ADOLESCENTS WITH BORDERLINE PERSONALITY DISORDER SYMPTOMS

SUBGROUPS OF ADOLESCENT GIRLS WITH BORDERLINE PERSONALITY DISORDER SYMPTOMS

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Abstract

This thesis examined the borderline personality disorder symptom profiles of teenage girls who were referred to a tertiary child and youth psychiatry clinic. Self-injury and unstable mood are key features of Borderline Personality Disorder (BPD) but are also associated with other disorders such as depression and anxiety disorders. The aim of the larger study was to determine whether BPD can be differentiated from other disorders in a highly comorbid adolescent sample who self-injure.

To answer this question, individuals in our sample were grouped based on the pattern of BPD symptom endorsement using a latent class analysis. The subgroups that emerged from our sample were then compared to each other across other clinical measures. Four latent classes were identified. The most impaired class had a high prevalence of BPD (70%). An intermediate class had a significantly higher prevalence of PTSD (41.7%). Another intermediate group had a higher prevalence of anxiety disorders (62%) (Social Phobia and Generalized Anxiety Disorder). The largest class had a low prevalence of all psychiatric disorders.

The results indicated that only a small subset of teenage girls who presented with selfinjury and unstable mood met criteria for BPD. These girls represented a distinct and severely impaired group with high comorbidity. The subgroups that emerged from our sample provide guidance to clinicians regarding the likelihood of a personality disorder diagnosis in this population and the pattern of emotional difficulties of youth who self-injure.

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List of Abbreviations

ADHD	Attention Deficit Hyperactivity Disorder
AIC	Akaike Information Criterion
BIC	Bayesian Information Criterion
BPD	Borderline Personality Disorder
BPQ	Borderline Personality Questionnaire
СВТ	Cognitive Behaviour Therapy
CD	Conduct Disorder
DAWBA	Development and Well-Being Assessment
DBT	Dialectical Behaviour Therapy
DHQ	Depression History Questionnaire
DIB-R	Diagnostic Interview for Borderlines Revised
DSM-IV-TR	Diagnostic and Statistical Manual for Mental Disorders –IV –Text Revision
GAD	Generalized Anxiety Disorder
IRS	Impairment Rating Scale
LCA	Latent Class Analysis
Lrx ²	Likelihood Ratio Chi-square test
MDD	Major Depressive Disorder
NSSI	Non-Suicidal Self-Injury
OCD	Obsessive Compulsive Disorder
ODD	Oppositional Defiant Disorder
SAQ	School Adjustment Questionnaire
VADPRS	Vanderbilt ADHD Parent Rating Scale

Declaration of Academic Achievement

This thesis consists of 4 chapters: Chapter 1 provides pertinent background information in regards to the diagnosis of BPD, and self-injury and its comorbid disorders. This chapter also provides an overview of the current study. Chapter 2 presents the measures used and describes the statistical analyses conducted for the study. Chapter 3 describes our findings and chapter 4 discusses the results, their clinical implications, the strengths and limitations of the study and also provides recommendations for future research. The research questions for this study were conceived by Dr. Khrista Boylan and myself. Subjects were recruited from the outpatient child and youth mental health clinic at Chedoke Hospital. The recruitment of subjects was carried out by Dr. Khrista Boylan and her research assistant, Kimberley Krasevich. The database that was created is part of the Teenage Girls Emotion Regulation (TiGER) Study funded through the Hamilton Health Sciences New Investigator Award. Data collection and entering were primarily conducted by Kimberly Krasevich, with the help of Victoria Stead and myself. Data coding for the questionnaires and measures used for this study was completed by myself. Data analyses were conducted by myself with the assistance of Dr. Jeffrey Burke. I presented the results of the study at the Faculty of Health Sciences (FHS) Research Plenary at McMaster University and was awarded the MILO Social Impact Award. Our project was also given the Canadian Government Scholarship (CGS) - Masters award. An article based on this thesis is in progress and will be submitted for publication.

CHAPTER 1

Introduction

The prevalence of self-injury has sharply increased in recent years, with estimates as high as 40-60% among adolescent clinical samples (Hilt, Nock, Lloyd-Richardson, & Prinstein, 2008; Muehlenkamp, Williams, Gutierrez, & Claes, 2009; Olfson, Gameroff, Marcus, Greenberg, & Shaffer, 2005). Many studies have shown that self-injury is more common in women than men, especially within clinical samples (Laye-Gindhu & Schonert-Reichl 2005; Lundh, Wangby-Lundh, & Bjarehed 2011; Nixon, Cloutier, & Jansson, 2008). Self-injury, and the chronic mood instability associated with it, are especially common amongst teenage girls seeking psychiatric treatment. This is concerning as self-injury is a significant risk factor for suicide attempts and completions (Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006;Whitlock et al., 2013). Accurate diagnosis is critical so that these girls can receive appropriate treatment at an early stage in the course of their mental illness which will decrease the likelihood of lifetime psychiatric impairment.

Self-injury and unstable mood are considered key features of adolescent Borderline Personality Disorder (BPD). Self-injury and mood dysregulation, however, are also associated with other, more common disorders, such as depression and anxiety disorders (Hawton, Saunders, & O'Connor, 2012). Given the relatively high prevalence of self-injury in clinical adolescent samples, not all adolescents who self-injure would be expected to meet criteria for BPD (Briere & Gil, 1998). It is clinically important to identify girls that meet criteria for BPD within a population that engages in self-injury as they will require more intensive treatment interventions such as Dialectical Behaviour Therapy (DBT). Furthermore, it is important to

accurately diagnose girls that do not meet criteria for BPD so that they can also receive treatment targeted to their primary areas of difficulty.

In our review of the literature, no studies were identified that have examined young girls who were referred to a psychiatric clinic for unstable mood and self-injury, but were not pre-selected on the basis of having BPD or other primary psychiatric disorders. Examining young girls who seek mental health care is an important contribution to the literature because it allows clinicians to understand the likelihood of BPD and related personality organizational difficulties in a general clinical sample. Studies among adult samples demonstrate the importance of early identification and treatment of BPD. Currently, clinicians' concern about prematurely providing a diagnosis of BPD among young patients may delay appropriate treatment. The stigma associated with BPD and the implications of a general reluctance to make this diagnosis in young patients can be significant barriers against ensuring accurate diagnosis and early intervention.

The primary purpose of the current study was to determine the burden of BPD and BPD features in an adolescent general psychiatric sample. Another aim of this study was to establish whether BPD could be differentiated from other disorders in a clinical sample of female adolescents who predominantly presented with self-injury and unstable mood. These questions were answered by statistically grouping individuals with similar patterns of BPD symptoms and comparing subgroups that emerge across measures of impairment, intensity of self-injury and level of psychopathology to inform diagnosis and treatment.

Borderline Personality Disorder

BPD is a mental disorder characterized by significant impairment in affective, interpersonal, and behavioural domains. It is estimated to affect approximately 2% of the general

adult population (APA, 2000). Typical features of BPD include self-injury and mood regulation difficulties.

The BPD diagnosis consists of nine criteria: frantic efforts to avoid real or imagined abandonment; a pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluation, identity disturbance; markedly and persistently unstable self-image or sense of self; impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating); recurrent suicidal behaviour, gestures, or threats, or self-mutilating behaviour; affective instability due to marked reactivity of mood (e.g., intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than a few days); chronic feelings of emptiness; inappropriate anger or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights); and transient, stress-related paranoid ideation or severe dissociative symptoms. To receive the diagnosis, at least 5 of the 9 criteria must be present, which leads to as many as 151 possible combinations of symptoms that would meet criteria. Not surprisingly, this results in a highly heterogeneous population of individuals diagnosed with BPD, making it difficult for clinicians to diagnose with accuracy and identify effective treatments.

Individuals with a diagnosis of BPD are disproportionately represented in clinical and inpatient populations where prevalence rates rise from an estimated population prevalence of 2% in community samples, to 10% of adult outpatients and 20% of inpatients (APA, 2000). Approximately 75% of individuals receiving this diagnosis attempt, and 10% complete, suicide (Black, Blum, Pfohl, & Hale, 2004). The severity and chronicity of symptoms of the disorder, among at least a subset of those with the diagnosis, is also reflected in the amount of mental

health resources and services BPD patients utilize (Bender et al., 2001; Zanarini, Frankenburg, Hennen, & Silk, 2004). Additionally, those who receive a diagnosis of BPD are more likely to experience chronic psychosocial dysfunction (Skodol et al., 2002). Despite the severity of the diagnosis, there is reason to be optimistic as the remission rate among adolescent and adults with BPD is relatively high (e.g., Zanarini, Frankenburg, Hennen, Reich, & Silk, 2006). Some features of BPD, however, such as affect instability and interpersonal dysfunction, tend to persist even after individuals have remitted (Paris, 2004; Zanarini, Frankenburg, Hennen, Reich, & Silk, 2005).

Diagnosis of BPD in Adolescents

The diagnosis of BPD, and personality disorders in general, in adolescence has been controversial (e.g., Bondurant, Greenfield, & Tse, 2004; Miller, Muehlenkamp, & Jacobson, 2008). In past versions of the Diagnostic and Statistical Manual (DSM), it was not possible to confer a diagnosis of a personality disorder before the age of 18. There are three key arguments against diagnosing BPD in youth. First, features of BPD are not unusual in teenagers, and some dismiss them as a normal part of this stage of development. Adolescence is a challenging period for many individuals who cope with emotional and adjustment issues. Self-image concerns, low and reactive mood and interpersonal difficulties, typical amongst teens, are also features of BPD (Miller, Muehlenkamp, & Jacobson, 2008).

Secondly, there is a concern regarding the stigma associated with receiving a diagnosis of BPD. While there is stigma associated with any mental diagnosis, it has been observed that the diagnosis of BPD may be particularly stigmatizing (Bonnington & Rose, 2014). Some advocates have gone so far as to refer to the condition as the 'leprosy' of psychiatric diagnoses (Burland,

2007) because individuals with BPD are regarded among mental health professionals as difficult to treat, with a generally poor prognosis.

Thirdly, there are many who claim that adolescent BPD may not be a valid diagnosis. Some argue that the higher prevalence rate and higher remission rate of BPD in adolescence versus in adulthood indicate that BPD in adolescence is transitory and likely a reflection of the normal difficulties that youth experience. Others mention that individuals with adolescent BPD tend to have a high comorbidity with other axis I and II disorders, which indicates that they may be misdiagnosed (Kaess et al., 2014). These issues surrounding the validity of adolescent BPD will be discussed in greater detail in the next section. Overall, clinicians who are reluctant to diagnose BPD in adolescence state that the potential benefit derived from making the diagnosis does not outweigh the stigma that patients with BPD may experience.

The DSM-IV-TR removed the age restriction on diagnosing personality disorders in recognition that some adolescents who meet criteria for a personality disorder will have a diagnosis that persists, whereas for others, it is recognised that the diagnosis may be more transient. To address the hesitations that clinicians have regarding diagnosing youth with personality disorders, additional criteria were added allowing clinicians to diagnose individuals younger than 18 years of age. Personality disorders can be diagnosed in adolescents only if maladaptive personality traits cannot be considered to be limited to a stage in development, symptoms persistently interfere with the individual's daily functioning for one year or longer, and axis I diagnoses (i.e., all psychological diagnostic categories except intellectual disabilities and personality disorders) are ruled out (APA, 2000, p. 687).

These additional criteria reduce the likelihood of misdiagnosis of adolescents who present with BPD features but may not meet criteria. The presence of impairment for at least a

year addresses the transient nature of BPD symptoms in a subset of adolescents. Requiring clinicians to rule out other axis II and axis I disorders as a cause for the BPD symptoms increases the validity of the diagnosis of BPD when it is made, but is challenging in practice for clinicians without the use of structured interview tools. This is because teens with depression and anxiety disorders have been shown to have many subthreshold BPD features, such as affect instability, and self-injury, but may not meet criteria for a diagnosis of BPD (Skegg, 2005). The requirement of these extra criteria to be met before BPD can be diagnosed in youth attempts to circumvent the difficulties in accurately diagnosing this age group, but the process is still wrought with difficulty particularly in the context of risk of stigma and a reluctance to diagnose (Sansone, & Sansone, 2013).

Validity of Adolescent BPD

The main argument against diagnosing adolescent BPD cluster around issues related to the validity of the diagnosis. Diagnostic validity describes whether the disorder accurately and consistently identifies individuals with a valid and distinct diagnosis (Aboraya, France, Young, Curci, & LePage, 2005). Predictive validity is a type of criterion validity that predicts the performance of individuals given the diagnosis in real-life tasks. In the case of a BPD diagnosis, evidence of predictive validity would be indication of future distress and impairment. Levy and colleagues (1999) examined the predictive validity of all personality disorders in a sample of inpatient adolescents. Using the Global Assessment of Functioning (GAF), the Symptom Checklist-90-R (SCL-90R), and a measure of drug use and future hospitalizations, it was concluded that adolescent BPD was partly indicative of future impairments. Although the diagnosis among adolescents was not predictive of a lower score on the GAF or the SCL, those who met criteria for BPD were more likely to engage in drug use and were more likely to have

future psychiatric hospitalizations (Levy et al., 1999).

Interpreting data from the Collaborative Longitudinal Personality Disorders Study (CLPS), Gunderson and colleagues found that, although BPD patients had a higher remission rate than other personality disorders, they experienced more severe and stable social and overall impairment compared to other axis II disorders and MDD (Gunderson et al., 2011). In a recent study, BPD diagnosis in adolescent inpatients was significantly related to clinical severity given its association with axis I disorders as well as dimensional measures of depression, emotion regulation and impulsivity (Glenn & Klonsky, 2013). A review of the literature concluded that youth diagnosed with adolescent BPD typically demonstrated marked functional impairment and distress (Bondurant, Greenfield, & Tse, 2004).

Related to concerns surrounding the diagnostic validity of adolescent BPD is the variation in the prevalence estimates of the disorder within this age group. The variation in the prevalence rate estimates across samples of adolescents coupled with the discrepancy in prevalence rates in adolescent versus adult samples raise questions regarding the legitimacy of the diagnosis of adolescent BPD. For example, estimates of prevalence rates in high school and community samples of adolescents vary from 3.3% in a study of 10, 000 11-year olds in the United Kingdom to 14% among 1300 French high school students (Bernstein, Cohen, Schwab-Stone, Siever, & Shinsato, 1993; Chabrol, Montovany, Chouicha, Callahan, & Mullter, 2001; Chabrol et al., 2004; Zanarini, 2003), while among adolescent inpatient samples the prevalence rate of BPD was found to be between 30% to 53% (Becker, Grilo, Edell, & McGlashan, 2000; Glenn & Klonsky, 2013). Examining sex differences, one study estimated that 76% of individuals who meet criteria for BPD are females (Widiger, & Weissman, 1991). Grilo et al. (1995) found that 61% of adolescent female inpatients were reported to have met criteria for

BPD versus 39% of males, and, in another small study involving hospitalized adolescents (n=25), 47% of girls, but none of the boys, were identified with the disorder (Myers, Burkett, & Otto, 1993). In community samples, however, much smaller, or no, sex differences are found in the prevalence rate of adolescent BPD (Bernstein et al., 1993). The extremely high prevalence of BPD in inpatient samples is an indication that, for a small but significant subset of patients with BPD, the disorder is chronic and severe requiring intensive and continuous treatment. In addition, the sizable sex difference in adolescent inpatient samples suggests that young females may be disproportionately represented among the more severe and persistent subgroup of individuals with BPD.

Stability of Adolescent BPD

Most of the literature examining the stability of adolescent BPD over time has concluded that it is modest to low, ranging from 9%, in a mixed clinical sample, to 29% in an adolescent inpatient sample (Arens et al., 2013; Bernstein et al., 1993; Garnet, Levy, Mattanah, Edell, & McGlashan, 1994; Gunderson, Stout, McGlashan et al, 2011; Meijer, Goedhart, & Treffers, 1998; Mattanah, Becker, Levy, Edell, & McGlashan, 1995; Yen, Gagnon, & Spirito, 2013). There is quite strong evidence of a decrease in the number of BPD symptoms from adolescence to adulthood (Bornovalova et al., 2009; Lenzenweger, 1999).

Bernstein and colleagues looked at the diagnostic stability of BPD in a community sample of 733 youth (Bernstein et al., 1993). Those who had moderate BPD (1 standard deviation (SD) above the mean on continuous measures of BPD) had a persistence rate of 29% and those who had severe BPD (2 SDs above the mean) had a persistence rate of 24%. Subsyndromal levels of BPD symptoms were still present, however, even among individuals who no longer met criteria. A recent study looking at a community sample in Germany found

that there was an exceptionally high remission rate of adolescent BPD into adulthood, but following this transition period, the diagnosis remained stable (Arens et al., 2013).

Using the Collaborative Longitudinal Personality Disorder Study (CLPS) data, researchers determined that the remission rate of BPD compared to other personality disorders and MDD was high, where 85% of BPD patients remitted (that is, had evidence of fewer than 2 of the diagnostic criteria for a period of 12 months) after 10 years, and had low rates of relapse (Gunderson et al., 2011). This result is very similar to that of another 10 year longitudinal study in which 88% of patients diagnosed with BPD did not meet criteria during the follow-up period (Zanarini et al., 1989).

Even among the most severely impaired patients with BPD, there is evidence that the worst of the symptoms lessen over time. Focussing on adolescent inpatients, in a small severely ill inpatient sample, only 2 (14%) of the 14 adolescent inpatients diagnosed with BPD retained the diagnosis at the 3 year follow-up, although those who remitted still retained some symptoms of BPD (Meijer et al., 1998). In a slightly larger sample where 31 adolescent inpatients met criteria for BPD, only 7 (23%) still met criteria after 2 years (Matttanah et al., 1995). Finally, in another sample of adolescent inpatients, 33% retained their diagnosis at the 2 follow-up (Garnet et al., 1994). A review that examined 36 relevant studies published from 1872 to 2004 concluded that there was weak evidence for diagnostic stability from adolescence into adulthood (Bondurant, Greenfield, & Tse, 2004).

It is reassuring for patients and their families that many individuals diagnosed with BPD attain remission in longer term follow-up. While the clinical significance of BPD symptoms are reduced, however, those who no longer meet diagnostic criteria may still retain subsyndromal symptomatology and experience significant impairment in key functional domains (Miller et al.,

2008).

Overall, the hesitation to diagnose BPD in adolescence can be countered by a recent body of literature supporting it as a valid diagnosis. The discrepancy in the prevalence rates within adolescent samples and between adolescent and adult samples could be due to a variety of different factors. Adolescent BPD is a relatively new diagnosis so the high prevalence and remission rates of BPD in adolescence could be due to methodological limitations such as variations in diagnostic tools, sample recruitment methodology, small sample size, and, in general, a lack of well-controlled studies. On the other hand, the high remission rate and the instability of symptom profiles of adolescents with BPD could indicate that BPD may be overdiagnosed in this age group. As adolescent BPD diagnosis becomes more widely accepted and more studies examining the validity of adolescent BPD are published, more conclusive recommendations can be made regarding the clinical utility of the diagnosis.

Self-injury

Self-injury is defined in the literature as "the intentional destruction of body tissue without suicidal intent and for purposes not socially sanctioned" (Klonsky, & Muehlenkamp, 2007, p.1045). For the purposes of this thesis, self-injury and Non-Suicidal Self-Injury (NSSI) are used interchangeably.

A core feature of BPD, especially in adolescents, is self-injury although patients with other diagnoses may also self-injure. It is critical that this behaviour is addressed at its onset as it is associated with suicidal behaviour and individuals who chronically engage in NSSI represent a significantly more impaired group who are less likely to stop self-injuring (Brickman, Ammerman, Look, Berman, & McCloskey, 2014; Nixon, Cloutier, & Aggarwal, 2002).

In the adult general population the prevalence of NSSI is approximately 4-6% (Briere & Gil, 1998; Klonsky, Oltmanns, & Turkheimer, 2003) while in adolescent community samples studies have reported ranges of 15%-37% (Muehlenkamp, Claes, Havertape, & Plener, 2012). The majority of studies indicate that there is a sex difference in the prevalence of NSSI. NSSI appears to be more common in girls, especially within clinical samples (Laye-Gindhu & Schonert-Reichl 2005; Lundh, KarimWangby-Lundh, & Bjarehed 2011; Nixon, Cloutier, & Jansson, 2008). In early adolescence (13-14 years), NSSI is three times more common in girls than boys (Stallard, Spears, Montgomery, Phillips, & Sayal, 2013).

Amongst 256 adult outpatients, 33% of the sample reported engaging in self-injury within the past three months (Zlotnick, Mattia, & Zimmerman, 1999). In a large mixed (inpatient and outpatient) sample, 21% of individuals identified themselves as self-injurers (Briere & Gil, 1998). Another study consisting of adult inpatients (n=54) found that 44% reported a history of self-injury (Nijman et al., 1999). Only one study was identified examining the prevalence of NSSI in clinical adolescent samples. These researchers found that the prevalence rate of 60% was much higher than in adult clinical samples (DiClemente, Ponton, & Hartley, 1991).

The higher prevalence of NSSI among adolescents than adults and its associated risk for impairment and suicidal behaviour demonstrate the importance of identifying and treating NSSI at its onset to reduce the risk of suicidal behaviour amongst teenagers, and, in particular, among teenage girls (In-Albon, Ruf, & Schmid, 2013).

Self-injury and comorbid disorders

NSSI has a unique and robust association with BPD and is considered a hallmark of this disorder (Andover, Pepper, Ryabchenko, Orrico, & Gibb, 2005; Soloff, Lis, Kelly, Cornelius, & Ulrich, 1994). The prevalence of NSSI in BPD is estimated between 65-80% (Brickman,

Ammerman, Look, Berman, & McCloskey, 2014). Although a significant proportion of adolescents who repeatedly engage in NSSI have a comorbid diagnosis of BPD, the majority do not. Other common disorders that adolescent self-injurers are typically diagnosed with are depression and anxiety disorders as well as PTSD.

The most prevalent disorders in samples of both adolescent and adults who injure themselves are axis I disorders, most frequently Major Depressive Disorder (MDD). Amongst a small sample of adult psychiatric inpatients with a history of NSSI the prevalence of MDD was 54%, closely followed by the prevalence of BPD (Herpertz, 1995). Another study examining a adults from a general practice clinic found that within the subset (11%) of individuals who met criteria for NSSI disorder, 42% of patients met criteria for depression, and 11% had anxiety disorders (Selby, Bender, Gordon, Nock, & Joiner, 2012). A study of adult psychiatric patients who reported self-injury had a prevalence of depression of 71%. Anxiety disorder was the second most common diagnosis (14%) and small percentage with PTSD (Haw, Hawton, Houston & Townsend, 2001). A study including 256 adult psychiatric patients who reported to have selfinjured within the past three months found that 11.7% had PTSD and 13.3% met criteria for BPD (Zlotnick, Mattia, & Zimmerman, 1999).

Amongst adolescent self-injurers, the prevalence of BPD appears to be higher than in adult samples. Nock and colleagues found that just over half of their sample met criteria for BPD (52%). A high level of comorbidity was also found with MDD (42%), PTSD (24%) and Generalized Anxiety Disorder (16%; Nock, Joiner, Gordon, Lloyd-Richardson, Prinstein, 2006). Another sample of female adolescent inpatients who met criteria for NSSI disorder had high rates of MDD (79.5%), significantly higher than clinical controls (30%) (In-Albon et al., 2013). Also prevalent were social phobia (38.5%), PTSD (28.2%), and BPD (20.5%).

The finding that NSSI is related to multiple disorders demonstrates the diagnostic heterogeneity of adolescents engaging in NSSI (Nock et al., 2006). Although there are interventions specifically targeting NSSI that have some evidence base (Muehlenkamp, 2006), treating comorbid disorders has also been shown to reduce self-harming behaviours (Skegg, 2005). Accurate diagnosis is a critical first step to understanding how to optimize treatment outcomes by addressing underlying issues related to self-injury.

Treatment

Treatment for BPD

The consensus amongst clinicians is that the optimal intervention for treating BPD is Dialectical Behaviour Therapy (DBT) (Linehan, 1993; Linehan et al., 2007). DBT is an intensive therapy, the main features of which include teaching emotional regulation and coping skills to reduce NSSI, addressing past traumatic experiences, and learning how to cope with invalidating environments.

Seven well-controlled studies have evaluated DBT and have found positive outcomes, primarily in the form of reductions in self-harming behaviour (Lieb, Zanarini, Schmahl, Linehan & Bohus, 2004). More recently, a RCT comparing DBT to other expert therapy determined DBT significantly decreased suicide attempts, hospitalizations, medical risk, and all forms of selfinjury (Linehan et al., 2007). Analysis of 28 studies that met the criteria for this systematic review demonstrated that DBT was the only intervention that had an adequate number of studies evaluating it to draw any conclusions about its efficacy. DBT appeared to reduce anger, parasuicidality (self-injury and suicide attempts) and general mental health (Stoffers, Völlm, Rücker, Timmer, Huband, & Lieb, 2012).

A large-scale meta-analysis of 28 studies evaluating the efficacy of pharmacological

interventions for BPD found preliminary support for second-generation antipsychotics, mood stabilizers and omega-3 fatty acids, but the treatment effect for each drug was only detected in one or two studies and therefore requires replication (Stoffers, Völlm, Rücker, Timmer, Huband, & Lieb, 2010). It was not recommended that anti-depressants be used to treat BPD, although it was acknowledged that it may be effective in addressing comorbid disorders. This is a critical finding as teenagers who present with mood dysregulation and self-injury are often diagnosed with a mood disorder and are given anti-depressants. The lack of evidence for anti-depressants in reducing BPD symptomatology indicates that specific interventions to address BPD are required. Overall, the review concluded that there is insufficient evidence for pharmacological interventions in treating BPD, especially in addressing core BPD features such as emptiness, identity disturbance and abandonment.

Treatment for Self-injury

Treatments for self-harming behaviour, which encompasses both NSSI and suicide attempts have been evaluated in a number of systematic reviews. These reviews are limited to psychological interventions as there are very few randomized control trials (RCTs) involving pharmacological interventions that specifically address self-injury, or studies that analyze drugs and psychotherapy in combination (Ougrin, Tranah, Stahl, Moran, & Asarnow, 2015).

In an early seminal meta-analysis, 23 RCT's evaluating treatments for self-injury for female patients with BPD who chronically engaged in NSSI provided support for problemsolving therapy, the provision of contact information to emergency services, long-term psychological therapy, and depot flupenthixol (Hawton et al., 2000). In another meta-analysis, involving 20 studies, problem-solving therapy appeared to be more effective in decreasing selfharming behaviour compared to non-treatment controls, although this effect did not reach a level

of significance (Hawton et al., 1998). In a follow-up meta-analysis including six studies, the same researchers found that when problem-solving therapy was used specifically to address NSSI, the effect of the treatment on decreasing this behaviour was not conclusive, but it did result in a significant reduction of depressive symptoms, feelings of hopelessness, and problem levels (Townsend et al., 2001).

Muehlenkamp conducted a review that specifically examined two interventions problem-solving therapy (PST) and DBT (Muehlenkamp, 2006). Results of studies included in this review indicated that comprehensive PST, or various permutations of comprehensive therapy (e.g., manual-assisted CBT (MACT)), may have a marginal beneficial effect compared to control treatments. In evaluating the efficacy of DBT in reducing suicidal behaviours and NSSI, the majority of studies included in the review found that DBT significantly reduced self-harming behaviour, particularly in BPD patients, compared to treatment-as-usual, although this effect was not maintained over 12 months (Linehan, Heard, & Amstrong, 1993; Verheul, Van Den Bosch, Koeter, De Riddler, Stijnen, & Van Den Brink, 2003). DBT has also been shown to be effective in reducing self-injury in community samples (Comtois, Elwood, Holdcraft, Smith, & Simpson, 2007) as well as in inpatients relative to treatment as usual (Barley et al., 1993; Bohus et al, 2004). DBT has been modified for adolescents who self-injure (Miller, 1999) and has produced results suggesting some success in reducing NSSI and suicidal behaviours as well as improving psychosocial functioning in inpatient and outpatient samples (Katz, Cox, Gunasekara, & Miller, 2004; Rathus & Miller, 2002). Based on this review, DBT appears to reduce self-injury; however, these results need to be interpreted with caution given that while individuals decrease NSSI behaviour, they do not completely stop the behaviour. Furthermore, DBT has not been compared to more extensive and targeted treatment interventions (Klonsky, 2007). Interestingly,

Muchlenkamp notes that individuals with a comorbid personality disorder or with a history of repeated NSSI appeared to be a subset much more resistant to treatment for self-injury.

A recent review of the treatments for suicide attempts and NSSI in adolescents included 19 RCT's evaluating a variety of psychological interventions and comparing them to treatmentas-usual or placebo (Ougrin, Tranah, Stahl, Moran, & Asarnow, 2015). The inclusion criteria for the characteristics of the sample were individuals under the age of 18 who had engaged in selfinjury at least once. The treatments used for this population were problem-solving therapy, CBT, family therapy, multifaceted developmental group psychotherapy, psychodynamic therapy, DBT, emotion regulation, tokens allowing readmission, and mentalization-based therapy. The treatments that showed the largest effect were DBT, mentalization-based therapy, and CBT. The authors suggest that DBT, CBT and mentalization-based therapy provide promising outcomes but replication of these findings is required before any conclusive recommendations can be made.

The consensus on the effectiveness of treatment for BPD, axis I disorders and NSSI, especially among children and adolescents, is still mixed with no particular treatment garnering a substantial and robust evidence-base. One potential reason the evidence for treatment efficacy to date has not been strong could be due to the variable sub-types and symptomatology within each group, and/or the over-diagnosis or misdiagnosis of individuals in these samples.

In summary, due to the high level of comorbidity among adolescents and the heterogeneity of self-injuring samples, it is very difficult for clinicians to confidently diagnosis teenage girls who primarily present with self-injury. Determining the prevalence of BPD, the comorbidity and the clinical features that differentiate subgroups within our sample, will provide diagnostic and treatment guidance for clinicians and will contribute to the discussion on the

validity of BPD in this population.

The Current Study

Given the importance of accurate identification of BPD, and recognizing the challenges of making this diagnosis in the midst of high comorbidity and self-injury in clinical samples, this study evaluated the presence of distinct profiles of BPD symptoms in 75 teenaged girls (11-18 years) who presented to a child and youth tertiary psychiatric clinic (the majority of whom presented with mood difficulties and NSSI). The number of profiles of BPD symptoms describing the sample were determined by performing a latent class analysis (LCA: Hagenaars & McCutcheon, 2002) based on the nine subscales of the Borderline Personality Questionnaire (BPQ; Poreh, Rawlings, Claridge, Freeman, Faulkner, & Shelton, 2006). The nine subscales reflect the nine criteria for BPD in the DSM-IVTR. Post-hoc analyses were conducted to compare the latent classes across other clinical measures to examine their clinical distinctness from each other.

A similar approach has recently been applied to adolescents with BPD (Ramos, Canta, de Castro, & Leal, 2014). This study used LCA to identify subgroups within the sample based on personality traits. Two distinct groups were identified, an internalizing and externalizing group. Klonsky and Olino (2008) conducted a LCA to describe a sample of adolescent self-injurers. The characteristics used to determine the subgroups were method of NSSI, features of NSSI (alone or with others), and its function (social or automatic) (Klonsky, & Olino, 2008). A study by Clifton and Pilkonis (2007) aimed to determine whether individuals who met criteria for BPD in a mixed clinical and non-clinical sample could be differentiated from healthy individuals or those with other mental disorders. Subgroups were determined using a LCA based on BPD symptom profiles. Their results indicated that the sample could be divided into two groups, a borderline

class and a non-borderline class (Clifton & Pilkonis, 2007). Finally, one that closely resembled our methodology employed a LCA based on BPD symptoms with a large community sample (age range: 16-74 years). Four subgroups emerged, primarily differentiated by level of symptom severity (Shevlin, Dorahy, Adamson, & Murphy, 2007).

The current study differs from the existing literature in that the study by Ramos and colleagues and Klonsky and Olino identified subgroups based on clinical features other than BPD. The study by Clifton and Pilkonis and Shevlin and colleagues differed from the current study with respect to its older sample and their researchers' employment of different recruitment approaches.

Currently, there studies that have used profile analyses (e.g. LCA) to examine BPD features among adults and youth that have found differences in the number and pattern of symptom endorsement. Given the likelihood that that there are different profiles among adolescent clinical samples, our study sought to explore whether the groups identified show distinct clinical profiles with respect to diagnosis and functional impairment, suggesting they are clinically useful to identify and that treatment specificity is likely to be important.

The main contribution of this study, therefore, is to characterize teenage girls from the perspective of the BPD symptom they present with. This work can help to debunk the questions about the relationship between self-injury and BPD in adolescent girls. There is a growing prevalence of adolescent girls seeking mental health treatment at these clinics for BPD features, mainly unstable mood and self-injury. As previously noted, mood difficulties and NSSI are also associated with depression and anxiety disorders, which are two to three times more common in females than males, particularly in clinical settings (Lewinsohn, Rohde, & Seeley, 1998; Miller, Muehlenkamp, & Jacobson, 2008). The combination of dysregulated mood and NSSI results in

young girls experiencing significant distress and they often present with suicidal ideation, and/or a history of suicidal behaviours. By elucidating the groups of symptom profiles that emerge from our sample, clinicians may be better able to diagnosis and identify the optimal treatments for each subgroup within this population.

The primary research question was to determine the prevalence of BPD in a tertiary clinic sample of girls, and to describe the patterns of comorbidity with BPD and other axis 1 disorders. If groups who do not meet criteria for BPD have a unique pattern of symptoms as well as severity, this suggests that the BPD group can be clearly distinguished from the others, increasing clinician confidence making the diagnosis.

A secondary research question was to identify the distinguishing features of the BPD group relative to the other girls in our sample who did not meet criteria. This allowed us to examine the symptom profiles of the girls with BPD as well as those who did not meet criteria.

Hypotheses

We predict that:

- despite patients having features of BPD, the diagnosis will be rare in this sample and there will be a high degree of comorbidity;
- 2) individuals who meet criteria for BPD will constitute a distinct subgroup within this population and will be distinguishable from others who do not meet criteria for BPD;

3) there will be at least two latent classes describing patterns of BPD symptoms. One group will have elevations on all BPQ domains and will have a significantly higher proportion of girls who meet criteria for BPD than the other group(s). This group will also have experienced significantly more trauma, an earlier onset of mental illness, a more extensive family psychiatric history, and lower levels of treatment response and severity of depressive symptoms than other

group(s). A second group will have elevations in the affective instability domain and will not meet criteria for BPD, but will have higher rates of depression or dysthymia. A potential third group could emerge with a higher score on the BPQ impulsivity subscale and will have a greater likelihood of being diagnosed with disruptive and/or behavioural disorders.

Rationale/Implications

Key features of BPD, such as persistent self-injury and unstable mood, commonly present in adolescent girls, creating the potential for misdiagnosis in this population (Briere & Gil, 1998). Importantly, there are differential diagnostic formulations of adolescent self-injurers, specifically depression and anxiety disorders (Hawton, Saunders, & O'Connor, 2012). It is therefore likely that not all adolescents who self-injure or have mood difficulties will meet criteria for BPD (Briere & Gil, 1998). Differentiating these groups is critical for early accurate diagnosis which will inform targeted treatments for the identified subgroups.

CHAPTER 2

Method

The Research Study

The current research project was conducted based on data collected as part of the Teenage Girls Emotion Regulation (TiGER) Study. This study, funded by the Hamilton Health Sciences Research Foundation, was designed to research processes and predictors of emotional dysregulation in teenaged female patients presenting for psychiatric assessment and treatment. All study procedures were approved by the Hamilton Integrated Research Ethics Board. The study was proposed to develop a better understanding of the psychiatric diagnostic profiles of teenage girls in clinical settings, most of whom engage in self-injury parasuicidal behaviour, report symptoms of depression, and have differential response to treatments. Detailed measurement of borderline personality disorder symptoms was obtained to examine the relationship between these common clinical features and BPD symptoms in adolescent females.

Participants

The sample consisted of 75 girls, ages 11 to 18 years (Mean =14.92, SD =1.50) who presented for clinical assessment to an outpatient general child and adolescent psychiatry clinic. Girls were referred to the clinic through three routes – by their family doctors, by an emergency room physician or by self-referral to a central referral agency. These three referral routes are typical in child and youth psychiatric clinics in Canada. The sample was not screened further by diagnosis or severity so as to enroll a sample reflective of youth seen in a mental health clinical practice setting. We did not, however, include youth with known autism spectrum disorders as these youth are seen by a different clinic at the hospital. We did not include a measure of IQ, but

confirmed that all girls were able to read at a Grade 6 (age 12) level using the Slosson Oral Reading Test.

Girls and their caregivers were recruited by referral from a mental health clinician or by a research assistant who obtained their contact information through a clinic database of all consecutively referred patients who also consented to be contacted for research. Participant and caregiver consented to participate in the research study after meeting with the research assistant. Research Ethics Board procedures were followed.

Family Demographics

Information on the highest level of education of both parents, the total household income, the parents' marital status, and the parents' living arrangements were obtained through an online survey. The questions asked were extracted from the Canadian Community Health Survey Cycle 1.2 and the National Longitudinal Survey of Children and Youth (NISCY). The majority of parents reported that their highest level of education was postsecondary or higher (76.7%). Only 11% (n=8) had a high school education or less. About half the parents reported an annual household income over \$50,000, with one-quarter reporting a household income over \$120,000. Fifty-seven percent (n = 42) of the parents reported living together either married or common law; 26% (n =19) were divorced or separated and 19.2% (n=14) were never married or single.

Measures

General Psychopathology

Development and Well-Being Assessment (DAWBA). The likelihood of the youth meeting criteria for a psychiatric disorder was identified using by the Development and Well-Being Assessment (DAWBA; Goodman et al., 2000). The DAWBA is a computerized user report psychiatric interview completed by parents and children/adolescents to identify youth

psychiatric diagnosis using a multi-informant best estimate procedure. It includes structured sections as well as open-ended questions where the respondents can describe their problems or concerns. A computer program uses this information to predict the presence or absence of diagnoses based on the DSM-IV criteria. A clinician then reviews the data and determines whether to accept or reject the computer-based diagnoses. The DAWBA has been shown to have excellent discrimination between clinical and community samples in that it identified a higher prevalence of psychiatric disorders among clinical samples as compared to community samples. It has also been shown to accurately differentiate between individuals with and without diagnosed disorders (Fleitlich-Bilyk & Goodman, 2004; Goodman et al., 2000). Within clinical samples, diagnoses based on the DAWBA have been found to be highly consistent with diagnoses based on case notes (Goodman et al., 2000). In a study examining the utility of the DAWBA in a clinical sample, diagnoses of emotional disorders had an acceptable positive predictive value (> 0.75), although assessment using the DAWBA had a tendency to under diagnose (Foreman, Morton, & Ford, 2009). The current study used the DAWBA to diagnose separation anxiety, social phobia, Post Traumatic Stress Disorder (PTSD), Obsessive Compulsive Disorder (OCD), Generalized Anxiety Disorder (GAD) and major depressive disorder. The computer prediction of each diagnosis based on the responses was used. The participants' responses were used to determine these diagnoses given that research has suggested that adolescents' self-report of emotional difficulties tend to be more accurate than the parents' responses (Shoval et al., 2012).

Specific Pathology

DIB-R (Measure of Borderline Personality Disorder (BPD)-Revised). Diagnosis of BPD was determined through a structured clinical interview conducted by a psychiatrist using the

Diagnostic Interview for Borderlines (DIB-R; Zanarini, Gunderson, Frankenburg, & Chauncey, 1989). The DIB-R is the most extensively used tool to diagnose BPD and has been validated as a diagnostic tool in adolescent samples (e.g. Ludolph, et al, 1990). It has the added strength for the purpose of this study of having been shown to clinically useful and valid for adolescent populations (Atlas & Postelnek, 1994; Yanchyshyn, Kutcher, & Cohen, 1986).

It is a semi-structured interview format consisting of 186 questions divided into four domains: affective, cognition, impulse action patterns, and interpersonal relationships. Scores on each of the four domains are then scaled to yield a total score between 0 and 10, where 8 or higher is considered to be the cut point for a diagnosis of BPD. The tool has good psychometric properties. One study found that in a mixed clinical sample of inpatients and outpatients (n = 237) aged 18-40 who had received an Axis II diagnosis, the DIB-R had a sensitivity of 0.82 and a specificity of 0.80 for BPD diagnosis. It had a positive predictive value of 0.74 and a negative predictive value of 0.87. Overall, the DIB-R is considered to provide a more clinically valid diagnosis of BPD as compared to the use of DSM criteria which do not require the clinician to judge the relevance of each symptom to the core domains of impairment of BPD (i.e., affect, cognition, impulsivity, and interpersonal functioning prior to declaring their presence) (Zanarini, Gunderson, Frankenburg, & Chauncey, 1989). Whereas the DSM criteria reflect a dimensional view of the symptoms, the DIB-R requires a categorical formulation with necessary symptom endorsement from each of the four domains of BPD. The DIB-R has also been shown to discriminate patients with BPD from those who are diagnosed with axis I disorders, such as depression (Kolb, & Gunderson, 1980; Soloff, & Ulrich, 1981). A review examining studies on the inter-rater reliability and test-retest reliability of the DIB-R found a good overall agreement (kappa > 0.75) in all the reliability studies examined (Zanarini, Frankenburg, & Vujanovic,

2002).

Borderline Personality Questionnaire (BPQ). Symptoms and severity of BPD were assessed using the Borderline Personality Questionnaire (BPQ; Poreh, Rawlings, Claridge, Freeman, Faulkner, & Shelton, 2006). The BPQ is a self-report measure consisting of 80 true/false statements. There are nine subscales that correspond to the nine DSM-IV BPD criteria (impulsivity, abandonment, unstable relationships, self-image, self-injury, emptiness, intense anger and quasi-psychotic states). The BPO was determined to be the best of four measures of BPD (McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD), the BPD items from the International Personality Disorder Examination Screening Questionnaire, and the BPD items from the Structured Clinical Interview for DSM-IV Axis II disorders (SCID-II) Personality Questionnaire) in characterizing a large sample of outpatients 15-25 years of age (Chanen et al., 2008). All four measures had similar psychometric properties; however, the BPO had the best overall diagnostic accuracy (0.85), and excellent test-retest reliability (ICC = .92) and internal consistency (alpha =.92) (Chanen et al., 2008). Support for the validity of the BPQ was found in a study comparing patients with BPD to clinical controls aged 14-25 years as well as a large sample of (primarily female) university students (Mean age, 20.2 years) (Fonseca-Pedrero et al., 2011; Henze et al., 2013). Our study used the BPQ to identify latent classes within the sample.

Self-injury. The Ottawa Self-injury Inventory was used to measure motivation, frequency and method(s) of Non-suicidal Self-Injury (NSSI) (OSI: Cloutier & Nixon, 2003). There are currently relatively few validated measures of self-injury. The OSI is a valid measure of self-injury that can be used in community and clinical samples. It captures information about self-injury including frequency, severity, duration, methods used, function and addictive features.

The psychometrics of the OSI were examined in 149 university students (82.6% women, mean age= 19.4yrs) who reported engaging in self-injury in the past six months (Martin, Cloutier, Levesque, Bureau, Lafontaine, & Nixon, 2013). The OSI demonstrated convergent validity with another validated measure of self-injury, the Functional Assessment of Self-Mutilation (FASM; Lloyd, Kelley, & Hope, 1997). They found it was also significantly correlated with other clinical measures such as symptom distress.

The current study used the OSI to measure lifetime frequency of engagement in NSSI. This was determined by taking the sum of the reported frequencies for each method of NSSI (e.g. cutting, burning, hitting self, swallowing dangerous substances, etc.). The data for lifetime frequency of NSSI were positively skewed due to a number of the girls in our sample reporting extremely high frequencies of engagement in NSSI. To normalize the data, the lifetime frequency of engagement in NSSI for two girls who reported over 1000 incidences were recoded to the next highest NSSI frequency in our sample, which was 655.

Measures of Attention Deficit Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD). Diagnosis of ADHD-Inattentive, ADHD-Hyperactive, and ADHD-Combined as well as diagnosis of ODD and CD were made using the Vanderbilt ADHD Parent Rating Scale (VADPRS: Wolraich, Lambert, Doffing, Bickman, Simmons, & Worley, 2003). This scale consists of four sections pertaining to each diagnosis (ADHD-Inattentive, ADHD-Hyperactive, ODD and CD), as well as 7 items related to anxiety and depression. Each item is scored on a four point scale from 0 to 3, corresponding to 'never', 'occasionally', 'often', and 'very often'. A cut point for each subscale determines whether individuals meet criteria for each disorder. The Vanderbilt has been established as a valid measure in a population of elementary school children (n = 243) who received a teacher-reported clinical diagnosis of ADHD or met criteria for ADHD according to the Vanderbilt ADHD Teacher Rating Scale (VADTRS). In a study comparing the VADPRS to the Computerized Diagnostic Interview Schedule for Children-IV, Parent version, the VADPRS had high agreement with the DSM-IV diagnosis of ADHD and had a high internal consistency (> 0.93). The ODD and CD scales also had adequate internal consistency (0.91) and were consistent with other relevant measures of impairment (Wolraich et al., 2003).

The total score of this measure was used to differentiate the four groups that emerged from the LCA as well as yes/no diagnosis of depression according to the stringent cut point of \geq 26. This cut point was chosen because it was the mean score on the CES-DC of individuals 12-18 years that met criteria for Major Depressive Disorder or dysthymia according to DSM-III in a validation study (Fendrich, Weissman, & Warner, 1990).

Depression History. Parents and research participants were asked about current, past and lifetime episodes of depression, the experience of inter-episode recovery and age of onset of first episode. The responses to number of episodes and inter-episode recovery were assessed to determine whether or not the youth met criteria for persistent depressive disorder (DSM-5) or dysthymia (DSM-IV). This questionnaire was created because the DAWBA did not include items for these latter disorders. It also provided insight into the girls' stability and duration of depressed mood. The age of onset of the first depressive episode was the only variable from this measure used for this study.

Total Number of Axis I Diagnoses. Total number of Axis I diagnoses was calculated by adding the number of diagnoses for which each girl met criteria as measured by the DAWBA (Separation Anxiety, Social Phobia, GAD, OCD, PTSD, and depression) and the VADPRS (ADHD-Inattentive, ADHD-Hyperactive, ADHD-Combined, ODD, and Conduct Disorder
(CD)). The maximum number of diagnoses that the girls in the sample could have was nine, as each ADHD diagnosis is independent of the other.

Measures of Impairment

Treatment History. Parents were asked to fill out a questionnaire designed by the principal investigator that asked the age at which treatment was first sought, the type and length of psychiatric treatment (e.g. community services, family doctor, private therapist, outpatient services), number of emergency visits and hospital admissions as well as type and number of pharmacological interventions that were prescribed. A continuous measure of the number of emergency room visits plus the number of hospitalizations were analyzed for this study as an indicator of medical service use.

Interpersonal Functioning. The Impairment Rating Scale (IRS: Fabiano & Pelham, 2002) parent version was used as a measure of quality of the girls' interpersonal functioning. It was initially developed to assess domains of social impairment that are common in children with ADHD. The three items extracted from this scale were: 'How your child's problems affect his/her relationship with play mates', 'How your child's problems affect his/her relationship with you', and 'How your child's problems affect his/her relationship with your child's problems affect his/her relationship with general'. Rating for each question was on a scale from 1 to 5, ranging from 'no problem' to 'an extreme problem'. Higher scores, therefore, reflect greater interpersonal difficulties. The psychometric properties of the IRS were examined in a sample of 252 children, half of whom were diagnosed with ADHD (mean age = 5 years old) and the other half were aged-matched controls (Lahey et al., 1998). In this sample, the IRS was reliable over a period of 1 year (r=.49 to.72, p<.001). Another study used a sample that consisted of 125 boys, 50% school–age children with ADHD and 50% were matched comparison children (average age = 9.5 years old) (Fabiano et al., 1999).

The parent version of the IRS was stable over 3 to 4 months (r=.74to.96, p< .001). Overall IRS has discriminant validity in differentiating children with ADHD from those who do not meet criteria and has convergent validity with other measures of impairment such as the Children's Global Assessment of Functioning (CGAS; Bird et al., 1987) (Fabiano & Pelham, 2009). The measure also moderately correlates with objective measures of problematic behavior and predicts use of mental health and school services (Fabiano et al., 2006). This study took the sum score on three questions asking how the child's problems affect his/her relationships with friends, parents and the entire family.

Adjustment and Behaviour Problems. The parent version of the School Adjustment Questionnaire Revised (Corrigan, 2003) contains 18 items that ask about the child's and parent's adjustment to school and the child's behaviour at school. The range of responses is on a scale from 1 to 5, from 'strongly disagree' to strongly agree'. Higher scores indicate better adjustment. For this study the Total subscale, with 16 of the 18 items, was used (Maumary-Gremaud, 2000). These questions address academic, social and general behavioural concerns. This subscale was determined to have good internal consistency and have the ability to differentiate between a high-risk control sample (n=155) and a normative sample (387) (Corrigan, 2003; Maumary-Gremaud, 2000). The mean sum score of these items were compared across the subgroups within our sample.

Procedure/Analytic Approach

Latent Class Analysis

A latent class analysis (LCA: Hagenaars & McCutcheon, 2002) was applied to determine whether there were distinct classes within the sample. LCA is a person-centered statistical method that identifies homogeneous subgroups within a population. It differs from variable-

centered approaches, such as factor analysis, in that it explores the relationship between individuals rather than examining the relationship between variables. Subgroups, or classes, are identified based on each individual's response patterns. Those who have similar response patterns are grouped together (Clifton & Pilkonis, 2007). In this study, we conducted an exploratory LCA using the nine subscales of the Borderline Personality Questionnaire (BPQ; Poreh, Rawlings, Claridge, Freeman, Faulkner, & Shelton, 2006) which correspond to the nine diagnostic criteria for BPD in the DSM-IV. Latent classes were determined based on the pattern of endorsement of the nine BPD symptoms. There is no established cut point for the nine BPQ subscales that would indicate the presence or absence of the nine symptoms. For the current study we determined symptom endorsement if the individual scored within the top quartile of the sample on each item.

The fit of models with between one to five classes were assessed, with fit evaluated using three statistics: the likelihood ratio chi-square (LRx²), Bayesian Information Criterion (BIC; Schwartz, 1978) and the Akaike Information Criterion (AIC; Akaike, 1987). Because of concerns about the reliability of model fit statistics based on a small sample size, bootstrapping procedures (with 500 iterations) were employed. The LRx² indicated the amount of association among the variables that remains unexplained after estimating the model (Vermunt & Magidson, 2005). The smaller the LRx² value, the better the model fits the data. Another way of comparing models using the LRx² is to set a p-value, usually greater than 0.05. This would indicate that the observed and the estimated values based on the model do not significantly differ. If more than one model has a p-value of greater than 0.05, the least parsimonious model is preferred. For both the AIC and the BIC, the model with the lower value is considered a better fitting model. Finally, to identify the preferred best-fitting model, conditional bootstrap log-likelihood

difference tests between successive models were conducted. In this test, a significant p-value indicates that the improvement in model fit arising from the addition of another parameter to the model is sufficient to overcome the preference for model parsimony. The LCA was conducted using Latent GOLD 4.0 (Vermunt & Magidson, 2005).

Class membership was determined by calculating the probability of the members within each class presenting with each symptom. An individual was then assigned to a class based on how closely her symptom profile matched the profile of the other members of the class. The difference between the BPD symptom patterns of individuals within the same class should therefore be significantly less than the difference in symptom patterns across classes.

Post-hoc Analyses

Post-hoc analyses were conducted to determine the validity of the classes identified by the LCA by comparing various non-BPD symptom covariates across the groups. A one-way ANOVA was run across groups for each covariate of interest. The measures used to compare the LCA groups were type and number of psychiatric diagnoses, duration of depressive symptoms, lifetime use of inpatient and emergency crisis services, as well as measures of psychosocial impairment. For the measures that had a significant main effect across groups, a post-hoc Tukey t-test (p< 0.05) determined which groups were different from each other and the direction of the difference. These post-hoc analyses were conducted to provide insight into whether the groups that emerged from the LCA were different not only based on their BPD symptom profile, but also on other measures of pathology.

CHAPTER 3

Results

As indicated in Table 1, relatively few girls in our sample met criteria for Borderline Personality Disorder (18.9%). The most common disorders were depression and Generalized Anxiety Disorder (GAD) where about half the sample met criteria for these disorders. Other common disorders were social phobia, Oppositional Defiant Disorder (ODD) and ADHD-Inattentive. Most of the girls met criteria for more than one out of the nine disorders examined. Table 1.

Disorders	%	n
Depression ^b	50.7	37
Generalized Anxiety Disorder ^b	48.0	36
Social Phobia ^b	40.0	30
ODD ^c	36.0	27
ADHD-Inattentive ^c	28.0	21
BPD ^a	18.7	14
Separation Anxiety ^b	15.3	11
PTSD ^b	13.3	10
OCD ^b	4.0	4
ADHD-Hyperactive ^c	4.0	3
ADHD-Combined ^c	4.0	3
CD ^c	2.7	2
	Mean	Range
Total Axis I Diagnoses ^{bc}	2.4	0-7

Prevalence of Psychiatric Disorders across the Sample (N=75)

Note: ^a Diagnostic Interview for Borderlines-Revised (DIB-R). ^b Development and Well-Being Assessment (DAWBA). ^c Vanderbilt ADHD Parent Rating Scale (VADPRS)

Other clinical variables measured across the sample are presented in Table 2. As would be expected given the referral criteria for the clinic and the inclusion criteria for this study, there was a high level of self-injury in the sample, with 70% reporting that they had self-injured more than 10 times. Most of the girls also report a lengthy history of depressive symptoms, the majority reporting low mood before the age of 12. A measure of interpersonal functioning was extracted from the Impairment Rating Scale (IRS: Fabiano & Pelham, 2002). The mean score on the three questions pertaining to relationships indicated that parents reported that their daughter was experiencing a high level of interpersonal problems. To capture that amount of medical service use total number of hospital admissions and emergency visits were reported by the parent. Just under forty percent (38%) had been previously hospitalized due to psychiatric problems and 57% of the girls had presented at emergency -- one girl reported going to the emergency 12 times.

Table 2.

Measures	Mean score	SD	Range	Ν
Interpersonal Functioning ^a	9.7	2.8	4-15	71
	Mean age	SD	Range	Ν
Depression ^c				
Age of onset	10.3	3.0	4-16	53
	Mean #	SD	Range	Ν
Treatment History ^d				70
Hospital admissions	0.8	1.3	0-5	
Emergency visits	1.4	2.0	0-12	
	Mean	SD	Range	Ν
NSSI Frequency ^e	130.6	187.1	0-655	74

Measures of Impairment across the Sample (N=75)

Note: ^a Impairment Rating Scale (IRS). ^b School Adjustment Questionnaire (SAQ)

^c Depression History Questionnaire (DHQ). ^d Treatment History Questionnaire (lifetime)

^e Ottawa Self-Injury (OSI)

Note: N varies because of missing data

Latent Class Analysis

The fit indices chosen to compare the one to four cluster model are reported in Table 3. Table 4 compares each model to each other using the Chi Square Difference Test. The latent class model with the best combination of fit statistics was the four cluster model. Although the Bayesian Information Criterion (BIC) indicated that the two cluster model was the best model, the Akaike Information Criterion (AIC) and the Likelihood Ratio Chi-square (LRx²) indicated that the four cluster model was a better fit to the data. The entropy of the four cluster model (0.91) was acceptable.

Table 3.

Goodness-of-fit Indices for the Latent Class Analysis Based on BPD Symptoms

Model	LRx ²	Bootstrapped <i>p</i> value	BIC	AIC	Entropy
1	298.887	0.0000	895.2314	874.374	1.0000
2	212.1385	0.0860	851.6577	807.626	0.8070
3	171.4427	0.1840	854.1369	786.93	0.9122
4	149.0625	0.6800	874.9316	784.55	0.9134
5	136.1092	0.5840	905.1531	791.596	0.9178

Note: Likelihood-ratio chi-squared (LRx²). Bayesian Information Criterion (BIC) based on Log-likelihood statistics Akaike Information Criterion (AIC) based on Log-likelihood statistics

The bootstrapped chi-square difference test was used to compare the four models to each other. P-values from the one cluster model to the four cluster model were significant indicating that each time another latent class was added the model fit the data better. The five cluster model was not significantly better than the four cluster model. Refer to Table 4 for the numerical value and p-value for each of the model comparisons.

Table 4.

Chi-square difference test	Value	р
1 vs 2	86.7485	0.0000
2 vs 3	40.6958	0.0000
3 vs 4	22.3802	0.0220
4 vs 5	12.9533	0.2120

Comparison of Four Latent Class Models

Composition of Latent Classes

The BPD symptom profiles of the four subgroups identified applying the LCA are depicted in Figure 1. The probability of endorsement of the nine BPD symptoms for each subgroup is reported in Table 5. The largest latent class, cluster 1, comprised about 50% of the sample. The girls in this cluster endorsed a very low level of all the BPD symptoms. About 20% of girls were assigned to cluster 2. This group had elevations on the symptoms of self-image issues and feeling empty, but had relatively low scores on all other BPD symptoms. The girls in cluster 3 (16%) endorsed high levels of abandonment concerns, suicide/self-mutilation, and psychotic states. Finally, cluster 4 (13% of sample), was the most impaired, with elevations on seven of the nine BPD symptoms. The mean age across groups did not differ significantly.

Figure 1.

Subgroups Identified Based on BPD Symptom Profiles



Note: The 9 points on the x-axis represent the nine diagnostic criteria for BPD in the DSM-IV-TR

Table 5.

BPD symptom	Cluster 1	2	3	4
	%	%	%	%
Impulsivity	16.2	0.0	33.3	50.0
Affect Instability	13.5	31.3	58.3	60.0
Abandonment Concerns	2.7	31.3	83.3	90.0
Relationship Disturbance	8.1	43.8	50.0	90.0
Self-Image Issues	8.1	68.8	16.7	100.0
Suicide/Self-Mutilation	24.3	0.0	100.0	90.0
Emptiness	0.0	100.0	25.0	100.0
Intense Anger	27.0	37.5	33.3	100.0
Quasi-Psychotic States	18.9	25.0	83.3	70.0

Prevalence of BPD Symptoms across Subgroups (N=75)

Prevalence of Psychiatric Disorders across Subgroups

The construct validity of the latent classes was examined by comparing the classes across other clinically relevant variables including the prevalence of various psychiatric diagnoses and measures of impairment. Table 6 indicates a high prevalence of depression and anxiety disorders across all groups, and, to a somewhat lesser extent, we also see a significant prevalence of Oppositional Defiant Disorder (ODD). There is an increase in comorbidity and symptom severity from cluster 1 to cluster 4 as reflected in the continuous rise in the average number of diagnoses.

The girls in Cluster 1, the low symptom group, had a low prevalence rate of psychiatric disorders relative to other groups. Those in cluster 2 had a higher prevalence rate of anxiety-related disorders, such as social phobia and generalized anxiety (GAD). The third cluster had a disproportionately higher prevalence of Post-Traumatic Stress Disorder (PTSD) compared to other groups. The final group had a high rate of comorbidity and a much higher prevalence rate of BPD. Almost 75% of the girls in cluster 4 met criteria for BPD.

Table 6.

Disorders	1 (n=37)	2 (n=16)	3 (n=12)	4 (n=10)	F Statistic	Group differences
	%	%	%	%		
BPD ^a	8.1	6.7	25.0	70.0	*F(3,70)=9.61	**4>1, **4>2, 4>3
Separation Anxiety ^b	5.4	26.7	25.0	25.0		
Social Phobia ^b	27.0	62.5	33.3	60.0	*F(3, 71)=2.77	
GAD ^b	27.0	62.5	66.7	80.0	*F(3, 71)=5.26	4>1
OCD ^b		12.5	8.3	10.0		
PTSD ^b	2.7	6.3	41.7	30.0	*F(3,71)=5.94	**3>1, 3>2
Depression ^b	32.4	53.5	75	88.9	*F(3, 69)=5.02	3>1, 4>1
ADHD-Inattentive ^c	10.8	25.0	50.0	70.0	*F(3,71)=10.74	3>1,**4>1,4>2
ADHD-Hyperactive ^c	8.1					
ADHD-Combined ^c	2.7			20.0	*F(3, 71)=2.82	
ODD ^c	27.0	25.0	41.7	80.0	*F(3, 71)=3.94	4>1, 4>2
CD ^c			8.3	10.0		
Total Axis I Diagnoses ^{bc}	14	26	35	49	*F(3 67)=11 4	**3>1 **4>1 4>2

Prevalence of Psychiatric Disorders across Subgroups (N=75)

 $\frac{\text{Total Axis I Diagnoses}^{\text{vc}} 1.4 2.6 3.5 4.9 | *F(3,67)=11.4 **3>1, **4>1, 4>2}{\text{Note: a Diagnostic Interview for Borderlines- Revised (DIB-R). b Development and Well-Being Assessment (DAWBA).}$ ^c Vanderbilt ADHD Parent Rating Scale (VADPRS)

Note: Ln mean (Log transformation mean)

Note: * p < 0.05

Note: ** p < 0.0083 (Bonferroni correction for multiple comparisons)

Note: N varies because of missing data

Group Comparisons across Measures of Impairment

The four latent classes did not significantly differ on most of the measures of impairment. Girls in all four groups reported having significant relationship difficulties, behaviour problems, and having used emergency medical services. Regardless of group membership, girls in this sample reported experiencing low mood from a very early age and chronic/repeated engagement in self-injury. The frequency of engaging in self-injury trended towards being significantly different across groups, increasing from cluster 1 to cluster 4. Number of lifetime hospital admissions also significantly differed across groups. Girls belonging to clusters 3 were admitted more often than the other groups, although significant difference in admission frequency emerged between cluster 3 and 2 only. Table 7

	1	2	3	4		Group
Measures	(n=37)	(n=16)	(n=12)	(n=10)	F Statistic	Differences
		Mean	score			
Interpersonal Functioning ^a	9.1	9.3	11.2	11.0	F(3, 67)=2.44	
	50.0	5 4 1	P 1 C	4 4 1		
Behaviour Problems ⁶	50.8	54.1	51.6	44.1	F(3, 69)=1.65	
		Mea	n age			
Depression ^c						
Age of onset	10.8	11.4	8.1	9.8	F(3, 49)=2.83	
	Mean #					
Treatment History ^d						
Hospital admissions	0.7	0.2	1.6	1.3	*F(3, 66)=3.23	3>2
Emergency visits	1.4	0.8	2.2	1.7	F(3, 66)=1.06	
Mean						
NSSI Frequency ^e	104.5	95.1	265.5	118.9	F(3, 70)=2.69	*3>1

Measures of Impairment across Subgroups (N=75)

Note: Impairment Rating Scale (IRS) ^a. School Adjustment Questionnaire (SAQ)^b. Depression History Questionnaire (DHQ)^c. Treatment History Questionnaire: ^d. Ottawa Self-Injury (OSI)^e *Note:* *p < 0.05

Note: **p < 0.0083 (Bonferroni correction for multiple comparisons)

Note: N varies because of missing data

CHAPTER 4

Discussion

The purpose of this study was to determine whether BPD could be differentiated from other disorders in a clinical sample of female adolescents who self-injure and have unstable mood. This was examined using a latent class analysis (LCA) where class membership was determined based on BPD symptom patterns. The LCA uncovered four distinct groups: a low symptom group, a primarily anxious group, a trauma group, and the BPD group.

Prevalence of Psychiatric Disorders across the Sample

It was hypothesized that not all teenage girls who present with self-injury and unstable mood will meet criteria for BPD. The results indicated that the prevalence of BPD in the sample was approximately 20%, which supported this hypothesis. This rate is in line with the estimates provided in the sparse literature on clinical samples of adolescents. Only two studies were identified reporting prevalence rates in clinical samples. One, including both male and female adolescent outpatients, found a rate of 11%; the other, also examining both genders, reported a prevalence rate of 22% (Chanen et al., 2004; Chanen et al., 2008). It appears that only a subset of girls who seek treatment for mood difficulties and self-injury typically meet criteria for BPD. The results of the current study indicated, however, that most of the individuals who did not meet criteria for adolescent BPD still experienced a significant level of psychosocial impairment and required targeted treatment.

There was a high level of comorbidity across the sample. This is consistent with a wellestablished finding that points to a higher level of comorbidity amongst adolescent versus adults within community general samples as well as within BPD samples (e.g. Rohde, Lewinsohn, & Seeley, 1991; Becker, Grilo, Edell, & McGlashan, 2000). In one large-scale American

population study of community samples, approximately 40% of affected adolescents met criteria for more than one disorder (Merikangas et al., 2010). The level of comorbidity was found to be especially high amongst adolescents diagnosed with BPD, where 89.7% of youth meeting criteria for BPD had severe mood and anxiety disorder multi-morbidity. Likewise, a study of adult outpatients found that individuals with BPD were twice as likely to have three or more disorders and four times more likely to have four or more disorders than adults with other psychiatric disorders. The authors postulated that the high level of comorbidity in patients with BPD is likely a reflection of the severity of the disorder as well as the multiple domains of symptom impairment included in the BPD diagnostic criteria (Zimmeran & Mattia, 1999).

Anxiety disorders, depression as well as ODD, were highly prevalent in this sample, in particular among the two most impaired groups (the trauma group and the BPD group). BPD has been reported to have a high comorbidity with axis II as well as axis I disorders (e.g. Miller, Muehlenkamp, & Jacobson, 2008; Zimmerman & Mattia, 1999). The disorders that most commonly co-occur with BPD are mood disorders (depression, dysthymia, bipolar disorders), anxiety disorders (specific phobia, social phobia, PTSD, GAD, panic disorder, agoraphobia), and substance use disorders (e.g. Glenn & Klonksy, 2013; McGlashan et al., 2000; Zanarini et al., 2014). Among adolescents with BPD, behavioural disorders (ADHD, ODD, CD) have been found to be as prevalent as anxiety and mood disorders (Glenn & Klonksy, 2013). Importantly, a few studies have noted a disproportionately higher prevalence of PTSD amongst individuals with BPD. One study concluded that PTSD appears to have a unique, though not universal, association with BPD (McGlashan et al., 2000). The high prevalence of anxiety disorders and depression found in our sample was expected given the high prevalence of depression (one in four) and anxiety (one in three) in adolescent community samples (Lewinsohn, Hops, Roberts,

Seeley, & Andrews, 1993; Merikangas et al., 2010). It has also been reported that there is a significant level of comorbidity of anxiety and depression in children and adolescents (Brady, & Kendall, 1992). Furthermore, these disorders are more common in young women than young men. Female adolescents are much more than males to have a unipolar mood disorder (depression, dysthymia) or anxiety disorders and slightly more likely to have BPD. This gender difference is particularly pronounced for PTSD (Merikangas et al., 2010).

Although the prevalence rates of anxiety disorders and depression were elevated in the research sample, other studies of samples of adolescents with BPD and adults with BPD have noted much higher rates. This difference may reflect the finding that the majority of girls in the sample did not actually meet criteria for BPD, although they did have BPD features. Our sample, therefore, may represent a less severely impaired group relative to studies where all individuals met criteria for BPD.

Perhaps a more comparable clinical sample to ours would be one comprised of adolescents with a history of self-injury. The most common disorder amongst self-injurers is depression, closely followed by anxiety disorders and substance use disorders (Skegg, 2005). In female adolescents who chronically engage in self-injury, depression is the most prevalent disorder, followed by social phobia and PTSD (In-Albon et al., 2013). Interestingly, the prevalence of BPD in their sample was exactly the same as in the current research sample, although the rate of anxiety disorders (social phobia and GAD) was much lower.

Overall, the high prevalence of anxiety, depression and ODD is consistent with studies of adolescents with BPD and adolescent who engage in deliberate self-injury. The prevalence rates of anxiety and depression, however, were lower in our sample compared to both populations. This may be because of the multiple routes of referral to the clinic whereas many research clinics

are pre-screened for severity of a primary disorder and therefore many have higher rates of psychiatric disorders in general.

Most of the girls referred to the clinic from which our sample was recruited reported selfinjury and subthreshold or diagnostic threshold levels of mood and anxiety symptoms. Adolescent samples that have features similar to ours are most commonly diagnosed with depression, closely followed by anxiety disorders. Our results contribute to the literature by characterizing the symptom profiles and prevalence of disorders within a sample of teenage girls seeking mental health treatment. It is the hope that characterizing our sample will improve clinicians' understanding of the psychological difficulties of this population.

Results from other Clinical Measures across the Sample

Eighty four percent of the girls in our sample reported engaging in NSSI in their lifetime and almost half of our sample reported engaging in NSSI more than 50 times. The prevalence of NSSI in our sample was higher than the 60% rate noted in the literature on adolescent clinical samples (DiClemente, Ponton, & Hartley, 1991) or and rates reported on adult psychiatric samples which vary from 21% to 44% (e.g. Briere & Gil, 1998; Nijman et al, 1998). The high prevalence of NSSI in our sample may be linked to the criteria for referral to the clinic which is an academic clinic that provides DBT. For this reason, girls needing mental health assessment in our geographic region may be referred to the study clinic because of a history of self-injurious behaviours.

The age of onset of depression in adolescents in community samples has been reported to be between the ages of 11 to 14 years, the peak prevalence period occurring in late adolescence (Merikangas et al., 2010). The average age of onset of depression in our sample was younger (10yrs) than what is typically reported in community samples. Earlier onset of a psychiatric

disorder is generally associated with poorer outcomes, and greater symptom severity and stability (e.g., Hollis, 2000; Saunders, & Goodwin, 2010). It also predicts a higher than average level of dysregulation which reduces the opportunity for normative skill development and increases the risk for a wide range of psychiatric problems as well as engagement in self-injury. In addition, it has been found that when depression is comorbid with BPD, the depression is more severe and persistent (Gunderson et al., 2014).

Various measures of impairment assessed in the study attest to the clinical nature of the sample. The mean score on the three items extracted from the Impairment Rating Scale was very high demonstrating that the emotional problems these girls are experiencing are seriously affecting their relationships with friends and family. The difficulties in interactions with others could be symptomatic of their difficulty in emotion regulation, a primary motivator for their engagement in self-injury. The combined prevalence of anxiety disorders, especially social phobia, as well as MDD could result in social withdrawal which, in turn, would hinder their ability to develop and maintain relationships. A high prevalence of ODD could further contribute to social dysfunction (Greene et al., 2002). Interpersonal dysfunction at this age is a significant concern as relationships, especially relationships with peers, are very important in adolescence. Most alarming is the association of interpersonal problems in adolescence with risk for suicidal behaviour (Johnson et al., 2002).

The measure of crisis service use provided insight into the degree of distress and impairment these girls and their caregivers were experiencing. The results indicated that the girls in the sample with more severe symptomatology heavily utilized a range of emergency services. This is consistent with the literature noting that individuals with BPD are disproportionately represented in outpatient and, to an even greater extent, in inpatient settings (APA, 2000),

suggesting that at least a subset of individuals with BPD experience significant psychosocial impairment. One review of the BPD literature found that 15% of all psychiatric admissions are patients with BPD (Widiger & Weissman, 1991) and a more recent review of treatment utilization of individuals with personality disorders found that patients with BPD had a more extensive treatment history than patients with other personality disorders or depression (Bender et al., 2001). BPD patients, then, seek, and receive, more outpatient psychotherapy and have more lifetime psychiatric hospitalizations and emergency room visits compared to patients with other personality disorders or axis I disorders (Bender et al., 2001). The frequent use of emergency services by a subset of girls in our sample may suggest a lack of adequate follow-up and continued treatment and support. The dependence on emergency services in times of crisis is costly to the healthcare system and is not the best practice to promote continuity of care and long term recovery and symptom management. The need for proper identification of girls with more severe symptomatology and the importance of early and appropriate treatment and monitoring is evident based on these findings.

Latent Class Analysis

The LCA indicated that the best fitting model for the sample was a four class model. The four classes appeared to differ on BPD symptom severity with each of the four groups consecutively endorsed a larger number of BPD criteria. Almost half of our sample was assigned to group one. This group was termed the 'low symptom' group because its members scored low on all BPD symptoms and had a relatively low prevalence of axis I disorders and BPD. One in five girls were assigned to the second lowest severity symptom group which had a high likelihood of endorsing the symptoms of 'self-image issues' and 'emptiness'. The items in these subscales (see Appendix A for a list of items for each subscale) reflect self-endorsed difficulties with self-esteem, and self-efficacy. Group two had a disproportionately higher prevalence of

anxiety disorders relative to most of the other groups and was therefore termed the 'anxious' group. Group three, labelled the 'trauma' group, endorsed particular BPD symptoms that are common among individuals who have experienced early trauma (e.g., abandonment concerns, suicide/self-mutilation, and dissociation) (Chu & Dill, 1990; Cook et al., 2005; Low, Jones, MacLeod, Power, & Duggan, 2000) and had higher rates of PTSD than in the other three groups. The fourth, most symptomatic, group had a high probability of endorsing six of the nine BPD symptoms. A significantly higher percentage of girls in this group met criteria for BPD so the group was labelled the 'BPD' group. This group also had a high comorbidity with a number of axis I disorders.

The results confirmed the hypothesis in so far as it had been predicted that one subgroup would score low on all symptoms, an intermediate group would endorse a few BPD symptoms and have a higher prevalence of anxiety disorders and/or depression, and a third group would endorse most of the nine BPD symptoms and would have a greater likelihood of meeting criteria for BPD. The low symptom group, the anxious group and the BPD group map onto the three subgroups we predicted to emerge from our sample. The emergence of the trauma group, however, with a level of impairment in between the anxious and the BPD group, represented another intermediate group that had not been predicted.

The findings were somewhat consistent with other studies that had used a latent class analysis to examine samples with similar characteristics. Klonsky and Olino (2008) identified subgroups within a sample of young adults who self-injure (Klonsky & Olino, 2008). Four latent classes emerged based on frequency and method of self-injury. The largest class (61%) reported low levels of self-injury and low levels of pathology. The second class (17%) had moderate levels of self-injury, but scored relatively low on other clinical variables. A third class (11%)

engaged in numerous methods of self-injury, reported more depressive symptoms, and scored higher than the other groups on anxiety. The final group (10%) exclusively cut themselves, and reported struggling with depression, anxiety and BPD symptoms. The motivation for engagement in self-injury for the fourth group was described by the researchers as automatic reinforcement which indicates that self-injury served as an emotion regulation technique, relieving negative emotions like depression and anxiety. The authors concluded that 80% (class 1 and 2) of self-injurers do not have appreciable clinical symptomatology. Class 3 and 4, however, have significant psychiatric problems and are likely representative of a clinical sample. Classes 3 and 4 appear similar to the sample in the current study who present with self-injury. The anxious group, which had a high prevalence of anxiety disorders and depression and reported a moderate level of self-injury, could be likened to Class 3 in the Klonsky and Olino study (2008) study. Their Class 4 is similar to the 'BPD group' in our study. Girls in our 'BPD group' were much more likely to meet criteria for BPD, have a high level of comorbidity with depression and anxiety disorders, and to repeatedly engage in self-injury (primarily cutting) than those in the other groups. Although the sample in this study differs slightly from ours in terms of age and symptom presentation, the similarity between two of the four classes identified is a promising indication that subgroups with specific features can be consistently identified in self-injuring samples.

Another study employing a latent class analysis on sixty adolescents diagnosed with BPD identified subgroups based on personality traits (Ramos, Canta, de Castro, & Leal, 2014). Across the sample, the BPD symptoms with the highest prevalence were impulsivity (96.7%), affect instability (98.3%) and anger (73.3%). The analysis revealed two groups the researchers defined as an 'internalizing' group and an 'externalizing' group. The internalizing group (53.5%)

consisted of more girls and young women than the externalizing group, and endorsed introversive, inhibited, doleful, self-demeaning and submissive personality traits. The externalizing group had higher scores on dramatizing, egotistic, unruly and forceful personality traits. On other clinical measures, the internalizing class endorsed a higher number of BPD symptoms (3.8 vs 3.2), had a more extensive history of self-injury, suicidal behaviour and previous hospitalizations. The BPD symptoms that were most prevalent in this group were emptiness, paranoid ideas/dissociation (called 'quasi-psychotic states' in the BPQ), and suicidal behaviour. The individuals in this class also reported more issues related to childhood abuse, self-image and self-confidence, as well as difficulties with anxiety and depression. Those in the internalizing group had elevations on the Depression Experiences Questionnaire (DEQ) related to loneliness, abandonment, neglect, and disturbed relatedness. Members of this 'internalizing' group had similar symptoms to the trauma group in our study. The internalizing group and the trauma group in our study both have a higher prevalence of early abuse/trauma relative to other groups and a higher endorsement of dissociation/psychotic states, abandonment concerns, suicidal behaviour, elevations on depression and anxiety and a greater number of hospitalizations.

The inclusion criteria for the study by Ramos and colleagues, which required that all subjects have a diagnosis of adolescent BPD, were more stringent than those used for our study. Their sample could therefore represent a more impaired group of adolescents relative to ours where only 19% of the girls met criteria for BPD.

Clifton and Pilkonis (2007) examined a mixed clinical (80%) and non-clinical adult sample on borderline personality symptomatology using latent class analysis (Clifton & Pilkonis 2007). The overall prevalence of BPD in this population was 24%. A latent class analysis based

on DSM-III-R BPD diagnostic criteria identified two subgroups; the 'borderline class' (n=171), which endorsed an average of three BPD criteria, and the 'non-borderline class' (n=240). Comparisons of the two classes across depression and anxiety measures, axis II severity and interpersonal dysfunction, revealed that the borderline class scored significantly higher than the non-borderline class. The latent class analysis therefore identified more individuals with BPD than if the procedure had adhered strictly to the DSM-III-R which requires the endorsement of 5 of 9 criteria. Based on their findings, the authors maintain that individuals with three BPD symptoms have a level of personality pathology and psychosocial impairment that does not significantly differ from individuals who meet the criteria for a formal diagnosis of BPD. It was concluded that extensive treatment for individuals with subthreshold symptomatology is still required.

Our findings are consistent with Clifton and Pilkonis's observation that three BPD symptoms represent a severe level of psychosocial impairment. The trauma group in our sample had elevations in three of the nine BPD symptoms but did not significantly differ from the BPD group on the majority of the clinical measures. Furthermore, both our trauma group and our BPD group endorsed higher levels of interpersonal dysfunction relative to our other two classes, consistent with the interpersonal dysfunction experienced by the 'borderline' class in the Clifton and Pilkonis study.

Another pertinent finding in the Clifton and Pilkonis study was after 27 years of age the probability of membership to the borderline class dropped below 50%. This could indicate that for some of the girls in our sample who have significant personality pathology, their symptoms are likely to significantly remit within the next five to ten years.

A final study that applied a similar methodology to ours conducted a latent class analysis

on a large community sample who participated in the British Psychiatric Morbidity Survey (N = 8580, age range = 16-74; Shevlin, Dorahy, Adamson, & Murphy, 2007). Four subgroups emerged based on the nine diagnostic criteria for BPD in the Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II) and primarily appeared to differ based on level of severity. The level of endorsement of the nine BPD symptoms across the sample indicated a high endorsement of impulsivity, abandonment and interpersonal relationships and a relatively low probability of endorsing identity disturbance (similar to 'self-image issues' in BPQ), paranoid ideation ('quasi-psychotic states' in the BPQ) and anger. Sixty seven percent of the sample were low on all symptoms and were termed the 'baseline group'. The 'high class' group (4.6%) had a high level of endorsement on five of nine criteria. This group also struggled with a range of psychopathologic conditions including anxiety and depressive disorders. Compared to the baseline group, individuals in the 'high class' were at higher risk of having experienced stressful life events (serious illness, assault, death of family member, domestic violence) as well as reporting a history of suicide attempt(s). All individuals who met criteria for BPD except one belonged to this group. The weighted prevalence of BPD across the entire sample was 0.71%. The authors observed that the prevalence of BPD was much lower than would have been expected based on the number of individuals in the 'high class', who endorsed at least 5 of 9 BPD criteria, the diagnostic threshold. They therefore postulated that the actual prevalence of BPD in their sample should be closer to the prevalence of individuals in the high class. The two intermediate groups, the 'moderate group' (9.5%) and the 'low group' (19.2%) were very similar to one another across BPD symptoms and clinical variables. The authors observed that a significant proportion of individuals in the moderate group may also have BPD despite not meeting diagnostic criteria as this group also had similar levels of comorbidity and suicidal

behaviour.

The prevalence of BPD was much lower in the Shevlin et al. (2007) study than in ours. This may be because their sample was recruited from the community, whereas ours were recruited from a tertiary outpatient clinic. Their findings indicating a higher level of endorsement of impulsivity compared to ours, was, once again, quite striking. Our sample had a higher likelihood of presenting with the BPD symptoms of 'self-image issues' and 'suicide/self-injury' relative to this study. Although four classes were identified in this study as well as our study, their classes primarily differed based on level of symptom severity. In ours, the groups had noticeably different symptom profiles relative to one another, although the same trend of increasing severity was found in our study from the low symptom group to the BPD group. The higher prevalence of anxiety and depression, history of trauma, and overall level of impairment in the moderate and high classes were consistent with the findings in our study that also found a high level of comorbidity with axis I disorders, a higher likelihood of reporting early trauma and a substantially higher level of impairment relative to the other two groups (low symptom group and anxious group).

The discrepancy between the findings in the literature compared to our study can be explained based on differences in the characteristics of the samples and the methodology. The first two studies examined samples with similar characteristics to our sample but identified subgroups based on measures other than BPD symptoms. The other two studies used a LCA based on BPD symptom profiles but studied samples with different characteristics and ages.

Another consistent difference between our results and those from studies reviewed was the level of impulsivity across the sample. All four studies reported levels of impulsivity that were much higher than in our sample. A possible explanation for this could be the measure used

to assess impulsivity in the BPQ. Although the BPQ was adapted for adolescents, many of the items in the impulsivity subscale may not provide valid examples of impulsive behaviour for this age group and were therefore not endorsed leading to low levels of impulsivity endorsement (false negatives). For example, some of the items include sexual promiscuity, risky driving, binge drinking and substance use as examples of impulsive behaviour. For the younger girls in our sample it is unlikely that they would have the opportunity to engage in these activities, although they may still have an impulsive orientation that would manifest in other behaviours.

Overall, there is significant overlap between the findings in the literature and our study which provide preliminary concurrent support for the groups identified in our sample. Four latent classes were identified in two of the four studies and many of the groups identified in the existing literature had similar characteristics to the groups that emerged in our sample.

In summary, although individuals who met criteria for BPD were clustered in the fourth group (BPD group) and clearly present a significantly more impaired subset, differentiating individuals in our sample with BPD from those that do not meet criteria is not an easy demarcation, particularly from youth with trauma. There are, however, significant differences between the two more severe groups (BPD group and trauma group) and the two less severe groups (anxious group and low symptom group). Based on these results, it may be important to consider the endorsement of three BPD symptoms, rather than five, in making a clinical judgement about treatment and diagnosis.

Clinical Implications

Although this research was not a treatment study, the results provide some guidance to clinicians regarding the diagnosis and treatment of female adolescents seeking mental health treatment. This population is very difficult to diagnose and the optimal treatment for these girls is

currently unclear. Based on the results of this study, however, a few potential recommendations can be made regarding diagnosis and treatment for this population.

We found that in a sample of teenage girls seeking mental health treatment, 20% met criteria for BPD. The latent class analysis confirmed that, of this 20%, most (70%) were assigned to the BPD group. This result suggests that the diagnosis of BPD can be anticipated in 1 out of 5 girls in a clinical sample of this age group.

The girls who met criteria for BPD could be identified based on level of impairment and degree of comorbidity and symptom severity. Compared to their peers in the sample, those with BPD were most impaired in terms of level of comorbidity. Comorbid disorders that occurred most exclusively in the BPD group were ODD and the ADHD-Inattentive subtype. Our findings suggest that adolescent girls presenting with a diagnosis of either of these disorders and BPD features should be screened for BPD as they are more likely than their peers to meet criteria for the diagnosis.

It should be noted that a portion of the trauma group also met criteria for BPD, although the BPD symptom profile based on the LCA indicated that they endorsed only four criteria, which is below diagnostic threshold. Interestingly, in three other studies that conducted a LCA on similar samples, the authors suggested that the diagnostic criteria for BPD are too stringent, and pointed to a subset of their sample who did not meet criteria for BPD, but had a level of impairment, symptom severity, and rate of comorbidity that was not significantly different from the individuals who did meet criteria for the diagnosis (Clifton & Pilkonis, 2007; Klonksy & Olino, 2008; Shevlin et al., 2007). Clifton and Pilkonis (2007) propose that changing the diagnostic threshold from 5 to 3 criteria may be more clinically informative.

Our results provide some support for their proposal. The trauma group identified in this

study presented with a level of comorbidity and impairment similar to the BPD group. The only measure on which the BPD and trauma groups significantly differed was their BPD symptom profile and the prevalence of a BPD diagnosis. The trauma group did have a substantially higher prevalence of PTSD, but this difference was not statistically significant. These results indicate that the trauma group has a broad range of psychiatric problems and a high level of BPD symptomatology. Intensive treatment and monitoring may be warranted for this group as well as the BPD group. Given the differences in the BPD symptom profiles and prevalence of BPD in these groups, it may be that this is a group of girls worthy of identification (i.e., they have PTSD as a primary diagnosis) and that their treatment would differ from that of the BPD group in terms of the degree to which it focuses on symptoms of trauma (e.g., Trauma-focussed CBT).

The similarities between the trauma and BPD groups in our study were consistent with the literature that indicates both a significant overlap between symptoms of complex trauma and symptoms of BPD and a high prevalence of trauma within BPD populations (Resick et al., 2012). As a result a component of DBT has been specifically designed to address trauma symptoms and their relationship with self-harming behaviours (Resick et al., 2012). This component of DBT could prove to be beneficial for the trauma group as it may reduce self-harming behaviours to a manageable level, allowing other trauma symptoms to then be addressed through more targeted interventions. Another treatment option for this group could be DBT-Prolonged Exposure (DBT-PE; Harned, & Linehan, 2008), a new variation on DBT created to incorporate trauma processing into the beginning stages of therapy. One study has shown preliminary support for the intervention's efficacy (Harned, Korslund, & Linehan, 2014). More research is needed to determine whether DBT-Prolonged Exposure is sufficient to address trauma symptoms in youth, or whether it is more effective than its evidence-based comparator, trauma-focussed CBT (Foa,

Keane, Friedman, & Cohen, 2009).

Individuals in the anxious group in our study were less impaired than the two more severe classes, although there was still evidence of a very high prevalence of internalizing disorders (e.g., anxiety disorders and depression). Problem-specific Cognitive Behavioural Therapy (CBT) may be the best treatment intervention for this group given it has been shown to have the largest effects on symptom reduction for children and adolescents with anxiety and depression (Compton et al., 2004).

Differences in BPD Symptom Profile

The symptom profile of the BPD group indicated that its members endorsed approximately six BPD symptoms, above the diagnostic threshold for BPD. The BPD symptoms that appeared to differentiate the BPD group from the other groups were 'relationship disturbance' and 'intense anger', and, to a lesser degree, 'self-image issues'. Although more research is needed, these symptoms may be better predictive markers of BPD than the other BPD criteria, such as self-injury, which is associated with a number of different disorders. Lifetime frequency of self-injury, according to the OSI, was elevated amongst the 84% of our sample that reported self-injuring within their lifetime. The latent class analysis, however, showed that the endorsement of the suicide/self-mutilation symptom cluster on the BPQ was elevated only for the trauma group and the BPD group. Both results indicate that self-injury is neither necessary nor sufficient for a diagnosis of BPD and that youth with a history of trauma commonly endorse this symptom in the absence of BPD.

Identifying girls who met criteria for BPD in a population of youth seeking mental health treatment was the primary aim of our research. The results revealed that girls with BPD represented a subgroup that can be differentiated from girls who only have BPD features based

on number of BPD symptoms endorsed and level of comorbidity. A secondary, and equally important aim, was to understand the symptom profiles of the girls who have BPD features but may not meet criteria. The results found that most girls in our sample presented with the BPD features of unstable mood and self-injury, but only those in the BDP group and trauma group had elevations across many BPD symptoms. This demonstrates that not all self-injurers have BPD and have a high level of symptoms. It is therefore likely that only the girls in the BPD group would require the full DBT program. Targeted interventions for self-injury, and/or treatments that address emotion regulation difficulties related to comorbid disorders (e.g. trauma, depression, anxiety) may be important to incorporate into the treatment plan for all groups identified in this study.

Implications for Diagnosis

There is a growing body of literature that criticises the categorical approach to diagnosis; in particular, the categorical approach to diagnosing personality disorders. The categorical model considers a list of symptoms, whereby a specific number of must be endorsed in order to meet criteria for a diagnosis. The arguments against the use of a categorical model include: the heterogeneity of symptom profiles amongst individuals with the same personality disorder, the level of comorbidity of personality disorders, and the instability of personality disorder diagnoses (Trull, & Durrett, 2005). A number of alternative strategies for diagnosis have been proposed to replace the current categorical model used in DSM-IV-TR. One that has gained substantial support is a dimensional approach. Rather than applying a somewhat arbitrary cut-off point to determine presence or absence of a disorder, a dimensional model considers the degree of impairment and/or severity (Coyne, 2013). A key advantage of this approach is that it captures individuals who may not otherwise have met the diagnostic threshold, but still have significant

impairment. For example, individuals with subsyndromal Borderline Personality Disorder have been shown to have psychosocial impairment that requires treatment (e.g. Clifton & Pilkonis, 2007; Trull, Widiger & Guthrie, 1990). These patients may not receive treatment using a categorical model as they would not have met criteria for a diagnosis.

Another drawback of the categorical model is that each symptom is given equal weight and is considered to contribute equally to meeting criteria for the diagnosis (Coyne, 2013). A dimensional model, however, does not require this assumption. It has been shown that some symptoms are better markers of BPD than others. Longitudinal studies reveal that symptoms that are less likely to remit are more trait-like and more specific to BPD (Choi-Kain, Zanarini, Frankenburg, Fitzmaurice, & Reich, 2010). More acute symptoms are specific behaviours, such as self-injury, and are less uniquely predictive of BPD given they are also associated with other disorders (Gunderson et al., 2011; McGlashan et al., 2005; Zanarini et al., 2007). A more nuanced understanding of the symptom profile of the patient allows clinicians to identify the maladaptive personality traits that may be underlying the disorder. This allows for targeted and personalized treatment based on the strengths and weaknesses of each patient, which may otherwise be overlooked applying a categorical model (Coyne, 2013; Hickie et al., 2013).

The results of the current study, as well as other latent class analyses of personality disorders, support a dimensional model of diagnosis (e.g. Clifton & Pilkonis, 2007; Conway, Hammen, & Brennan, 2012; Shevlin et al., 2007; Trull, Widiger, & Guthrie, 1990). Clifton and Pilkonis (2007) found a 'borderline latent class' and a 'nonborderline latent class' in a mixed clinical and nonclinical sample. The borderline latent class only endorsed three borderline symptoms, yet this grouping explained a greater amount of the variance in outcome measures than grouping individuals based on BPD diagnosis using the DSM-IV. The researchers

concluded that given that individuals who have subsyndromal levels of BPD still have significant dysfunction, a broader conceptualization of BPD may be more accurately reflect the impairment associated with BPD symptomatology (Clifton & Pilkonis, 2007). Shevlin and colleagues identified four latent classes primarily differing on level of BPD symptom severity. Their results also provided support for BPD being considered along a continuum rather than a single construct (Shevlin et al., 2007). Finally, a study of a large community sample of young adults examining borderline symptomatology using latent trait, latent class, and factor mixture models, found support for a dimensional understanding of borderline personality pathology (Conway, Hammen, & Brennan, 2012). The authors recommended a dimensional model that assigns a weight based on severity of the BPD symptom (Conway et al., 2012).

Our findings contribute to the evidence in support of a dimensional approach to diagnosing BPD for two reasons. First, the four groups that emerged from our sample had substantially different symptom profiles from one another. The significant heterogeneity in the psychiatric difficulties that these girls experienced indicated that differential treatment would likely be warranted for each subgroup. Secondly, the 'trauma' subgroup we identified endorsed only four BPD symptoms, a number below diagnostic threshold. On many measures of impairment, however, this trauma group did not significantly differ from the 'BPD' subgroup. The importance of capturing the symptom profile of the girls in our sample as well as identifying girls with subsyndromal BPD symptomatology is evident based on these results. A dimensional model would address these aspects of diagnosing and treatment planning for girls with borderline personality pathology.

Although a categorical model is a convenient method for clinicians to diagnose and communicate with patients and other clinicians, there is mounting evidence for employing a

more inclusive approach to diagnosing personality disorders. The DSM-5 has begun to translate this literature into clinical recommendations through a hybrid categorical-dimensional model of personality disorder diagnosis.

Strengths and Limitations

The exploratory nature of a latent class analysis was a strength of this study. LCA is a valuable approach for clinical research because it is a bottom-up approach that is guided by the data, therefore resembling the strategy that clinicians use to arrive at a diagnosis (Rindskopf, & Rindskopf, 1986). The drawback of employing an exploratory statistical analysis is the need for replication to have strong confidence in the results. A confirmatory LCA that produced similar results would provide strong support for our findings.

Our sample size was fairly typical compared to other clinical samples in the literature. The division of our sample into subgroups, however, greatly reduced statistical power for the ad hoc analyses. The comparisons across our two smallest groups (trauma and BPD group) were not powered enough to yield statistically significant results, although the two groups had a substantially different pattern of BPD symptom endorsement. Of note is that the girls in our sample appeared to generally come from middle to upper middle class families and have educated parents. Since both the child and at least one parent had to provide consent to participate in research, the girls in our study likely represented only a subset of families seeking mental health treatment for self-injury and unstable mood. A biased sample is, however,

Another strength of our research was the richness of the information provided through the results of the BPQ measure. The BPQ is a dimensional measure that captures a wide variety of emotional difficulties. This measure, however, also has weaknesses. The BPQ has been shown to

be a valid measure of BPD symptomatology for late adolescence and early adulthood, but some of the items, in particular those in the impulsivity sub-scale, are not appropriate for a younger sample. The dimensionality of this scale is also a limitation because there are no cut points for the BPQ on the nine sub-scales. To determine the absence or presence of each of the nine BPD symptoms for this study a cut point was chosen given the distribution of the data.

Future Directions

There are a number of avenues that warrant further research. Other post-hoc assessment that may be clinically informative would be to examine the prevalence of axis II disorders other than BPD. BPD has been reported to have a high comorbidity not only with axis I disorders but also with axis II disorders (e.g. Bondurant, Greenfield, & Tse, 2004). Knowing the level of comorbidity with axis II disorders can further inform treatment and improve outcome. In addition, a symptom that should be regularly assessed in clinical assessments is self-injury. The age of onset of NSSI, the method(s) and function(s) of NSSI for the identified groups would help clinicians provide better targeted treatment for this behaviour. Evidence of an early age of onset of NSSI and use of a variety of methods would indicate higher impairment and a need for more intensive targeted treatment. The motivation for engagement in NSSI would provide insight into the impetus for self-injury and could potentially identify other symptoms that perpetuate or are associated with this behaviour. For instance, the trauma group may report a higher prevalence of engaging in NSSI to prevent dissociation. The motivation for NSSI for other groups may be to relieve intense negative affect or emotion tension (Klonsky, 2007). Understanding the motivation behind self-injury would provide insight into appropriate interventions. For example, addressing trauma for members of the trauma group, or applying treatment for anxiety for the anxious group would not only alleviate primary symptoms but could also potentially reduce the frequency selfinjury.

This study only captured the BPD symptom profiles and level of impairment of our sample at a single time point. Future longitudinal studies that follow the girls in our sample as they transition for adolescents into adulthood would allow an examination of how their symptom profiles and level of impairment change over time. The stability of severe symptomatology and psychosocial impairment in a subset of girls would confirm the need for this group to receive early and intensive treatment in order to reduce the likelihood of a lifetime mental health problems. Monitoring treatment response for each of the subgroups in our sample could be another means to determine whether our findings are clinically informative. If the anxious group shows a disproportionately higher treatment response to anxiety-focussed CBT, the trauma group shows a greater treatment outcome following trauma specific interventions, and the BPD group has significant symptom reduction following DBT, the results of our study would be reinforced.

Dysregulated mood and self-injury symptoms are common in patients attending adolescent mental health clinics, particularly in young women. This study suggests that by measuring BPD symptoms, clinical heterogeneity can be examined that could direct different treatment regimes. Given the importance of early intervention with this high risk population, other studies are recommended to examine the utility of this approach to improve treatment outcomes.

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Appendix A

BPQ Items Organized by Subscale

Impulsivity	Affective instability	Abandonment	Relationships	Self-image	Suicide/self- mutilation	Emptiness	Intense anger	Quasi- psychotic states
I often do things without thinking them through.	I often become depressed or anxious 'out of the blue'.	People often leave me	I am rarely disappointed by my friends.	I feel inferior to other people.	I have threatened to hurt myself in the past.	I do not believe that I have the skills to do anything with my life.	I rarely get angry at other people.	Sometimes I feel like I am not real.
I will not have sex with someone unless I have known them for quite some time.	I sometimes feel anxious or irritable and become sad a few hours later.	When people close to me die or leave me, I feel abandoned	I often exaggerate the potential of friendships only to find out later that they will not work out	If I were more like other people I would feel better about myself	I have deliberately tried to hurt myself without trying to kill myself.	In general, my life is pretty boring.	I frequently get into physical fights	People are sometimes out to get me
I have tried 'hard' street drugs (e.g. cocaine, heroin).	My friends have told me that my mood changes very quickly	I am afraid to spend time alone.	People who seem trustworthy often disappoint me.	I wish I could be more like some of my friends.	I have made a suicide attempt in the past.	I often feel like I have nothing to offer others.	I have trouble controlling my temper	l can read other people's minds.
It is not unusual for me to have sex on the first date.	My mood frequently alternates throughout the day between happiness, anger, anxiety and depression	When my friends leave, I am confident I will see them again.	My friends often disappoint me	I feel that people would not like me if they really knew me well	I have cut myself on purpose.	I often feel lonely and deserted.	I have no difficulty controlling my temper.	I sometimes see or hear things that others cannot see or hear
I get high on drugs whenever I feel like it.	I sometimes feel very sad but this feeling can change quickly	No one loves me	People often let me down.	I feel comfortable acting like myself.	I used to try to hurt myself to get attention.	I am often different with different people in different situations so that sometimes I am not sure who I am.	l easily become irritated by others.	Sometimes I can actually hear what other people are thinking.

When I drink, I drink too much.	I rarely feel sad or anxious.	I find it difficult to depend on others because they will not be there when I need them.	When I trust people, they rarely disappoint me.	I wish I were someone else.	I have never made an attempt to hurt myself.	I rarely feel lonely	l get angry easily.	It is impossible to read others' minds
I often receive speeding tickets.	I sometimes feel very happy but this feeling can change quickly	I have difficulty developing close relationships because people often abandon me.	The relationships with people I care about have lots of ups and downs.	I am very comfortable with who I am.	I have been in the hospital for trying to harm myself	I feel like my life is not interesting.	I often find that the littlest things make me angry.	Sometimes I can't tell between what is real and what I have imagined
I often do things impulsively.	I consider myself to be a moody person.	I feel like my family has deserted me.	My friends are always there when I need them.	I am not sure what I want to do in the future		My life is without purpose.	When I am angry, I sometimes hit objects and break them.	
At times I eat so much that I am in pain or have to force myself to throw up.	I often feel like I am on an emotional 'roller coaster'	The people I love often leave me.		In social situations, I often feel that others will see through me and realise that I don't have much to offer		I often feel empty inside.	Others often make me angry.	
	People tell me that I am a moody person.	I often become frantic when I think that someone I care about will leave me				I am confused about my long-term goals.	Others say I'm quick tempered.	

BPQ Items Organized by Subscale (con't)