Mechanisms Contributing to Suicidal Ideation: The Relationships Between Borderline Personality Disorder Symptoms, Gender, and Emotion Dysregulation

by

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Abstract

This study examined the relationships between gender, borderline personality disorder (BPD) symptoms, emotion dysregulation, and suicidal ideation. Emotion dysregulation was examined as a potential mediator in the relationship between BPD symptoms and suicidal ideation. The moderating role of gender in these relationships was also explored. Participants were a community sample of 101 adults experiencing BPD symptomatology. Assessments were completed at baseline, 6-months, and 12-months, and included diagnostic interviews as well as questionnaires on symptomatology and suicidality. Emotion dysregulation did not mediate the BPD symptom-suicidal ideation relationship when examining the full sample. The nonacceptance of emotional responses and lack of emotional clarity dimensions of emotion dysregulation emerged as significant mediators among females only. Impulsiveness was a significant mediator among males only. The results of this study provide insight into gender differences in mechanisms contributing to suicidal ideation among individuals with BPD symptoms and highlights potential gender-specific treatment targets.
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Chapter 1
Introduction

Borderline personality disorder (BPD) is characterized by emotion dysregulation, impulsivity, unstable interpersonal relationships, and suicidality (Leichsenring, Leibing, Kruse, New, & Leweke, 2011). Other diagnostic criteria for BPD include fears of abandonment, identity disturbance, chronic feelings of emptiness, and stress related paranoia or dissociation (Schotte & Clum, 1987). Problems in patients with BPD are generally described as pervasive, inflexible, and as causing significant impairment (Linehan, Tutek, Heard, & Armstrong, 1994; Lieb et al., 2004).

Epidemiological studies have suggested that BPD occurs in 1.6% -5.9% of the general population, however, rates among treatment-seeking populations are considerably greater. It is estimated that up to 10% of individuals receiving outpatient psychiatric care, as well as 20% of those receiving inpatient care, meet diagnostic criteria for BPD (American Psychiatric Association, 2013; Torgersen, Kringlen, & Cramer, 2001; Widiger & Weissman, 1991). Recent epidemiological studies have suggested that approximately equal numbers of males and females meet criteria for BPD (Grant et al., 2008). It should be noted, however, that gender differences are evident in BPD treatment-seeking populations; some evidence suggests that approximately 70% of this population is female (Lieb et al., 2004). This is echoed in research samples, which also have primarily focused on treatment seeking females with BPD. The existing literature regarding gender differences in BPD is limited (Mancke, Bertsch, & Herpertz, 2015; Sansone & Sansone, 2011; Silberschmidt, Lee, Zanarini, & Schulz, 2015). Some studies suggest gender is related to specific BPD symptoms, such as negative affect, emotional regulation, emotion dysregulation, and suicidality (Aldao & Nolen-Hoeksema, 2012; Mościcki, 1994).
Concerning specific symptoms of BPD, non-suicidal self-injury (NSSI), suicidal thoughts, and suicidal behaviours are among the most prominent treatment targets in BPD (McMain, 2015). It is estimated that 70% of those with the disorder report a past suicide attempt and the rates of death by suicide in BPD are roughly 50 times greater than those observed in the general population (Black, Blum, Pfohl, & Hale, 2004; Paris, 2004). Although effective treatments targeting suicidality in BPD exist, some individuals fail to benefit and continue to experience chronic suicidal thoughts and engage in suicidal behaviours (Linehan et al., 2006; Zanarini et al., 2008). One potential avenue to improve interventions targeting suicidality is to better understand the mechanisms that contribute to suicidality over time.

Currently, mechanisms contributing to the chronicity and high rates of suicidality in BPD are unclear. Extant literature has indicated a robust relationship between emotion dysregulation and suicidality (Neacsiu, Fang, Rodriguez, & Rosenthal, 2017; Rajappa, Gallagher, & Miranda, 2012), however gender differences in this relationship, particularly within the context of BPD symptoms, have not been examined. This study aims to explore gender differences in the prospective relationships between BPD symptoms, emotion dysregulation, and suicidal ideation. Specific attention will be given to dimensions of emotion dysregulation as mediators of the relationship between BPD symptoms and suicidal ideation. A review of the relationships between suicidality, BPD, and emotion dysregulation, as well as evidence of gender differences, is provided below.

1.1 Borderline Personality Disorder and Suicidality

Longitudinal studies have suggested that the presence of psychopathology, specifically personality disorders, increase the risk of suicidal behaviours (Ajdacic-Gross, Lauber, Baumgartner, Malti, & Rössler, 2009; Oldham, 2007; Zanarini et al., 2008). Within the context
of BPD, suicidal behaviours and suicidal ideation are often described as chronic and have been
the focus of an extensive body of research (Goodman et al., 2012; Paris, 2002; Soloff &
Chiappetta, 2017). This persistent suicidality is conceptualized as a maladaptive strategy for
regulating the heightened affective states that characterize BPD (Paris, 2002; Sansone, 2004;
Wagner & Zimmerman, 2006).

Suicidal ideation has been described as beliefs, thoughts, or urges related to suicide
(Goodman et al., 2012; Nock et al., 2008) and may be a maladaptive method of relating to and
obtaining support from others (Fine & Sansone, 1990; Sansone, 2004). Suicidal ideation also
appears to be related to other BPD criteria. Sansone (2004) posits that chronic suicidal ideation
in BPD is linked to distress arising from interpersonal difficulties, while an ecological
momentary assessment (EMA) study examining suicidality in BPD found both suicidal
behaviours and ideation were predicted by the intensity of negative emotions reported. Suicidal
ideation is among the strongest predictors of suicide attempts and has been highlighted as a
clinically important treatment target (Brown, Beck, Steer, & Grisham, 2000; Leon, Friedman,
In keeping with this notion, Links and colleagues (2007) have stated that improving the
understanding of both suicidal behaviours and ideation will be fundamental to altering the course
of BPD.

As stated previously, suicide attempts are pervasive among individuals with BPD. For
example, in one study focusing on both inpatient and outpatients, more than 60-70% of
individuals with BPD had a lifetime history of suicide attempts, with an average of three or more
these findings, demonstrating that lifetime rates of suicide attempts were 80% for participants
with BPD, compared to 4.5% among an ‘other personality disorder’ control group. At a 10-year follow-up, 13% of individuals with BPD had attempted suicide in the past two years, compared to only 3% of controls (Zanarini et al., 2008).

In the general population, up to 10% of suicide attempts result in death, while 40% of those that die from suicide have a history of past attempts (Leon et al., 1990). This trend is consistent within the BPD population specifically, with those who die by suicide being more likely to have prior attempts and hospitalizations than people with BPD who have only attempted (McGirr, Paris, Lesage, Renaud, & Turecki, 2007). High risk of death by suicide in BPD is also signaled by older age, lower education, comorbid major depressive disorder, antisocial personality disorder, and a family history of problem substance use (Goodman et al., 2012; Soloff, Fabio, Kelly, Malone, & Mann, 2005). A history of childhood sexual abuse is also a powerful predictor of suicide attempts in BPD, with individuals reporting a history of sexual abuse showing rates of suicide attempts ten times greater than those with BPD alone (Soloff, Lynch, & Kelly, 2002).

1.2 Suicide & Gender

At present, it is unclear whether gender represents a risk factor of suicidality in BPD, particularly among populations that are not treatment seeking (Goodman et al., 2012; Pompili, Girardi, Ruberto, & Tatarelli, 2005). Consistent gender differences exist regarding suicidal behaviours in the North American general population. A primary finding is that men are more likely to complete suicide, while women have greater rates of suicide attempts and NSSI (Mościcki, 1994; Statistics Canada, 2016). For example, one study found that 62% of males completed suicide on their first attempt compared to 38% of females (Isometsä & Lönnqvist, 1998). Recent surveys suggest similar trends; Statistics Canada stated in 2013, 4,054 Canadians
died from intentional self-harm, and that 75% of these deaths were reported in men (Statistics Canada, 2017). Similar trends are apparent in the United States, where males represent 77.9% of all suicides, while women are more likely to report suicidal ideation (CDC, 2016). It should be noted that cross-cultural studies examining suicidality have indicated variations in the relationship between gender and the prevalence of suicide attempts, types of suicidal gestures, and methods used (Freeman et al., 2017; Snowdon et al., 2017).

Given gender differences are observed in suicide attempt risk factors, particularly comorbid psychiatric disorders and a history of childhood sexual abuse (Gallo, Munhoz, Loret de Mola, & Murray, 2018; Nolen-Hoeksema, 2012; Sansone & Sansone, 2011; Wellman, 1993), it may be expected that women with BPD would demonstrate more evidence of suicidal behaviours than men. Interestingly, a recent study of gender differences in BPD found no gender differences in terms of suicidal ideation or behaviours, and it was proposed that in BPD, gender differences seen in the general population may be diminished (Silberschmidt et al., 2015). Although some differences in comorbidity emerged, it was reported that aggression and substance use were similar for males and females, and that typical differences in major depression and post-traumatic stress disorder were reduced (Silberschmidt et al., 2015). An important limitation of this study stems from the use of a treatment seeking, primarily female sample, which is largely representative of the BPD literature. Goodman et al (2012) stressed that while some data have indicated that younger women with BPD who are engaged in treatment are at a low risk of suicide completion, this is not applicable to non-treatment seeking men or women. This is especially relevant given the low rates of treatment entry among men with BPD, and the results of studies among individuals who complete suicide, which suggest a high frequency of untreated BPD among males (McGirr, Paris, Lesage, Renaud, & Turecki, 2007, 2009). Although robust
evidence suggests that suicidal behaviour (i.e. suicide attempts) in BPD diminishes over time, the severity of suicidal behaviours often remain unclear, and rates of suicide attempts remain greater than those seen in the general population. Gender differences in emotion dysregulation as specific mechanisms of suicidality in BPD may be an area to pursue further.

1.3 Emotion Dysregulation in Borderline Personality Disorder

Theoretical and empirical research have both suggested that BPD is fundamentally a disorder of emotion dysregulation (Gunderson, 2002; Laddis, 2015; Linehan, 1993; Linehan, 2015). This tenet has been consistently described by Linehan’s biosocial theory of BPD (Linehan, 1993; Linehan, 2015). The theory posits that individuals with BPD are born with a biological predisposition to emotional sensitivity that, when combined with an invalidating environment, leads to the frequent experience of intense negative affect and associated emotion dysregulation. Linehan suggests that these individuals develop an inclination towards impulsive, maladaptive behavioural strategies to manage intense emotions, with NSSI and substance abuse being common regulation tools. While these behaviours can reduce negative affect in the moment, thus reinforcing their use, they also prevent the learning and implementation of more adaptive methods and typically increase the likelihood of further dysregulated negative affect in the future (Crowell, Beauchaine, & Linehan, 2009; Ebner-Priemer et al., 2015).

Healthy emotion regulation is often described as a multidimensional construct involving one, or several of the following components: 1) insight and acceptance of emotional states; 2) the ability to engage in goal-directed behaviour while experiencing negative emotions; 3) and the ability to flexibly employ contextually appropriate emotion regulation strategies (Gratz et al., 2016; Gratz & Roemer, 2004). The use of adaptive emotion regulation strategies has demonstrated relationships with desirable mental health and physical health outcomes. Examples
have included a reduced experience of negative emotions, increased pain tolerance, and lowered cardiac reactivity (Campbell-Sills, Barlow, Brown, & Hofmann, 2006; Conley, Bishop, & Andersen, 2016; Hayes, Strosahl, & Wilson, 1999; John & Gross, 2004). With respect to emotion dysregulation, one of the most commonly used definitions has been provided by Gratz and Roemer (2004). In this conceptualization, emotion dysregulation is characterized by several dimensions: 1) The nonacceptance of emotional responses, a tendency to either experience secondary negative emotions, or not accept reactions, in response to negative emotion; 2) Difficulty engaging in goal-directed behaviour, which reflects problems focusing, or completing tasks when experiencing negative emotions; 3) Difficulties controlling impulsive behaviour, which involves a diminished capacity to regulate behaviour when experiencing negative emotion; 4) Lack of emotional awareness, in which emotions are not attended to or acknowledged; 5) Limited access to emotion regulation strategies, the belief that little can be done to modify unpleasant affect; and 6) Lack of emotional clarity, the diminished ability to know, and understand emotions experienced. These six dimensions of emotion dysregulation are all included as subscales in the Difficulties in Emotion Regulation Scale (DERS), which has demonstrated high internal consistency, good test–retest reliability, and adequate construct and predictive validity (Gratz & Roemer, 2004).

Although some studies have reported emotion dysregulation is uniquely related to BPD (Glenn & Klonsky, 2009; Gratz et al., 2016), it is important to note that the specificity of emotion dysregulation in BPD relative to other disorders is unclear, and that emotion dysregulation has been described as a transdiagnostic mechanism related to multiple disorders and dysfunctional behaviours (Gratz, Weiss, & Tull, 2015; Gratz, Moore, et al., 2016). Nonetheless, it is generally accepted that emotion dysregulation has a significant role in the
etiology and maintenance of BPD symptoms (Crowell, Beauchaine, & Linehan; Glenn & Klonsky, 2009; Linehan, 1993; Stepp et al., 2014).

The relationship between BPD, heightened affect, and emotion dysregulation is well established within the empirical literature (Kröger, Vonau, Kliem, & Kosfelder, 2011; Lynch, Chapman, Rosenthal, Kuo, & Linehan, 2006; Nica & Links, 2009). For example, individuals with BPD display increased emotional vulnerability, a more intense experience of emotions, a heightened sensitivity to negative and positive emotional stimuli, and experience a slower return to a baseline emotional state when compared to those without the disorder (Andover & Morris, 2014; Nica & Links, 2009). A study comparing outpatients with BPD to those without any personality disorder, indicated that individuals with BPD had an unwillingness to experience distress, were less likely to tolerate emotional distress during the pursuit of goal-directed behaviour, and were unlikely to approach distressing situations (Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006). Individuals with BPD also demonstrate greater lability in terms of anger and anxiety compared to those with other PDs (Koenigsberg et al., 2002). Studies using EMA have shown that BPD is characterised by large sudden shifts from positive to negative affective states, triggering of negative affect by external events, and that, when compared to healthy controls, individuals with BPD shifted from positive to negative states significantly faster (Ebner-Priemer et al., 2007; Nica & Links, 2009; Reisch, Ebner-Priemer, Tschacher, Bohus, & Linehan, 2008). These emotional difficulties are particularly insidious within the context of BPD, given the elevated tendency to engage in maladaptive coping, such as NSSI, suicidal ideation, and suicide attempts, in response to overwhelming emotions (Esposito et al., 2003; Oldham, 2007).
Not surprisingly, emotion dysregulation has been the focus of numerous studies attempting to understand the underlying mechanisms of BPD and its associated impairments (Gratz, et al., 2016). Several studies have indicated that among individuals with BPD, emotion dysregulation contributes to aggression, poor physical health, and sleep disturbance (Gratz, Weiss, et al., 2016; Grove, Smith, Crowell, & Ellis, 2016; Mancke, Herpertz, Kleindienst, & Bertsch, 2016). A recent study by Gratz et al., (2016) examined BPD as a prospective predictor of physical health symptoms, exploring whether emotion dysregulation acted as a mediator in this relationship. Results supported the role of emotion dysregulation as a mediator in the relationship between baseline BPD symptoms and physical health eight months later.

Additionally, when investigating whether specific dimensions of emotion dysregulation would mediate the relationship between BPD symptoms and physical health, lack of access to effective emotion regulation strategies and lack of emotional clarity both demonstrated significant indirect effects. The link between BPD, emotion dysregulation and behavioural dysregulation is also evident. Prospective examination has shown emotion dysregulation mediates the relationship between BPD and aggression over the course of a year (Stepp et al., 2014), while other studies have demonstrated it fully mediates the relationship between BPD and interpersonal problems (Herr, Rosenthal, Geiger, & Erikson, 2013). Selby and colleagues (2013) found a three-way interaction between high levels of negative emotion, rumination, and BPD symptoms predicting engagement in dysregulated behaviours such as drug use, verbal aggression, and binge eating (Selby & Joiner, 2012).

Research has suggested that males and females vary in terms of emotion regulation strategies, the frequency of strategy use, and the number of emotion regulation strategies used (Nolen-Hoeksema, 2012). Difficulties in adaptive emotion regulation in males with BPD has
been characterized by a higher likelihood of explosive emotions and greater use of alcohol as a coping mechanism compared to females (Barnow et al., 2007; Nolen-Hoeksema, 2012). Females have reported more affective instability, as well as greater use of both adaptive and maladaptive emotion regulation strategies. Adaptive strategies more frequently endorsed among females include reappraisal, problem focused coping, seeking social support, and acceptance (Nolen-Hoeksema, 2012; Tamres, Janicki, & Helgeson, 2002). A study of eating pathology in a non-clinical sample of college students indicated females experienced greater difficulties with emotional clarity, the ability to engage in goal-directed behavior, and the ability to use adaptive strategies to regulate emotion states (Robinson, Kosmerly, Mansfield-Green, & Lafrance, 2014). Some evidence also suggests females have a greater tendency to engage in rumination, a significant mediator in the relationship between gender and depressive symptoms, as a method of regulating emotions (Nolen-Hoeksema, 2012; Tamres et al., 2002). Given the relationships between emotion dysregulation and suicidality (Law, Khazem, & Anestis, 2015), it is possible that these gender differences may contribute to different mechanisms that drive suicidal thoughts and behaviours in BPD.

1.4 Emotion Dysregulation and Suicidal Behaviour

Extant research suggests that difficulties in regulating negative affect are linked to suicidality (Linehan, 1993; Neacsiu, Fang, Rodriguez, & Rosenthal, 2017; Yamokoski, Scheel, & Rogers, 2011). More specifically, emotion dysregulation has shown a direct relationship to suicidal ideation (Khazem & Anestis, 2016) and an indirect relationship with suicide attempts (Anestis, Kleiman, Lavender, Tull, & Gratz, 2014). For example, a recent community study indicated that those with past suicide attempts reported significantly greater emotion dysregulation compared to those without (Khazem & Anestis, 2016). Research has identified the
relationship between emotion dysregulation and suicidal behaviours in a number of populations including children, adolescents, college students, older adults with depression, and adults with BPD (Brown et al., 2009; Fonagy, Luyten, & Bateman, 2015; Weinberg & Klonsky, 2009; Tamás et al., 2007; Ciarrochi, Deane, & Anderson, 2002; Neacsiu, Fang, Rodriguez, & Rosenthal, 2017; Weinberg & Klonsky, 2009).

Neacsiu et al (2018) reported that problems in emotional clarity significantly predicted suicidal ideation, and that those who attempted suicide reported greater levels of negative affect, emotion dysregulation, and maladaptive coping strategies compared to healthy controls. Similar findings have been shown in individuals with substance use disorders, with those reporting a history of NSSI showing higher levels of emotion dysregulation (Martin, White, Flanagan, Yensel, & Bloomberg, 2011). Interestingly, these individuals showed significant elevations on specific subscales of the DERS, including emotional nonacceptance, limited access to effective emotion regulation strategies, and difficulties engaging in goal-directed behaviors when distressed. Martins et al, (2011) state these relationships all remained when controlling for a number of factors including BPD, posttraumatic stress disorder, substance abuse severity, and childhood factors.

Other studies have also investigated whether specific aspects of emotion dysregulation predict suicidal behaviours. For example, Rajappa et al, (2012) examined whether emotion dysregulation would predict suicidality among a sample of college students with varying degrees of past suicidal behaviour. They report that after adjusting for depressive symptoms, mood, and anxiety diagnoses, that nonacceptance of emotional responses, and perceived limited access to emotion regulation strategies were significantly worse among individuals with multiple past suicide attempts compared to those with no past attempts (Rajappa et al., 2012).
Increases in suicidal behaviours are also associated with a variety of negative affective states including shame, hopelessness, anger, and guilt (Klonsky, Kotov, Bakst, Rabinowitz, & Bromet, 2012; Seidlitz, Conwell, Duberstein, Cox, & Denning, 2001; Brown et al., 2009; Neacsiu et al., 2017; You, Talbot, He, & Conner, 2012). Bender and colleagues demonstrated that the perception of negative affect as overwhelming results in reduced fears of physical and emotional pain, contributing to capacity to engage in suicidal behaviours (Bender, Anestis, Anestis, Gordon, & Joiner, 2012). Overall, it appears that suicidality in BPD may contribute to a short-term reduction in intense affect, however in the longer term, it is linked with the continued experience of intense negative emotions and reinforcement of future suicidality.

1.5 Current Study

Given the large body of research linking BPD, emotion dysregulation, and suicidality, it is likely that emotion dysregulation may mediate the relationship between BPD and suicidality. The current study will examine the relationships between emotion dysregulation and suicidal ideation in a community sample of individuals with BPD features. Gender differences will also be assessed to determine whether mechanisms contributing to suicidality vary between males and females. The results of the current study may clarify mechanisms contributing to chronic suicidality seen in BPD and identify potential treatment targets. Furthermore, this study may aid in the generalization of existing data on BPD across genders to non-treatment seeking populations. Specifics hypotheses are as follows:

**Hypothesis #1:** Rates of gender differences across BPD symptoms, dimensions of emotion dysregulation, and suicidal ideation will be systematically evaluated. It is likely that females will present as more severe on all variables.

**Hypothesis #2:** The relationships between BPD symptoms, emotion dysregulation, and
suicidal ideation over a one-year period will be examined. More specifically, the mediating role of emotion dysregulation between initial BPD symptoms and future suicidality will be investigated. Based on existing literature, it is expected that emotion dysregulation will mediate this relationship. In addition, a multiple mediator analysis will compare the mechanistic utility of the six DERS subscales.

**Hypothesis #3:** Exploratory moderated mediator analyses will examine if males and females demonstrate differences in the mediating role of emotion dysregulation between initial BPD symptoms and future suicidal ideation.
Chapter 2

Methods

2.1 Participants and Recruitment

Participants included 101 community members currently experiencing symptoms of BPD such as high negative affect, impulsivity, interpersonal problems, and suicidal ideation. Inclusion criteria were 1) being between 16 and 65 years old, 2) reporting at least three of the nine symptoms of BPD as defined by the DSM-IV, and 3) proficiency in the English language. Exclusion criteria included current psychotic disorder or severe cognitive limitation. Recruitment was achieved through the use of flyers posted at various mental health clinics, hospitals, and universities and advertisements posted online through kijiji.com.

2.2 Sample Characteristics

A total of 101 individuals participated in the current study. Sample characteristics and demographic information are displayed in Table 1. The mean age of the sample was 27.5 (SD=10.2) years old, and 61.4% were female (n= 62). Demographic information was missing for one participant who was subsequently excluded from analysis examining gender differences. The sample was diverse in terms of ethnicity with the following breakdown: White North American (n=49; 48.5%), Black North American (n=16; 15.8%), South-East Asian (n=17; 16.8%), South Asian (n=12; 11.9%), Middle Eastern (n=1; 1%), Hispanic (n=1; 1%), and other (n=4; 4%). The majority of the sample reported being unmarried (n= 82; 81.5%), with the remainder being married or living with a spouse (n=12; 11.9%), separated (n=3; 3%) or divorced (n=3; 3%). Roughly one third of the sample reported the use of a psychotropic medication at baseline (n=37; 36.6%), while 18.8% (n=19) reported currently engaging in psychotherapy. In terms of suicidality at intake, 56.4% (n=57) reported thoughts of self-harm in the past week, 36.6%
(n=37) endorsed frequent suicidal ideation in the past two weeks, and 41.6% (n=42) of the sample reported a past suicide attempt.

A total of 101 participants completed time one baseline assessments. Time two 6-month assessments were completed by 90.1% of the initial sample (n= 92), and 80.2% (n=81) of the original sample completed the time three 12-month assessment. No gender differences in attrition were observed (Table 1).

2.3 Procedure

Interested participants completed a phone screen with a trained research assistant to assess their appropriateness for the study. During the phone screen, the research assistant asked if the person was currently experiencing each of the nine diagnostic criteria for BPD. If the person answered affirmatively to at least three of the symptoms, they were considered eligible for the study. It should be noted that the research assistant did not complete a diagnostic interview at this time, only a screening of the symptoms. This more flexible approach ensured recruitment of all individuals on the BPD spectrum who may report a reduced number of symptoms at baseline for any given reason. This also served to increase the feasibility of the study. If a participant met inclusion criteria, they were invited to complete a time 1 assessment over the telephone or in-person.

Participants arrived in the lab of the principal investigator or were contacted by phone to be consented and assessed by a trained research assistant. In the event of a phone interview, participants received consent forms electronically and provided an electronic signature. They completed the questionnaire measures through a secure online survey website before the completion of the interview. Questionnaires included assessments of suicidality, BPD symptomatology, and emotion dysregulation. Interviews included an abbreviated diagnostic
interview and an extensive life stress interview. Only the measures relevant to the present research questions are described below. Participants then completed identical assessments at a 6-month follow-up (time 2) and one-year follow-up (time 3).

2.4 Measures

2.4.1 Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997). The SCID-II is a semi-structured diagnostic interview that assesses the 10 DSM-IV personality disorders. Only the BPD module was completed for this study. Psychometric properties of study variables are displayed in Table 2.

2.4.2 The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS is a 36-item self-report questionnaire that assesses clinically relevant emotion regulation. The DERS is composed of six factors: Nonacceptance of Emotional Responses, Engaging in Goal-Directed Behaviour, Impulse Control Difficulties, Lack of Emotional Awareness, Limited Access to Emotion Regulation Strategies, and Lack of Emotional Clarity. Each item is rated on a five-point Likert scale, ranging from almost never to almost always. The internal consistencies of DERS total scores and each DERS subscale were acceptable in this study (Table 2).

2.4.3 Borderline Symptom List-23 (BSL-23; Bohus et al., 2009). The BSL-23 is a well-validated self-report measure of BPD symptom severity and measures relevant thoughts and feelings over the preceding week. The BSL includes 23 items which are rated on a four-point Likert scale, ranging from not at all to very strong. Internal consistency for the measure is excellent, with alpha coefficients ranging from .94 to .97 (Bohus et al., 2009). For the current study, internal consistency was high (Table 2).
2.4.4 Beck Scale for Suicide Ideation (BSS; Beck & Steer, 1991). The BSS is a 21-item self-report scale that assesses the intensity of current suicidal ideation, with items rated on intensity (range = 0-2). The first 19 items assess suicidal ideation, while the last two items assess past attempts. Consistent with the BSS manual scoring guideline, only the first 19 items were totaled to give a score of pure suicidal ideation. Test-retest reliability has also been demonstrated. Normative data is available for inpatient (Mean total score=.74, SD=.37) and outpatient populations (Mean total score=.53, SD=.31) experiencing suicidal ideation (Beck & Steer, 1993). The BSS demonstrated acceptable internal consistency (Table 2).

2.5 Analyses

All data was tested for normality, outliers and homoscedasticity through examination of means and distributions using descriptive statistics, stem-and-leaf plots, box plots, and histograms. Demographic, correlational analyses were completed with IBM SPSS Version 24 using independent sample t-test and chi-square tests where appropriate. Mediation analyses were completed utilizing the program Mplus 8.0. For the proposed models, BPD, suicidal ideation, and emotion dysregulation will be measured by the BSL-23, BSS, and DERS respectively. Mediation analysis was selected to examine whether the predictive relationship between time 1 BPD symptoms and time 3 suicidality was partially occurring through emotion dysregulation at time 2. All mediation analyses controlled for time 1 suicidal ideation. Mediation analyses also examined whether specific types of emotion dysregulation (i.e., the dimensions of the DERS) emerged as stronger mediators compared to the other types. To determine whether participant gender acts as a moderating variable in the relationship between BPD symptoms and suicidality through emotion dysregulation, interaction terms were created between gender and the predictors in each model (BPD symptoms and emotion dysregulation). These terms, along with the main
effect of gender, were entered into the models to determine if gender exerted a moderating effect on the paths in the mediation model. In the presence of significant interactions, grouping analyses exploring the mediation models separately per gender were used to determine the nature of the interactions. A maximum likelihood robust (MLR) estimator is indicated for nonnormally distributed data and was used in all mediation models. This is appropriate because the estimation of the indirect effect involves the product of the α path (path from the independent variable to the mediator) and the β path (path from the mediator to the dependent variable accounting for the independent variable), which is a skewed distribution. MLR also addresses potential bias stemming from the presence of data missing at random.
Chapter 3

Results

3.1 Gender Differences in Study Variables

Gender differences in baseline demographic and clinical variables can be found in Table 1. Few gender differences were apparent at time one, however, chi-squared tests showed significantly more female participants reported using psychotropic medications at intake compared to males \[ \chi^2(1, n = 99)=4.30, p=0.038 \] and that significantly more male participants endorsed past week alcohol intoxication \[ \chi^2(1, n = 100)=6.79, p=0.009 \]. Independent samples t-tests were used to examine gender differences in study variables for each time point. Means, standard deviations, and gender differences for BSL, DERS total, and BSS scores are displayed in Table 3. Descriptive statistics and group differences for each DERS subscale are presented in Table 4. Females reported significantly higher ratings on the BSL at time one only. Females also reported significantly greater emotion dysregulation at time one and time two.

Means, standard deviations, and Pearson product-moment correlations for all study variables are included in Table 5. BSL, DERS total, and BSS scores all significantly correlated with one another. With the exception of DERS awareness, all of the intercorrelations between the BSL and DERS subscales were statistically significant. The BSS significantly correlated with the DERS nonacceptance, goals, impulse, and strategies subscales. Only BSS data at time three demonstrated positive skew, with the remainder of variables showing normal distributions.

3.2 Simple Mediation Model: Overall Emotion Dysregulation as a Mediator in the Relationship between BPD Symptoms and Suicidal Ideation

Results of the model examining the significance of the indirect effect of BPD symptoms on suicidal ideation through emotion dysregulation is displayed in Figure 1. For all models, fit
indices and variance accounted for in time 3 suicidal ideation are displayed in Table 6. Although BPD symptoms did not significantly predict suicidal ideation above and beyond the effect of time 1 suicidal ideation, BPD symptoms did positively and significantly predict emotion dysregulation. Emotion dysregulation did not predict suicidal ideation after controlling for time 1 BPD symptoms and suicidal ideation. Only baseline suicidal ideation significantly and positively predicted suicidal ideation at time three, above and beyond baseline BPD symptoms. No significant indirect effects were observed ($a\beta = .066, SE=.055, 95\% \text{ CI} [-.042, .174], p=.225$). This model demonstrated acceptable fit indices (Table 6).

3.3 Multiple Mediation Model: Emotion Dysregulation Dimensions as Mediators of the Relationship between BPD Symptoms and Suicidal Ideation

To determine whether specific types of emotion dysregulation would mediate the relationship between BPD symptoms and suicidal ideation, the six DERS subscales were entered into the model in place of DERS total scores as mediators (Figure 2). BPD symptoms significantly and positively predicted each subscale with the exception of lack of emotional awareness. Emotional clarity and baseline suicidal ideation significantly predicted suicidal ideation at time three after controlling for BPD symptoms at baseline. BPD symptoms did not significantly predict suicidal ideation above and beyond time 1 suicidal ideation. The total indirect effect was not statistically significant ($a\beta = .002, SE=.067, 95\% \text{ CI} [-.050, .051], p=.981$), and no significant indirect effects were demonstrated for the nonacceptance ($a\beta = .070, SE=.065, 95\% \text{ CI} [.056, .197], p=.278$), difficulty with goal directed behaviour ($a\beta = -.039, SE=.049, 95\% \text{ CI} [-.135, .057], p=.425$), impulsiveness($a\beta = .062, SE=.050, 95\% \text{ CI} [-.036, .159], p=.214$), awareness ($a\beta = -.004, SE=.009, 95\% \text{ CI} [-.022, .015], p=.689$), and strategies
(αβ = -.146, SE=.090, 95% CI [-.322, .030], p= .103) dimensions of the DERS. A significant indirect effect emerged for lack of emotional clarity, which significantly mediated the relationship between BPD symptoms and suicidal ideation (αβ = .059, SE=.029, 95% CI [.001, .0117], p= .046). Fit indices were poor when testing the multiple mediation model (Table 6).

3.4 Moderated Mediation Models

To examine whether gender significantly moderated differences in the mediation models tested, a moderated mediation analysis was completed. In the first model tested, interaction terms between the BSL and gender, and between DERS total scores and gender were computed. A significant interaction term between gender and a mediator variable was indicative of a moderated mediation (i.e., that the nature of the specific path differed across genders). Standardized regression weights of the predictors of interest are displayed in Table 7. Only suicidal ideation at time one significantly predicted suicidal ideation at time three. No significant moderation effects were present.

In the next model tested, the moderated multiple mediation model, interaction terms were computed between gender and the BSL, and all six DERS subscales. Standardized regression weights of the predictors of interest are displayed in Table 8. BPD symptoms significantly and positively predicted both nonacceptance of emotional responses and difficulties engaging in goal directed behaviour. Suicidal ideation at baseline, nonacceptance of emotional responses, and impulsivity all significantly and positively predicted suicidal ideation at time three when controlling for baseline BPD symptoms. Two relationships demonstrated a significant moderation effect: gender and nonacceptance of emotions, as well as gender and impulsiveness.
No indirect effects were detected ($\alpha\beta = -0.031$, SE=.314, 95% CI [-.646, .584], p=.921). Fit indices for this model were poor (Table 6).

Because there were significant moderator effects for the moderated multiple mediator model, this model was examined separately across gender to elucidate the nature of these interactions. Gender was entered as a grouping variable in the multiple mediator model which allowed for separate model estimates for each gender (Figure 3.). This analysis revealed that, among females, nonacceptance of emotions, difficulty with goal directed behavior, and baseline suicidal ideation all significantly predicted suicidal ideation at time 3. In addition, the relationship between BPD symptoms and suicidal ideation was mediated by nonacceptance of emotional responses ($\alpha\beta = .146$, SE=.069, 95% CI [-.576,.109], p= .015). For males, impulsiveness was the only variable in the model that significantly predicted suicidal ideation (Figure 3). A significant indirect effect was also observed among males; the relationship between BPD symptoms and suicidal ideation was mediated by impulsiveness ($\alpha\beta = .227$, SE=.097, 95% CI [.037,.418], p= .019). The fit indices were poor for both models (Table 6).

3.5 Nonacceptance of Emotional responses as a Mediator of the Relationship between BPD Symptoms and Suicidal Ideation

Because of the poor model fit for the gender-specific multiple mediator models, we decided to rerun these models including only the significant mediators. Results were confirmed for both models, with a large improvement in fit indices. For females, a significant indirect effect was observed, with nonacceptance of emotional responses significantly mediating the relationship between BPD symptoms and suicidal ideation ($\alpha\beta = .106$, SE=.054, 95% CI [-.495,.164], p=0.050) (Figure 4). Among males, BPD symptoms significantly and positively
predicted nonacceptance of emotional responses. Suicidal ideation was not significantly predicted by any variables in the model (Figure 4). No significant indirect effects were observed for males. ($a\beta = -.166, SE=.168, 95\% CI [0, .213], p=.324$). Fit indices for these models were in the acceptable range (Table 6).

3.6 Impulsiveness as a Mediator of the Relationship between BPD Symptoms and Suicidal Ideation

The analyses examining nonacceptance as a singular mediator were repeated for the impulsiveness subscale. The DERS impulsiveness subscale was entered into a model as a mediator between BSL scores at baseline and BSS at time three (Figure 5). Among females, no significant indirect effects were observed ($a\beta = -.029, SE=.042, 95\% CI [-.111,.052], p=.481$). Among male participants, a significant indirect effect was observed, specifically that suicidal ideation was predicted by BPD symptoms through emotionally dysregulated impulsiveness ($a\beta = .222, SE=.074, 95\% CI [.076,.368], p=.003$). Fit indices were satisfactory for both models (Table 6).

3.7 Gender Differences in Lack of Emotional Clarity as a Mediator of the Relationship between BPD Symptoms and Suicidal Ideation

Although previous analyses did not support emotional clarity as being moderated by gender, it was the only DERS subscale to predict suicidal ideation after controlling for time 1 BSL and BSS. For that reason, exploratory analyses were completed examining emotional clarity as a singular mediator and then separately per gender (Figure 6). Among the full sample, a significant indirect effect was observed, with lack of emotional clarity significantly mediating
the relationship between BPD symptoms and suicidal ideation ($\alpha\beta = .063, SE=.029, 95\% CI [.006, .120], p=0.031$). For females, a significant indirect effect was observed, with lack of emotional clarity significantly mediating the relationship between BPD symptoms and suicidal ideation ($\alpha\beta = .029, SE=.014, 95\% CI [.002, .056], p=0.036$). Among males, BPD symptoms did not significantly predict lack of emotional clarity or suicidal ideation above and beyond baseline suicidal ideation. No significant indirect effects were observed for males. ($\alpha\beta = .017, SE=.018, 95\% CI [-.019, .052], p=.356$). Fit indices for these models were in the acceptable range (Table 6).
Chapter 4

Discussion

The current study examined the role of emotion dysregulation in mediating the relationship between BPD symptoms and suicidal ideation. Gender differences were explored as a potential moderator of these effects. Females and males demonstrated several similarities in terms of BPD symptoms and suicidal ideation; however, females reported significantly more emotion dysregulation at baseline and at 6-months follow-up. Results in the full sample did not support emotion dysregulation or specific dimensions of emotion dysregulation as mediators of the BPD symptom - suicidal ideation relationship. Subsequent analysis suggested that the nonacceptance of emotional responses and lack of emotional clarity significantly mediated this relationship among females, while impulsiveness emerged as a significant mediator among males. This study highlights differential mechanisms for males and females in the relationship between BPD symptoms and suicidal ideation.

4.1 Overall Gender Differences

It was expected that females would be more severe in terms of BPD symptoms, ratings of emotion dysregulation, and suicidal ideation. Although females reported higher levels of BPD symptoms at time one, this relationship was not maintained at the other time points. Rates of DSM-IV BPD diagnosis did not differ for males and females. Taken together, these results do not support significant gender differences in BPD symptoms across gender. With regards to emotion dysregulation, the initial hypothesis was supported. Females had significantly greater overall ratings of emotion dysregulation during the time one and time two assessments. Females were also more severe in terms of specific dimensions of emotion dysregulation including nonacceptance of emotions, difficulty engaging in goal directed behaviours, and impulsiveness at
time one and two. Females scored higher on limited access to emotional regulation strategies at all time points. This supports previous studies indicating females experience greater emotion dysregulation than males (Nolen-Hoeksema, 2012; Weinberg & Klonsky, 2009). This trend was particularly interesting given similarities in BPD symptoms.

No gender differences in suicidal ideation were observed for any time point. Although this finding is contrary to trends observed in the general population suggesting females experience more suicidal ideation (CDC, 2016), it is consistent with previous results suggesting that expected gender differences in suicidality are absent among individuals with BPD (Silberschmidt et al., 2015). It should be noted that Silberschmidt et al., (2015) used a clinical trial sample, and that the results of the current study provide support for extending attenuated gender differences in suicidal ideation to non-treatment seeking populations with BPD symptoms.

4.2 Emotion Dysregulation as a Mediator Between BPD Symptoms and Suicidal Ideation

DERS total scores provide a general representation of difficulties regulating emotions. It was hypothesized that BPD symptoms would predict suicidal ideation, and that emotion dysregulation would mediate this relationship. Consistent with theoretical conceptualizations of BPD, BPD symptoms predicted greater emotion dysregulation (Gunderson, 2002; Linehan, 1993). Contrary to the initial hypothesis, emotion dysregulation did not predict suicidal ideation above and beyond baseline suicidal ideation, or mediate the relationship between BPD symptoms and suicidal ideation. Suicidal ideation at baseline was the only variable to significantly predict suicidal ideation at the time three assessment. This is consistent with literature that has highlighted the chronicity of suicidal ideation. For example, results of a longitudinal epidemiological study suggested that over one third of individuals who experienced suicidal
Ideation reported chronic symptoms over the ten year study period (Borges, Angst, Nock, Ruscio, & Kessler, 2008).

Although emotion dysregulation did not predict suicidal ideation over and above baseline suicidal ideation and BPD symptoms, total DERS scores were significantly correlated with BSS ratings at each time point. DERS total scores at time one and time two also significantly predicted suicidal ideation at time three when BPD symptoms and baseline suicidal ideation were not included in the model. Overall, these findings are in line with past studies that suggest emotion dysregulation is predictive of suicidal ideation (Khazem & Anestis, 2016; Law et al., 2015; Lynch, Cheavens, Morse, & Rosenthal, 2004; Orbach et al., 2007; Shelef, Fruchter, Hassidim, & Zalsman, 2015). For example, emotion dysregulation was shown to be associated with suicidal ideation in a large sample of college students independent of depressive symptoms, low social support, and father-child conflicts (Arria et al., 2009). The opposite has also been demonstrated with greater self-reported emotion regulation being negatively associated with suicidal ideation (Ciarrochi, Deane, & Anderson, 2002). The majority of studies examining whether emotion dysregulation prospectively predicts suicidal ideation have not accounted for baseline suicidal ideation. It is likely the more stringent approach used in this study contributed to the absence of a significant relationship between emotion dysregulation and suicidal ideation.

Emotion dysregulation as conceptualized by Gratz and Roemer (2004) is a multidimensional construct, and it is also possible that only specific dimensions of emotion dysregulation are related to suicidal ideation, as supported in the present study.

Subsequent analyses examined whether specific dimensions of emotion dysregulation would mediate the relationship between BPD symptoms and suicidal ideation. Multiple mediation analyses revealed that problems with emotional clarity significantly predicted suicidal ideation.
above and beyond baseline suicidal ideation and BPD symptoms and a significant indirect effects was observed. Similar to the first model tested, baseline suicidal ideation emerged as a potent predictor of future suicidal ideation, and it is possible that this relationship washed out the effects of the other emotion dysregulation dimensions. It should be noted that this model demonstrated poor fit indices, likely due to the large number of non-significant mediating variables examined. The relationships between BPD symptoms, emotional clarity, and suicidal ideation are discussed in detail below.

4.3 Exploration of Gender Differences in Mechanisms Contributing to Suicidal Ideation

Given the differences apparent in males and females in terms of emotion dysregulation (Anestis et al., 2014; McRae, Ochsner, Mauss, Gabrieli, & Gross, 2008; Nolen-Hoeksema, 2012; Weinberg & Klonsky, 2009) and suicidal ideation (CDC, 2016; Rich, Kirkpatrick-Smith, Bonner, & Jans, 1992) it was predicted that mechanisms contributing to suicidal ideation would differ for males and females. More specifically, it was hypothesized that gender would moderate mediation effects observed between BPD symptoms and subsequent suicidal ideation. Consistent with this hypothesis, two significant interactions were observed. Gender significantly moderated the mediation effect of nonacceptance of emotion responses, as well as impulsiveness. This suggests that among males and females, nonacceptance and impulsiveness contributed differentially to the relationship between BPD symptoms and suicidal ideation.

Mediation models using a sample split by gender clarified these relationships and provided additional support for moderated mediation effects. Given the significant interactions observed, it was expected that nonacceptance of emotional responses and impulsivity would each demonstrate significant indirect effects, and that these would vary across males and females. This was largely supported by the results of this study which indicated nonacceptance of
emotions mediated the BPD symptom – suicidal ideation relationship for females only, while impulsivity was a significant mediator among males only.

Although these models provided support for unique mechanisms contributing to suicidal ideation in males and females it was apparent that the models tested had poor fit indices, likely stemming from the inclusion of a large number of non-significant mediator variables. Three models were re-run to examine nonacceptance, impulsiveness, and clarity as singular mediators. The final model was done for exploratory purposes because, although clarity was not shown to demonstrate any indirect or moderator effects, it was the only dimension to predict suicidal ideation above and beyond the other variables. These models were tested separately for males and females. All models demonstrated acceptable fit indices when including only this significant mediating variable.

4.3.1 Nonacceptance of Emotional Responses

As measured by the DERS, nonacceptance represents a refusal to accept reactions to distress and the experience of negative secondary emotions in response to negative emotions (Gratz & Roemer, 2004). Secondary emotions are described as reactions to initial, primary, emotions, for example experiencing anger in response to initially feeling shame or sadness. These secondary emotions are often typified by maladaptive responses, and are frequently the target of emotion regulation skills training (O’Donohue & Fisher, 2009). Results suggested that nonacceptance was a significant mediator among females, but not for males. These results are consistent with past research suggesting that females report more difficulties using acceptance as an adaptive coping strategy (Nolen-Hoeksema, 2012; Tamres et al., 2002). It has been posited that among individuals with BPD, nonacceptance of emotions contributes to deficits in adaptive coping and suicidal behaviours (Linehan 1993). One study investigating the relationship between
suicidal ideation and emotion dysregulation among adolescents has provided some support for this theory (Weinberg & Klonsky, 2009), demonstrating that nonacceptance was significantly correlated with depression, anxiety, eating disorders, substance use, and suicidal ideation. Rajappa et al., (2012) have provided contradictory findings, reporting that nonacceptance did not predict suicidal ideation but did differentiate individuals with and without a history of suicide attempts. It is notable that the sample used in this study consisted of undergraduate students enrolled in an introductory psychology class, whereas the current study recruited an adult community sample endorsing symptoms of BPD. Given the evidence suggesting that maladaptive coping in response to intense emotions contributes to suicidality (Lynch et al., 2004; Tamás et al., 2007; Yen et al., 2004), it is possible that the relationship between nonacceptance and suicidal ideation is more prominent among individuals experiencing psychological distress. Further, it is possible that inclusion of both genders in previous studies obscured the relationship between nonacceptance and suicidal ideation.

4.3.2 Impulsiveness

The impulsiveness dimension of the DERS describes difficulties maintaining control of one’s behavior when experiencing negative emotions (Gratz & Roemer, 2004). It is important to highlight that research suggests impulsivity in general is composed of several facets including lack of premeditation, lack of perseverance, sensation seeking, positive urgency, and negative urgency (Cyders et al., 2007; Whiteside & Lynam, 2001). Although this beyond the scope of the current study, it should be noted impulsiveness as measured by the DERS is related only to negative urgency, which is described as a tendency to act rashly when distressed (Settles et al., 2012; Whiteside & Lynam, 2001). Results of the current study demonstrated that impulsivity significantly mediated the relationship between BPD symptoms and suicidal ideation among
males (McKeown et al. 1998). Although females reported significantly greater levels of impulsiveness at time one and two, it did not emerge as a significant mediator. These results provide additional support to our initial hypothesis that gender would moderate mechanisms contributing to suicidal ideation. Previous studies have shown that impulsiveness is predictive of suicide attempts (Mann, Waternaux, Haas, & Malone, 1999; Neacsiu et al., 2017; Osman et al., 1999), however the relationship between impulsiveness and suicidal ideation is less clear. For example, Weinberg and Klonsky (2009) found impulsiveness demonstrated a strong relationship with suicidal ideation, echoing similar relationships observed among adolescents (McKeown et al., 1998). Conversely, other studies have failed to demonstrate a significant relationship between impulsiveness and suicidal ideation (Gratz & Roemer, 2008; Rajappa et al., 2012). For example, Neacsiu and colleagues (2017) examined if difficulties in emotion regulation would predict suicidal ideation in a transdiagnostic community sample, finding no significant relationship between impulsiveness as defined by the DERS and suicidal ideation. Interestingly, these findings may not contradict the results of the current study. The significant role of impulsiveness as a mediator between BPD symptoms and suicidal ideation emerged only when using a male sample. It is possible that the combined assessment of male and females in other studies obscured this relationship. In support of the relationship between male gender, suicidality, and impulsiveness, Simon et al. (2001) demonstrated that male gender distinguishes impulsive suicide attempters from non-impulsive attempts. It is unclear if this trend would remain when examining suicidal ideation. At present, it appears that no other studies have examined the relationship between male gender, impulsiveness, and suicidal ideation within the context of BPD symptoms. Considering the inconsistent relationship between suicidal ideation and impulsiveness observed in the literature, the findings of this study require replication.
4.3.3 Lack of Emotional Clarity

The lack of emotional clarity dimension of the DERS reflects the degree to which individuals know of and comprehend the emotions they experience. When included in a single mediator model, lack of emotional clarity was the only dimension of emotion dysregulation to significantly mediate the BPD symptom – suicidal ideation relationship in analyses collapsing across gender. Although clarity did not demonstrate a significant interaction with gender, thus not supporting a moderator effect, exploratory analyses examining lack of emotion clarity as a mediator in the BPD symptom-suicidal ideation relationship were also completed separately per gender. When this was done, lack of emotion clarity demonstrated a significant indirect effect only for females. It is possible that the difference in effect between males and females was too small to demonstrate a significant moderator effect or that less power in the male sample (due to the smaller number of participants) affected the significance of the indirect effect. Some evidence suggests that among adolescents, females experience more problems with emotional clarity (Weinberg & Klonsky, 2009), although these results have not been replicated in adult samples. These results also support previous studies suggesting problems with emotional clarity are related to suicidal ideation (Neacsiu et al., 2017; Rajappa et al., 2012). For example, results of a recent community study demonstrated that problems with emotional clarity significantly accounted for variance in suicide ideation above and beyond negative emotions, demographics, and clinical characteristics. Similarly, Abeyta et al (2015) found that individuals with low emotional clarity experienced greater suicidal ideation compared to those with high emotional clarity, and suggested that poor comprehension of affective states contributes to difficulties finding life meaning which subsequently leads to suicidal ideation (Abeyta, Routledge, Juhl, & Robinson, 2015). Closely echoing the results of this study, Neacsiu et al (2017) reported that lack
of emotional clarity significantly predicted suicidal ideation in a transdiagnostic community sample. Together, this suggests that among individuals experiencing BPD symptoms, problems with emotional clarity play an important role in the development of suicidal thoughts, particularly among females.

4.4 Clinical Implications

The results of this study highlight the role of both gender and specific dimensions of emotion dysregulation in predicting future suicidal ideation. Past studies have suggested suicidal ideation can contribute to an individual’s chronic distress as well as predict heightened risk for suicide attempts (Beck, Kovacs, & Weissman, 1979; Borges et al., 2008). Findings of this study indicate that treatments targeting specific aspects of dysfunctional emotion regulation may reduce suicidal ideation. Males may benefit from interventions targeting impulsiveness, while females may benefit from treatments targeting the failure to understand and accept emotions. This is largely consistent with contemporary psychotherapies that target emotion dysregulation to ameliorate suicidal behaviours (Linehan, 1993; Linehan, 2015; Sahlin et al., 2017). For example, emotion regulation group therapy (ERGT) targets emotional dysregulation, and the avoidance of emotions in particular (Gratz & Gunderson, 2006). This intervention has demonstrated significant reductions in emotion dysregulation, experiential avoidance, impulsive behaviours, and NSSI (Gratz, Bardeen, Levy, Dixon-Gordon, & Tull, 2015; Gratz & Gunderson, 2006; Sahlin et al., 2017). ERGT has also shown changes in emotion dysregulation mediate the effects of the intervention on BPD cognitive and affective symptoms (Gratz et al., 2015).

Notably research on emotion regulation group therapy has primarily focused on exclusively female samples; future studies may include males, and examine specific dimensions of emotion dysregulation, as well as suicidal ideation as an outcome. Dialectical Behaviour Therapy has also
been shown to reduce emotion dysregulation, including impulsivity, and may be a particularly efficacious treatment for males experiencing suicidal ideation (Jamilian, Malekirad, Farhadi, Habibi, & Zamani, 2014).

As noted previously, treatment seeking samples are primarily female, and research samples often use exclusively or predominately female samples. The current study supports previous findings indicating that males and females are equally symptomatic in terms of BPD symptoms (Grant et al., 2008). Given the consequence of untreated chronic suicidal ideation (Borges, Angst, Nock, Ruscio, & Kessler, 2008; Brown, Beck, Steer, & Grisham, 2000), it is important that future research explore barriers to treatment entry among males experiencing BPD symptoms.

4.5 Limitations and Future Directions

While the current study elucidated mechanisms contributing to suicidal ideation, several limitations should be highlighted. First, female participants reported greater use of psychotropic medications at baseline. It is possible that females in this study were more severe in terms of BPD symptoms, emotion dysregulation, and suicidal ideation, and that the use of psychotropic medications attenuated gender differences. Second, although results suggested that impulsiveness mediated the relationship between BPD symptoms and suicidal ideation for males, it is unclear if this relationship is specific to impulsive behaviour in response to negative emotions or broader impulsivity-related personality traits which have been implicated in suicide risk and behaviours (Turecki, 2005). Personality traits, as well as other facets of impulsivity such as lack of premeditation, lack of perseverance, sensation seeking, and positive urgency, were not directly measured in the present study. Third, it is frequently assumed when testing mediation models that no extraneous variables are present that influence both the mediating and outcome
variable (Robins & Rotnitzky, 2004). Given the complex relationship between emotion
dysregulation, suicidality, and other psychiatric disorders it is possible that unmeasured
confound variable such as substance use, depressive symptoms, or trauma symptoms influenced
results in this study (Barr, Fulginiti, Rhoades, & Rice, 2017; Miranda, Tsypes, Gallagher, &
Rajappa, 2013; Rajappa et al., 2012; Wolff et al., 2016).

While the full sample was adequately powered to examine these relationships, analyzing
the genders separately resulted in a decrement to power. It is possible that a larger sample size
would show modified results. This study was also unique in its use of a non-clinical community/sample. This is particularly relevant given that BPD symptoms were examined as the primary
predictor in all models tested. Nonetheless, 89% of the sample met for at least one clinically
significant diagnostic criterion of BPD at baseline, and ratings of emotion dysregulation and
suicidal ideation mirrored those observed in treatment seeking and non-treatment seeking
samples with BPD (Goodman et al., 2014; Neacsiu & Tkachuck, 2016; Osborne, Michonski,

This study has several methodological strengths that provide clarity into the relationships
between BPD symptoms, emotion dysregulation, suicidal ideation, and gender. The use of a
community sample proved advantageous as it helps extend previously observed trends in
suicidality and emotion dysregulation among individuals with BPD to non-treatment seeking
samples with a higher percentage of male participants. This underscores the relevance of
suicidality in both males and females, and is of particular relevance given the high frequency of
untreated BPD among males who die by suicide (McGirr et al., 2007b, 2009). The use of
longitudinal data is also a highlight of this study and allowed for interpretation of causal
relationships in the mechanisms explored.
To our knowledge this is the first study to demonstrate the moderating role of gender in emotion dysregulation driven mechanisms contributing to suicidal ideation within the context of BPD symptomatology. Findings indicating that BPD symptoms predict suicidal ideation through nonacceptance of emotional responses and lack of emotional clarity in females, and through impulsiveness in males. Future research may seek to replicate these findings in clinical samples, particularly in regards to changes in these dimensions throughout the course of therapy. Although the aim of the current study was to examine how BPD features would related to suicidal ideation through emotion dysregulation, future studies may assess whether these relationships persist in the context of other disorders. Overall, the results of this study provide insight into mechanisms contributing to suicidal ideation among individuals with BPD symptoms, and highlight potential gender-specific treatment targets.
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**Table 1.**
**Sample Demographic and Clinical Characteristics**

<table>
<thead>
<tr>
<th></th>
<th>Males n=38</th>
<th>Females n=62</th>
<th>Test Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, Range; Mean (SD)</td>
<td>19-52; 30.47 (10.26)</td>
<td>17-68; 25.76 (9.85)</td>
<td>t(98)=2.3</td>
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<tr>
<td>Ethnicity, n (%)</td>
<td></td>
<td></td>
<td>χ²(1)=11.2</td>
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<td>17(44.7)</td>
<td>32(51.6)</td>
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<td>African American</td>
<td>10(26.3)</td>
<td>6(9.7)</td>
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<tr>
<td>Asian (South, South East, East)</td>
<td>11(28.9)</td>
<td>19(30.7)</td>
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<tr>
<td>Other</td>
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<td>χ²(1)=.203</td>
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<td>Marital Status</td>
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<tr>
<td>Single/Never Married</td>
<td>32 (84.2)</td>
<td>50 (80.6)</td>
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<td>Married/Living with Spouse</td>
<td>4(10.5)</td>
<td>8(12.9)</td>
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<tr>
<td>Divorced/Separated</td>
<td>2(5.2)</td>
<td>4(6.4)</td>
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<tr>
<td>Medication, n (%)</td>
<td>9 (24.3)</td>
<td>28 (45.2)</td>
<td>χ²(1)=.038*</td>
</tr>
<tr>
<td>Therapy, n (%)</td>
<td>7(19.4)</td>
<td>12(19.4)</td>
<td>χ²(1)=.00</td>
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<tr>
<td>DSM-IV BPD Diagnosis, n (%)</td>
<td>8(21.1)</td>
<td>21(33.9)</td>
<td>χ²(1)=1.88</td>
</tr>
<tr>
<td>Past Suicide attempt</td>
<td>14(36.8)</td>
<td>27(43.5)</td>
<td>χ²(1)=1.4</td>
</tr>
<tr>
<td>Past Week Self Harm</td>
<td>5(13.2)</td>
<td>15(24.2)</td>
<td>χ²(1)=3.6</td>
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<tr>
<td>Suicidal Ideation (past 2 weeks)</td>
<td>13(52.0)</td>
<td>24 (54.5)</td>
<td>χ²(1)=3.9</td>
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<tr>
<td>Past Week Alcohol Intoxication</td>
<td>23(60.5)</td>
<td>21(33.9)</td>
<td>χ²(1)=8.8*</td>
</tr>
<tr>
<td>Past Week Drug Use</td>
<td>16(42.1)</td>
<td>21(33.9)</td>
<td>χ²(1)=5.1</td>
</tr>
<tr>
<td>6-month retention</td>
<td>33(86.8)</td>
<td>58(93.5)</td>
<td>χ²(1)=1.3</td>
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<tr>
<td>12-month retention</td>
<td>31 (81.6)</td>
<td>50(80.6)</td>
<td>χ²(1)=.01</td>
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* significantly different, p < .05 corrected for multiple comparison; BPD = borderline personality disorder; MDD = major depressive disorder
Table 2.
Psychometric Properties of Study Variables

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<td>DERS Awareness Time 2</td>
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<td>DERS Strategies Time 2</td>
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<td>8-40</td>
<td>-.035</td>
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<td>DERS Clarity Time 2</td>
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Note. *=p<0.05. BSL = Borderline Symptom List. BSS = Beck Scale for Suicide Ideation. DERS = Difficulties in Emotion Regulation. DERS Nonacceptance = Nonacceptance of Emotional Responses. DERS Goals = Engaging in Goal-Directed Behaviour. DERS Impulsivity = Impulse Control Difficulties. DERS Awareness = Lack of Emotional Awareness. DERS Strategies = Limited Access to Emotion Regulation Strategies. DERS Clarity = Lack of Emotional Clarity. DERS Total = DERS total scores.
Table 3.  
Independent Samples t-tests Comparing BSL, BSS, and DERS Total Scores Across Gender for Each Time Point.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Gender</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>Cohen’s d</th>
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<td>1.51</td>
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<td>.41</td>
<td>-1.05</td>
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<td>Male</td>
<td>38</td>
<td>.30</td>
<td>.36</td>
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<td>DERS Total Time 1</td>
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<td>62</td>
<td>120.26</td>
<td>22.27</td>
<td>-4.41***</td>
<td>.91</td>
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<td>Male</td>
<td>38</td>
<td>99.97</td>
<td>22.41</td>
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<tr>
<td>BSL Time 2</td>
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<td>1.55</td>
<td>.94</td>
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<td>.28</td>
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<td>33</td>
<td>1.26</td>
<td>1.06</td>
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</tr>
<tr>
<td>BSS Time 2</td>
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<td>.30</td>
<td>.41</td>
<td>-1.06</td>
<td>.23</td>
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<td></td>
<td>Male</td>
<td>33</td>
<td>.21</td>
<td>.36</td>
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<td></td>
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<tr>
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<td>-3.28**</td>
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<td>31</td>
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<td>.34</td>
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<td>99.28</td>
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<td>31</td>
<td>92.55</td>
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</tbody>
</table>

Note. **=p<0.01, ***p<0.001. BSL= Borderline Symptom List. BSS = Beck Scale for Suicide Ideation. DERS = Difficulties in Emotion Regulation.
Table 4.
Independent Samples t-tests Comparing DERS Subscales for Each Time Point.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Gender</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>Cohen’s d</th>
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*Note.* *=p<0.05, **=p<0.01, ***=p<0.001. DERS = Difficulties in Emotion Regulation. DERS Nonacceptance = Nonacceptance of Emotional Responses. DERS Goals = Engaging in Goal-Directed Behaviour. DERS Impulsivity = Impulse Control Difficulties. DERS Awareness = Lack of Emotional Awareness. DERS Strategies = Limited Access to Emotion Regulation Strategies. DERS Clarity = Lack of Emotional Clarity
Table 5.
Means, Standard Deviations, and Intercorrelations of Study Variables

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<th>6</th>
<th>7</th>
<th>8</th>
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<td>2. BSS Intake</td>
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<td>3. DERS1</td>
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<td>.241*</td>
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<td>.501***</td>
<td>.228*</td>
<td>.261*</td>
<td>.510***</td>
<td>.433***</td>
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<td>.294**</td>
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<td>.672***</td>
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<td>.890***</td>
<td>.673***</td>
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<td>.110</td>
<td>.175</td>
<td>.151</td>
<td>.130</td>
<td>.288**</td>
<td>.251*</td>
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</tbody>
</table>

Note. *p < .05, **p < .01, ***p < .001. Numbered measures indicate subscales. BSL= Borderline Symptom List. BSS = Beck Scale for Suicide Ideation. DERS = Difficulties in Emotion Regulation. DERS1 = Nonacceptance of Emotional Responses. DERS2 = Engaging in Goal-Directed Behaviour. DERS3 = Impulse Control Difficulties. DERS4 = Lack of Emotional Awareness. DERS5 = Limited Access to Emotion Regulation Strategies. DERS6 = Lack of Emotional Clarity. DERSTOT= DERS total scores.
Table 6.
*Summary of Fit Indices and Variance Accounted for in Mediation Models*

<table>
<thead>
<tr>
<th>Model</th>
<th>Akaike (AIC)</th>
<th>CFI</th>
<th>RMSEA [95% CI]</th>
<th>SRMR</th>
<th>R²</th>
</tr>
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<tbody>
<tr>
<td>Simple Mediation</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Full Sample</td>
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<td>.00[.00, .28]</td>
<td>.02</td>
<td>.41(.10)***</td>
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<tr>
<td>Multiple Mediation</td>
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<tr>
<td>Full Sample</td>
<td>3472.71</td>
<td>.46</td>
<td>.27[.24, .32]</td>
<td>.16</td>
<td>.50(.10)***</td>
</tr>
<tr>
<td>Females</td>
<td>3430.64</td>
<td>.48</td>
<td>.28[.25, .33]</td>
<td>.17</td>
<td>.65(.08)***</td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.49(.16)**</td>
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<td>Moderated Mediation</td>
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<tr>
<td>Full Sample</td>
<td>3427.51</td>
<td>.19</td>
<td>.47[.45, .50]</td>
<td>.32</td>
<td>.91(.04)**</td>
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<tr>
<td>Nonacceptance</td>
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<tr>
<td>Full Sample</td>
<td>607.66</td>
<td>.98</td>
<td>.11[.08, .33]</td>
<td>.03</td>
<td>.28(.09)**</td>
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<tr>
<td>Females</td>
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<td>.97</td>
<td>.13[.09, .35]</td>
<td>.04</td>
<td>.51(.12)***</td>
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<tr>
<td>Males</td>
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<td></td>
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<td></td>
<td>.24(.19)</td>
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<tr>
<td>Impulsiveness</td>
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<tr>
<td>Full Sample</td>
<td>589.16</td>
<td>1.00</td>
<td>.00[.00, .19]</td>
<td>.01</td>
<td>.39(.11)***</td>
</tr>
<tr>
<td>Females</td>
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<td>.97</td>
<td>.14[.00, .35]</td>
<td>.04</td>
<td>.47(.12)***</td>
</tr>
<tr>
<td>Males</td>
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<td></td>
<td></td>
<td></td>
<td>.46(.18)**</td>
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<tr>
<td>Clarity</td>
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</tr>
<tr>
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<td>1.00</td>
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<td>.01</td>
<td>.45(.05)***</td>
</tr>
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<td>Females</td>
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<td>1.00</td>
<td>.00[.00, .26]</td>
<td>.03</td>
<td>.56(.09)***</td>
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<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.34(.19)</td>
</tr>
</tbody>
</table>

*Note.** = p<0.01, *** = p<0.001. CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual*
Table 7.
*Standardized Regression Weights (Standard Errors) of the Study Variables (BSL, BSS, DERS) and Gender, as Well as the Interaction between DERS Total Scores and Gender Predicting Suicidal Ideation at Time Three.*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-.194(.354)</td>
</tr>
<tr>
<td>BSL Time 1</td>
<td>-.145(.599)</td>
</tr>
<tr>
<td>BSS Time 1</td>
<td>.594(.113)***</td>
</tr>
<tr>
<td>DERS Total Time 2</td>
<td>.145(.525)</td>
</tr>
<tr>
<td>Gender*BSL Time 1</td>
<td>.165(.694)</td>
</tr>
<tr>
<td>Gender*DERS Total Time 2</td>
<td>.023(.800)</td>
</tr>
</tbody>
</table>

Table 8.
*Standardized Regression Weights (Standard Errors) of the Study Variables (BSL, BSS, DERS) and Gender, as Well as the Interaction between DERS Subscales and Gender Predicting Suicidal Ideation at Time Three.*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.096(.195)</td>
</tr>
<tr>
<td>BSL Time 1</td>
<td>.006(.233)</td>
</tr>
<tr>
<td>BSS Time 1</td>
<td>.218(.072)**</td>
</tr>
<tr>
<td>DERS Nonacceptance Time 2</td>
<td>-.485(.224)*</td>
</tr>
<tr>
<td>DERS Goals Time 2</td>
<td>.275(.217)</td>
</tr>
<tr>
<td>DERS Impulse Time 2</td>
<td>.529(.191)**</td>
</tr>
<tr>
<td>DERS Awareness Time 2</td>
<td>.057(.164)</td>
</tr>
<tr>
<td>DERS Strategies Time 2</td>
<td>-.264(.234)</td>
</tr>
<tr>
<td>DERS Clarity Time 2</td>
<td>.088(.291)</td>
</tr>
<tr>
<td>Gender*BSL Time 1</td>
<td>.080(.263)</td>
</tr>
<tr>
<td>Gender*DERS Nonacceptance Time 2</td>
<td>.758(.281)**</td>
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<tr>
<td>Gender*DERS Goals Time 2</td>
<td>-.533(.306)</td>
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<tr>
<td>Gender*DERS Impulse Time 2</td>
<td>-.637(.241)**</td>
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<tr>
<td>Gender*DERS Awareness Time 2</td>
<td>-.027(.199)</td>
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<tr>
<td>Gender*DERS Strategies Time 2</td>
<td>.250(.312)</td>
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<tr>
<td>Gender*DERS Clarity Time 2</td>
<td>.008(.375)</td>
</tr>
</tbody>
</table>

*Note.* *=p<0.05, **=p<0.01, ***p<0.001. BSL = Borderline Symptom List. BSS = Beck Scale for Suicide Ideation. DERS = Difficulties in Emotion Regulation. DERS Nonacceptance = Nonacceptance of Emotional Responses. DERS Goals = Engaging in Goal-Directed Behaviour. DERS Impulsivity = Impulse Control Difficulties. DERS Awareness = Lack of Emotional Awareness. DERS Strategies = Limited Access to Emotion Regulation Strategies. DERS Clarity = Lack of Emotional Clarity.
Figure 1. *Mediation Model Examining if Borderline Personality Disorder Symptoms (BSL) Predict Suicidal Ideation (BSS) through Emotion Dysregulation (DERS) when Accounting for Baseline Suicidal Ideation. Paths Represent Standardized Regression Weights with Standard Errors in Parentheses. Note. *** = p < .001.*
Figure 2. Multiple Mediation Model Examining if Borderline Personality Disorder Symptoms (BSL) Predict Suicidal Ideation (BSS) Through Each Emotion Dysregulation Subscale when Accounting for Baseline Suicidal Ideation. Paths Represent Standardized Regression Weights with Standard Errors in Parentheses. Note. * = p < .05; ** = p < .01; *** = p < .001.
Figure 3. Multiple Mediation Model Examining if Borderline Personality Disorder Symptoms (BSL) Predict Suicidal Ideation (BSS) through Each Emotion Dysregulation subscale when Accounting for Baseline Suicidal Ideation Among (a) Females Only and (b) Males Only. Paths Represent Standardized Regression Weights with Standard Errors in Parentheses. Note. * = p < .05; ** = p < .01; *** = p < .001
Figure 4. Mediation Model that Examined if Borderline Personality Disorder Symptoms (BSL) Predict Suicidal Ideation (BSS) through Nonacceptance of Emotions when Accounting for Baseline Suicidal Ideation for a) Females Only, b) Males Only. Paths Represent Standardized Regression Weights with Standard Errors in Parentheses. Note. * = p < .05; *** = p < .001.
Figure 5. Mediation Model that Examined if Borderline Personality Disorder Symptoms (BSL) Predict Suicidal Ideation (BSS) through Impulsiveness when Accounting for Baseline Suicidal Ideation for a) Females Only, b) Males Only. Paths Represent Standardized Regression Weights with Standard Errors in Parentheses. Note. * = p < .05; *** = p < .001.
Figure 6. Mediation Model that Examined if Borderline Personality Disorder Symptoms (BSL) Predict Suicidal Ideation (BSS) through Lack of Emotional Clarity when Accounting for Baseline Suicidal Ideation for a) The Full Sample, b) Females Only, c) Males Only. Paths Represent Standardized Regression Weights with Standard Errors in Parentheses. Note. * = p < .05; ** = p < .01; *** = p < .001.