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Emotion Dysregulation as a Mediator of the Relationship between Symptoms of Borderline Personality Disorder and Implicit Suicidality
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<table>
<thead>
<tr>
<th>Title</th>
<th>Name</th>
<th>Degree</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>
Acknowledgments

“Nothing great is ever achieved without much enduring.” – St. Catherine of Siena

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Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgments</td>
<td>3</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>4</td>
</tr>
<tr>
<td>List of Tables</td>
<td>5</td>
</tr>
<tr>
<td>List of Figures</td>
<td>6</td>
</tr>
<tr>
<td>List of Appendices</td>
<td>7</td>
</tr>
<tr>
<td>Dissertation</td>
<td>8</td>
</tr>
<tr>
<td>References</td>
<td>35</td>
</tr>
<tr>
<td>Tables</td>
<td>46</td>
</tr>
<tr>
<td>Figures</td>
<td>48</td>
</tr>
<tr>
<td>Appendices</td>
<td>51</td>
</tr>
</tbody>
</table>
List of Tables

Table                                                                 Page
1. Descriptive Statistics for All Variables ......................................................... 46
2. Intercorrelations among All Variables .............................................................. 47
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hypothesized Mediational Model of Suicidality, BPD, and Emotion Dysregulation</td>
<td>48</td>
</tr>
<tr>
<td>2. Test of a Mediational Model of Suicidality, BPD, and Emotion Dysregulation</td>
<td>49</td>
</tr>
<tr>
<td>3. Test of a Mediational Model of Suicidality, BPD, and Nonacceptance</td>
<td>50</td>
</tr>
</tbody>
</table>
List of Appendices

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Approval Letter from the Xavier University Institutional Review Board</td>
<td>51</td>
</tr>
</tbody>
</table>
Abstract

Emotion dysregulation and frequent suicidal behaviors are defining features of borderline personality disorder (BPD). In fact, emotion dysregulation is critical to the utilization and maintenance of suicide attempts (Gross, 1998a; Gross, 1998b; Linehan, 1993; McMain et al., 2001). Traditionally, clinicians have utilized explicit self-report measures to determine suicidality despite findings that 78% of patients explicitly deny suicidal ideation before completing suicide (Busch, Fawcett, & Jacobs, 2003). Nock et al. (2010) developed and evaluated a version of the implicit association test (IAT) that measures implicit associations of self with death/suicide: The Death/Suicide IAT (DS-IAT). Research is needed to test if the DS-IAT can predict implicit suicidality of individuals with symptoms of BPD and if emotion dysregulation mediates this relationship. Analyses were conducted using data gathered from 83 male and female undergraduate students at a private Midwestern university who completed the DS-IAT, a measure of specific subjective impairments typically experienced by individuals with BPD, and a measure of difficulties in emotion regulation. Results demonstrated a significant relationship between BPD symptoms and implicit suicidality as well as BPD symptoms and emotion dysregulation. However, results indicated no significant relationship between emotion dysregulation and implicit suicidality. Post hoc analyses examining specific domains of emotion dysregulation demonstrated that nonacceptance of emotional responses was a mediator of the relationship between BPD symptoms and implicit suicidality.
Emotion Dysregulation as a Mediator of the Relationship between Symptoms of Borderline Personality Disorder and Implicit Suicidality

Borderline personality disorder (BPD) is prevalent in the United States, with approximately 2-4% of Americans meeting diagnostic criteria for BPD (Gunderson, 2011). Twenty percent of mental health inpatients and 15% of mental health outpatients are diagnosed with BPD (Gunderson, 2011). Sixty-three percent of inpatients and 33% of outpatients obtaining psychotherapy for a personality disorder meet BPD criteria (Widiger & Frances, 1989). BPD is often characterized by pervasive emotion dysregulation, which is defined as an inability to regulate emotional cues, experiences, actions, and responses, despite a person’s best effort to do so (Linehan, Bohus, & Lynch, 2007). BPD is one of the most lethal mental illnesses in the United States, considering that 8-10% of individuals with BPD complete suicide (American Psychiatric Association, 2001).

Traditionally, clinicians have utilized explicit self-report measures to determine a person’s suicidality despite findings indicating that 78% of patients who commit suicide explicitly deny suicidal ideation before completing suicide (Busch, Fawcett, & Jacobs, 2003). In response to the difficulty inherent in explicit suicide measures, Nock and colleagues (2010) developed and evaluated a version of the IAT that measures implicit associations of self with death/suicide. Given the prevalence of BPD, the highly lethal nature of the disorder, and the fact that current measures of suicidality utilize explicit self-reports, research is needed to test if the Death/Suicide IAT (DS-IAT) can measure suicidal cognition in individuals with symptoms of BPD, and if emotion dysregulation mediates this relationship.
Borderline Personality Disorder

According to the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (*DSM-5*), BPD is “a pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity, beginning by early adulthood and present in a variety of contexts [. . .]” (APA, 2013, p. 663). Linehan (1993) organized the criteria of BPD into five categories of dysregulation: interpersonal, behavioral, cognitive, self, and emotional. People with BPD suffer interpersonal dysregulation in which relationships are intense and chaotic and the individual makes frantic efforts to avoid abandonment. Behavioral dysregulation, including impulsive and suicidal behaviors, is often present in individuals with BPD. Stressful situations can lead these individuals to experience cognitive dysregulation such as dissociation, delusions, and depersonalization, although alleviation of the stressful situation typically leads to diminishment of symptoms. Self dysregulation occurs when the person feels empty, reports having no sense of self, or bases his/her sense of self on others’ views of him/her. Emotion dysregulation is the most prevalent form of dysregulation experienced by individuals with BPD and can include intense emotional responses, depression, anxiety, irritability, and difficulties in the experience and expression of anger.

Emotion Dysregulation

Pervasive emotion dysregulation is a key component of BPD. Emotion dysregulation is an inability to regulate emotional cues, experiences, actions, and verbal and nonverbal responses under normal conditions, despite a person’s best effort to do so (Linehan et al., 2007). Emotion dysregulation involves a deficiency of emotional awareness, understanding, and acceptance (Gratz & Roemer, 2004; Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006). It includes an inability to access effective strategies for regulating emotional intensity and/or duration.
Additionally, emotion dysregulation can entail a resistance to accepting emotional distress as necessary for pursuing personal goals and an inability to work towards goals in times of distress.

Emotion dysregulation is considered pervasive when the person has an increased vulnerability to high emotionality and is unable to regulate a wide range of emotions, problems, and situations (Linehan et al., 2007). Emotion vulnerability occurs when an individual is keenly sensitive to emotional stimuli, reacts strongly to the stimuli, and experiences a slow return to an emotional baseline. Pervasive emotion dysregulation affects all of the subsystems in the emotional system, including behavior, physiology, cognition, and experience.

The biosocial theory of BPD is one of the leading theories of the etiology of emotion dysregulation in individuals with BPD. This theory proposes a transactional model between biological irregularities and an invalidating environment (Linehan, 1993). Individuals with BPD are thought to have biological irregularities caused by genetics, intrauterine events, and/or early childhood events (McMain, Korman, & Dimeff, 2001). These biological irregularities include an increased sensitivity to emotional stimuli, intense and extreme emotional experiences, and a slow return to emotional baseline (Linehan, 1993). This genetic predisposition to difficulties in emotion regulation transacts with an invalidating environment that trivializes, ignores, and/or punishes a child’s expression of internal experience (McMain et al., 2001). Characteristics of an invalidating environment include intermittent reinforcement of extreme emotional responses, punishment of emotional displays, and oversimplification of problem solving (Linehan, 1993). An invalidating environment communicates to the child that his or her interpretation of an experience is wrong, therefore depriving the child of opportunities to label internal experiences and regulate emotions (McMain et al., 2001).
Several studies have examined the relationship between BPD and emotion dysregulation. Farmer and Nelson-Gray (1995) found that features of BPD are positively related to personality traits associated with negative emotionality such as neuroticism. Persons with BPD report more frequent, intense, and enduring negative emotions in daily living than do persons without BPD (Ebner-Priemer, Kuo, et al., 2007; Ebner-Priemer, Welch, et al., 2007; Levine, Marziali, & Hood, 1997; Stiglmayr et al., 2005). They also experience fewer positive emotions and less time fluctuating from a positive to a negative mood than individuals who are not diagnosed with BPD (Ebner-Priemer, Kuo, et al., 2007; Ebner-Priemer, Welch, et al., 2007). Additionally, individuals diagnosed with BPD tend to be more sensitive to emotional facial expressions than individuals who are not diagnosed with BPD (Lynch et al., 2006).

Emotion dysregulation is a critical element to the utilization and maintenance of self-harm and suicide attempts. Several theorists have identified self-harm and suicide attempts as an effort of individuals with BPD to regulate their emotions (Chapman, Gratz, & Brown, 2006; Gratz et al., 2006; Gratz & Roemer, 2008; Gross, 1998a; Gross, 1998b; Kamphuis, Ruyling, & Reijntjes, 2007; Linehan, 1993; McMain et al., 2001). According to a conceptualization consistent with dialectical behavior therapy (DBT), most dysfunctional behaviors of individuals with BPD, including suicide attempts and self-harm, result from a lack of other effective emotion regulation strategies (Linehan, 1993; McMain et al., 2001). Gross’ (1998a, 1998b) concept of response modulation supports this conclusion. Response modulation is an emotion regulation strategy in which the individual directly influences his/her physiological, experiential, or behavioral responding. The effectiveness of response modulation is dependent upon whether the emotional response has reached a level the person considers to be unmanageable. Individuals with BPD may effectively reduce the intensity of a negative emotion by engaging in self-harm,
but the consequences of self-harm are dysregulating in and of themselves. By the time individuals with BPD think about using distress tolerance or emotion regulation techniques, they are often too distressed to use the techniques or are unable to use them as effectively as they would have at a lower level of distress (Putnam & Silk, 2005).

**Suicide**

Suicide is the 10th leading cause of death in the United States, accounting for 2.1 percent of all deaths and occurring at a rate of 12.1 per 100,000 people (American Foundation for Suicide Prevention, 2014). Over 38,000 Americans and approximately 1 million people worldwide die by suicide each year (World Health Organization, 2012). The most common reason for suicide attempts is to escape severely distressing circumstances (Boergers, Spirito, & Donaldson, 1998; Varadaraj, Mendonca, & Rauchenberg, 1986).

Frequent suicidal behaviors are a defining feature of BPD. In fact, BPD is the only personality disorder for which recurrent suicidal behavior or self-harm is central to diagnosis (APA, 2013; Berk, Jeglic, Brown, Henriques, & Beck, 2007). Intentional self-injury, including non-suicidal self-injury (NSSI) and suicide attempts, is prevalent among individuals who meet criteria for BPD (Clarkin, Widiger, Frances, Hurt, & Gilmore, 1983; Cowdry, Pickar, & Davies, 1985; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991). Seventy percent to 75% of patients with BPD have engaged in at least one self-injurious behavior, ranging from behaviors requiring no medical treatment to behaviors necessitating intensive care (Clarkin et al., 1983; Cowdry et al., 1985). In community samples, 50% of individuals admitted to the hospital for NSSI (Soderberg, 2001) and over 33.3% individuals who complete suicide (Isometsä et al., 1996) are diagnosed with BPD. Clients with BPD who engage in NSSI are twice as likely to complete suicide than clients who do not engage in NSSI (Stone, 1989). Approximately 8-10% of
individuals with BPD complete suicide, putting the disorder amongst the most lethal mental disorders (APA, 2001).

Previous suicide attempts have been identified as one of the best predictors of suicide attempts and completed suicide in patients with BPD (Paris, 1990; Paris, Nowlis, & Brown, 1989). The presence of another mental disorder comorbid with BPD increases the probability of suicidal behavior and may increase the frequency and lethality of suicide attempts (Mann, Waternaux, Haas, & Malone, 1999; Soloff & Fabio, 2008; Zanarini et al., 1998).

Particular traits associated with BPD (such as rejection sensitivity, fear of abandonment, impulsivity, and intolerance of aloneness) are common motivators of impulsive suicidal behavior (Brodsky, Malone, Ellis, Dulit, & Mann, 1997; Soloff & Fabio, 2008). In a 2007 study, Berk et al. found that, when compared with recent suicide attempters without BPD, recent suicide attempters with BPD demonstrated more severe psychopathology, more hopelessness, greater depression, higher numbers of past suicide attempts, higher levels of suicidal ideation, and greater deficits in interpersonal effectiveness. The unstable interpersonal relations inherent in the lives of individuals with BPD is related to suicidal behavior through increased occurrence of adverse life events, particularly problems in the individuals’ romantic relationships (Yen et al., 2005).

**Implicit Measures of Suicidality**

Implicit measures are instruments for which the outcome is an index of an attitude or cognition even though individuals have no control over the outcome, are unaware of the attitude or outcome, or are unaware of the impact of the attitude/cognition on the outcome (De Houwer, 2006). Several researchers have used implicit measures to explore suicidality. Williams and Broadbent (1986) found that individuals who had recently attempted suicide demonstrated
attentional bias toward information related to suicide on an emotional Stroop task. Becker, Strohbach, and Rinck (1999) found that individuals who had attempted suicide specifically attended to suicide-related information. Cha, Najmi, Park, Finn, and Nock (2010) also used an emotional Stroop task and demonstrated that attentional bias to suicide-related stimuli is associated with a history of past suicide attempts as well as how recently past attempts occurred. The authors were able to predict future suicide attempts above and beyond common clinical predictors such as the presence of a mood disorder, multiple suicide attempts, a scale for suicidal ideation, patient prediction, and clinician prediction.

Nock and Banaji (2007a, 2007b) developed a self-injury implicit association test (referred to in this paper as the SI-IAT) that measures implicit associations about self-injury. The SI-IAT measured the strength of association with self-injury in individuals with a recent history of nonsuicidal self-injury (NSSI) and noninjurious individuals. Performance on the SI-IAT was strongly and consistently predictive of recent suicidal ideation, recent suicide attempts, and subsequent suicidal ideation at follow-up. Scores on the SI-IAT of two participants who attempted suicide during the follow-up period were significantly higher than the scores of participants who did not make an attempt, which provides preliminary evidence that the SI-IAT may be helpful in the prospective prediction of suicide attempts.

The Implicit Association Test

The Implicit Association Test is based on theories of implicit cognition and implicit attitudes. Implicit attitudes are demonstrated via unconscious behaviors or judgments that are automatically activated when evaluating a stimulus (Greenwald, McGhee, & Schwartz, 1998). Individuals experience implicit cognition when past events of which they are unaware affect their actions or judgments, even when they are explicitly asked about their actions or judgments.
EMOTION DYSREGULATION, BPD, & SUICIDALITY

(Greenwald & Banaji, 1995). Implicit associations can be measured by reaction speed. The IAT was developed to measure the implicit association between a concept and an attribute (Greenwald et al., 1998). The IAT measures reaction speed by recording response latency, which is the amount of time it takes for an individual to respond to a stimulus by pressing the appropriate computer key. Shorter response latencies indicate a greater association between the stimuli whereas longer response latencies indicate lesser associations between stimuli. Individuals tend to have longer response latencies when presented with incongruent stimuli and shorter response latencies when presented with congruent stimuli. (Please refer to Greenwald and colleagues’ 1998 paper for an example of the structure of the first published IAT, which examined implicit attitudes toward flowers in relation to insects.)

Many theorists question the validity of the IAT. Han, Olson, and Fazio (2006) proposed that the IAT may assess societal and cultural norms, not necessarily an individual’s attitudes. Despite this assertion, Han and colleagues still found the IAT to be a valid and reliable measure. De Houwer and Moors (2007) suggested that instead of being a task to measure implicit attitudes, the IAT may be a problem-solving task in which an individual must determine how stimuli fit into categories. Multiple studies have indicated that individuals can fake, or respond dishonestly to the IAT (Fiedler & Bluemke, 2005; Schnabel, Banse, & Asendorpf, 2006; Steffens, 2004). In spite of these considerations, much research has demonstrated that the IAT is a valid and reliable measure that can assess implicit cognitions and in some cases predict future behavior (e.g., Greenwald, Poehlman, Uhlmann, & Banaji, 2009; Nock & Banaji, 2007a; Nock & Banaji, 2007b; Nock et al., 2010; Rüscher et al., 2007).
The Death/Suicide IAT

Nock and colleagues (2010) developed and evaluated a version of the IAT that measures associations of self with death/suicide. They administered the Death/Suicide IAT (in this paper referred to as the DS-IAT) to 157 adults presenting at a psychiatric emergency department of a large metropolitan hospital. Some participants had attempted suicide just before presenting at the emergency department whereas others presented with other psychiatric emergencies. Each participant completed a written assessment. To determine the predictive validity of the DS-IAT, Nock et al. assessed demographic and psychiatric risk factors for suicide attempts, history of suicidal behavior, clinician and patient predictions of the likelihood of a future suicide attempt, and conducted a follow-up assessment. Nock and colleagues administered the Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock, Holmberg, Photos, & Michel, 2007) to assess the presence of suicide attempts and distinguish purposeful suicide attempts from unintentional suicidal gestures. They also administered the Beck Scale for Suicide Ideation (BSI; Beck & Steer, 1991), which was used to measure patients’ severity of suicidal ideation while in the emergency department. The follow-up assessment occurred 6 months following the emergency visit and consisted of examination of hospital and medical records to determine if patients had been readmitted for suicide attempts, as well as a telephone interview during which the SITBI was readministered.

Nock and colleagues (2010) reported several clinically relevant findings. Patients presenting to the emergency department after attempting suicide had a significantly stronger implicit association between self and death/suicide than patients who presented with other psychiatric emergencies. Also, the DS-IAT predicted future suicide attempts above and beyond the effects of the presence of a current depressive disorder and history of prior suicide attempts.
Nock and his colleagues found that participants who attempted suicide had a significantly stronger implicit association with death/suicide than did participants who engaged in self-injury without suicide intention. The authors demonstrated that clinicians’ prediction of the likelihood of future suicide attempts did not significantly predict actual attempts. However, patients’ prediction of their likelihood of making a future suicide attempt did significantly predict actual attempts. In fact, performance on the DS-IAT predicted the occurrence of future suicide attempts above and beyond patients’ predictions. Participants whose performance on the DS-IAT elicited a stronger association between self and death/suicide were significantly more likely to attempt suicide after leaving the psychiatric emergency department than participants with a stronger association between self and life. The DS-IAT significantly predicted future suicide attempts beyond other clinical predictors (demographic and psychiatric factors, history of suicidal behavior, and clinician and patient predictions). In fact, the presence of an implicit association with death/suicide was positively associated with an approximately six-fold increase in the likelihood of attempting suicide in the following 6 months.

Nock and colleagues (2010) identified a behavioral marker (an implicit association between self and death/suicide) that predicts future suicide attempts, predicts the attempts better than current clinical methods, and distinguishes suicide attempters from other psychiatrically distressed patients. The authors argued that a person’s implicit cognition might direct how the individual chooses to cope with extreme distress and that an implicit association with death/suicide may represent one of the final steps in the decision to commit suicide.

The study by Nock and colleagues (2010) had limitations. First, participants were recruited from one emergency room in one hospital in the United States, so there is no evidence that results would generalize to other populations. Second, the DS-IAT stimuli mostly focused
on a general concept of death and not specifically on suicide. Finally, the predictive validity of the DS-IAT was determined by comparing it against demographic and psychiatric factors, history of suicidal behavior, and clinician and patient predictions; however, the DS-IAT was not compared to other predictive measures such as structured risk assessments or biological measures.

A number of studies have utilized the DS-IAT. In a study by Harrison, Stritzke, Fay, Ellison, and Hudaib (2014), the DS-IAT significantly predicted 5 out of 6 suicide risk indicators above and beyond previous suicide attempts. The authors also found that the DS-IAT appeared to measure a diminished desire to live. Price and colleagues’ (2014) research using the DS-IAT to assess implicit suicidality in individuals treated with ketamine for depression demonstrated mixed evidence for the clinical utility of the DS-IAT. Tang, Wu, and Miao (2013) utilized the DS-IAT in their research on escape theory, demonstrating that the impact of failure or success priming on implicit suicidality is more distinct among individuals with internal loci of control and absent among individuals with external loci of control.

The current study examines the generalizability of the results obtained by Nock and colleagues (2010) by recruiting from a private Midwestern university in the United States. This study expands upon previous research of the use of the DS-IAT by incorporating the relationship between symptoms of BPD, emotion dysregulation, and suicidality. Given that suicidality is a key feature of BPD, the author aims to strengthen the validity of the DS-IAT by demonstrating that increases in BPD symptoms are related to increases in suicidality on the DS-IAT.

**Hypotheses**

Considering the theory and research examined previously, it was hypothesized that the relationship between suicidality and symptoms of BPD is mediated by emotion dysregulation
Baron and Kenny’s (1986) four-step mediational model was used and is described in the ‘Results’ section. As such, testing the primary hypothesis requires testing multiple hypotheses.

Frequent suicidal behaviors are a defining feature of BPD (APA, 2013) and approximately 8-10% of individuals with BPD complete suicide (APA, 2001). Therefore, it was hypothesized that the predictor variable (symptoms of BPD) will be significantly positively related to the criterion variable (suicidality). Specifically, there will be a significant positive relationship between symptoms of BPD as measured by the total score on the Borderline Symptom List 23 (BSL-23) and strength of association between death and self as measured by the $D$ score indexed through the DS-IAT.

Pervasive emotion dysregulation is a key component of BPD (Linehan, 1993). Persons with BPD report more frequent, intense, and enduring negative emotions in daily living and experience fewer positive emotions and less time fluctuating from a positive to negative mood than persons without a BPD diagnosis (Ebner-Priemer, Kuo, et al., 2007; Ebner-Priemer, Welch, et al., 2007; Levine, Marziali, & Hood, 1997; Stiglmayr et al., 2005). Therefore, it was hypothesized that the predictor variable (symptoms of BPD) will be significantly positively related to the mediator variable (emotion dysregulation). Specifically, symptoms of BPD as measured by the BSL-23 total score will be significantly positively related to emotion dysregulation as indicated by the Difficulties in Emotion Regulation Scale (DERS) total score.

Suicide attempts and self-harm can be maladaptive coping skills used to solve problems in living when one’s emotions are dysregulated (Linehan, 1993). Several theorists have identified self-harm and suicide attempts as an effort of individuals with BPD to regulate their emotions (Chapman et al., 2006; Gratz et al., 2006; Gratz & Roemer, 2008; Gross, 1998a; Gross,
Therefore, it was hypothesized that the criterion variable (suicidality) will be significantly positively related to the mediator variable (emotion dysregulation). Specifically, emotion dysregulation as measured by the DERS total score will be significantly positively related to an association between death and self as measured by the $D$ score indexed through the DS-IAT.

Given that BPD is a disorder of emotion regulation (Linehan, 1993), and emotion dysregulation is often a precursor to suicidal behavior (Chapman et al., 2006; Gratz et al., 2006; Gratz & Roemer, 2008; Gross, 1998a; Gross, 1998b; Kamphuis et al., 2007; Linehan, 1993; McMain et al., 2001), it was hypothesized that the relationship between symptoms of BPD and suicidality will be mediated by emotion dysregulation. Mediation will be evidenced by the relationship between the BSL-23 total score and the DS-IAT $D$ score becoming non-significant when controlling for the DERS total score.

**Method**

**Participants**

The 108 male and female participants were undergraduate students at a Division I, mid-sized, Catholic university in the Midwest. Participants were recruited from the undergraduate psychology participant pool and received partial course credit for their participation in the study. Due to the sensitivity of one of the measures (the Borderline Symptom List-23; Bohus et al., 2009) to therapeutically induced change of impairment typical in BPD (Bohus et al., 2007), individuals were not invited to participate if they had or were currently engaged in DBT skills training or individual DBT therapy.

Data from 83 participants were analyzed. Because the DS-IAT measures response latencies and disruptions during testing could impact response latencies, 23 participants’ data
were removed due to disruptions during the administration of the test blocks of the DS-IAT (e.g., cell phone ringing, others entering the room, participants speaking while others were completing the test blocks). Because multiple participants (up to four) were often assessed at one time, a distraction by one participant disrupted the assessment process of the entire group. Additionally, two participants’ data were removed due to difficulty reading and/or speaking the English language. This removal is consistent with the study by Nock and colleagues (2010), which did not include participants who could not speak or understand English. For the sample that was analyzed, age ranged between 18 and 45 years and the mean age of the sample was 20.78 (2.88) years. The sample was 50.6% female \((n = 42)\). Regarding class standing, 7.2% were first year students, 14.5% were second year students, 41.0% were third year students, and 37.3% were fourth year students. Regarding participants’ self-identified race, 90.4% identified as White or Caucasian, 4.8% identified as Asian, 1.2% identified as African-American, 1.2% identified as Asian-American, 1.2% identified as Hispanic, and 1.2% identified as multi-racial.

**Measures**

**Demographic questionnaire.** A demographic data questionnaire was created and used to collect information regarding participants’ age, sex, racial identity, and class year.

**Borderline Symptom List 23.** The Borderline Symptom List 23 (BSL-23; Bohus et al., 2009) is a 23-item self-report questionnaire that quantitatively assesses specific subjective impairments of individuals with BPD. The BSL-23 is the short version of the Borderline Symptom List 95 (BSL-95; Bohus et al., 2007). Examples of items on both versions of the BSL include: “I felt helpless,” “I thought of hurting myself,” and “I suffered from shame.” Responders are encouraged to rate how strongly each item describes how they felt over the course of the last week. Each item is rated using a Likert scale with responses ranging from 0 to
4 (0 = not at all and 4 = very strong). A total score is calculated by summing all items. Higher total scores indicate more BPD symptoms. For the current study, the total score was used as an indicator of subjective impairment related to symptoms of BPD.

The BSL-23 demonstrates good to excellent psychometric properties (Bohus et al., 2009). The authors of the BSL-23 found it to be highly intercorrelated with the longer BSL-95 in all samples \( (r_s = 0.96) \). It has high internal consistency, with the value for the total score being \( \alpha = 0.97 \) \( (\alpha = .92 \) for current study). The BSL-23 has good test-retest reliability; after one week, the test-retest reliability of the total score was \( r = 0.82 \). It also illustrates convergent validity with positive moderate to high correlations with a measure of depression \( (r = 0.83) \) and a measure of psychopathology \( (r = 0.48) \). The BSL-23 demonstrates significant discriminant validity (mean \( d = 1.13 \)) by differentiating between BPD and other psychological disorders. Also, the BSL-23 demonstrated evidence of sensitivity to change as patients’ with BPD total impairment decreased in five symptom areas over the course of a 12-week treatment with DBT (Bohus et al., 2007).

**Difficulties in Emotion Regulation Scale.** The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a 36-item, self-report measure that assesses six factors involved in difficulties in emotion regulation. The six factors assessed by the DERS are Nonacceptance of Emotional Responses (Nonacceptance), Difficulties Engaging in Goal-Directed Behavior (Goals), Impulse Control Difficulties (Impulse), Lack of Emotional Awareness (Awareness), Limited Access to Emotion Regulation Strategies (Strategies), and Lack of Emotional Clarity (Clarity). Each factor has its own subscale within the DERS. All of the 36 items have factor loadings of .40 or higher (Gratz & Roemer, 2004). Each item is rated using a Likert scale with responses ranging from 1 to 5 \( (1 = \text{almost never} \) and 5 = \text{almost always}; Gratz & Roemer, 2004). Higher scores indicate more emotion dysregulation. Sample items
include “When I’m upset, I believe that I will remain that way for a long time” and “When I’m upset, I have difficulty controlling my behaviors.” A total score is calculated by summing all 36 items. Factor subscales can be scored by summing the items in each subscale. For the current study, the total score was used as an indicator of emotion dysregulation.

The DERS is a reliable and valid assessment tool. It has high internal consistency ($\alpha = .93$; Gratz & Roemer, 2004; $\alpha = .90$ for current study). Item-total correlations range from .16 to .69, with 34 items having item-total correlations above .30. The DERS also has high test-retest reliability ($r = .84$, $p < .01$). Comparing the DERS to the Generalized Expectancy for Negative Mood Regulation Scale (NMR; Catanzaro & Mearns, 1990), the Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004) and the Emotional Expressivity Scale (EES; Kring, Smith, & Neale, 1994) gives evidence of construct validity. The DERS has illustrated predictive validity, as correlations between DERS and a measure of self-harm (the Deliberate Self-Harm Inventory; DSHI; Gratz, 2001) are significant and positive for both genders (for women, $r = .20$; for men, $r = .26$).

**Death/Suicide Implicit Association Test.** The Death/Suicide IAT (DS-IAT, Nock et al., 2010) is a brief, computer-administered test that uses individuals’ reaction times when classifying words or phrases that measure the automatic mental associations they hold about life and death/suicide. According to prescribed instructions, participants classified words associated with “death,” “life,” “me,” and “not me.” “Death” words include: die, dead, deceased, lifeless, and suicide. “Life” words include: alive, survive, live, thrive, and breathing. “Me” words include: I, myself, my, mine, and self. “Not me” words include: they, them, their, theirs, and other.
Participants were presented with a practice task, two priming tasks, and two test tasks. The practice task consists of six blocks totaling 184 trials. Before beginning each block, participants were presented with a screen to orient them to the location of the words on the screen. Each stimulus word is presented for an unlimited amount of time. Participants classified words into their respective categories by pressing the ‘e’ or ‘i’ key on the computer keyboard. Incorrect classifications were followed by a red “X” below the stimulus word. When a participant incorrectly classified a word, he or she was required to correctly classify the word after the “X” was presented in order to continue to the next stimulus word. Correct classifications allowed the participant to proceed to the next stimulus word.

Once participants completed the practice task and learned how the IAT works, they were presented with the death/suicide blocks. There were four death/suicide blocks totaling 80 trials, though only two blocks of 30 trials each were test blocks. Participants were first presented with a black screen instructing them to classify words into the categories of “death” and “life” (lime green words) or “me” and “not me” (white words) and reminding them of the keys to press. Participants were provided with a list of words for each word category (see aforementioned list). The test blocks required participants to classify stimulus words when the “death” and “life” categories were paired with the “me” and “not me” categories.

In general, IATs use reaction time measurements to determine the relative strength of implicit associations between concepts and attributes based on the idea that quicker processing speeds lead to stronger associations (Rüsch et al., 2007). The IAT computer program records and analyzes response latencies for all trials using the standard IAT scoring algorithm (Greenwald, Nosek, & Banaji, 2003). The IAT is scored using a $D$ score (described in Lane, Banaji, Nosek, & Greenwald, 2007), which is calculated by taking the difference in average
response latency between the two combined tasks and dividing it by the standard deviation of all of the latencies in the two test blocks. A $D$ score is calculated for each participant in order to determine the relative strength of each participant’s association between “death” and “me,” with positive $D$ scores representing a strong association between death and self and negative $D$ scores representing a strong association between life and self.

The DS-IAT is a valid measure of suicidality. The DS-IAT illustrates predictive validity in the Nock et al. (2010) study, in which it predicted suicide attempts above and beyond clinical predictors. The DS-IAT also demonstrated predictive validity in the Nock et al. study through its ability to distinguish between participants who attempted suicide and participants who engaged in nonsuicidal self-injury. Nock and colleagues also established a clinically meaningful cut-off point based on whether each individual’s score represented an association between death/suicide and self ($D > 0$) versus life and self ($D < 0$). Patients who associated themselves strongly with death/suicide ($D > 0$) were significantly more likely to attempt suicide after leaving the emergency department than were patients who associated themselves strongly with life. With this cut-off point, the DS-IAT significantly predicted future suicide attempts beyond other clinical predictors, illustrating an approximately six-fold increase in a patient’s likelihood of attempting suicide in the following six months.

**Procedure**

Prior to data collection, the university Institutional Review Board (IRB) approved the study protocol to ensure compliance with human subjects standards (Appendix A). Upon approval, participants were recruited from the undergraduate psychology research pool over the course of one semester. An announcement about the study was posted on the participant pool bulletin board. The announcement displayed the web-address for participants to sign up and
stated that participants would complete a brief behavioral task using a computer program followed by three questionnaires about emotions and behaviors. The announcement also emphasized that individuals who had previously or currently participated in DBT skills training or individual therapy could not participate in the study.

At the time of the study, individuals completed the informed consent procedure. After participants granted consent, they completed the demographic data sheet, BSL-23, DERS, and DS-IAT. The order of administration of the BSL-23 and DERS was counterbalanced to control for order effects and fatigue. To ensure confidentiality, all data and documents were free of identifying information and coded using only a number. All participants received a debriefing statement that included contact information in the event that they wanted counseling services or had questions regarding the study or their rights as research participants.

**Results**

A mediation model consisting of several steps of linear regressions was used to analyze the primary hypothesis (Figure 1; Baron & Kenny, 1986). This mediational model provided a way to test if emotion dysregulation was involved in the occurrence of an implicit association between death/suicide and self among individuals with symptoms of BPD. The first step of the mediation analysis, as outlined by Baron and Kenny (1986), is to demonstrate that a significant relationship exists between the predictor variable (BSL-23) and the criterion variable (DS-IAT D score; Path C). In order for mediation to occur, the next step is that the predictor variable (BSL-23) must account for changes in the mediator variable (DERS; Path A). Third, the mediator variable must account for part of the change in the criterion variable (DS-IAT D score; Path B). Finally, the mediator variable mediates the relationship if a previous significant relationship
between the predictor variable and criterion variable becomes less significant when controlling for the mediator variable (Path C').

Results are displayed in Figure 2. As hypothesized, the first step of mediation was significant, such that the BSL-23 was significantly positively related to the DS-IAT, \( r(83) = .22, \ p < .05 \) (Path C). Also as hypothesized, the second step of mediation was also significant, such that the BSL-23 was significantly positively related to the DERS, \( r(83) = .54, \ p < .001 \) (Path A). Contrary to hypotheses, the third step was non-significant, as the DERS was not significantly positively related to the DS-IAT, \( r(83) = .17, \ p = .12 \) (Path B). According to Baron and Kenny’s (1986) mediational model, mediation cannot occur because this relationship was non-significant. Analysis was still conducted for the fourth step of mediation, which demonstrated that, when controlling for the DERS, the relationship between the BSL-23 and DS-IAT became non-significant, \( \beta(80) = .18, \ p = .16 \) (Path C’). See Table 1 for means, standard deviations, and Cronbach’s \( \alpha \) for all variables.

The construct of emotion dysregulation used in the current study, the DERS total score, is thought to be a comprehensive measure of 6 factors of emotion dysregulation. Each of the 6 factors accounts for a unique aspect of emotion dysregulation. Although initial results demonstrated that the DERS total score was not a mediator, the relationship between the BSL-23 and the DS-IAT became non-significant when controlling for the DERS total score, implying that some factor of the DERS might have been mediating the relationship. Thus, exploratory analyses were conducted to determine if one or more of the 6 DERS factor subscales accounted for the change in the relationship between the BSL-23 and the DS-IAT once the DERS was controlled. Based on the intercorrelations of the DERS factor subscales with the DS-IAT D score (see intercorrelations in Table 2), only the Nonacceptance of Emotional Responses factor
subscale (“Nonacceptance”) was significantly related to the DS-IAT D score. Therefore, a mediational model was tested using the Nonacceptance factor subscale.

Mediation analyses conducted using the Nonacceptance factor subscale produced significant results, according to Baron and Kenny’s (1986) mediational model (see Figure 3 for results). As in the original mediation analyses, the first step of mediation was significant, such that the BSL-23 was significantly positively related to the DS-IAT, $r(83) = .22, p = .05$ (Path C). The second step of mediation was also significant, such that the BSL-23 was significantly positively related to Nonacceptance, $r(83) = .63, p = .00$ (Path A). Furthermore, the third step was significant, such that Nonacceptance was significantly positively related to the DS-IAT, $r(83) = .23, p = .04$ (Path B). In the fourth and final step of the mediation analysis, the relationship between the BSL-23 and DS-IAT became non-significant when controlling for Nonacceptance, $\beta(80) = .13, p = .37$ (Path C’). Analyses conducted using the other 5 DERS factor subscales demonstrated non-significant relationships between the subscales and the DS-IAT (Step 3). Additionally, the relationship between the BSL-23 and the “Awareness” DERS subscale (Step 2) was non-significant.

Discussion

The purpose of the current study was to expand upon previous research of the use of the DS-IAT (Harrison et al., 2014; Nock et al., 2010; Price et al., 2014; Tang, et al., 2013) by examining if the DS-IAT’s measurement of implicit suicidal cognition is related to symptoms of BPD and if emotion dysregulation mediates this relationship. As hypothesized, symptoms of BPD were significantly positively related to implicit suicidality. This finding is consistent with previous research on the relationship between BPD and suicide (APA, 2013; APA, 2001; Berk, et al., 2007; Clarkin et al., 1983; Cowdry et al., 1985; Isometsä et al., 1996; Linehan et al., 1991).
Also as hypothesized, symptoms of BPD were significantly positively related to emotion dysregulation, which is consistent with previous research (Ebner-Priemer, Kuo, et al., 2007; Ebner-Priemer, Welch, et al., 2007; Levine, Marziali, & Hood, 1997; Linehan, 1993; Lynch et al., 2006; Stiglmayr et al., 2005). Contrary to hypotheses, the third step of the mediational analysis (the relationship between emotion dysregulation and implicit suicidality) was non-significant and therefore the current study did not establish emotion dysregulation as a mediator in the relationship between symptoms of BPD and implicit suicidality. This non-significant finding is contrary to previous research on the relationship between emotion dysregulation and suicidality (Gross, 1998a; Gross, 1998b; Linehan, 1993; McMain et al., 2001; Paris, 2006). This result was very unexpected, given the data demonstrating a relationship between emotion dysregulation and suicidality. Therefore, it seemed necessary to run the fourth and final mediation step as planned, in an attempt to better understand this unexpected finding. Despite the non-significant relationship between emotion dysregulation and implicit suicidality, the relationship between symptoms of BPD and implicit suicidality became non-significant when controlling for emotion dysregulation.

The non-significant results of Step 3 of the mediation could be due to multiple reasons. One possibility is that emotion dysregulation is not related to implicit suicidality. Second, it is possible that the current study lacked statistical power. The actual effect size measured was small to medium ($f^2 = .06$). A post-hoc analysis indicates that 176 participants would be needed to detect this effect. Fewer than 176 participants were recruited because the a priori power analysis estimated 80 participants would be needed to detect the desired effect, which was expected to be larger. Third, it is possible that a comprehensive construct of emotion dysregulation does not mediate the relationship between symptoms of BPD and suicidality;
instead, it may be the case that one or more unique domains of emotion dysregulation mediate the relationship.

Exploratory analyses were conducted using the DERS factor subscales (see Table 2). As seen in Figure 3, borderline symptoms were significantly positively related to implicit suicidality (Path C) and nonacceptance of emotional responses (Path A). Nonacceptance of emotional responses was significantly positively related to implicit suicidality (Path B) and mediated the relationship between symptoms of BPD and implicit suicidality (Path C’). The Nonacceptance subscale reflects a tendency toward negative secondary emotional responses to one’s negative primary emotions, as well as a lack acceptance of one’s distress (Gratz & Roemer, 2004). Negative secondary emotions assessed by the DERS Nonacceptance subscale include guilt, shame, embarrassment, anger, and irritation. Examples of items from the Nonacceptance subscale include, “When I’m upset, I feel guilty for feeling that way,” “When I’m upset, I become angry with myself for feeling that way,” and “When I’m upset, I feel like I’m weak.” The link between lack of acceptance of one’s distress by means of negative secondary emotional responses and implicit suicidality is in line with the research on the role of self-invalidation in the epidemiology and maintenance of BPD (Linehan, 1993). If an individual with BPD is emotionally dysregulated and tells his/herself that it is not acceptable to feel this way, negative secondary emotions follow, which would likely increase the emotion dysregulation as well as the likelihood of suicidal behavior.

The results of the current study’s exploratory analyses were somewhat consistent with previous research examining the relationship between the DERS factor subscales and suicidality. Research conducted by Rajappa, Gallagher, and Miranda (2012) on a college sample found that the Nonacceptance factor subscale distinguished individuals with no history of suicide attempts
from individuals with histories of multiple attempts. Rajappa et al. (2012) also found that the Strategies factor subscale distinguished individuals with no history of suicide attempts from individuals with histories of single and multiple attempts, which is inconsistent with the current study’s findings that no other DERS factor subscale was significantly related to implicit suicidality.

The findings of the current study have several potential implications. First, considering that suicidal behavior is a key diagnostic criterion for BPD, the current study strengthens the evidence of the validity of the DS-IAT by demonstrating that higher levels of BPD symptoms are related to higher levels of implicit suicidality on the DS-IAT. Second, results highlight the potential clinical utility of the DS-IAT for individuals with symptoms of BPD. The significant relationship between symptoms of BPD and implicit suicidality provides evidence of the construct validity of the DS-IAT, demonstrating that individuals who endorse more symptoms of BPD also endorse more implicit suicidality. The current study provides evidence that the DS-IAT can accurately measure implicit suicidality in individuals with symptoms of BPD. If the DS-IAT were to be used in a clinical setting with individuals with symptoms of BPD, it could potentially aid clinicians in recognizing individuals at risk for suicide and thus allow clinicians to intervene. Third, preliminarily it appears that nonacceptance of emotional responses may carry particular importance in the relationship between symptoms of BPD and implicit suicidality. This finding suggests that providing clinically relevant treatment interventions that target nonacceptance of emotional experiences, negative secondary emotional responses, and self-invalidation in individuals with BPD may be of particular importance. Fortunately, there are treatments that target nonacceptance of emotional experiences and/or self-invalidation (e.g., third-wave cognitive-behavioral therapies such as DBT or Acceptance and Commitment
Therapy; ACT). It is possible that one of the many reasons treatments such as DBT and ACT are so successful for individuals with BPD is precisely because they target nonacceptance. Given the potential mediating role of nonacceptance on the relationship between BPD symptoms and implicit suicidality, it is possible that connecting individuals with BPD to treatments targeting nonacceptance could greatly decrease the number of suicides over time. Future research should explore the impact of such treatments on implicit suicidality.

Some limitations should be noted when interpreting the results of the current study. First, the sample used in the current study was a nonclinical, majority Caucasian sample comprised of undergraduate students in a participant pool, which limits the generalizability of the findings because of the minimal diversity of the sample. Future studies should examine a clinical sample of individuals with BPD who have not participated in DBT and who are more diverse in age, race, and socioeconomic status. Second, as stated earlier, the current study may have lacked statistical power. Third, at the time of this writing, the DS-IAT is available only in English. Future research is needed to develop the DS-IAT in other languages so that non-English speakers can use the measure. Fourth, the current study used two self-report measures. The use of self-report measures introduces the potential for error due to the subjectivity of the measure and the possibility that participants’ answers may be influenced by social desirability. However, the main measure used in the study, the DS-IAT, is a behavioral measure that does not have the same limitations as self-report measures. Additionally, the anonymous nature of the study may have guarded against the influence of social desirability. Fifth, the current study utilized the original version of the DS-IAT used by Nock and colleagues in 2010. The original version of the DS-IAT was used in the current study because it was the only version available at the start of data collection.
There have since been updates to the DS-IAT. Randall, Rowe, Dong, Nock, and Colman (2013) published research comparing an updated version of the DS-IAT (renamed the Death/Life IAT) to five other versions of the IAT, including a suicide-specific Suicide/Life IAT. The DS-IAT was the only version of the IAT that significantly predicted self-harm following discharge from the emergency department. Future research should be conducted using the newest version of the DS-IAT and/or Suicide/Life IAT.

The current study examined the relationship between symptoms of BPD, emotion dysregulation, and implicit suicidality. Preliminary results demonstrated that the specific domain of nonacceptance of emotional responses mediated the relationship between symptoms of BPD and implicit suicidality, rather than the broad, multi-factorial construct of emotion dysregulation. Given the results of the current study as well as ongoing research by Nock and colleagues, the DS-IAT (or a suicide-only IAT) may eventually help clinicians predict the degree of suicidality in their clients, especially clients with BPD.
References


typology and the borderline personality disorder. *Journal of Abnormal Psychology, 92*,
263-275. doi:10.1037/0021-843X.92.3.263

syndrome. *International Journal of Psychiatry in Medicine, 15*, 201-211. doi:10.2190/
3Y0C-HAUKE-04JX-GBPN

De Houwer, J. (2006). What are implicit measures and why are we using them? In R. W. Wiers
&A. W. Stacy (Eds.) *Handbook of Implicit Cognition and Addiction* (pp. 11-28).

De Houwer, J., & Moors, A. (2007). How to define and examine the implicitness of implicit

Ebner-Priemer, U. W., Kuo, J., Kleindienst, N., Welch, S. S., Reisch, T., Reinhard, I., . . . Bohus,
M. (2007). State affective instability in borderline personality disorder assessed by
ambulatory monitoring. *Psychological Medicine, 37*, 961-970. doi:10.1017
/S0033291706009706

(2007). Psychophysiological ambulatory assessment of affective dysregulation in
j.psychres.2006.04.014

erratic-dramatic personality disorders. *Journal of Research in Personality, 29*, 189-207.
doi:10.1006/jrpe.1995.1011


Table 1

Descriptive Statistics for All Variables (n = 83)

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<th>Variable</th>
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<td>BSL-23</td>
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<tr>
<td>DERS Impulse Control</td>
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<tr>
<td>DERS Emotion Regulation Strategies</td>
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<td>DERS Awareness</td>
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<tr>
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Table 2

*Intercorrelations among All Variables*

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<td>.23*</td>
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<td>.09</td>
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<td>.41***</td>
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</table>

IAT = DS-IAT; BSL = BSL-23; NA = nonacceptance; GDB = goal-directed behavior; IC = impulse control; ERS = emotion regulation strategies; A = awareness; C = clarity

*p < .05 (2-tailed).  **p < .01 (2-tailed).  ***p < .001 (2-tailed).
Figure 1. Hypothesized mediational model of suicidality, BPD, and emotion dysregulation. The first model illustrates the hypothesized significant relationship between the predictor variable (BSL-23; Borderline Symptom List 23) and the criterion variable (DS-IAT D Score; Death-Suicide Implicit Association Test D Score; Path C). In the second model, Path A is the hypothesized relationship between the predictor variable (BSL-23) and the mediator variable (DERS; Difficulties in Emotion Regulation Scale). Path B is the hypothesized relationship between the mediator variable (DERS) and the criterion variable (DS-IAT D score). Path C’ is the hypothesized direct effect of the BSL-23 on the DS-IAT D score after controlling for the DERS. Dotted lines indicate that the mediator variable is controlled.
Figure 2. Test of a mediational model of suicidality, BPD, and emotion dysregulation. The first model illustrates the significant relationship between the predictor variable (BSL-23; Borderline Symptom List 23) and the criterion variable (DS-IAT D Score; Death-Suicide Implicit Association Test D Score; Path C). In the second model, Path A is the significant relationship between the predictor variable (BSL-23) and the mediator variable (DERS; Difficulties in Emotion Regulation Scale). Path B is the non-significant relationship between the mediator variable (DERS) and the criterion variable (DS-IAT D score). Path C’ is the non-significant direct effect of the BSL-23 on the DS-IAT D score after controlling for the DERS. Dotted lines indicate that the hypothesized mediator variable is controlled. *p < .05. **p < .001.
Figure 3. Test of a mediational model of suicidality, BPD, and nonacceptance. The first model illustrates the significant relationship between the predictor variable (BSL-23; Borderline Symptom List 23) and the criterion variable (DS-IAT D Score; Death-Suicide Implicit Association Test D Score; Path C). In the second model, Path A is the significant relationship between the predictor variable (BSL-23) and the mediator variable (nonacceptance; nonacceptance of emotional responses). Path B is the non-significant relationship between the mediator variable (nonacceptance) and the criterion variable (DS-IAT D score). Path C’ is the non-significant direct effect of the BSL-23 on the DS-IAT D score after controlling for nonacceptance. Dotted lines indicate that the mediator variable is controlled.

*p < .05. **p < .001.
Appendix A

Institutional Review Board Approval Letter

November 8, 2012
Andrea Winchester
8678 Monsanto Dr.
Cincinnati, OH 45231

Dear Ms. Winchester:

The IRB has completed the review of your protocol #1233, Emotion Dysregulation as a Mediator of the Relationship between Symptoms of Borderline Personality Disorder and Implicit Suicidality using expedited review procedures. We appreciate your thorough treatment of the issues raised and your timely response. Your study is approved in the Expedited category under Federal Regulation 45CFR46. Approval expires November 8, 2013. A progress report, available at [http://www.xavier.edu/irb/forms.cfm](http://www.xavier.edu/irb/forms.cfm), is due by that date.

If you wish to modify your study, including any changes to the approved Informed Consent form, it will be necessary to obtain IRB approval prior to implementing the modification. If any adverse events occur, please notify the IRB immediately.

We wish you success with your research!

Sincerely,

Morell E. Mullins, Jr., Ph.D.
Chair, Institutional Review Board
Xavier University

MEM/sb

c: Nicholas Salsman, Advisor

enclosure: stamped informed consent