significant in the model χ^2 (2) = 38.58, $p < .001$ (see table 4). This model explained 13.7% of the variance. In step 2, timing of childhood maltreatment variables was added to the model. This addition accounted for an additional 8.70% (ΔR^2 =0.087, $p< .001$), with model fit improving to explain 22.4% of the variance.

Table 4

Hierarchical Logistic Regression with BPD Symptom Trajectories as Outcome Variable

								95% CI		
		B	S.E.	Wald	df	*p*	Exp(B)	Lower	Upper	Model *p*
Step 1					2					0.137
	BVIC	1.52	0.30	25.38	1	0.000	4.59	2.54	8.31	
	Gender	0.80	0.28	7.99	1	0.005	2.22	1.28	3.84	
Step 2					5					0.224
	BVIC	1.34	0.32	17.28	1	0.000	3.84	2.04	7.23	
	Gender	0.85	0.30	8.28	1	0.004	2.34	1.31	4.18	
	Pre-Elementary MT	1.63	0.39	17.77	1	0.000	5.11	2.39	10.90	
	Elementary MT	1.53	0.42	13.37	1	0.000	4.60	2.03	10.42	
	Secondary School MT	0.26	0.66	0.16	1	0.692	1.30	0.36	4.69	

Note: BVIC = bullying victimization. MT= maltreatment.

Any maltreatment during pre-elementary school significantly predicted the increased risk for association to the moderate stable BPD symptom trajectory group ($\beta = 1.63$, $p < .001$, OR= 5.11, 95% CI [2.39, 10.90]). Any maltreatment during elementary school was also a significant predictor ($\beta = 1.53$, $p < .001$, OR = 4.60, 95% CI [2.03, 10.42]) of belonging to the moderate stable BPD trajectory group. Maltreatment during secondary school was not found to be a significant predictor of BPD symptom trajectory group membership ($\beta = 0.26$, $p = .692$). Bullying victimization remained significant in step 2 ($\beta = 1.34$, $p < .001$, OR = 3.84, 95% CI [2.04, 7.23]), as did gender ($\beta = 0.85$, $p = .004$, OR = 2.34, 95% CI [1.31, 4.18]).

Chi-square analyses were run to establish association between BPD symptom trajectory groups and the timing of childhood maltreatment. The association was found to be significant χ^2 (3, N = 416) = 41.44, p < .001, with a moderate strength of association (Cramer's V = 0.32, p < .001). Standardized residuals indicated that those with pre-elementary and elementary school onset of childhood maltreatment were significantly more likely to be categorized into the moderate stable BPD symptom trajectory (see table 5).

Table 5

Chi-Square Analysis Proportions with Timing of Maltreatment as Outcome Variable

	Low Stable Trajectory	Moderate Stable Trajectory
No Maltreatment	86.9% (SR=1.3)	57.3%* (SR=-2.4)
Pre-Elementary Maltreatment	5.5%* (SR=2.1)	21.3%* (SR= 3.9)
Elementary Maltreatment	4.9% (SR=1.7)	16.9%* (SR=3.2)
Secondary School Maltreatment	2.8% (SR=0.4)	4.5% (SR=0.7)

Note: Proportion of individuals with no maltreatment and timing of maltreatment in the low stable and moderate stable trajectory groups. *Standardized residual (SR)> ±1.96

A chi-square analysis was conducted to examine the association between gender and the timing of childhood maltreatment. The association was not statistically significant χ^2 (3, N = 416) = 4.61, p = .202, with a small effect size (Cramer's V = 0.11), suggesting that the distribution of maltreatment timing did not differ significantly between men and women. Descriptive statistics revealed that pre-elementary onset was reported by 10.0% of women, compared to 7.3% of men, while elementary onset was relatively evenly distributed with 6.8% of women reporting maltreatment at this time compared to 8.5% of men. High school onset of maltreatment was rare overall with 4.4% of women reporting this onset compared to 1.2% of men. However, standardized residuals across all cells were within acceptable limits ($|z| < 2$), indicating no cell contributed disproportionately to the overall chi-square statistic.

Type of Childhood Maltreatment

A hierarchical logistic regression was used to examine type of childhood maltreatment (physical or sexual) at any time point, as a predictor of BPD symptoms in young adulthood (ages

20 to 26), while controlling for gender and bullying victimization. The low stable trajectory group was selected as the reference group. Bullying victimization and gender were added in step 1 and explained 15.4% of the variance (χ^2 (2) = 40.15, p < .001) (see table 6). In step 2, type of childhood maltreatment was added to the model. The addition, accounted for an additional 10.3% (ΔR^2 =.103, p< .001), explaining 25.7% of the variance in BPD classification.

Table 6

								95% CI		
		B	S.E.	Wald	df	*p*	Exp(B)	Lower	Upper	Model *p*
Step 1					2					0.154
	BVIC	0.87	0.30	8.71	1	0.003	2.39	1.34	4.27	
	Gender	1.61	0.32	26.07	1	0.000	4.98	2.69	9.23	
Step 2					4					0.257
	BVIC	0.81	0.31	6.61	1	0.010	2.24	1.21	4.16	
	Gender	1.36	0.34	16.34	1	0.000	3.90	2.02	7.54	
	Sexual Maltreatment	1.56	0.42	14.19	1	0.000	4.77	2.12	10.76	
	Physical Maltreatment	1.28	0.35	13.79	1	0.000	3.60	1.83	7.08	

Note: BVIC = bullying victimization. MT= maltreatment.

Sexual abuse at any time point, was found to significantly predict classification to the moderate stable BPD symptom trajectory (β = 1.56, p < .001, OR = 4.77, 05% CI [2.12, 10.76]). Physical abuse was also a significant predictor of moderate stable BPD symptom trajectory classification (β = 1.28, p <.001, OR = 3.60, 95% CI [1.83, 7.08]. Gender and bullying victimization remained as significant predictors in step 2 (see table 5).

Chi-square analyses were run for both sexual and physical childhood maltreatment at any time point, using no maltreatment as the reference group. The association between sexual childhood maltreatment and moderate stable BPD symptom trajectory classification was

statistically significant χ^2 (1, N = 402) = 37.53, p < .001, with a moderate strength of association (Cramer's V = 0.31, p <.001). Of those who reported sexual maltreatment, 61.8% were in the moderate stable BPD symptom trajectory group (see table 7). There was also a significant association between physical childhood maltreatment (see table 8) and the moderate stable BPD trajectory group x^2 (1, N = 400) = 23.96, p < .001, with a small to moderate strength of association (Cramer's V = 0.25, p < .001). Of those who reported physical maltreatment, 31.8% were in the moderate stable BPD symptom trajectory.

Table 7

	No Sexual Maltreatment	Standardized Residual	Sexual Maltreatment	Standardized Residual
Low Stable Trajectory	95.9%	0.8	4.1%*	-2.7
Moderate Stable Trajectory	75.0%	-1.6	25.0%*	5.2

Note: r^2 = 37.53, p < .001. Cramer's V = 0.31, N = 402. *Standardized residual> 1.96

Table 8

	No Physical Maltreatment	Standardized Residual	Physical Maltreatment	Standardized Residual
Low Stable Trajectory	89.4%	0.9	10.6%*	-2.1
Moderate Stable Trajectory	68.2%	-1.7	31.8%*	4.0

Note: r^2 = 23.96, p < .001. Cramer's V = 0.25, N = 400. *Standardized residual> 1.96

Chi square analyses were conducted to examine the associations between gender and sexual abuse as well as gender and physical abuse. Results revealed a significant relation between gender and sexual abuse χ^2 (1, N = 402) = 12.57, p < .001, with a small to moderate association (Cramer's V = .177, p < .001). Descriptive statistics showed that 12.5% of women in the sample reported experiencing sexual abuse at any time point, compared to 2.5% of men. Standardized residuals indicate that significantly fewer men reported sexual abuse than expected

(z = -2.6), while significantly more women reported sexual abuse than expected (z = 2.2). Results indicated there was no significant association between gender and physical abuse χ^2 (1, N = 400) = 0.29, p = .588. Descriptively, 16.5% of men reported experiencing physical abuse compared to 14.5% of women reporting physical abuse. Standardized residuals were all within ± 0.4, suggesting that observed accounts did not differ meaningfully from expected values.

Discussion

Understanding the effects of childhood maltreatment, both in terms of type (sexual or physical) and timing (pre-elementary, elementary, or high school), is critical to clarifying the developmental pathways leading to BPD symptoms. In the present study, I examined how these dimensions of childhood maltreatment influence BPD symptomology across early adulthood (ages 20 to 26), with the goal of identifying the long-term impacts of early adversity. Using a person-centred approach, LCGA was employed to identify distinct trajectories of BPD symptoms during this period. Although previous research has established links between childhood maltreatment and BPD symptomology (e.g., Hetch et al., 2014; Pietrek et al., 2013), few researchers have simultaneously examined the effects of both maltreatment type and timing in predicting BPD symptom development during adulthood. I identified two distinct BPD symptom trajectories: a low stable group and a moderate stable group. Subsequent hierarchical logistic regression analyses indicated that both sexual and physical childhood maltreatment, regardless of timing, significantly predicted membership in the moderate stable BPD symptom trajectory group. Furthermore, exposure to any form maltreatment during pre-elementary school or elementary school also significantly increased the likelihood of being classified in the moderate stable BPD symptom group, suggesting that early developmental periods may represent a time of heightened vulnerability.

BPD Symptom Trajectories

BPD is a chronic disorder characterized by fluctuations in symptom severity over time, with individuals potentially experiencing periods of heightened or reduced symptoms (McDavid & Pilkonis, 1996; Videler et al., 2019). Accordingly, BPD symptomology was assessed longitudinally to provide a more accurate representation of symptom patterns, as assessment at single time point may capture either a peak or lull in symptom severity thereby offering an incomplete picture of the disorder. Two stable BPD symptom trajectories were identified

between the ages of 20 and 26: a low stable (78%) and a moderate stable (22%). This finding is consistent with prior literature indicating at least two distinct BPD symptom trajectory groups are commonly observed (Clifton & Pilkonis, 2007). The moderate stable group demonstrated a slight decline in symptom severity over time, which aligns with existing evidence, suggesting that BPD symptoms generally decrease in intensity into adulthood (APA, 2022). Although BPD is typically characterized by instability (APA, 2022), the findings highlight the presence of stable symptom patterns over a six-year period. Of note, most of the research examining stability has used only two time points and predominantly employed rank-order stability metrics (Bornovalova et al., 2010; Clifton & Pilkonis, 2007; Fossati et al., 1999; Hallquist & Lenzenweger, 2013; Shevlin et al., 2007; Thatcher et al., 2005), which do not capture the nuanced within-person changes in symptom severity over time (Wright et al., 2015; Zanarini et al., 2003). As such, this study extends the literature by using yearly repeated assessments to characterize intra-individual patterns of symptom stability, providing a more detailed understanding of how BPD symptoms progress during early adulthood.

As expected, women were overrepresented in the moderate stable BPD symptom trajectory, while men were more likely to be represented in the low stable trajectory. This pattern is also consistent with existing literature indicating that BPD is more frequently diagnosed in women than in men with estimates suggesting a 3 to 1 distribution (APA, 2022). However, studies using community-based samples typically report a narrower gender gap in prevalence rates (3.0% in women and 2.4% in men; Tomko et al., 2014). Although women were more frequently classified into the moderate stable trajectory group, the gender disparity was less pronounced than what is seen in clinical samples (typically 75% women; APA, 2022). In the present study, 27.8% of women and 13.8% of men fell into the risk category.

Timing of Childhood Maltreatment in Predicting BPD Symptom Trajectories

No a priori hypotheses were made regarding the timing of childhood maltreatment predictions due to inconsistencies the literature. Instead, the effects of maltreatment timing were explored post hoc using a hierarchical logistic regression to predict membership in BPD symptom trajectory groups. Results indicated that maltreatment occurring during both the pre-elementary and elementary school periods significantly increased the likelihood of classification to the moderate stable BPD symptom trajectory group. Specifically, individuals who experienced

maltreatment during pre-elementary school were 1.63 times more likely to be assigned to the moderate stable trajectory compared to those with no maltreatment. Similarly, those who experienced maltreatment during elementary school were 1.53 times more likely to fall into the moderate stable group. These effects were even significant while controlling for gender and bullying victimization, known predictors of BPD (APA, 2022; Erazo et al., 2023; Wolke et al., 2012).

The present study contributes to the limited body of research examining the timing of childhood maltreatment in relation to BPD symptoms. To date, only a small number of studies have addressed this issue. For example, Hecht et al. (2014) investigated the effects of both type and timing of childhood maltreatment on borderline features (BPD symptoms in adolescence), finding no significant differences borderline features severity based on the onset or recency of maltreatment. In contrast, Pietrek et al. (2013) examined the associations between maltreatment type, frequency, and developmental timing with BPD, MDD, and schizophrenia and reported that early adverse experiences significantly predicted BPD. Although the existing literature on this topic is sparse and somewhat inconsistent, the current findings build upon and are generally consistent with prior research by supporting the role of early maltreatment in the development of BPD symptoms.

Interestingly, maltreatment occurring during high school did not significantly predict elevated BPD symptoms in the present study. This may be due to the developmental sensitivity of earlier childhood periods, particularly pre-elementary and elementary school years. These periods are critical for the formation of foundational emotion regulation, attachment security, and interpersonal schemas, domains frequently impaired in individuals with BPD (Crowell et al., 2009; Fonagy et al., 2000). Maltreatment occurring during adolescence, while still harmful, may exert less influence on these core developmental processes, particularly if earlier periods were relatively stable or if protective factors (e.g., peer support, increasing autonomy) were present. Additionally, by high school, individuals may have developed more cognitive and emotional resources to process or buffer against maltreatment, which could attenuate its long-term psychological impact. It is also possible that the timing of maltreatment interacts with the chronicity or cumulative burden of adversity (Manly, 2005), such that isolated instances of later

maltreatment may have less predictive value for BPD symptoms compared to sustained or early-life exposure.

Although women were more likely to report childhood maltreatment than men overall, there were no statistically significant gender differences in the timing of maltreatment onset in the present study. This suggests that, while women may experience maltreatment at higher rates, particularly sexual maltreatment, the developmental timing at which it occurs (pre-elementary, elementary, or high school) is relatively similar across genders, at least in this sample. Prior research has shown that early maltreatment (particularly before age 10) is associated with more severe psychological outcomes, including emotion dysregulation and personality pathology (Cicchetti & Toth, 2005; Manly et al., 2001). However, the lack of gender differences in timing may reflect shared vulnerabilities across boys and girls during sensitive developmental periods when caregiving environments exert significant influence on socioemotional development. It is also possible that timing is shaped more by contextual and familial risk factors, such as mental health, domestic violence, or poverty, than by gender alone (Dong et al., 2004). Furthermore, gendered differences in maltreatment type may be more salient than timing, for example, girls are more likely to experience sexual abuse, while boys may be more exposed to physical or emotional abuse (Finkelhor et al., 2014). These findings underscore the importance of examining both timing and type of childhood maltreatment, while also considering that certain developmental risk windows may be universally impactful regardless of gender.

Type of Childhood Maltreatment in Predicting BPD Symptom Trajectories

In line with my original hypotheses, both sexual and physical maltreatment at any time point significantly predicted membership in the moderate stable BPD symptom trajectory group. Also as hypothesized, sexual maltreatment exhibited a stronger association with this trajectory group compared to physical maltreatment. Specifically, individuals who experienced sexual maltreatment were 4.77 times more likely to be categorized into the moderate stable BPD symptom trajectory than those with no history of maltreatment. Individuals who experienced physical maltreatment were 3.60 times more likely to be categorized into the moderate stable BPD symptom trajectory than those with no maltreatment. These findings align with existing research suggesting that sexual abuse may exert a stronger and more enduring impact on the development of BPD symptoms than physical abuse (see Ibrahim et al., 2018 for review;

Hengartner et al., 2013). Importantly, both forms of maltreatment were significant predictors while controlling for gender and experiences of bullying victimization, highlighting their unique contribution to BPD symptom development. These results underscore the need for early identification and targeted intervention for individuals exposed to sexual and physical abuse, particularly given their differential impact on long-term symptom trajectories.

In the present study, a significant gender difference in experiences of sexual maltreatment was found, with women significantly more likely to report having experienced sexual abuse than men in childhood. This finding aligns with literature indicating that women and girls are disproportionately affected by sexual victimization across the lifespan (Cutler & Nolen-Hoeksema, 1991; Putnam, 2003). Gendered social norms, power imbalances, and gender-based violence contribute to the increased vulnerability of girls to sexual abuse, particularly during adolescence when gender roles and expectations intensify (Finkelhor et al., 2014). In contrast, no significant gender differences were found for physical abuse, suggesting that men and women in the sample reported comparable rates of childhood physical abuse. This finding is consistent with the broader literature whereby physical abuse is typically evenly distributed across genders, particularly in community samples (Currie & Widom, 2010). Additionally, cultural norms around aggression and discipline may contribute to more equal exposure to physical maltreatment across males and females. It is also possible that gender differences in disclosure play a role; while girls may be more likely to report sexual victimization, boys may underreport due to stigma, shame, or fear of not being believed (Holmes & Slap, 1998). The significant gender disparity in sexual maltreatment, but not physical maltreatment, highlights the importance of considering both the type of maltreatment and the gendered context in which it occurs when assessing risk and outcomes related to early adversity.

Childhood Maltreatment and BPD Symptoms

The present findings reinforce the established link between childhood maltreatment and the development of BPD symptoms. Specifically, both physical and sexual maltreatment, along with any form of maltreatment in pre-elementary or elementary school were significant predictors of moderate stable BPD symptom trajectories across early adulthood. Although these associations are well documented, it is essential to further consider how early adversity leads to the emergence and maintenance of BPD symptomology. Several theoretical and empirical

frameworks point to potential mediating mechanisms that may explain this developmental pathway.

One mechanism is emotion dysregulation, which as been conceptualized as a core feature of BPD and likely a consequence of early maltreatment. According to biosocial theory (Linehan, 1993), children who grow up in invalidating environments (where emotions are dismissed, punished, or misunderstood), struggle to develop the skills needed for managing intense emotional experiences. Kim and Cicchetti's (2010) research support this model, demonstrating that maltreatment, particularly when it begins in early development and involves multiple forms (e.g., neglect, physical, and sexual abuse), is strongly associated with emotion dysregulation, which in turn predicts both internalizing and externalizing symptoms. Given that emotion dysregulation underlies many core BPD symptoms (affective instability, impulsivity, and interpersonal difficulties), it is plausible that this mechanism partially accounts for the observed associations in the present study.

Neurobiological alterations resulting from early maltreatment may also contribute to the onset of BPD symptoms. Researchers have shown that maltreatment during critical developmental periods can disrupt brain structure and function, particularly in regions implicated in emotion regulation, threat detection, and interpersonal processing (e.g., Teicher & Samson, 2016). For example, alterations in the amygdala, hippocampus, and prefrontal cortex have been documented in individuals with histories of early abuse, and these changes may increase vulnerability to heightened emotional reactivity, impulsivity, and difficulty forming stable relationships, which are core features of BPD. Although I did not examine neurobiological outcomings directly, these findings offer a biological framework through which early maltreatment may exert lasting psychological effects.

Another potential mechanism involves the formation of maladaptive cognitive schemas, shaped through insecure or disorganized attachment relationships. Bowlby's (1973) attachment theory suggests that children develop internal working models of the self and others based on early caregiving experiences. These internal working models act as templates for interpreting social cues, managing distress, and forming relationships throughout life. When caregivers are a source of fear or inconsistency, as often occurs in contexts of maltreatment, the child experiences a conflict between the need for comfort and the fear of the caregiver, often leading to

disorganized attachment (Main & Solomon, 1990). Over time, this disorganization can manifest as heightened sensitivity to rejection, unstable self-concept, and alternating patterns of dependency and withdrawal, all core symptoms of BPD (Agrawal et al., 2004; Lyons-Ruth et al., 2004).

When caregivers are abusive, neglectful, or inconsistent, children may internalize schemas characterized by mistrust, fear of abandonment, and feelings of unworthiness, beliefs which are commonly reported by individuals with BPD (Fonagy et al., 2000). Attachment insecurity not only affects relational expectations but also emotional regulation capacities, as securely attached children typically learn to co-regulate their emotions through consistent caregiver support. In contrast, children with insecure or disorganized attachments lack these early co-regulatory experiences, leading to poor emotional control and chronic fear of abandonment in adulthood (Mikulincer & Shaver, 2019; Steele & Siever, 2010).

Erikson's (1950) psychosocial theory complements this framework, proposing that the earliest developmental task, trust versus mistrust, forms the foundation for later emotional and relational functioning. When this stage is disrupted by maltreatment or inconsistent caregiving, the child may develop a pervasive sense of insecurity and difficulty trusting others, which aligns with the interpersonal instability characteristic of BPD (Agrawal et al., 2004; Mikulincer & Shaver, 2019). Moreover, Fonagy et al., (2003) argue that secure attachment underlies the development of mentalization (the capacity to understand one's own and others' mental states). Chronic maltreatment or attachment trauma may impede this capacity, resulting in misinterpretation of social cues, and difficulties in understanding others' intentions, which further exacerbates the interpersonal volatility and paranoia often observed in BPD.

These attachment-based processes suggest that maltreatment disrupts not only a child's sense of safety and trust but also the development of essential relational and emotional competencies. The inability to form secure attachments, regulate affect, and mentalize effectively may represent key pathways through which early relational trauma contributes to the onset and persistence of BPD symptoms.

Taken together, these studies suggest that childhood maltreatment may disrupt core developmental systems (biological, emotional, and relational), setting the stage for the emergence and persistence of BPD symptoms into adulthood. The results of this study provide

important evidence of the association between maltreatment and BPD symptom trajectories, but future research should aim to incorporate these mediating processes to develop a more comprehensive understanding of the pathways from early maltreatment to personality pathology. Doing so may offer critical insight for the design of early intervention targeting these mechanisms before symptoms become entrenched.

Limitations

Findings from the present study contribute to the growing body of literature on BPD symptomology and its association with childhood maltreatment. Notable strengths of this study include a longitudinal, person-centred design, which enabled the examination of symptom trajectories over time and the use of a community-based sample, allowing for the analysis of BPD symptoms within a non-clinical population.

Although this study offers several strengths, it is important to acknowledge its limitations. The CEVQ-SF is a well-established measurement of childhood maltreatment, but concerns have been raised about the validity of retrospective accounts of self-reports. Specifically, some researchers have argued that retrospective accounts may be subject to recall bias and reduced accuracy, particularly regarding subtle or nuanced details (see review Hardt & Rutter, 2004). Additionally, there is debate over the possibility of false memories, with some concerns that individuals may inaccurately recall events that did not occur (Maughan & Rutter, 1997). However, more recent evidence suggests that false reporting is relatively uncommon. For instance, Goldfarb et al. (2019) found that individuals are more likely to underreport or respond with uncertainty (“I don’t know”) rather than to fabricate instances of abuse.

Statistical power due to a reduced analytic sample was also a limitation. Although the overall participant pool was large, the subset of individuals included in the final analyses was smaller, as inclusion required complete data on both BPD symptoms and childhood maltreatment. This reduction in sample size limited the complexity of the analyses that could be conducted, particularly restricting the ability to examine interactions between maltreatment type and timing in relation to BPD symptomology.

Clinical Implications and Future Directions

Given the stability of BPD symptom trajectories observed in this study, along with the well-documented risks associated with childhood maltreatment, early interventions targeting

both factors are essential. One evidence-based psychotherapeutic approach to treating BPD is dialectical behavioural therapy (DBT) developed by Marsha Linehan (Linehan, 1987). DBT emphasizes development of a collaborative and supportive therapeutic relationship and incorporates a dialectical framework that balances acceptance of the individual with efforts to promote behavioural change. Research has consistently demonstrated the effectiveness of DBT in reducing suicidality and improving overall functioning in individuals with BPD, with evidence supporting its long-term benefits (see Hernandez-Bustamante et al., 2024 for review).

Although DBT has long been considered the primary psychotherapeutic modality for treating BPD (Linehan, 1987), the American Psychiatric Association released updated clinical guidelines in 2024 (APA, 2024; Keepers et al., 2024). These guidelines emphasize the importance of a comprehensive person-centred assessment, which should include the reason for evaluation, treatment goals and preferences, a review of psychiatric symptoms (including core features of personality disorders and co-occurring conditions), psychiatric and medical history, psychosocial and cultural context, mental status examination, and evaluation of suicide risk, self injurious behaviour, and aggression. The initial assessment of the individual should also incorporate a quantitative measure to assess symptom severity and functional impairment. A key shift in the updated guidelines is the recommendation for a documented, collaborative, and individualized treatment plan. Individuals should be actively involved in discussions regarding their diagnosis and treatment, including receiving psychoeducation about their condition. Prior to initiating new pharmacological treatments, clinicians are advised to conduct a thorough review of co-occurring disorders, previous psychotherapy, non-pharmacological treatment, past medication trials, and current medications. Psychotropic medications should be time-limited, addressing specific measurable symptoms, and used in conjunction with psychotherapy. Additionally, medication regimens should also be re-evaluated every six months to assess effectiveness and make necessary adjustments.

An important consideration in the treatment of BPD is the presence of clinician bias toward individuals with this diagnosis. Lindell-Innes et al. (2023) found that clinicians in the later stages of their training reported significantly lower levels of treatment optimism, empathy, and positive attitudes toward individuals with BPD compared to early- and mid-stage trainees. This decline may reflect increased exposure to negative systemic attitudes and stigma within

clinical settings, where more experienced trainees may internalize the pessimism or frustration modeled by staff. Additionally, many mental health professionals report feeling underprepared or undertrained to effectively treat individuals with BPD, which may further contribute to negative perceptions. Enhancing clinician education and training focused on BPD diagnosis and treatment could help reduce stigma and improve therapeutic engagement. Another contributing factor is limited health literacy (on the part of both patient and clinicians) which can result in misunderstandings about the nature of BPD and its symptoms (Ring & Lawn, 2025). This lack of understanding may foster conflicting perceptions of individuals with BPD as simultaneously out of control and yet fully responsible for their behaviours (such as their self-harm or perceived manipulative behaviour).

When examining the role of childhood maltreatment in development of BPD symptomology, it is also essential to also consider interventions aimed at preventing or mitigating the impact of such experiences. Evidence-based interventions to reduce or prevent child maltreatment include cognitive behavioural therapy (CBT), home visitation programs, parenting skills training, and multi-component approaches (van der Put et al., 2017). Short-term interventions often focus on enhancing parental self-confidence, while interventions that emphasize parenting skills and the provision of social and emotional support have been associated with larger effect sizes.

Beyond clinical and research implications, the findings of this study also highlight the need for broader policy-level interventions to address the long-term effects of childhood maltreatment on mental health. Given the significant association between early maltreatment and BPD symptom development, policies that prioritize early identification, prevention, and trauma-informed care are essential. For instance, implementing universal screening for adverse childhood experiences in pediatric and school settings could help detect at-risk youth before symptoms worsen. Additionally, investing in training programs for educators, social workers, and primary care providers to recognize signs of maltreatment and emotional dysregulation may facilitate earlier referrals and support. Community-based initiatives that promote parenting education, stable housing, and access to mental health care could also function as upstream prevention strategies. Furthermore, policy frameworks should support the integration of trauma-informed practices within child welfare systems, youth services, and school environments to

reduce re-traumatization and foster psychological safety. By addressing these structural factors policymakers can help mitigate the developmental impact of maltreatment and reduce the incidence and severity of BPD symptoms across the lifespan.

Although the current study focused primarily on risk factors, it is equally important to consider protective factors that may buffer the impact of childhood maltreatment and prevent the onset or persistence of BPD symptoms. Not all individuals exposed to early adversity go on to develop BPD, suggesting the presence of resilience processes that interrupt the pathway from trauma to psychopathology. Research has identified several protective factors, including emotion regulation skills, secure attachment relationships, social support, and self-efficacy (Cicchetti, 2013; Rutter, 2012). For instance, the presence of a consistent and emotionally responsive caregiver (even in the context of broader familial dysfunction) has been shown to mitigate the negative psychological effects of maltreatment (Toth & Manly, 2011). Likewise, peer support, access to mental health services, and involvement in structured activities such as school or community programs can promote resilience and adaptive functioning. These factors may help individuals develop more flexible coping strategies and reduce the likelihood of internalizing maladaptive beliefs about themselves or others. Future research should explore how these protective factors interact with maltreatment histories to influence BPD symptom trajectories, which may inform preventative interventions that strengthen resilience among at-risk youth.

Future research examining the relation between childhood maltreatment and BPD symptomology should explore the interaction between maltreatment type and timing. Although such analyses would require a larger sample size, they would enable researchers to assess how specific types of maltreatment experienced at different developmental stages jointly influence the emergence and trajectory of BPD symptoms. This approach could provide a more nuanced understanding of the developmental pathways leading to BPD. Future research could benefit from examining cumulative maltreatment across developmental periods, as chronic exposure to maltreatment may confer greater risk for persistent BPD symptoms (Manly, 2005). Additionally, future studies should consider incorporating a broader range of maltreatment types, such as neglect and emotional abuse, to capture a more comprehensive picture of adverse childhood experiences. Including both community and clinical samples would enhance generalizability and allow for the examination of a wider range of symptom severity. Furthermore, integrating

multiple sources of maltreatment data, such as self-reports and official records from child protection agencies, could improve the accuracy and completeness of maltreatment history by accounting for both reported and non-reported experiences.

Conclusion

The present study contributes to the existing literature by examining how both the type and timing of childhood maltreatment predict the development of BPD symptoms across early adulthood. By using a longitudinal, person-centred approach within a community-based sample, my research offers a more nuanced understanding of how early adversity shapes the course of BPD symptomology over time. These findings illuminate the complex and multifaceted nature of BPD, emphasizing not only the significance of early risk factors but also the developmental sensitivity of certain periods. In doing so, the study raises critical awareness of BPD's early origins and provides valuable insights for clinical practice and community-based interventions aimed at delivering more tailored and effective treatment. Moreover, the results have broader implications for prevention and policy, highlighting the importance of early identification, trauma-informed care, and resilience-building strategies across systems that severe vulnerable youth. Although further research is needed to investigate underlying mechanisms and protective factors, this study lays important groundwork for an integrated, developmentally informed, and intervention-focused approach to reducing the long-term impact of childhood maltreatment on BPD.

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