

**THE CUMULATIVE EFFECTS OF BULLYING VICTIMIZATION IN CHILDHOOD  
AND ADOLESCENCE ON BORDERLINE PERSONALITY DISORDER SYMPTOMS  
AND POST-TRAUMATIC STRESS DISORDER IN EMERGING ADULTHOOD**

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**Abstract**

Childhood and adolescent bullying victimization procures mental health issues and dysfunction. Using a longitudinal design from the McMaster Teen study dataset, a semi-parametric group-based trajectory analysis was used to identify distinct patterns of peer victimization across ages 10 to 18. A three-class solution of peer victimization was selected. Most individuals followed a low decreasing trajectory of peer victimization (71.3%). The next largest group followed a moderate decreasing peer victimization trajectory (25.2%), and the smallest group followed a high stable peer victimization trajectory (3.5%). These trajectory groups were used to predict Borderline Personality Disorder (BPD) symptoms and Post-Traumatic Stress Disorder (PTSD) in emerging adulthood (ages 19 to 22). Results indicated that the high stable and moderate decreasing groups differed from the low decreasing group on BPD symptoms; individuals who were bullied by their peers in childhood and adolescence were more likely to have elevated symptoms of BPD in adulthood. However, when controlling for gender and childhood maltreatment, this differentiation only held true for the high stable group. Results also indicated that children and adolescents who followed a high stable trajectory of bullying victimization were more likely to meet PTSD diagnostic criteria in emerging adulthood than those who followed a low decreasing or moderate decreasing trajectory. The implications of the positive associations of childhood and adolescent bullying victimization on BPD symptoms and PTSD are considered via a group socialization theory lens. High levels of bullying victimization are explained as a form of relational trauma. Results suggest that peer relations are powerful enough to lead to subsequent personality pathology, and implications of these associations are examined through a developmental trauma framework. Understanding the developmental impact of childhood and adolescent bullying on BPD symptoms and PTSD provides insight and supports prevention and intervention initiatives at the school level and in clinical practice.

*Keywords:* Bullying victimization, Borderline Personality Disorder symptoms, Post-Traumatic Stress Disorder, relational trauma

The Cumulative Effects of Bullying Victimization in Childhood and Adolescence on Borderline Personality Disorder Symptoms and Post-Traumatic Stress Disorder in Emerging Adulthood

### **Introduction**

Borderline Personality Disorder (BPD) is a mental disorder characterized by pervasive, unstable, and intense interpersonal relationships, self-image, affect regulation, impulsivity, and suicidal behaviour, threats, or self-mutilation (The Diagnostic and Statistical Manual of Mental Disorders 5th ed.; DSM-5; American Psychiatric Association, 2013). Other features of BPD as described by the DSM-5 include fear of abandonment, incapacity to trust the motives of others, and anger (APA, 2013). In the general population, it affects approximately 1.4% of youth (aged 12-17; APA, 2013), 3.2% of young adults (Johnson et al., 2008). BPD is presented amongst adolescents and adults, and vary significantly by gender, with girls and women being more likely to receive a diagnosis than boys and men (APA, 2013; Kaess et al., 2014; Torgersen et al., 2001). Chronic suicidal ideation/behaviour is a key characterization to this diagnosis, especially during adolescence, and is a cause for great concern because it is often expressed alongside impulsivity and difficulties in emotional regulation (Soloff & Chiappetta, 2012). Moreover, impairments related to suicide risk are highest during emerging adulthood (APA, 2013). Research geared toward elucidating the etiology, prevention, and treatment of BPD symptoms is crucial because up to 70% of individuals with BPD will attempt suicide, and up to 10% of individuals diagnosed with BPD will complete suicide (APA, 2013; Goodman et al., 2012).

Although BPD is most commonly diagnosed in individuals in emerging adulthood (APA, 2013), it is generally agreed that personality disorders “have their roots” in childhood and adolescence (Kaess et al., 2014, p.783). Despite the normative flux of personality, emotional instability, and unsteady self-image experienced during adolescence, BPD diagnoses are equally reliable and valid in adolescence and adulthood (Chanen, 2004; Haltigan & Vaillancourt, 2016). Risk factors and determinants that contribute to the development of BPD include childhood temperamental factors, such as negative emotionality and impulsivity (Kendler et al., 2008). Other important factors include low socioeconomic status (Cohen et al., 2008), family adversity, affective parenting (e.g., warmth, maternal satisfaction with their child, acceptance and rejection, hostility in disciplining and punishing their child), maternal psychopathology, and adverse childhood experiences— specifically childhood maltreatment (Stepp et al., 2016). Increasing evidence indicates that both childhood temperamental abnormalities and adverse environmental experiences, as well as their interaction, account for later expression of BPD symptoms (Haltigan & Vaillancourt, 2016; Hengartner et al., 2013).

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The most common interpersonal adverse childhood experiences studied to date are related to household dysfunction, namely abuse (emotional, physical, and sexual), neglect, and household challenges (Ahmadi, 2016; Felitti et al., 1998), which is more typical in the childhood histories of those with BPD compared to individuals who do not have BPD (APA, 2013). Research findings have consistently shown that trauma occurring during childhood and adolescence plays a critical role in the development of BPD (Newnham & Janca, 2014). Even though bullying victimization is conceptualized as a type of interpersonal trauma (Hong et al., 2020), it is understudied in the literature compared to negative outcomes related to parental abuse. Indeed, less is known about how bullying victimization in childhood impacts the presentation of BPD symptoms in emerging adulthood, which was one of the foci of my thesis. Furthermore, limited research has been conducted to model other disorders sharing a high comorbidity with BPD symptoms in emerging adulthood, such as post-traumatic stress disorder (PTSD; Scheiderer et al., 2015), in relation to bullying victimization.

Like BPD and BPD symptoms, another outcome of interpersonal adverse childhood experiences is PTSD. In the DSM-5, PTSD is characterized by a dysregulation in emotion processing, as well as deficits in self-organization, and relational security after experiencing a real or perceived threat (APA, 2013). These core PTSD symptoms can only be established once a link to one or more traumatic event(s) has been identified. Other symptoms include the presence of intrusion symptoms (e.g., recurrent memories of a traumatic event, distressing dreams related to the traumatic event, dissociative reactions, psychological distress triggered by a traumatic event), avoidance of stimuli associated with a traumatic event, negative changes in cognition or mood, and changes in reactivity beginning or worsening after a traumatic event (APA, 2013). PTSD is the most prevalent psychologically adverse outcome of exposure to a traumatic event with up to 3.8% of individuals meeting diagnostic criteria (Shalev et al., 2017). Researchers studying psychological trauma have focused less on the topic of bullying and more so on the interpersonal trauma of childhood maltreatment.

Those who experience trauma during formative developmental periods, such as in childhood and adolescence, are at a high risk for both PTSD and personality disorders (Ford & Courtois, 2014), which is consistent with extant literature demonstrating a high comorbidity between PTSD and BPD (e.g., Eichelman, 2010; Pagura et al., 2010). It has been shown that a history of childhood trauma and PTSD are linked to BPD symptoms. Several studies have shown an association between PTSD symptoms related to childhood victimization and BPD

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presentations, such as deficits in cognitive empathy (e.g., accuracy in inferring mental states), suicide attempts, lethality of self-injury acts, non-suicidal self-injury, crises that leads to hospitalization, psychotic symptoms, and a self-concept that is anxious- and guilt- prone (Eichelman, 2010; Ford & Courtois, 2014; Harned et al., 2010; Kulkarni et al., 2017; Roepke et al., 2013; Rusch et al., 2010; Wedig et al., 2013; Zlotnick et al., 2003). Nonetheless, these symptoms have mainly been explored in the context of child abuse with a primary caregiver (Ball & Links, 2009; Bradley et al., 2005). Ford and Courtois (2014) point out the overlap of diagnostic criteria of BPD and complex PTSD, and call for a need to further investigate the nuanced role of psychological trauma in BPD. Adults with BPD are most likely to report histories of psychological trauma, with interpersonal trauma being the most prevalent; it has been suggested that complex PTSD (included in the ICD 11; World Health Organization, 2018) serves as a subtype of BPD when developmental trauma is caused or related to symptoms of impairment (Ford & Courtois, 2014). What is not clear is whether other developmental periods, such as emerging adulthood, are also implicated in the development of BPD and PTSD in the context of being exposed to abuse, and what role bullying victimization plays in the development of these disorders.

Emerging adulthood is a vulnerable developmental time period characterized by a peak in self-esteem (Trzesniewski et al., 2003), meaningful social events (Duncan & Agronick, 1995), identity exploration, instability, self-focus feelings that are neither like an adult nor an adolescent, and optimism (Arnett, 2004; Berzin, 2010). It is also a time of role transitions (e.g., becoming more independent) and acquiring new skills (Lerner & Steinberg, 2009; Shanahan, 2000). Resources that support a successful transition into emerging adulthood include autonomy, motivation, and adult support (Masten et al., 2004). Although there is no strict cut-off, studies generally encompass individuals that fall, on average, within the 18- to 25-year old age range as emerging adults (e.g., Berzin, 2010; Leadbeater et al., 2014; Veroude et al., 2013).

In sum, the pathway between dysfunctional parent-child relationship, specifically child maltreatment, and BPD has been researched extensively (Battle et al., 2004; Hengartner et al. 2013; Lobbestael et al., 2010). For example, in a systematic review, de Aquino Ferreira et al. (2018) reconfirmed that childhood sexual abuse is a major risk factor and strong predictor of BPD in children younger than 12 years old, forecasting severe clinical presentations and poor outcomes. Fewer studies have examined the impact of other forms of victimization on BPD and PTSD, although there is a growing recognition that bullying victimization is a strong predictor of

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BPD features (Arseneault et al., 2010; Haltigan & Vaillancourt, 2016; Sansone et al., 2010; Wlodarczyk & Lawn, 2016; Wolke et al. 2012) and PTSD symptoms (Idsoe et al., 2021; Idsoe et al., 2012; Ossa et al., 2019). With this backdrop in mind, the foci of my thesis were on how the cumulative exposure to bullying victimization across childhood and adolescence contributes to the development of BPD symptoms and PTSD during emerging adulthood.

### Literature Review

#### **Bullying Victimization and Borderline Personality Disorder**

There is an emerging literature confirming the relation between being the target of bullying victimization during childhood and pathological scores on measures of BPD symptomatology, where the severity and stability of being bullied are significant contributing factors (Arseneault et al., 2010; Sansone et al., 2010; Sansone et al., 2013; Wolke et al., 2012). That is, being a target of bullying in childhood increases the risk of developing BPD symptoms in later childhood (Wolke et al., 2012) and adolescence (Haltigan & Vaillancourt, 2016; Wlodarczyk & Lawn, 2017). To my knowledge, this inquiry has only been investigated once beyond adolescence by Antila et al. (2017) in a psychiatric population. They found that being a target of bullying victimization in childhood and adolescence increases the risk of developing subsequent personality disorders in early adulthood (under the age of 30), wherein this risk was four times more likely for women than men. In order to broaden these findings, I have examined the expression of BPD symptoms in emerging adulthood in the general population as it related to childhood bullying victimization using a prospective study.

Bullying victimization is a form of peer maltreatment in which systemic social exclusion, verbal, physical, and cyber-abuse are directed repeatedly at an individual in the context of an imbalance of power (Lereya et al., 2015; Olweus, 1997; Vidourek et al., 2016). Exposure to bullying is associated with negative social, physical/biological, behavioural, financial, and mental health consequences (Wolke et al., 2013) that are long-standing (McDougall & Vaillancourt, 2015). Accordingly, exposure to bullying victimization is considered a public health threat (Mitchell, 2018; Moreno & Vaillancourt, 2017).

In Canada, 33% of adolescent students have reported being bullied (Molcho et al., 2009; Vaillancourt et al., 2010), while 34% of Canadian adults have retrospectively reported being bullied during their school years (Kim & Leventhal, 2008). Internationally, one third of children aged 13-15 years old experience bullying victimization on a regular basis (UNICEF, 2017). This is consistent with other research investigating the developmental trajectories of bullying: fewer

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than 10% of children are consistently bullied by peers; children who do experience bullying victimization are most likely to be targets during middle school, as bullying peaks in early adolescence (Ghoul et al., 2013; Pellegrini & Long, 2002; Kim et al., 2009). By the end of high school, bullying victimization levels taper significantly and approximately 40% of children are never or rarely targeted by peers (Pepler et al., 2008).

Although there is yet to be a definitive underlying psychological mechanism that links specific environmental risk factors with BPD symptom expression, researchers have begun to theorize how bullying could lend itself to this personality disorder. From a physiological perspective, bullying victimization leads to an altered stress response (Ouellet-Morin et al., 2011; Vaillancourt et al., 2007; Vaillancourt et al., 2011), which may be related to emotional dysregulation associated with relational victimization (Rudolph et al., 2009), and may be observed as impulsivity and affective instability symptoms of BPD (Wolke et al., 2012). Moreover, negative peer interactions may modify the relational schemata (Salmivalli & Isaacs, 2005), resulting in relational difficulties with the self and other, which is a hallmark symptom of BPD (Winsper et al., 2018; Wolke et al., 2012).

Dysregulated behaviour in children is an example of an individual feature that is associated with BPD in early adolescence. In fact, dysregulated children are more likely to be bullied, which in turn can influence the development of BPD (Winsper et al., 2018). Although various forms of childhood adversities are related to personality disorders (e.g., neglect and child maltreatment, sociodemographic factors, etc.; Afifi et al., 2011), bullying victimization, conduct problems in school, and relational victimization are some of the strongest predictors of BPD; and the relation between sexual abuse and BPD weakens when such forms of adversities are considered (Hengartner et al., 2013).

Wolke et al. (2012) found that being a target of bullying in elementary school was predictive of BPD symptoms at 8- and 10-year follow-ups compared to individuals who had not been bullied by their peers. These results remained significant when accounting for confounding variables, such as age, gender, risk factors during pregnancy, DSM-IV diagnoses, maladaptive parenting (e.g., maternal hitting and hostility), child IQ, and sexual abuse. The relation indicated that “every point increase on the continuous scale of combined (rated 0 to 3), chronic victimization was associated with a 1.57 increased odds of BPD symptoms” (Wolke et al., 2012, p.850). These results suggest that the dose-response effect was not changed when the

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confounding variables were added into the model. In fact, Wolke et al. proposed that their study reflected a causal relationship.

Haltigan and Vaillancourt (2016) identified groups that had elevating, stable, and low trajectories of BPD features among preteens, and results of their stress-diathesis model suggested that youth with child-reported reactive temperaments who experienced high levels of bullying victimization had a higher likelihood of falling within an elevated borderline feature trajectory group. Haltigan and Vaillancourt found that being a target of peer aggression was particularly relevant to the development of borderline personality symptoms in childhood and adolescence. Their results stated that youth had a higher likelihood of falling within the elevated borderline personality features trajectory group if they had experienced higher levels of bullying victimization, supporting the need for prevention and intervention strategies in childhood and adolescence (Haltigan & Vaillancourt, 2016).

There is a strong argument for understanding bullying victimization as a form of interpersonal trauma (Idsoe et al., 2021), thus understanding its link with BPD symptoms makes sense and affords the potential to establish preventative efforts that can help reduce suicidal ideation and attempts which are high among individuals with BPD (APA, 2013). Moreover, given that BPD and PTSD share certain core symptoms, including suicidal thoughts and behaviour, as well as established links to trauma which are also associated with increased suicidal thoughts and behaviour (APA, 2013; Stein et al., 2012, p.145), another focus of my thesis was to examine how bullying victimization is associated with the development of PTSD.

### **Bullying Victimization and Post-Traumatic Stress Disorder**

As mentioned, early adolescence is a time where bullying victimization peaks (Ghoul et al., 2013). Those who are both perpetrators and targets of bullying (i.e., bully-victims) are more likely to continue to be victimized, despite the fact that bullying rates steadily decrease after it peaks in adolescence (Silberg et al., 2016). Due to the harmful and repetitive nature of bullying victimization, it is no surprise that exposure to bullying has been linked to mental health issues in later life (McDougall & Vaillancourt, 2015; Vidourek et al., 2016). However, only recently have researchers begun to investigate the links between bullying victimization and PTSD. This omission raises the question of how we define bullying victimization within a trauma framework. Indeed, there is continued discussion regarding whether bullying can be classified as a traumatic event and satisfy diagnostic criteria for PTSD, despite both the clear link (Nielsen et al., 2015;

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Idsoe et al., 2021) and the nature of bullying as repetitive, intentional, interpersonal aggression (Olweus, 1993).

Several researchers (Idsoe et al., 2021; Mynard et al., 2000; Storch & Esposito, 2003; McKenney et al., 2005; Rivers, 2004; Ossa et al., 2019) have found links between current and retrospective accounts of bullying during childhood and adolescence and PTSD symptoms in childhood and adolescence, where frequency of exposure and severity of victimization indicated a stronger association (e.g., Chen & Elklit, 2017; Crosby et al., 2010; McKenney et al., 2005). Overall, the odds of endorsing high levels of PTSD symptoms are greater among children who report bullying victimization, compared to those who do not (McKenney et al., 2005). Positive correlations have been demonstrated between bullying victimization- especially relational victimization- and PTSD symptoms in elementary school aged children for boys and girls, where targets of bullying are twice as likely to exhibit high levels of PTSD symptoms compared to others with no experience of bullying victimization (Litman et al., 2015; Murphy et al., 2014; Mynard et al., 2000). These symptoms seem to continue into emerging adulthood (Lev-Wiesel et al., 2006).

To my knowledge, most research examining the relation between bullying victimization and subsequent PTSD has examined bullying during adulthood (e.g., Leymann & Gustafsson, 1996). In fact, Simiola et al., (2015) noted in their meta-analysis that there is a lack of longitudinal research and structured clinical interviews to provide evidence that clarifies the role of bullying victimization as a causal precursor to a PTSD diagnosis or symptoms. Retrospective accounts of being bullied have been linked with PTSD symptoms (Murphy et al., 2014) and possibly lend to a causal relationship for suicide attempts in adulthood (Katsaras et al., 2018; Klomek et al., 2010; Meltzer et al., 2011), but to the best of my knowledge, these associations have not been examined prospectively.

In sum, there is a lack of longitudinal studies examining the links between bullying victimization and symptoms of BPD. There has also been a recent call for researchers to investigate the links between bullying victimization and PTSD using structured clinical interviews (Simiola et al., 2015). BPD and PTSD have relationships with trauma, overlap in symptomology, and have a high degree of lifetime co-occurrence (Pagura et al., 2010). Their shared features have led some to suggest that BPD is a syndrome of PTSD (Pagura et al., 2010). With this backdrop in mind, I investigated the relation between self-reported bullying

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victimization across adolescence and how exposure to this type of abuse was related to the development of BPD symptoms and PTSD in young adulthood assessed using clinical interviews.

### **Current Study**

#### **Research Objectives**

My aim was to examine developmental trajectories of bullying victimization from age 10 to 18 in predicting BPD symptoms and PTSD in young adulthood (age 19-22), while controlling for gender and childhood maltreatment.

The role of gender was treated as a control given the robust gender differences in the prevalence of BPD symptoms and PTSD (APA, 2013). With regards to BPD, girls and women are more affected by BPD than boys and men (APA, 2013), and girls and women are more likely to express suicidality, self-harming behaviour, affective instability, and feelings of emptiness compared to boys and men; however, all other BPD symptoms are equally expressed across both genders (Hoertel et al., 2014). With respect to traumatic events, women are at a higher risk than men for developing PTSD following trauma (Bokszczanin 2007; Laufer & Solomon 2008). Idsoe et al. (2012) found that gender did not moderate the relationship between bullying victimization and PTSD, however, overall girls had higher levels of PTSD symptoms, and were twice as likely to fall within the clinical range for PTSD symptoms compared to boys who were also bullied (Idsoe et al., 2012).

Childhood maltreatment was controlled for in the analyses because it is well documented that individuals are often exposed to multiple types of abuse, otherwise known as poly-victimization (Ford & Delker, 2018). Specifically, children who experience poly-victimization often experience traumatic events in multiple environments such as at home, in schools, and in the community (Cyr et al., 2012). In the case of bullying victimization, a recent study indicated an association between familial maltreatment and bullying victimization during adolescence (Ssenyonga et al., 2019). Moreover, other studies have shown that maltreated children are at a higher risk of being bullied by their peers than non-maltreated peers (Benedini et al., 2016; Lereya et al., 2015).

#### **Research Questions**

My thesis answered the following research questions:

1. What are the predictive associations between trajectories of bullying victimization across childhood and adolescence on the development of BPD symptoms and PTSD in emerging adulthood?

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2. Do these associations remain significant when controlling for gender and childhood maltreatment?

### **Hypotheses**

It was predicted that *at least* three distinct trajectories of bullying victimization would be founded comprising of a low decreasing (i.e., individuals who have not been bullied over time), a moderate decreasing group (i.e., individuals who were bullied in childhood but have desisted in adolescence), and a high stable group (i.e., individuals who have been chronically bullied across childhood and adolescence). It was also predicted that young adults who have experienced continuous bullying across childhood and adolescence (a high stable bullying victimization group) would be more likely to display BPD symptoms and meet diagnostic criteria for PTSD than young adults who were never bullied by their peers (a low decreasing bullying victimization group). Finally, these predictions for BPD symptoms were expected to remain after controlling for gender and the exposure of any type of childhood maltreatment.

### **Methodological Framework**

#### **Procedure**

The current study used data from the McMaster Teen Study, which is an ongoing, longitudinal study that gathers information about individuals' mental health, bullying, and relationships using a multi-method, multi-informant approach. Ethics approval was received annually from associated university ethics boards and from the relevant school board. Each year, parental consent and student assent was obtained for the child's participation in a student survey, and the participant's consent was acquired for a telephone interview. At the beginning of the study, students would complete measures in school via paper and pen, and in later years completion of self-reporting transitioned to at home via paper and pen, or an online format. Participant compensation for completing the survey and telephone interview consisted a gift card worth \$10 to \$50, depending on the year of participation.

Participants were recruited from 51 randomly selected primary schools beginning in the spring of 2008 from the Southern Ontario Public School Board and followed annually for 13 years. Children completed self-report measures and parents (87% mothers) completed structured clinical interviews to assess their child's behaviour, peer experiences, and various facets of their mental health functioning at each time point. Data have been collected yearly to date. Demographic information was provided by the person most knowledgeable (PMK; usually the mother; 80% of the time) about the child on household income and education of the PMK.

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From Time 1 to Time 8, participants were given the offer to complete a survey (online or paper versions were available) and beginning at Time 9, a clinical interview conducted by a trained research assistant was used to assess various DSM-5 mental health disorders. The current study used data on BPD symptoms and PTSD from the structured clinical interview.

### **Participants**

At Time 1, participants were close to 11 years old ( $M_{age} = 10.91$  years;  $SD = 0.36$ ) and at Time 12 they were 22 years old ( $M_{age} = 21.99$  years;  $SD = 0.33$ ). From the first year of data collection, 875 participants were recruited to be a part of the longitudinal study, and 80% ( $n = 703$ ) participated; 53% of those participants were girls. The majority of students were self-reported European-Canadian (white) ethnic background (71%) followed by Did Not Know = 12%; Other = 4%; African/West-Indian-Canadian (Black) = 3%; South-Asian-Canadian = 3%; Asian-Canadian = 2%; Middle-Eastern-Canadian = 2%; Canadian = 1%; South/Latin American-Canadian = 1%. At Time 1, the median household income of the sample was \$70 000 to \$80 000 and 74% of parents reported to have obtained post-secondary education; the median average household income for the province at this time was \$70 910.

The criterion to be included in the analytic sample was for each participant to have data on bullying victimization between ages 10 and 18. Furthermore, between the ages of 19 and 22, participants had provided retrospective data on childhood maltreatment, provided prospective data on BPD symptoms, and were prospectively screened for PTSD by participating in a clinical interview.

### **Measures**

#### **Borderline Personality Disorder**

The Borderline Symptoms List, youth report (BSL; Bohus et al., 2007) consists of 95 items that are self-reportedly responded to on a 5-point Likert scale that ranges from 0 to 4, with 0 corresponding to not at all, and 4 corresponding to very strong. This scale quantifies borderline-typical symptomatology based on the DSM-5 and the expert opinions of clinicians and borderline patients. In the current study, the BSL-23 was used to assess BPD symptoms; this is a shortened version of the BSL-95 using the items with the highest levels of sensitivity to change and discriminant ability. The BSL-23 showed comparable internal consistency to the full-version ( $\alpha = .94-.97$ ) and similar discriminate validity (Bohus et al., 2009). Items on the BSL-23 are based on the DSM-IV and -5, The Diagnostic Interview for Borderline Personality Disorder, both clinical experts and BPD patients included in the scale development, and empirical findings. The diagnostic

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criteria covered includes affective instability, recurrent suicidal tendencies, transient dissociative symptoms, self-criticism, difficulties with trust, emotional vulnerability, proneness to shame, self-disgust, loneliness, and helplessness. (Kleindienst et al., 2020). Based on comparisons from various validated instruments (such as the International Personality Disorders Examination and the Global Assessment of Functioning), six grades of symptoms severity were identified relative to BLS-23 mean scores, ranging from none or low to extremely high. Compared to those who meet diagnostic criteria for a full BPD diagnosis, individuals who endorse BPD traits but do not meet the threshold for a diagnosis still experience relationship dysfunction and distress. Therefore, in the current study, BPD symptoms were treated as a continuous variable.

Overall, the BSL-23 demonstrates higher sensitivity to the effects of therapy than the BLS-95, as is exhibited through a larger effect size (BSL-23,  $d=0.47$ ; BSL-95,  $d=0.38$ ; Bohus et al., 2009). Internal consistency for the BSL-95 total score was excellent,  $\alpha = .95$ , and it demonstrated to have good test-retest reliability,  $r=.84$ . The BSL-95 yielded higher scores for persons with DSM-IV Axis I disorders, compared to healthy controls (Bohus et al., 2007). As of Time 9, the BSL-23 was administered as part of a structured clinical interview by trained counselling psychology graduate students and mental health professionals at the University of Ottawa who were supervised by a clinical psychologist.

### **Post-Traumatic Stress Disorder**

The M.I.N.I International Neuropsychiatric Interview is a structured diagnostic interview developed to generate 17 DSM-IV and ICD-10 axis I psychiatric disorders (Sheehan et al., 1998). It is used for assessing a large range of disorders, including Posttraumatic Stress Disorder. For the current study, the M.I.N.I. version 7.0, which maps onto the DSM-5, was also administered as a structured clinical interview. The M.I.N.I. is validated against the Structured Clinical Interview for DSM-IV diagnoses and the Composite International Diagnostic Interview for ICD-10. Confirmatory factor analysis provided evidence supporting convergent and discriminant validity for the M.I.N.I. for adolescents and adults. The disorder classifications yielded estimates of test-retest reliability and validity that is comparable to other standardized diagnostic interviews in both general population and clinic samples, and a pooled test-retest reliability with a Kappa value of 0.58 (Duncan et al., 2018). Data on PTSD used for this analysis were gathered in a structured clinical interview from Time 9, Time 10, Time 11, or Time 12.

### **Bullying Victimization**

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An adapted version of the Olweus Bully/Victim Questionnaire (Olweus, 1996) was used to assess and measure the involvement of individuals in bullying victimization (Vaillancourt et al., 2010). Participants were provided with the definition of bullying: “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.” They were asked “How often have you been bullied at school during the past 3 months?”. A 5-point frequency scale was used to assess prevalence: 0= *never*, 1= *only once or twice*, 2= *2 or 3 times a month*, 3= *once a week*, 4= *several times a week*, and examples of different forms of bullying were provided, including physical (e.g., hitting, shoving, kicking, spitting or beating up others), verbal (name calling, mocking, hurtful teasing, verbally threatening), social (e.g., excluding others from groups, gossiping or spreading rumors about others), and cyber (using computer or e-mail messages or pictures to hurt someone’s feelings; Vaillancourt et al., 2010).

Students continued to report on four-items related to the frequency of the type of bullying behaviour (physical, verbal, relational, cyber). At each time point, responses were adjusted for missing responses (up to two items) and were averaged to create composite scores. Higher scores indicated greater levels of bullying victimization. Internal reliabilities were good at each time point ( $\alpha$  min= 0.79).

### **Childhood Maltreatment**

The Childhood Experiences of Violence Questionnaire- Short Form (CEVQ-SF; Walsh et al., 2008) consists of 7 stem questions and 7 items on developmental timing, that measure bullying (two items), physical punishment (one item), physical abuse (three items), and sexual abuse (one item); the short version is as reliable and valid as the full version and minimizes respondent burden (Tanaka, 2011). For the short form, internal consistency demonstrated a good reliability, and was measured using Cronbach’s alpha for physical abuse only ( $\alpha$ = 0.85; Tanaka et al., 2011). Construct validity showed an overall association between physical abuse and sexual abuse and clinical symptoms similar to the full version (*never*, *1–2 times*, *3–5 times*, *6–10 times*, and *more than 10 times*) followed by questions on when the experience happened and who did this if the first question was answered as 1 to 2 times or more. The minimum score is 3-5 times for one or more items for an experience to be classified as abuse, with the exception of sexual abuse, in which case any experience qualifies as having been abused (Tanaka, 2011; Walsh et al.,

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2008). The cut-off score of 1-2 times for sexual abuse and 3-5 times for any other abuse was used as inclusion criteria for the analysis.

Additional questions regarding who was told about the experience along with when this happened and for applicable items, seeking medical attention and police involvement were asked. According to child protection workers, this questionnaire adequately covered all domains of child abuse and associative emotional-behavioural problems (Walsh et al., 2008).

Test-retest intraclass correlations were good to excellent, exceeding Kappa values of 0.74 with the exception of bullying victimization (0.59-0.61). Content validity was evaluated by a member panel of Child Welfare workers, who classified each stem item as relevant, or relevant and requiring minor alterations, resulting in a content validity significance level above 0.05. In terms of criterion validity, from 0.50 to 0.67 represented fair to good agreement with physical and sexual abuse constructs, as determined by social workers, child and youth workers, and a pediatrician (Walsh et al., 2008).

In the current study, the CEVQ-SF was administered at Time 9 as a retrospective measure, and again Time 10 to account for any participants who did not report on this measure the previous year and wished to participate. In Time 9 the three items related to physical abuse and one item related to sexual abuse had a Cronbach's alpha of .69 and in 0.70 in Time 10.

### **Analysis**

#### **Analytic Plan**

Semi-parametric group-based modelling using latent class growth analysis (LGCM) was used to estimate the number and shape of trajectories of bullying victimization from early childhood through late adolescence on MPlus version 8.0 (Muthén & Muthén, 1998-2017). This analysis comprised of 8 years of available participant data from age 10 to age 18 to identify the developmental progression of bullying victimization in this sample. The trajectories were used to predict future BPD symptoms and PTSD during the following 4 years (ages 19 to 22). With this method, individual variation over time is considered to be normally distributed within groups, which have distinct growth patterns (Nagin, 2002). LGCM is used to analyze longitudinal data which follows a pattern of change wherein the strength and direction of the relation between independent and dependent variables are different across life stages and identifies subgroups of individuals that follow a pattern of change over time, with respect to one variable of interest (Andruff et al., 2009).

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Evaluation of the best fitting models is based on standard conventions (Nagin, 1999). Specifically, the Bayesian information criterion (BIC), the Lo-Mendell-Rubin likelihood ratio test (LMR–LRT), entropy, a conceptually clear model, and a model with a sufficient number of members in each group to be able to examine group differences was considered. The BIC is a commonly used fit index in which lower values indicate a more parsimonious model. LMR–LRT provides a  $k - 1$  likelihood ratio-based method for determining the ideal number of trajectories; a low  $p$  value ( $p < .05$ ) indicates that the  $k$  trajectory model is a better fit to the data compared to the  $k - 1$  trajectory model. Finally, entropy is a measure of classification accuracy with values closer to 1 indexing greater precision, ranging from 0 to 1. Posterior probabilities indicate how well individuals were matched to their trajectory group, and values above .7 represented a good match (Nagin, 2005). After trajectory groups were identified, the low group was selected a priori as the reference group to create contrast codes between the other groups. The impact of outcomes was assessed using a hierarchical linear regression for trajectory group contrasts on BPD symptoms (a continuous variable) in step 1, and gender and childhood maltreatment were added to the model in step 2. A chi-square analysis was performed for PTSD (a dichotomous variable) in SPSS 27.

### Results

#### Missing Data

Little's MCAR test was used to examine whether data was missing at random for the predictors and outcomes, with the Benjamini-Hochberg correction for multiple testing (Benjamini & Hochberg, 1995). Little's MCAR test was significant ( $\chi^2(640) = 759.99, p < .001$ ). After applying the Benjamini-Hochberg correction, one t-test remained. The remaining significant t-test revealed a higher mean for bullying victimization at age 12 (Time 3) for those present at age 15 (Time 5), compared to those missing at age 15 ( $t(196) = 3.1, p = .002$ ). Considering these missing data were not systematic, missingness related to the outcomes was treated as ignorable.

Participants in the trajectory group were compared against those who were not in the trajectory group ( $n = 363$ ) on demographic variables relating to predictor and/or outcome variables: ethnicity, parental level of education, and household income (e.g., Borowsky, 2013; Meaney, 2016; Stepp, 2011; Tippet & Wolke, 1971). A chi-square test of independence was performed, which indicated a difference between samples on ethnicity. Specifically, there were fewer participants in the overall sample than expected who identified as White ( $\chi^2(1) = 23.97, p < .001$ ); *standardized residual* = -2.0) and there were more individuals than expected who

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identified as White in the analytic sample (*standardized residual*= .9). Those in the trajectory group had, on average, a higher parental education level ( $t(805)=6.46, p<.001$ ) and higher household income ( $t(157)=5.90, p<.001$ ) than those not in the trajectory analysis.

Participants from the bullying victimization trajectories who had complete data on BPD symptoms, PTSD, and childhood maltreatment created the final sample. Participants of the final sample ( $n=338$ ) were also compared on demographic variables against those who formed the trajectory analytic sample and did not provide data on BPD symptoms, PTSD, and childhood maltreatment ( $n=363$ ). There were no differences between samples on ethnicity ( $\chi^2(1)=0.53, p=.47$ ). Those in the outcomes final sample had, on average, a higher parental education level ( $t(647)=4.00, p<.001$ ) and household income ( $t(645)=4.18, p<.001, d=.33$ ) compared to those in the trajectory analytic sample.

### **Descriptive Statistics**

Table 1 describes correlations among reports of bullying victimization at each time point. All associations were statistically significant and the majority of these associations ranged from medium (Pearson  $r$  larger than 0.3) to large (Pearson  $r$  larger than 0.5; Cohen, 1992). Additionally, Table 1 displays the number of participants who completed bullying victimization measures of the analytic sample from age 10 to age 18. The means and standard deviations are also reported.

Moreover, between ages 19 and 22, the majority of participants who completed measures on BPD symptoms were women (62.1%,  $n= 210$  women vs. 37.8%,  $n=128$  men); of the same sample, 22 participants met diagnostic criteria for PTSD (86.4 %,  $n= 19$  women 13.6% vs.  $n= 3$  men). Over half (52.1%,  $n=365$ ) of participants in the analytical sample completed the measure for BPD symptoms. Within the same time frame, 51.9% ( $n=364$ ) participants completed the measure for PTSD.

### **Developmental Trajectories**

Semiparametric group-based modeling was used to identify the number and shape of distinct trajectories of bullying victimization across ages 10 to 18. Models were estimated using MPlus 8.0 via latent class growth analysis (LCGA). After testing up to four possible classes, a three-class solution was selected. Table 2 represents the fit indices associated with different class solutions. Figure 1 illustrates the three trajectory groups of bullying victimization over childhood and adolescence. Although the three-class solution had a slightly higher BIC value compared to the two-class solution, it had the highest entropy value, and a significant LMR-LRT value.

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Considering such values, in addition to theoretically meaningful groups, a three-class solution was deemed suitable as the final model.

Most individuals followed a trajectory that was low and decreasing in bullying victimization (low decreasing; 71.3%,  $N=516$ ) and had a statistically significant intercept ( $I: .56, p<.01$ ), a statistically significant slope ( $S: -.12, p<.01$ ), and a statistically significant positive quadratic ( $Q: .01, p<.01$ ). The next largest group was characterized by a moderate decreasing bullying victimization trajectory (25.2%;  $N= 163$ ). This group had a statistically significant intercept ( $I: 1.40, p<.01$ ), but the slope and quadratic terms were not significant ( $S: -.15, p=0.06$ ;  $Q: .002, p=0.77$ ). The smallest group of individuals, as can be seen in Figure 1, followed a high stable bullying victimization trajectory (high stable; 3.5%,  $N=22$ ). The intercept was statistically significant ( $I: 1.74, p=0.02$ ), however the slope and quadratic terms were not statistically significant ( $S: .04, p=0.93$ ;  $Q: -.01, p=0.85$ ). Posterior probabilities denoted that individuals were well matched to their trajectory groups (low decreasing= $.94$ ; moderate decreasing= $.89$ ; high stable =  $.91$ ).

### **BPD Symptoms and PTSD Outcomes Predicted by Trajectory Group Membership**<sup>12</sup>

A linear regression was used to identify whether BPD symptoms differed by trajectory group, while controlling for gender and the presence or absence of childhood maltreatment. The low decreasing group was selected as the reference group. A chi-square analysis was used to determine whether the bullying victimization trajectory groups differed in the proportion of PTSD diagnosis. The analyses were performed in SPSS 27.

Table 3 illustrates the descriptive statistics of each trajectory group with BPD symptoms. The high stable group had the highest mean of BPD symptoms of all three trajectories ( $M= 1.2, SD= 0.87$ ). As depicted in Table 4, the high stable trajectory group of bullying victimization differed from the low decreasing group on BPD symptoms at ages 19 to 22 ( $b= 0.76, \beta=.21, p<.05$ ). The moderate decreasing and low decreasing trajectory groups of bullying victimization were also statistically different from one another ( $b = 0.15, \beta=.11, p<0.05$ ) at ages 10 to 18.

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<sup>1</sup> Analyses were run as a single model with BPD symptoms and PTSD as outcome variables, however due to the small number of participants with PTSD in the high stable trajectory group ( $n=22$ ), the analysis was underpowered and the analytic approach was limited. With this approach, logistic regression revealed that the high stable trajectory group no longer differed from the low decreasing group on PTSD when controlling for gender and childhood maltreatment.

<sup>2</sup> Because BPD and PTSD associations and interactions could not be determined with the presented analysis, refer to Table 5 and Table 6 for BPD (as a dichotomous variable) and PTSD crosstabulations among the final analytic sample, with a clinical cut-off score of 1.5. Using a clinical cut-off score, 15.1% ( $n=51$ ) of individuals from the final analytic sample met diagnostic criteria for BPD.

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These trajectory group comparisons account for approximately 5% of variance ( $R^2 = .05$ ,  $p < 0.05$ ) for BPD symptoms at ages 19 to 22, which was a significant finding,  $F(2,335) = 9.16$ ,  $p < .05$ . After accounting for gender and childhood maltreatment, the high stable trajectory group continued to statistically significantly differ from the low decreasing group ( $b = 0.47$ ,  $\beta = 0.13$ ,  $p < 0.05$ ); however, the moderate decreasing group no longer significantly differed from the low decreasing group ( $b = 0.07$ ,  $\beta = 0.05$ ,  $p = 0.32$ ). Gender ( $b = 0.08$ ,  $\beta = 0.12$ ,  $p < 0.05$ ) and childhood maltreatment ( $b = 0.26$ ,  $\beta = 0.36$ ,  $p < 0.05$ ) were statistically significant when added to the model and contributed to the association with BPD symptoms. Together, gender and childhood maltreatment accounted for approximately 14% of variance in the model ( $\Delta R^2 = .14$ ,  $p < 0.05$ ), and this change in  $R^2$  was statistically significant,  $F(4,333) = 19.94$ ,  $p < .05$ .

A chi-square test of independence was used to examine the relation between trajectory group membership and subsequent PTSD diagnosis. Fisher's exact test was performed due to one expected cell count being less than 5 and confirmed a relation of PTSD with individuals in the bullying victimization trajectory groups (Fisher's exact test  $\chi^2 = 7.62$ ,  $p = 0.017$ ,  $\phi_c = 0.16$ ). A Cramer's V value ( $\phi_c$ ) above 0.15 denotes a strong association (Akoglu, 2018). A standardized residual over 1.96 (Garcia-Perez, 2015; *standardized residual* = 2.5) indicated that the number of cases in the high stable trajectory group with a PTSD diagnosis was significantly larger than what would be expected if this difference were accounted for by chance. The percentage of individuals with PTSD in the high stable trajectory group is 23.1%, which is significantly larger than the expected prediction, compared to 76.9% of individuals in this trajectory who did not meeting diagnostic criteria for PTSD. Proportions of individuals with and without PTSD among each trajectory group are displayed in Table 7. Therefore, following a high trajectory of bullying victimization in childhood and adolescence increased the likelihood of an individual meeting PTSD diagnostic criteria in emerging adulthood.

### Discussion

Understanding the developmental impact that bullying victimization during childhood and adolescence has on subsequent BPD symptoms and PTSD is important because bullying can result in a health crisis that predicts an array of persistent mental health problems (e.g., McDougall & Vaillancourt, 2015; Vidourek et al., 2016; Wolke et al., 2013). Although bullying is abusive (Olweus, 1993), few studies have examined it through a relational trauma framework (Idsoe et al., 2021). Just as with other forms of relational abuse, bullying victimization is predictive of BPD (e.g., Antila et al., 2017; Wolke et al., 2012); however, this topic is still understudied

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using a longitudinal design as it relates to young adults (Antila et al., 2017). The aim of my study was to further understand the relation between bullying victimization with BPD symptoms and PTSD seeing as both disorders are highly and positively correlated with each another and contribute to the growing knowledge of understanding victimization outcomes through a developmental and trauma framework (Idsoe et al., 2021).

I investigated self-rated experiences of bullying victimization across childhood and adolescence (age 10 to 18) in the prediction of BPD symptoms and PTSD in emerging adulthood (ages 19 to 22), treating gender and childhood maltreatment as control variables. As predicted, three trajectories were found when modelling the development of self-reported bullying victimization. The trajectory group accounting for the majority of the sample (71.3%) experienced low rates of bullying victimization. The second largest group (25.2%) experienced moderate levels of bullying victimization, and the smallest developmental trajectory (3.5%) represented a group who were consistently bullied at a high intensity from ages 10 to 18. Although the slope and quadratics terms were not statistically significant, Figure 1 depicts means in bullying victimization among the high stable group that slightly increase as individuals approached the age of 12, after which decreased slightly throughout the following 5 years. However, even with this decrease, the victimization reported remained relatively high. These bullying victimization trajectories had longitudinal patterns and relative proportions that are consistent with previous studies. For example, Barker et al. (2008) identified three bullying victimization trajectories described as low (85%), high and decreasing (10%) and high and increasing (5%) among 13-to 16- year-olds. Haltigan and Vaillancourt's (2014) bullying victimization trajectory model revealed a low/declining group (85.5%) and a moderate/declining group (14.5%) of individuals from Grade 5 to 8 (also modelled with data from the McMaster Teen study). Peer victimization patterns of moderate to high intensity that decrease with age are also consistent with previous research (e.g., Smith et al., 1999; Smith et al., 2001). The most noteworthy difference in design between the aforementioned studies and the current study is that bullying victimization was assessed from childhood to late adolescence, which has reproduced and captured the trends seen from Barker et al. (2008) who examined bullying victimization from early to mid-adolescence, and from Haltigan and Vaillancourt (2014) who examined bullying victimization from childhood to early adolescence.

As predicted, the high stable and moderate decreasing bullying victimization groups differed from the low and decreasing group on subsequent BPD symptoms. This finding

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confirmed that children and adolescents who were bullied at high levels that remain high throughout their grade school years were more likely to develop combinations of feelings of emptiness, emotional instability and reactivity, identity disturbance, self-damaging impulsive behaviour, a pattern of intense/unstable relationships, and suicidal behaviour or threats (APA, 2013). The predictive associations between the high stable and moderate decreasing groups with BPD symptoms highlights the adverse associations of individuals who are chronically and intentionally abused by their peers at high and moderate intensities. However, after accounting for gender and a history of childhood maltreatment, only the high stable trajectory group differed from the low decreasing group on BPD symptoms. These results suggest that chronic and intense bullying victimization is significantly associated with BPD symptoms, even when accounting for the associations of gender and childhood maltreatment.

The significant variance that was accounted for by gender and childhood maltreatment on BPD symptoms was in keeping with my prediction. This lends to the face validity of the Borderline Symptoms List (youth report), as it is established in the literature that girls and women are more likely to endorse BPD symptoms and meet diagnostic criteria compared to boys and men (APA, 2013; Kaess et al., 2014; Torgersen et al., 2001). In support, childhood maltreatment is predictive of BPD in adulthood (e.g., Godbout et al., 2009), and so it is theoretically congruent that gender and a history of childhood maltreatment contributed to the relation between individuals who follow a high stable trajectory of bullying victimization in childhood and adolescence on subsequent BPD symptoms. Specifically, the number of cases in the high stable trajectory group with a PTSD diagnosis is likely related to the bullying victimization they experienced, as the percentage of individuals in this category (23.1%) is significantly larger than what would be expected if it was solely accounted for by chance. Such results suggest that the small group of individuals who are bullied at high levels from ages 10 to 18 are at a significantly higher risk for experiencing a trauma response substantial enough to meet diagnostic criteria for PTSD from the time they are 19 to 22 years old. This is important for not only understanding how bullying victimization affects the victim in psychological and psychosomatic ways, but also for considering the proper course of treatment and intervention that is appropriate for a trauma response.

These findings suggest that early bullying victimization intervention should focus on the small number of individuals in schools who are being chronically victimized at a higher (perceived) intensity. This is in keeping with previous studies reporting that bullying

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victimization was positively correlated with BDP (Sansone et al., 2010) and PTSD in adulthood (Idsoe et al., 2021). These conclusions can be reinforced by attachment theory (Bowlby, 1973, 1984) and the group socialization theory of development (Harris, 1995).

It is well established in the literature that childhood maltreatment and abuse (i.e., relational trauma) predicts adult BPD and a range of pervasive psychological and relational difficulties (e.g., Godbout et al., 2009; Herman et al., 1989; Ogata et al., 1990; Rogosch & Cicchetti 2005). John Bowlby, known for his pioneering work in attachment theory, held that childhood attachment experiences with primary caregivers have long lasting effects that persist throughout the lifespan and are major determinants for personality pathology (Levy, 2005). Although the gold standard has historically examined attachment styles molded through a child-caregiver relationship, the current findings support that bullying victimization is likely unto itself a form of relational trauma salient enough to contribute to and/or accentuate attachment disorganization (Idsoe et al., 2021). Experiencing high stable bullying victimization as young as 10 years old can set individuals on a developmentally stable course of continued victimization at a similar intensity. This is fitting because it is known that trauma can enervate a child's ability to empathize, recognize, consolidate, and attend to cues and affective states of others, and by extension, themselves (see Carlson et al., 2009). Furthermore, BPD is the most "prototypical" disorder when considering problems of the self, identity, attachment, and relatedness (Luyten et al., 2019). By mid-adolescence, solidified maladaptive traits may increase the risk of a BPD diagnosis. Repeated exposure to maladaptive interactions (i.e., an invalidating environment such as bullying) in childhood and early adolescence contributes to social cognitive deficits (i.e., over-interpreting motives of others) and emotion dysregulation, creating a positive feedback loop. This feedback loop feeds negative social, cognitive, emotional, and behavioural outcomes. Such outcomes contribute to the use of maladaptive coping strategies, and further evoke a negative response from peers that are abusive or invalidating. It is the combination of both cycles that contribute to disrupting healthy social development (Winsper, 2018).

Bowlby (1973, 1984) theorized that one's attachment style describes individual behaviour patterns and represents the organizing of expectations from others as a response to seeking comfort. Seeing as development is cumulative (Carlson et al., 2009), early childhood experiences are perpetually influential (Bowlby, 1973); however, over the lifespan "early experience, later experience, and current circumstances interact to shape adult adaptation or disturbance" (Carlson et al., 2009, p. 1313). In addition to early childhood attachment and family context, other social

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experiences have the capacity to influence a person's developmental pathway (Lee & Hankin, 2009). Researchers have found that children with insecure attachment styles (i.e., anxious-ambivalent, dismissive, and/or fearful; Bartholomew & Horowitz, 1991) are more likely to be bullied (Perry et al., 2001; Walden & Beran, 2010; Zhu, 2015). All three types of insecure attachment styles are also associated with BPD, and are characterized by an individual who longs for intimacy, while simultaneously being concerned with dependency and rejection (Agrawal et al., 2004). An individual with a dismissive attachment style would likely hold a positive view of themselves and a negative view of others; an individual with a preoccupied attachment style would view themselves negatively and others positively; and an individual with a fearful attachment style would likely hold a negative view of themselves and others (Bartholomew & Horowitz, 1991). These styles translate into clinginess, angry, dependent, and avoidant behaviour (Choi-Kain et al., 2009). This being said, peers arguably have a significant influence as it relates to attachment theory. Peer interactions contribute to and modify the pre-existing template accrued through the parental dyadic relationship, which teaches children about themselves and the world, shaping their cognitions, emotions, responses, and defences (e.g., Harris, 1995).

Although attachment theory was an unprecedented advancement in explaining the basis of how a dyadic relationship creates schemas that govern how an individual relates to and understands their world from a young age, Harris (1995) goes above and beyond and advocates for intra- and inter-group processes as the facets responsible for "transmission of culture and for environmental modification of children's personality characteristics" (p. 458). Harris's group socialization theory builds off Maccoby and Martin's (1983) line of research, spawning from the observations that biological or adoptive siblings do not develop similar personalities despite having the same parenting experiences. In fact, monozygotic twins reared in the same home will not be noticeably more similar or dissimilar from each other than those raised in separate homes (Alter, 2000; Bouchard et al., 1990; Harris, 1995; Plomin & Daniels, 1987; Scarr, 1992). These are important studies that Harris considered because with nature and nurture (heredity and environment) being the pillars of development, the assumption that parenting style is the only nurture component that develops a child's personality has been challenged (Alter, 2000; Maccoby & Martin, 1983). Interactions between parent-child and peer-child come with different opportunities for development: a vertical power dynamic is one where the less capable depends on the more capable (Hartup & Laursen, 1991), and a horizontal power dynamic is based on equal contribution between parties (Laursen & Bukowski, 1997). Parent-child interactions are

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typically more vertical than horizontal (Reich & Vandell, 2011; Russell et al., 1998), whereas peer-child interactions are typically more horizontal than vertical (Reich & Vandell, 2011).

Harris (1995) fundamentally theorized a mechanism wherein peer socialization experiences hold more weight than the parent-child relationship as it contributes to personality development (Alter, 2000). Children want to be like other children, not like adults, and those who are more like adults, are less likely to earn peer respect. Therefore, children are socialized by other children where the dynamic of “groupness” drives an individual to form a group, and identify with their own rather than another (Alter, 2000; Harris, 1995). This theory of group socialization also considers how children prepare to live in their own generation, rather than that of their parents (Harris, 1995).

In understanding how important and impactful peer relations are for development, Corsaro (1993) examined children’s peer groups, which have a culture of their own and have the potential to be fluid, dynamic, and adaptive. Therefore, childhood socialization is compelled by the movement through a series of such peer cultures (Corsaro, 1993, p. 361). This is the process that makes individuals within a peer group of a society more similar to each other (than dissimilar; Harris, 1995). The social environmental context a child or adolescent finds themselves in determines the kind of language and behavioural patterns they will acquire. Individuals develop different behavioural systems for different social contexts; however, with consistency across contexts we can say that personality is reasonably stable (Harris, 1995). Based on the presented results, it is likely that exposure to a high intensity and chronicity of bullying victimization is a social context that contributes to maladaptive behavioural and cognitive systems that shape personality, which, after childhood and adolescence, remains relatively stable for the remainder of the lifespan (Harris, 1995; McCrae, 1993).

Seeing as the group socialization theory asserts that peer experiences hold more weight in child development than the parent-child dyadic relationship, repeated exposure to peer abuse during childhood and adolescence is a major life stressor that shapes an individual’s maladaptive behaviour, schemas, beliefs, affects, and moods. These are all intertwined in forming personality states that, in part, become enduring personality traits (Funder, 1991). It is the repetition of states that make up personality traits (Funder, 1991; Johnson, 1999; Roberts, 2009). In this case, high and chronic bullying victimization contributes to variance in affect and behaviour dysregulation, disturbances in consciousness, and cognition schema alterations (d’Andrea et al., 2012). Such alterations help to justify the manifestation of personality traits such as inappropriate anger,

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impulsiveness, fear of abandonment, inconsistency of perceived stability in relationships, problems with trust, feelings of emptiness, and suicidal thoughts/attempts, all of which are pivotal to borderline personality features (APA, 2013). They also contribute to consolidating intense and unstable relationships, which are most likely to present and solidify in early adulthood (APA, 2013; Schuster & Bogart, 2013).

### **The Intersectionality of BPD Symptoms and PTSD**

The psychopathological sequelae associated with the high chronicity and intensity victimization trajectory group from this study supports other research that calls to understand bullying victimization as a form of interpersonal trauma (e.g., D'Andrea et al., 2012; Idsoe, 2012; Idsoe, 2021; Walters, 2018), regardless of the availability of coping resources (Nielsen, 2015). Bullying victimization is correlated with all three PTSD symptom clusters (intrusion, avoidance/numbing, and hyper arousal; Nielsen, 2015), even though historically the two have been studied separately (Idsoe et al., 2021). In fact, targets of bullying victimization showed similar trends to complex PTSD symptoms of battered women and victims of childhood abuse, in that the symptoms of arousal and re-experiencing form a single cluster, and avoidance formed a distinct cluster (Tehrani, 2004). Nielsen et al. (2015) conducted a meta-analysis and reported a strong correlation between bullying victimization and PTSD symptoms in children and adolescents, which is consistent with previous research (e.g., Crosby et al., 2010; Idsoe et al., 2012; Idsoe et al., 2015).

Current findings beg the question of whether the effects of bullying victimization on subsequent BPD symptoms can wholly be accounted for by a disorder of personality, or better identified as a form of complex PTSD and developmental trauma (Idsoe et al., 2021). There are mixed conclusions about appropriately assigning diagnoses of BPD, PTSD, and/or complex PTSD in the extant literature. MacIntosh et al. (2015) posited this question in an empirical review and found that some researchers pronounce BPD as a diagnosis of trauma based on symptoms that are more fitting with complex PTSD. With BPD and PTSD sharing core deficits in affect regulation, impulse control, reality testing, inter-personal relationships, and self-integration (APA, 2013; MacIntosh et al., 2015), it has been suggested that BPD is a complex or chronic form of PTSD. However, merging BPD with complex PTSD conflates risk with causation (Goodman & Yehuda, 2002). In response to this debate, Cloitre et al. (2014) conducted a study which found that trauma survivors can be divided into the following groups: low symptoms (including BPD, PTSD and complex PTSD), high-PTSD symptoms, high complex PTSD

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symptoms, and high BPD symptoms. They used a latent class analysis to show that although overlap was inevitable, BPD and PTSD remained distinct. These findings are supported by statistics examining BPD and PTSD comorbidity rates in adults: of adults with BPD, 30.2% were also diagnosed with PTSD, and of individuals with PTSD, 24.2% were also diagnosed with BPD (Pagura et al., 2010). It is possible that my investigation's findings may be capturing BPD traits in addition to outcomes associated with interpersonal trauma better explained by complex PTSD or a developmental trauma response.

In appreciating the complexity of the outcomes of bullying victimization and the literature on outcomes of interpersonal trauma, my results can be explained by diagnoses and concepts that extend beyond PTSD. For example, Terr's (1979, 1991) Type II trauma accounts for more complex symptomatology and results from multiple exposures to a traumatic event, compared to Type I traumas that are more closely linked with PTSD and a single traumatic event. Bremner's (2016) concept of "trauma-spectrum disorders" would also encapsulate the effects of bullying victimization, as it considers outcome problems such as BPD, PTSD, depression, substance use, and psychosomatic issues that are concurrently associated with childhood trauma. As mentioned, bullying victimization is ongoing, repetitive, and intentional (Olweus, 1993), thereby fitting for this conceptualization of developmental trauma. A PTSD diagnosis alone could fail to capture the range of psychological and psychiatric symptoms, and ultimately increase the risk of providing incomplete interventions to bully-victims with complex trauma-related presentations (Idsoe et al., 2021).

Idsoe et al. (2021) call for the need to explore bullying victimization through a combined framework of developmental trauma disorder and complex PTSD. In addition to complex PTSD, it is important to see bullying victimization as a developmental trauma that can result in developmental impairments (i.e., an impairment in attachment, biology, affect regulation, dissociation, behavioural regulation, cognition, or self-concept; Cook et al. 2005; Kisiel et al., 2014), which cannot be captured by a PTSD diagnosis (Idsoe et al., 2021; van Der Kolk et al., 2019). Taking a developmental perspective also broadens an understanding of how exposure to bullying victimization interacts with different psychological and neuropsychological stages (Idsoe et al., 2020). In reviewing PTSD as an outcome of bullying victimization, it is important to acknowledge the chronic and developmental framework in which victimization occurs, and by extension the complex and developmental impacts that arguably cannot solely be captured by traditional PTSD criteria (Idsoe et al., 2021).

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### **Limitations and Future Recommendations**

The present study had a number of strengths, including the use of a large sample with consistent measures within a prospective longitudinal design. Nevertheless, there were some limitations. First, despite the longitudinal design, no causal conclusions could be drawn. Future studies could use a crossed-lagged panel model to determine the temporal order of bullying victimization, BPD symptoms, and PTSD. Second, in terms of the data acquisition, one potential shortcoming is that childhood maltreatment was retrospectively reported. Although the Childhood Experiences of Violence Questionnaire is a reliable and valid instrument for assessing maltreatment among youth (Walsh et al., 2008), some criticisms highlight potential biases in retrospective assessments based on normal processes of forgetting, infantile and traumatic amnesia, depressed mood, a need to justify mental illness, and depression (see Fisher et al., 2011). Third, due to the small number of participants within the high stable trajectory who had a diagnosis of PTSD at ages 19 to 22, a single model with both BPD symptoms and PTSD as outcome variables was underpowered and information about the relation between BPD symptoms and PTSD could not be accounted for. Therefore, the statistical analysis was limited. Moreover, there were not enough data to treat gender and childhood maltreatment as moderators. In treating gender and childhood maltreatment as control variables as opposed to moderators, information was missing about the strength and direction of how these variables contributed to BPD symptoms and PTSD in emergent adulthood, as well as their interaction effects. It is also noteworthy to consider that overall, fewer men participated in the McMaster Teen interviews than women. Fourth, only bullying victimization was examined as a predictor variable of BPD symptoms and PTSD because both mental health conditions have strong links with relational trauma; however bullying perpetration and bullying victimization are moderately related, and frequently accompany one another (Walters, 2018). Future studies could consider a no bullying group, an only-bully group, a bully-victim group, and a victim-only group, which may continue to explain the complex relation between bullying victimization and perpetration as it leads to the development of psychopathologies. Finally, the current study did not account for known genetic predispositions and genetic vulnerabilities that contribute to the development of BPD symptoms. Seeing as there is increasing evidence for gene-environmental interactions in BPD (e.g., Distel et al. 2011) and gene-gene effects mediated through trauma (Luyten et al., 2019), controlling for this element may provide more insight into the mechanisms and etiological impact of bullying victimization on development of personality pathology.

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In agreeance with the extant literature, future recommendations advocate for researching bullying victimization through a developmental trauma lens to continue to bridge the gap between trauma and bullying research (Idsoe et al., 2021). Seeing as greater levels of bullying victimization are associated with subsequent trauma symptomatology, treating it as such, and understanding it as a developmental and complex phenomenon, will ultimately shift the way it is currently examined from symptoms to syndrome. Understanding the longitudinal internalizing and externalizing outcomes through a relational- rather than incidental- perspective will address the call avoid conceptualizing and treating PTSD symptoms as oppose to developmental impairments (Idsoe et al., 2021). This way the whole individual, their experience, and their development are considered.

### **Clinical Implications**

The findings presented emphasize the importance of prevention and intervention programs at the school level, given that chronic levels of bullying victimization are related to subsequent BPD symptoms and PTSD. These findings contribute to the robust literature confirming a link between bullying victimization and distress, adjustment problems, and severe symptoms of mental health issues (McDougall & Vaillancourt, 2015; Wolke et al., 2013), all of which support the call for efforts to reduce bullying victimization in childhood and adolescence (Arseneault et al., 2010). Despite the will to implement such programs, educators and other professionals often lack a foundational theoretical knowledge and understanding of bullying phenomena (Arseneault et al., 2010). BPD symptoms and PTSD are related to high levels of distress, self-harming behaviour, and dysfunctional relationships, among other adverse outcomes (APA, 2012), and so implications of their relation to bullying victimization suggest incorporating this information in university curricula for teachers and administrative staff (and related professionals), and in streamlined continuing education courses (Arseneault et al., 2010).

At this time, efforts in assessment, prevention, and intervention for bullying are directed through the educational system (Beeson & Vaillancourt, 2016). Yet, screening and assessing for bullying victimization is under-represented among healthcare workers, despite the fact that it is a significant public health threat (Moreno & Vaillancourt, 2017). Because many children and adolescents do not feel comfortable disclosing their victimization experiences to teachers or parents, Vaillancourt et al. (2017) point to regulated healthcare providers to screen for bullying victimization, whereby it is within their scope to identify and/or treat trauma-related disorders. This list includes, but is not limited to physicians, psychologists, social workers, nurses (Moreno

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& Vaillancourt, 2017), naturopaths, and psychotherapists (Medicine Act, 1991) as an additional source of screening and assessment for bullying victimization. If such professionals are integral in recognizing children and adolescents who are affected by bullying (e.g., Stephens et al., 2018), it seems logical that these professions should incorporate bullying victimization assessments as part of their best practices, and include this knowledge in their respective training models. Given that professional intervention and reporting is mandated upon suspected or confirmed child maltreatment and abuse, the same level of discipline for intervention should apply to cases of bullying victimization given that it is arguably an equally harmful form of abuse with long-term consequences (McDougall & Vaillancourt, 2015). As such, it is recommended that screening for bullying victimization carry the same weight as screening for other forms of abuse. This is imperative because BPD symptoms, along with their associated safety concerns, were related to experiences of high levels of chronic bullying victimization, even while controlling for childhood maltreatment. Moreover, the significant relation between high levels of bullying victimization and subsequent PTSD suggest that (1) items on this topic be incorporated into standardized structured and semi-structured interviews that assess for childhood trauma (currently, the most frequently assessed childhood traumas are sexual abuse, physical abuse, significant separation from primary caregiver, verbal or psychological abuse, and witnessing violence; Roy & Perry, 2004), and (2) bullying victimization be considered in mental health conceptualization for treatment planning.

When it comes to bully-victims, common therapeutic treatment orientations employed include social skills training (Kõiv, 2015), cognitive-behavioural therapy (CBT; Beck & Beck, 1995; Fung, 2017), narrative therapy (Butler & Platt, 2008; White & Epton, 1990), structural family therapy (Butler & Platt, 2008; Minuchin, 1974), or group therapy (Einarsen et al., 2010), to name a few. Because bullying victimization is related to BPD symptoms and trauma-induced stress response, clinicians could benefit from incorporating developmental trauma-informed practices in their treatment approach. Therapy models based on cognitive behaviour theories (such as CBT, modified CBT for personality disorders, dialectical behaviour therapy, systems-based group therapy, and schema-focused therapy), do not define or reference the concept of self (Kerr et al., 2015). After all, “[relational] trauma invariably involves not being seen, not being mirrored, and not being taken into account” (van der Kolk, 2014, p.59), therefore, treatment for developmental or relational trauma must involve reactivating these mirroring capacities. With this shift in understanding, a trauma-informed approach to treatment among bully-victims could

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include building blocks for attachment (caregiver affect management, attunement, consistent response, routines and rituals), self-regulation (affect identification, modulation, affect expression), and competency (executive functioning skills, developmental tasks) in order to integrate and process a trauma experience (ARC; Arvidson et al., 2011; Blaustein & Kinniburgh, 2010; Kinniburgh & Blaustein, 2005; Rossen & Hull 2013).

As written by Dr. van der Kolk (2014), even after a traumatic experience is over, physiological and neurobiological changes have occurred, and posttraumatic reactions may be reactivated which causes a release of stress hormones into the body. Treatment to such reactions must use the brain's natural neuroplasticity by using a top-down approach (i.e., talking and reconnecting with others), medications that help alleviate symptoms, and/or a bottom-up approach (bodily experiences that physically and viscerally contradict feelings of helplessness and trauma responses; van der Kolk, 2014). In highlighting the importance of attending to the neurobiological and physiological processes that are affected by trauma, other bottom-up approaches, such as Somatic Experiencing (Levine, 2010; Levine et al., 2018), may be a useful integration. In sum, chronic bullying victimization during developmental years is related to PTSD, and with a growing body of research advocating for the inclusion of developmental trauma in theory and science (e.g., Idsoe et al., 2021), such a traumatic experience warrants a trauma-informed treatment approach to address the bio-psycho-social facets of dysregulation.

### **Conclusion**

In the present study I examined the complex pathways between childhood and adolescent bullying victimization and traumatogenic outcomes (MacIntosh et al., 2015) in emerging adulthood. My thesis contributed to existing research by addressing the gap in the literature that relates childhood and adolescent bullying victimization to BPD symptoms and PTSD among emerging adults using a prospective longitudinal design (i.e., Reuter et al., 2015). This is a worthy topic because among individuals who present with BPD symptoms, the precipitant to suicide attempts is often interpersonal in nature (Eichelman, 2010), implying that prevention and mediation of interpersonal victimization could likely attenuate suicidal ideation or behaviour. By examining the longitudinal trajectories of bullying victimization during childhood and adolescence, I was able to move beyond the attachment effects of the parent-child relationship and consider how ongoing, intense, abusive peer relations consolidate personality characteristics and trauma responses that translate to dysfunction and distress during emergent adulthood.

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Since it is known that verbal, psychological, and physical forms of victimization are linked to the development and presentation of BPD and PTSD (Idsoe et al., 2012; Wlodarczyk & Lawn, 2017), the findings presented have contributed to empirical investigations by re-confirming the relations between school-aged bullying victimization and subsequent mental health effects. To my knowledge, this is the first study of its kind that has examined BPD symptoms and PTSD among the young adult age group as an outcome of previous bullying victimization. Committing to conceptualizing and differentiating the relations between BPD symptoms, PTSD, and complex PTSD is vital to understanding bullying victimization as a relational trauma, which influences clinical advancements and successful treatment for traumatized adults (Ford & Courtois, 2014).

Continuing the investigation of etiological origins of BPD symptoms and recognizing the traumatic extent of being victimized in childhood and adolescence is required to enhance the working knowledge of risk factors of BPD symptoms and PTSD expression. This will support design and deliverance of well-tailored prevention and intervention approaches (Macintosh, 2015). Specifically, understanding chronic bullying victimization as a form of developmental trauma will ultimately inform clinicians' choice of appropriate treatment to support victims whose social, physiological, emotional, and cognitive development have been affected or altered through repeated interpersonal trauma experiences.

Bullying victimization is a systemic issue that calls for school-based efforts and anti-bullying interventions (Olweus, 1997; Vaillancourt et al., 2003) in order to help promote positive life outcomes across many domains for emerging adults who have been victimized (Evans et al., 2014).

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## BULLYING VICTIMIZATION AND TRAUMA OUTCOMES

**Table 1***Correlations Among Bullying Victimization and Descriptive Statistics*

	Trajectory Variables							Descriptive Statistics			
	BVIC – Age 10-11	BVIC – Age 11-12	BVIC – Age 12-13	BVIC – Age 13-14	BVIC – Age 14-15	BVIC – Age 15-16	BVIC – Age 16-17	Mean	Standard deviation	<i>n</i>	%
BVIC – Age 10-11	<b>0.52</b>	<b>0.48</b>	<b>0.42</b>	<b>0.30</b>	<b>0.40</b>	<b>0.31</b>	<b>0.23</b>	0.84	0.76	648	92.4
BVIC – Age 11-12		<b>0.64</b>	<b>0.42</b>	<b>0.35</b>	<b>0.32</b>	<b>0.29</b>	<b>0.19</b>	0.66	0.69	599	85.4
BVIC – Age 12-13			<b>0.53</b>	<b>0.38</b>	<b>0.38</b>	<b>0.37</b>	<b>0.19</b>	0.59	0.59	548	78.1
BVIC – Age 13-14				<b>0.45</b>	<b>0.53</b>	<b>0.49</b>	<b>0.34</b>	0.58	0.58	506	72.1
BVIC – Age 14-15					<b>0.56</b>	<b>0.56</b>	<b>0.44</b>	0.41	0.41	489	69.8
BVIC – Age 15-16						<b>0.58</b>	<b>0.46</b>	0.40	0.30	452	64.5
BVIC – Age 16-17							<b>0.58</b>	0.30	0.30	436	62.2
BVIC – Age 17-18								0.30	0.30	448	63.9

*Note.* BVIC = Bullying Victimization. Correlations in bold are statistically significant at  $p < .01$

## BULLYING VICTIMIZATION AND TRAUMA OUTCOMES

**Table 2***Fit Indices for Latent Class Trajectory Models for Bullying Victimization*

No. of Groups	BIC	LMR-LRT	BLRT	Entropy
1 Class	7339.824	-	-	-
2 Class	6448.392	p=0.007	<.001	0.833
3 Class	6233.972	p=0.443	<.001	0.841
4 Class	6042.465	p=0.680	<.001	0.833

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

## BULLYING VICTIMIZATION AND TRAUMA OUTCOMES

**Table 3***Descriptive Statistics of BPD Symptoms by Trajectory Group Membership*

Trajectory Group	BPD Symptoms		
	Mean (SD)	Min.	Max.
High Stable	1.2 (0.87)	0	2.43
Moderate Decreasing	0.58 (0.68)	0	3.04
Low Decreasing	0.44 (0.55)	0	3.04

*Note:* Descriptive statistics for BPD symptoms for individuals aged 19 to 22 among each trajectory group. Scores are based on a 5-point Likert scale ranging from 0 to 4, with higher scores indicating an increase in severity of symptoms.

## BULLYING VICTIMIZATION AND TRAUMA OUTCOMES

**Table 4***Hierarchical Regression Coefficients with BPD symptoms as an Outcome Variable*

	Unstandardized B	Standardized $\beta$	p value	R <sup>2</sup>	$\Delta R^2$	F	p value
Step 1				0.05		9.16	0.00*
High stable trajectory group vs low decreasing trajectory group	0.76	0.21	0.00*				
Moderate decreasing vs low decreasing trajectory group	0.15	0.11	0.05*				
Step 2					0.14	19.94	0.00*
High stable trajectory group vs low decreasing trajectory group	0.47	0.13	0.01*				
Moderate decreasing vs low decreasing trajectory group	0.07	0.05	0.32				
Gender							
Childhood Maltreatment	0.08	0.12	0.01*				
	0.28	0.36	0.00*				

*Note:* Step 1 predictor variables: high stable vs low decreasing trajectory group and moderate decreasing vs low decreasing trajectory group. Step 2 predictor variables: high stable vs low decreasing trajectory group, moderate decreasing vs low decreasing trajectory group, gender, and childhood maltreatment.

\* $p < .05$ .

## BULLYING VICTIMIZATION AND TRAUMA OUTCOMES

**Table 5***Crosstabulation of Individuals in Final Sample for BPD and PTSD*

		PTSD diagnosis		
		Yes	No	Total
BPD diagnosis	Yes	50.0%	12.7%	100%
	No	50.0%	87.3%	100%

*Note:* Crosstabulations of individuals ( $n=337$ ) with and without a BPD diagnosis, as determined by the clinical cut-off score, who also meet diagnostic criteria for PTSD.

## BULLYING VICTIMIZATION AND TRAUMA OUTCOMES

**Table 6***Crosstabulation of Individuals in Final Sample for PTSD and BPD*

		BPD diagnosis		Total
		Yes	No	
PTSD diagnosis	Yes	21.6%	78.4%	100%
	No	3.8%	96.2%	100%

*Note:* Crosstabulations of individuals ( $n=337$ ) with and without a PTSD diagnosis who also meet diagnostic criteria for BPD, using the clinical cut-off score.

## BULLYING VICTIMIZATION AND TRAUMA OUTCOMES

**Table 7***Chi-Square Test of Independence Proportions with PTSD as an Outcome Variable*

	With PTSD	Standardized Residual	Without PTSD	Standardized Residual	Total
High Stable Trajectory Group	23.1%*	2.5	76.9%	-0.6	100%
Moderate Decreasing Trajectory Group	8.4%	0.9	91.6%	-0.2	100%
Low Decreasing Trajectory Group	4.3%	0.3	95.7%	-1.1	100%

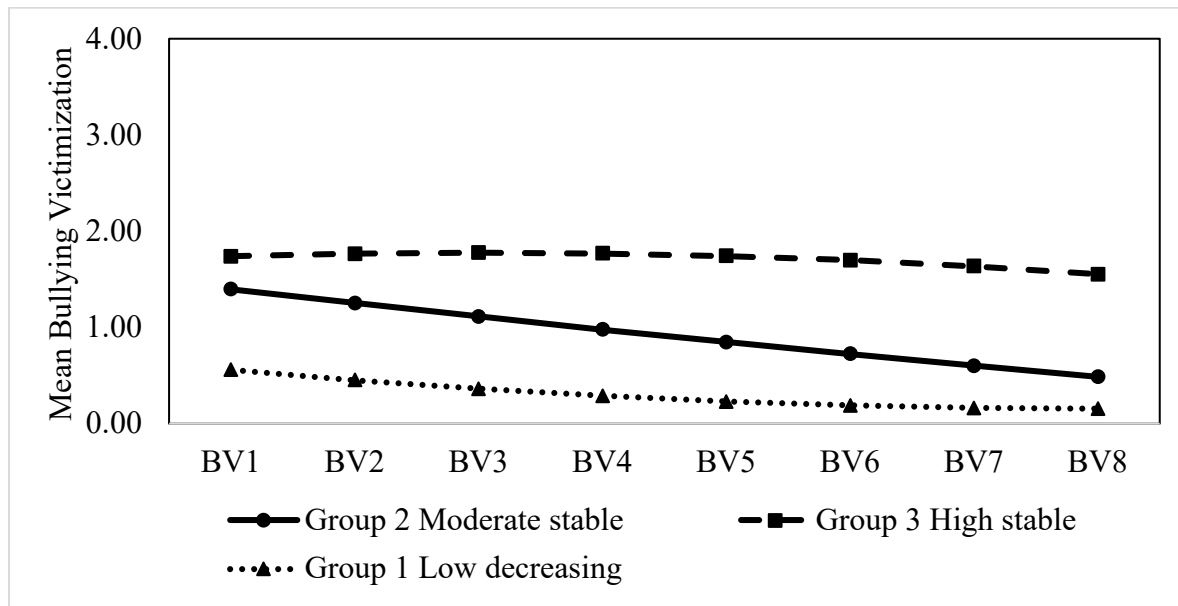
*Note:* Proportion of individuals with and with PTSD in the high stable trajectory group, moderate decreasing trajectory group, and low decreasing trajectory group.

\*Standardized residual > 1.96

## BULLYING VICTIMIZATION AND TRAUMA OUTCOMES

**Figure 1**

*Trajectories of Bullying Victimization across Childhood and Adolescence (ages 10 to 18).*



Developmental trajectories of bullying victimization across elementary school, middle school and high school (ages 10 to 18). Fit indices for one-trajectory model (Bayesian information criterion [BIC] = 7339.82; entropy, n.a.; Lo-Mendell-Rubin likelihood ratio test [LMR-LRT], n.a.), two-trajectory (BIC = 6448.39; entropy = .83; LMR-LRT,  $p = .007$ ), three-trajectory (BIC = 6233.97; entropy = .84; LMR-LRT,  $p = .44$ ), four-trajectory (BIC = 6042.47; entropy = .83; LMR-LRT,  $p = .68$ ).