Journal of Clinical Child & Adolescent Psychology
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/hcap20

Nonsuicidal Self-Injury Disorder: An Empirical Investigation in Adolescent Psychiatric Patients

Catherine R. Glenn [a] & E. David Klonsky [b]
[a] Department of Psychology , Harvard University
[b] Department of Psychology , University of British Columbia
Published online: 17 May 2013.

To cite this article: Catherine R. Glenn & E. David Klonsky (2013): Nonsuicidal Self-Injury Disorder: An Empirical Investigation in Adolescent Psychiatric Patients, Journal of Clinical Child & Adolescent Psychology, DOI:10.1080/15374416.2013.794699

To link to this article: http://dx.doi.org/10.1080/15374416.2013.794699

Journal of Clinical Child & Adolescent Psychology, 0(0), 1–12, 2013

ISSN: 1537-4416 print/1537-4424 online
DOI: 10.1080/15374416.2013.794699

Routledge
Taylor & Francis Group

Nonsuicidal Self-Injury Disorder: An Empirical Investigation in Adolescent Psychiatric Patients

Catherine R. Glenn
Department of Psychology, Harvard University

E. David Klonsky
Department of Psychology, University of British Columbia

Nonsuicidal self-injury (NSSI) is a growing public health concern, especially among adolescents. In the current edition of the *Diagnostic and Statistical Manual of Mental Disorders*, NSSI is classified as a criterion of borderline personality disorder (BPD). However, a distinct NSSI disorder will now be included in *DSM–5* as a "condition requiring further study." It is important to note that, at this time, there is little direct evidence supporting the *DSM–5* proposal over the *DSM–IV* classification. To address this need, the current study examined the extent to which NSSI occurs independently of BPD and has clinical significance beyond a diagnosis of BPD in adolescent psychiatric patients. NSSI disorder was assessed based on the proposed *DSM–5* criteria in 198 adolescents ages 12 to 18 (74% female; 64% Caucasian, 14% Hispanic, 10% African American, and 12% mixed/other ethnicity) from a psychiatric hospital. Major Axis I disorders, Axis II BPD, and suicide ideation and attempts were assessed with structured clinical interviews; emotion dysregulation and loneliness were measured with validated self-report questionnaires. First, results indicated that NSSI disorder occurred independently of BPD. Specifically, although there was overlap between the occurrence of BPD and NSSI disorder, this overlap was no greater than that between BPD and other Axis I disorders (e.g., anxiety and mood disorders). Second, NSSI disorder demonstrated unique associations with clinical impairment—indexed by suicide ideation and attempts, emotion dysregulation, and loneliness—over and above a BPD diagnosis. Taken together, findings support the classification of NSSI as a distinct and clinically significant diagnostic entity.

Nonsuicidal self-injury (NSSI) refers to the deliberate, self-inflicted destruction of body tissue without suicidal intent, and for purposes not socially sanctioned (Favazza & Conterio, 1989; International Society for the Study of Self-Injury, n.d.; Klonsky, 2007; Muehlenkamp, 2005; Nock & Prinstein, 2004). The most common forms of NSSI include skin cutting, burning, and severe scratching (Nock & Prinstein, 2004; Ross & Heath, 2002; Whitlock, Eckenrode, & Silverman, 2006). NSSI is highly prevalent among adolescents: It is estimated that 14 to 15% of adolescents in community samples (Laye-Gindhu & Schonert-Reichl, 2005; Ross & Heath, 2002) and 40% or more of adolescents in psychiatric samples engage in NSSI (DiClemente, Ponton, & Hartley, 1991; Kumar, Pepe, & Steer, 2004). These high rates of NSSI among adolescents are alarming given the behavior's associations with severe mental health outcomes. For instance, growing research suggests that NSSI is one of the most robust prospective predictors of suicide attempts in adolescents (Asarnow et al., 2011; Wilkinson, Kelvin, Roberts, Dubicka, & Goodyer, 2011).

This project was supported in part by an NIH grant (MH08009601) awarded to E. David Klonsky, Ph.D. Special thanks to Kristie Golden, Ph.D., as well as to the staff and patients at South Oaks Hospital—The Long Island Home for all their support with this project.

Correspondence should be addressed to E. David Klonsky, Department of Psychology, University of British Columbia, 2136 West Mall, Vancouver, BC, V6T 1Z4, Canada. E-mail: edklonsky@gmail.com

Research to date has not yet clarified why adolescents are at increased risk for engaging in NSSI. However, studies have demonstrated that adolescents exhibit heightened emotional reactivity and lability, compared to both children and adults (e.g., Larson, Moneta, Richards, & Wilson, 2002), and that these differences may be explained by key neurobiological changes during this developmental period (e.g., incentive- and emotion-focused regions mature rapidly while prefrontal control regions are still developing; Casey et al., 2010). Increased emotional reactivity/lability without a well-developed control system may place adolescents at heightened risk for engaging in extreme emotion regulation strategies, such as NSSI. Although the adolescent-specific mechanisms of risk have not been elucidated, the high rates of NSSI and the behavior's relation to severe outcomes among adolescents suggest that research on NSSI in this age group is greatly needed.

NSSI is currently classified in the *Diagnostic and Statistical Manual of Mental Disorders* (i.e., *DSM–IV–TR*; American Psychiatric Association [APA], 2000) as a criterion of borderline personality disorder (BPD). Therefore, the large association between NSSI and BPD is not surprising (Andover, Pepper, Ryabchenko, Orrico, & Gibb, 2005; Glenn & Klonsky, 2009b; Klonsky, Oltmanns, & Turkheimer, 2003). However, NSSI is not unique to BPD. It relates to other personality disorders, such as histrionic, paranoid, and schizotypal PDs (Klonsky et al., 2003; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006), as well as to many Axis I disorders, including anxiety, depressive, eating, and substance use disorders (Andover et al., 2005; Darche, 1990; Favazza & Conterio, 1989; Klonsky et al., 2003; Nock et al., 2006). Given NSSI's association with a range of both Axis I and Axis II disorders, the *DSM–IV* classification of NSSI as a symptom of BPD may not be accurate.

EARLY CALLS TO CLASSIFY NSSI AS ITS OWN DIAGNOSTIC ENTITY

For decades, there have been arguments to classify NSSI as its own diagnostic entity. For instance, Kahan and Pattison (1984) proposed a *deliberate self-harm syndrome* based on the following features: (a) an inability to resist the impulse to injure oneself, (b) the experience of tension prior to the NSSI act, and (c) the experience of release or relief after the NSSI act is completed. Similarly, Favazza and Rosenthal (1990) recommended that the *DSM* include a *repetitive self-mutilation syndrome*, which included features akin to Kahan and Pattison's (1984), plus an additional criterion: preoccupation with thoughts of self-harm. More recently, Muehlenkamp (2005) argued that classifying NSSI as its own diagnostic entity would serve important research and clinical purposes, such as enhanced communication between researchers and clinicians regarding the nature and function of NSSI.

NSSI IN *DSM*

Despite arguments for NSSI's reclassification as its own disorder, NSSI has been categorized exclusively as a criterion of BPD since the third edition of the *DSM* (APA, 1980). This current classification contains two key assumptions about the relation between NSSI and BPD: (a) that NSSI is unlikely to occur without a BPD diagnosis, and (b) that NSSI does not have clinical significance outside the context of BPD. However, research in the past 5 to 10 years suggests that these assumptions may be false. For instance, rates of NSSI in adolescents (Jacobson, Muehlenkamp, Miller, & Turner, 2008; Nock et al., 2006) and young adults (Herpertz, 1995; Zlotnick, Mattia, & Zimmerman, 1999) are much higher than rates of BPD in these samples, suggesting that NSSI frequently occurs *without* a BPD diagnosis. Similarly, in a psychiatric inpatient sample of adolescents, approximately half of self-injurers did not meet criteria for BPD (Nock et al., 2006). Moreover, numerous studies have found that NSSI on its own is linked with clinical impairments such as anxiety and depression (Andover et al., 2005; Klonsky et al., 2003), as well as suicidal thoughts and behaviors (Asarnow et al., 2011; Glenn & Klonsky, 2009b; Nock et al., 2006; Whitlock et al., 2006; Wilkinson et al., 2011).

NSSI DISORDER IN *DSM–5*: A SHIFT IN THINKING

Based on this accumulating evidence, NSSI has become increasingly viewed as a behavior occurring in a variety of populations, rather than just those with BPD. In fact, a new NSSI disorder was proposed for inclusion in the next edition of the *DSM* (APA Task Force on DSM-5 Development, n.d.) and will be included in *DSM–5* as a "condition requiring further study." This shift in perspective will prompt additional research on NSSI as a diagnostic entity of clinical import in and of itself. Notably, when proposing an independent NSSI disorder, the DSM–5 Childhood Disorders and Mood Disorders Work Groups emphasized four main reasons for reclassifying NSSI. First, the Work Groups asserted that the *DSM–IV* classification of NSSI as a BPD symptom is inconsistent with the growing body of evidence suggesting that NSSI occurs in non-BPD populations. The *DSM–IV* categorization of NSSI is problematic because it could lead many adolescents who self-injure to be misdiagnosed with BPD and receive inappropriate care.

In general, clinical misdiagnosis is common (e.g., Steiner, Tebes, Sledge, & Walker, 1995). Moreover, because a *DSM* diagnosis is required to receive mental health treatment covered by insurance, if an adolescent engages in NSSI but does not meet criteria for any *DSM* Axis I disorder (e.g., 12% of psychiatric patients in Nock et al., 2006), he or she may be misdiagnosed with BPD given that NSSI is a symptom of BPD in the *DSM*.

Second, the NSSI disorder proposal emphasized the importance of clearly differentiating NSSI from attempted suicide. The current BPD criterion in *DSM–IV* reads, "recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior," thus combining (and perhaps equating) NSSI with suicidal behaviors. In clinical settings, mischaracterizing NSSI as a suicide attempt (which is commonly reported among adolescents; Kumar et al., 2004), can lead to inaccurate case conceptualization and inappropriate treatment including iatrogenic hospitalization. In addition, there is concern that epidemiological research does not explicitly distinguish NSSI from attempted suicide, which has led to inflated prevalence rates of attempted suicide. Ample research highlights key differences between NSSI and attempted suicide in terms of prevalence, frequency, motivations, medical severity, and psychosocial correlates (see Kahan & Pattison, 1984; Muehlenkamp, 2005; Walsh & Rosen, 1998). Notably, although it is distinct from suicide, NSSI is a well-established risk factor for suicidal behavior (Lewinsohn, Rohde, & Seeley, 1994), and, moreover, recent and growing evidence suggests that NSSI is actually one of the most robust prospective predictors of suicide attempts in adolescents, even when controlling for previous suicidal behavior (TORDIA: Asarnow et al., 2011; ADAPT: Wilkinson et al., 2011). Therefore, distinguishing nonsuicidal from suicidal self-injurious behaviors is crucial for accurately assessing suicide risk. Taken together, it is important for both research and clinical reasons that the *DSM* classification reflects the difference between NSSI and attempted suicide.

Third, a separate NSSI disorder would also have significant implications for research and treatment development. The current *DSM–IV* classification inhibits funding for research on NSSI and its treatment, except in the context of a BPD diagnosis. For instance, Dialectical Behavior Therapy (DBT; Linehan, 1987), an empirically supported treatment for BPD and one of the only

TABLE 1
Operationalization of the Proposed *DSM–5* Nonsuicidal Self-Injury (NSSI) Disorder Criteria in the Current Study

Proposed NSSI Disorder Criterion for DSM-5	*Operationalization of Criterion in the Current Study*
(A) *In the past year, 5 days of NSSI that was severe enough to cause tissue damage but without suicidal intent*	Participants were only included if they had engaged in: (a) more than 5 NSSI episodes in their lifetime, (b) at least one episode of NSSI in the last 12 months, (c) NSSI that was without suicidal intent, and (d) severe NSSI, including cutting, burning, severe scratching, or banging/hitting self.
(B) *NSSI is associated with <u>two</u> of the following*:	
(1) *Negative feelings or thoughts immediately precede engagement in NSSI*	This criterion was not directly assessed. However, almost all self-injurers (98%) reported that NSSI served an affect regulation function, assessed using the ISAS (e.g., "When I self-injure, I am reducing anxiety, frustration, anger, or other overwhelming emotions").
(2) *A period of preoccupation with NSSI precedes the NSSI*	This criterion was not directly assessed.
(3) *NSSI urges occur frequently even if not acted upon*	This criterion was not directly assessed.
(4) *NSSI is engaged in with a purpose*	Participants were only included if they endorsed at least one item on the ISAS, indicating that NSSI served a specific function.
(C) *NSSI causes significant distress or impairment in important areas of functioning*	Participants' reason for admission was not available. However, all participants were admitted to the inpatient or partial hospitalization unit for severe psychopathology, and many adolescents reported during the interview that their NSSI led to their current admission to the hospital.
(D) *NSSI does not occur exclusively in a state of psychosis, delirium, or intoxication, and cannot be accounted for by another mental or medical disorder*	This criterion was not assessed directly. However, participants were excluded if they were in a current psychotic episode. Delirium is rarely diagnosed in adolescents. It is unknown whether participants engaged in NSSI exclusively when intoxicated. However, only half the sample engaged in substance use, so this could not account for the NSSI in the total sample. Further, most substance use occurred in groups whereas most self-injurers reported that they engaged in NSSI only when alone. Finally, participants were excluded if they had cognitive impairments that inferred with their ability to complete the study, therefore ruling out other severe disorders that could be accounting for the NSSI.

treatments that specifically targets NSSI, is often recommended for self-injuring patients. However, in a previous study, DBT was not superior to community treatment provided by experts for reducing NSSI (Linehan et al., 2006). In addition, DBT is an intensive (group and individual components) and lengthy (typically 1 year) treatment that may not be feasible in many settings. Therefore, DBT may not be efficient or desirable if more focused and less time-intensive treatments can better address NSSI. Moreover, given that rates of NSSI are higher than rates of BPD among adolescents, the field is in great need of short-term treatments that efficiently and effectively treat NSSI. The addition of a separate NSSI disorder would increase funding for research and treatments that target NSSI specifically, including NSSI without co-occurring BPD.

Finally, including NSSI in the *DSM* would provide a standardized definition of clinically significant NSSI, which would greatly facilitate comparisons of findings from different studies. For instance, currently, some NSSI studies include individuals who have engaged in even one lifetime episode of NSSI in NSSI samples, others require minimum frequencies such as five or 10 episodes, and still others require that particular behaviors be performed (e.g., cutting). The inclusion of a standardized definition in the *DSM* would provide diagnostic criteria that could be used consistently across studies on NSSI and greatly facilitate the development of cumulative knowledge about NSSI.

Notably, the proposal to include a separate NSSI disorder in the *DSM* is a significant shift in thinking from earlier conceptualizations of NSSI. Inclusion of a separate NSSI disorder would allow for co-occurrence between NSSI and other Axis I disorders, as well between NSSI and Axis II disorders such as BPD (see Criterion D in Table 1).[1] This means that individuals could be diagnosed with (a) both NSSI disorder *and* BPD, (b) either NSSI disorder *or* BPD, or (c) neither NSSI disorder nor BPD. In short, as the criteria are currently written, the presence or absence of BPD would have no influence on the diagnosis of NSSI disorder.

THE CURRENT STUDY

Although a growing body of evidence suggests that the *DSM–IV* classification of NSSI may be inaccurate, the field lacks data directly addressing the two key assumptions of the *DSM–IV* classification: (a) that NSSI is unlikely to occur without a BPD diagnosis, and (b) that NSSI does not have clinical significance outside the context of BPD. The present study was designed to evaluate these assumptions as testable predictions that can potentially be refuted through empirical study. Specifically, the current study's aims were to examine (a) the extent to which NSSI disorder occurs outside the context of BPD, and (b) whether NSSI disorder indicates clinically significant impairment above and beyond a diagnosis of BPD. The study utilized an adolescent psychiatric sample because rates of NSSI are highest among this population (DiClemente et al., 1991; Kumar et al., 2004) and because BPD can be validly diagnosed in adolescents (Miller, Muehlenkamp, & Jacobson, 2008).

For the first aim, we examined the diagnostic overlap between NSSI disorder and BPD, as well as the extent to which NSSI occurs outside of a BPD diagnosis. In addition, we compared co-occurrence of NSSI disorder and BPD to the co-occurrence of BPD with other psychiatric disorders. Co-occurrence among different disorders is expected, especially in psychiatric samples (Angold, Costello, & Erkanli, 1999); thus, sufficient independence of NSSI disorder and BPD would be demonstrated not by zero overlap but by overlap comparable to, or less than, that exhibited between BPD and other disorders. It was predicted that BPD's co-occurrence with NSSI disorder would be similar to, or less than, its co-occurrence with other disorders, such as mood and anxiety disorders.

For the second aim, we first examined the association between NSSI disorder and three indicators of clinical impairment: (a) past month suicide ideation and attempts, (b) difficulties with emotion regulation, and (c) loneliness. These three variables were chosen to have clinical distress/impairment indices relevant to behavioral (suicide ideation and attempts), emotional (emotion dysregulation), and interpersonal (loneliness) domains, and because previous research has shown these variables to be elevated in both NSSI (Gratz & Roemer, 2004; Klonsky, 2007; Nock et al., 2006; Whitlock et al., 2006) and BPD (APA, 2001; Glenn & Klonsky, 2009a; Zanarini et al., 2007). Second, we examined the incremental contribution of NSSI disorder in predicting these indices of clinical distress/impairment (suicide ideation and attempts, emotion dysregulation, and loneliness) over and above a BPD diagnosis. We predicted strong associations between NSSI and indicators of clinical impairment, and further that these associations would remain significant when controlling for BPD, thus demonstrating that NSSI conveys clinical significance beyond its association with BPD.

Given that the proposed NSSI disorder criteria are new and this study is one of the first to examine these

[1]Some may argue that a BPD diagnosis should serve as a rule-out for NSSI and that it should not be possible to diagnose both BPD and NSSI. Unfortunately, because the *DSM–5* Personality Disorders workgroup was never asked to reconsider the role of NSSI in the BPD criteria, the future role of NSSI as a criterion for BPD is unclear. What we do know is that the current version of the proposed NSSI disorder criteria do not include BPD as a rule-out, and thus allow for the possibility of comorbid NSSI disorder and BPD.

criteria, it is important to consider how this research will inform our understanding of this disorder. Referring to the criteria for establishing diagnostic validity proposed by Robins and Guze (1970), research on a new disorder occurs in five phases: "clinical description, laboratory study, exclusion of other disorders, follow-up study, and family study" (p. 983). It is anticipated that initial studies examining a new diagnostic category will focus on early phases of this research. The current study provides evidence for the clinical description of NSSI disorder in adolescents (Phase 1), examines whether NSSI disorder can be delimited from a related disorder—BPD (Phase 3).

Of note, the current study has similar goals to a recent study from Selby, Bender, Gordon, Nock, and Joiner (2012), a seminal article in this area that provided preliminary support for the clinical significance of NSSI disorder in adults. Thus, it is important to note key differences between our study and Selby et al.'s. First, our study was able to more closely assess the proposed criteria for NSSI disorder. Specifically, in their NSSI group, Selby et al. included any individual who reported at least one episode of NSSI in the past year and did not assess frequency or motivations for NSSI. In contrast, the current study assessed frequency and motivations for NSSI and was thus able to better approximate the proposed NSSI disorder criteria, which stipulate minimum frequency and endorsement of motivations for NSSI (see Table 1).

Second, the current study utilized a reliable and valid measure of NSSI behaviors and functions, the Inventory of Statements about Self-Injury (ISAS; see Measures section). In contrast, Selby et al. utilized a one-item screening question with unknown psychometric properties to assess NSSI. This difference is important because NSSI rates differ greatly when single item (12.5% endorsement) versus multiple item or checklist measures (23.6% endorsement) of NSSI behaviors are used (Muehlenkamp, Claes, Havertape, & Pleanr, 2012). Third, the current study is unique in its examination of NSSI disorder in adolescents compared to Selby et al.'s focus on adults. Given existing research indicating that NSSI most often begins during adolescence, is extremely prevalent among adolescents, and has been linked to severe mental health outcomes such as suicidal behaviors in adolescents, it is vital for research to focus on this particular age group in addition to Selby et al.'s important research on adults. Indeed, the proposed NSSI disorder was a focus of the *DSM–5* Child and Adolescent Disorders Work Group. Finally, the current sample was also more clinically severe. Selby et al. examined patients in an outpatient clinic, whereas the majority of our sample was receiving inpatient treatment. It is important to examine the utility of these new diagnostic criteria in samples that range in clinical severity.

METHOD

Participants and Procedure

Participants for the current study were recruited from the adolescent psychiatric inpatient and partial hospitalization units of a northeastern U.S. hospital that serves a wide geographic region comprised of both urban and suburban neighborhoods. These units offer short-term treatment for adolescents suffering with a range of severe psychopathology, including emotional and behavioral disorders, as well as suicide-related thoughts and behaviors. Adolescents were recruited from June 2008 to October 2010 and were excluded from the study only if they were unable to complete the protocol due to psychosis, aggressive behavior, cognitive deficits, or suicide-related behavior that the staff deemed too extreme to participate. Of note, because we were interested in NSSI, the population was oversampled for patients who engaged in NSSI; therefore, data should not be used to estimate NSSI prevalence in this sample.

Of 524 potential participants, 102 adolescents' parents refused participation during the admissions process (no reason was provided). Further, 19 adolescents refused participation (six reported being too upset/depressed about hospital admission, and 13 reported not being interested in study but did not provide a specific reason), and 13 adolescents were not appropriate based on the exclusion criteria mentioned above. In addition, 186 parents consented for their children to participate, but the adolescent was not admitted to the hospital long enough for data to be collected. Finally, six participants were excluded from the study analyses due to missing data on the key NSSI measure (i.e., ISAS; see Measures section) and therefore their NSSI status could not be determined. The final sample consisted of 198 adolescents (74% female) ages 12 to 18 (M age = 15.13, SD = 1.38). The ethnic composition of the sample was 64% Caucasian, 14% Hispanic, 10% African American, and 12% mixed or other ethnicity.

Inclusion in the NSSI disorder group was based on the proposed criteria for Nonsuicidal Self-Injury disorder in *DSM–5* (APA Task Force on DSM-5 Development, n.d.). However, because study data were collected 2 years before the draft criteria for NSSI disorder were published, a measure specifically developed and keyed for each proposed criterion was not utilized. Instead, information from a valid and comprehensive NSSI assessment tool (i.e., ISAS; see Measures) was matched to the proposed criteria as much as possible (see Table 1).

The project was approved by the appropriate Institutional Review Boards, and informed consent/assent was obtained from both the parent and adolescent at

the hospital prior to initiation of the study. Participants completed the study protocol, which took approximately 1 hr to complete, in one to two sessions at the hospital. Clinical interviews were conducted by a master's-level doctoral student who had been trained to reliability (i.e., $rs \geq .90$ with other master's- or doctoral-level trained interviewers) on measures of Axis I and Axis II disorders. After study completion, all adolescents were debriefed about the purpose of the study and thanked for their participation.

Measures

NSSI. NSSI was assessed using the ISAS, a reliable and valid measure of NSSI frequency and functions (Glenn & Klonsky, 2011; Klonsky & Glenn, 2009). Section I of the ISAS assesses the lifetime frequency of 12 different NSSI behaviors performed "intentionally (i.e., on purpose) and without suicidal intent" (i.e., banging/hitting body parts, biting, burning, carving, cutting, interfering with wound healing [wound picking], needle sticking, pinching, pulling hair, rubbing skin against rough surfaces, severe scratching, and swallowing dangerous chemicals), as well as descriptive features of NSSI including the age of NSSI onset and date of most recent NSSI episode. Section II of the ISAS assesses 13 functions of NSSI that have been proposed in the empirical and theoretical mental health literature (Klonsky, 2007; Klonsky & Glenn, 2009).

BPD. BPD was assessed with the Structured Interview for *DSM–IV* Personality (Pfohl, Blum, & Zimmerman, 1997) BPD questions, which assess the nine *DSM–IV* BPD criteria. Each BPD criterion is rated on the following scale: 0 (*criterion not at all present*), 1 (*subthreshold criterion*), 2 (*criterion present for most of last 5 years*), and 3 (*criterion strongly present*). A BPD diagnosis is considered present if five or more criteria are rated as a 2 or 3. Reliability and validity of the Structured Interview for *DSM–IV* Personality have been verified in both non-treatment-seeking and patient populations (Jane, Pagan, Turkheimer, Fiedler, & Oltmanns, 2006; Pilkonis et al., 1995).

DSM–IV Axis i disorders and suicide ideation and attempts. Axis I disorders were assessed using the Mini-International Neuropsychiatric Interview for Children and Adolescents, English Version 6.0 (MINI-Kid; Sheehan, Shytle, Milo, Janavs, & Lecrubier, 2009), a brief diagnostic structured interview that assesses the major *DSM–IV* Axis I disorders diagnosed during childhood and adolescence. The MINI-Kid has demonstrated good to excellent test–retest and interrater reliability, as well as good to excellent concordance with the Schedule for Affective Disorders and Schizophrenia for School-Age Children (Sheehan et al., 2010). Moreover, the MINI-Kid has been utilized in numerous studies to assess Axis I psychopathology in children and adolescents (e.g., Ariga et al., 2008; Buckner, Lopez, Dunkel, & Joiner, 2008; Kar & Bastia, 2006). The MINI-Kid was also used to assess past month suicide ideation and attempts.

Emotion dysregulation. The Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004) consists of 36 items that assess six different aspects (i.e., subscales) of emotion regulation difficulties: (a) lack of emotional *Awareness*, (b) lack of emotional *Clarity*, (c) *Nonacceptance* of emotions, (d) inability to engage in *Goal*-directed behavior when emotional, (e) engagement in *Impulsive* behavior when emotional, and (f) inability to access emotion regulation *Strategies*. The DERS has demonstrated good internal consistency and test–retest reliability, as well as good construct validity in adolescents (Weinberg & Klonsky, 2009).

Loneliness. The UCLA Loneliness Scale (Russell, 1996), a 10-item measure, was used to assess loneliness and social isolation in the sample. The Loneliness Scale has exhibited good to excellent reliability (internal consistency and 1-year test–retest reliability) and validity (robust relationships with measures of interpersonal relationships and other measures of loneliness) in adolescents (Mahon, Yarcheski, & Yarcheski, 1995).

RESULTS

NSSI Disorder Characteristics

First, we determined the number of participants who met full criteria for NSSI disorder and examined the characteristics of NSSI in this group. One hundred twenty-six adolescents reported engaging in NSSI in their lifetime. Ninety-eight participants (50% of the total sample and 78% of the self-injuring sample) met criteria for NSSI disorder (based on the criteria described in Table 1). The remaining 28 self-injurers did not meet the criteria we utilized to index NSSI disorder for the following reasons: 20 failed to meet the frequency threshold (at least five episodes of NSSI), and eight failed to meet the recency criterion (past year NSSI).

The average age of NSSI onset for the NSSI disorder group was 12.76 years of age ($SD = 2.08$). The most common NSSI behaviors were cutting (89%), banging/hitting (58%), and severe scratching (48%). Most self-injurers (93%) engaged in more than one method of NSSI ($M = 4.59$ methods, $SD = 2.63$). The most common function of NSSI was affect regulation (e.g., calming myself down), which was endorsed by 98% of the sample as

either *somewhat relevant* or *very relevant* to the experience of NSSI. Other commonly endorsed functions were marking distress (e.g., creating a physical sign that I feel awful; endorsed by 89% of the sample), self-punishment (e.g., punishing myself; endorsed by 88% of the sample), and antidissociation (e.g., causing pain so I will stop feeling numb; endorsed by 88% of the sample).

NSSI Disorder Versus Non-NSSI Disorder Clinical Comparison Group

Next, the NSSI disorder group was compared to participants who did not meet criteria for NSSI disorder (non-NSSI disorder clinical comparison group). To form the non-NSSI disorder clinical comparison group, we combined the 72 participants without any NSSI history and the 28 participants who had engaged in some NSSI but did not meet the threshold for NSSI disorder.[2] Therefore, for the analyses described next, the 98 participants with NSSI disorder were compared to the 100 participants not meeting criteria for NSSI disorder.

Complete information about demographic and diagnostic differences between the NSSI disorder and non-NSSI disorder groups are presented in Table 2. The NSSI disorder group was comparable to the clinical comparison group on all demographics (all $ps > .20$), except for gender: The NSSI disorder group had significantly more female participants than the non-NSSI comparison group ($p < .001$). In regard to diagnostic features of the two groups, the NSSI disorder group had significantly more individuals who met for an anxiety disorder, mood disorder, bulimia, and borderline personality disorder (all $ps < .001$). In contrast, rates of alcohol/substance use disorders and attention-deficit/disruptive behavior disorders were comparable between the two groups ($ps = .294$ and .307, respectively). Further, although most participants in the overall sample met criteria for more than one Axis I disorder ($M = 3.29$ Axis I disorders, $SD = 2.36$), the NSSI disorder group met criteria for significantly more Axis I disorders than the non-NSSI comparison group ($p < .001$).[3]

Next, we examined whether the increased clinical severity in our NSSI disorder group was due to comorbid BPD. Therefore, we compared (a) the clinical group without NSSI disorder or BPD (i.e., non-BPD clinical comparison group; $n = 75$) to (b) the subgroup of individuals with NSSI disorder but without BPD (i.e., non-BPD NSSI disorder group; $n = 42$) on these same clinical variables. Analyses revealed that the non-BPD NSSI disorder group exhibited significantly higher rates of Axis I internalizing disorders, $t(109) = 3.54$, $p = .001$, $d = 0.68$; suicide ideation, $\chi^2(1, N = 106) = 15.91$, $p < .001$, $\Phi = .39$; suicide attempts, $\chi^2(1, N = 106) = 3.69$, $p = .055$, $\Phi = .19$; emotion dysregulation, $t(92) = 4.09$, $p < .001$, $d = 0.85$; and loneliness, $t(89) = 2.05$, $p = .044$, $d = 0.43$, than the clinical comparison group.

Aim 1: Co-Occurrence of NSSI Disorder and BPD

For Aim 1, we examined the extent to which NSSI disorder co-occurred with BPD. It is important to acknowledge that overlap will be inflated because participants with NSSI disorder automatically meet the suicide/self-injury criterion of BPD. In addition, because inpatient psychiatric samples exhibit substantial diagnostic comorbidity in general, we examined whether co-occurrence of BPD with NSSI disorder was greater than that of BPD with other disorders.

There was significant overlap between NSSI disorder and BPD (see Table 3). Of adolescents who met criteria for NSSI disorder, 52% also met for BPD. And, of the adolescents with a current BPD diagnosis ($n = 58$), 78% also met our criteria for NSSI disorder. However, as displayed in Table 3, diagnostic overlap between BPD and other disorders was similar to, or in some cases larger than, that between BPD and NSSI disorder. For example, of the participants who met diagnostic criteria for BPD, 84% also met criteria for an anxiety disorder, 83% for a disruptive behavior disorder, and 78% for a mood disorder. In terms of degree of association, adolescents with BPD had 6.10 times the odds of receiving an NSSI disorder diagnosis as those without BPD. Notably, these odds were similar to those for having a mood disorder (odds ratio [OR] = 6.54) or anxiety disorder ($OR = 6.24$) among adolescents with BPD (see Table 3).

Aim 2: NSSI Disorder and Clinical Impairment

For Aim 2, we examined the association of NSSI disorder with clinical impairment, and whether this association remained significant above and beyond the presence of BPD.[4] Clinical impairment was operationalized as (a) past month suicide ideation and attempts, (b) emotion dysregulation, and (c) loneliness. Suicide ideation and attempts were significantly more common among the

[2]There were no differences between the sub threshold NSSI disorder and noninjuring clinical comparison groups in age ($p = .321$), ethnicity ($ps > .48$ for all group comparisons), emotion dysregulation (all $ps > .26$), loneliness ($p = .792$), suicide ideation or attempts (all $ps > .65$), rates of all major Axis I disorders (all $ps > .19$), or rates of BPD ($p = .132$). However, there were more female adolescents in the sub threshold NSSI group (76%) than in the noninjuring comparison group (54%), $\chi^2(1, N = 100) = 5.05$, $p = .025$.

[3]The Benjamini–Hochberg procedure (Benjamini & Hochberg, 1995) was used to control the false discovery rate for multiple comparisons. Using this procedure, it was determined that all results reported as significant at $p < .05$ in Tables 2, 4, and 5 were not likely to be due to Type I error.

[4]The patterns of results for all NSSI disorder clinical impairment analyses were the same (a) when the suicide/self-injury criterion was excluded from the BPD diagnostic variable, and (b) when a continuous BPD symptom variable was used (instead of the dichotomous diagnostic variable).

TABLE 2
Descriptive and Diagnostic Features of the Nonsuicidal Self-Injury (NSSI) Disorder and Non-NSSI Disorder Clinical Comparison Groups

			Group Comparison[c]		
	NSSI Disorder[a]	*Clinical Comparison*[b]	*Statistical Test*	*p*	*ES*
Descriptive Features					
Age: *M* (*SD*)	15.22 (1.39)	15.03 (1.37)	$t(196) = 0.99$	.323	$d = 0.14$
Gender: (% Female)	86.7%	61%	$\chi^2(1, N = 198) = 16.93$	<.001	$\Phi = .29$
Ethnicity: (% Caucasian)	62.2%	66%	$\chi^2(1, N = 198) = 0.30$	.582	$\Phi = .04$
African American	8.2%	12%	$\chi^2(1, N = 198) = 0.80$	.370	$\Phi = .06$
Hispanic	15.3%	12%	$\chi^2(1, N = 198) = 0.46$	.498	$\Phi = .05$
Mixed Ethnicity	13.3%	8%	$\chi^2(1, N = 198) = 1.45$	.229	$\Phi = .09$
Grade[d]: *M* (*SD*)	8.9 (1.4)	8.8 (1.5)	$t(191) = 0.67$	.506	$d = 0.10$
Diagnostic Features[e] (*% of participants meeting criteria for the* DSM-IV *disorder*)					
Alcohol/Substance Use Disorder	45.7%	37.6%	$\chi^2(1, N = 166) = 1.10$	.294	$\Phi = .08$
Anxiety Disorder	73.5%	41.2%	$\chi^2(1, N = 168) = 17.91$	<.001	$\Phi = .33$
ADHD/Disruptive Behavior Disorder	73.2%	65.9%	$\chi^2(1, N = 167) = 1.05$	.307	$\Phi = .08$
Borderline Personality Disorder	51.7%	14.9%	$\chi^2(1, N = 174) = 26.48$	<.001	$\Phi = .39$
Bulimia	18.3%	0%	$\chi^2(1, N = 167) = 17.08$	<.001	$\Phi = .32$
Mood Disorder	66.3%	33.3%	$\chi^2(1, N = 170) = 18.43$	<.001	$\Phi = .33$
Total No. of Axis I Disorders: *M* (*SD*)	4.23 (2.52)	2.35 (1.76)	$t(165) = 5.56$	<.001	$d = 0.87$
Suicidal Thoughts and Behaviors					
Suicide Ideation (past month)	67.1%	29.2%	$\chi^2(1, N = 163) = 22.87$	<.001	$\Phi = .38$
Suicide Attempt (past month)	24.4%	8.6%	$\chi^2(1, N = 163) = 7.31$	.007	$\Phi = .21$
Emotion Dysregulation and Loneliness: M (SD)					
DERS Total	117.94 (28.07)	86.62 (29.94)	$t(157) = 6.71$	<.001	$d = 1.07$
DERS Nonacceptance	16.77 (7.51)	12.17 (6.10)	$t(157) = 4.25$	<.001	$d = 0.68$
DERS Goals	19.07 (5.30)	15.66 (5.52)	$t(157) = 3.98$	<.001	$d = 0.64$
DERS Impulse	19.60 (6.97)	15.75 (6.24)	$t(157) = 3.67$	<.001	$d = 0.59$
DERS Awareness	19.48 (5.72)	16.75 (5.67)	$t(157) = 3.02$	.003	$d = 0.48$
DERS Strategies	27.48 (9.01)	18.36 (6.82)	$t(157) = 7.22$	<.001	$d = 1.15$
DERS Clarity	15.54 (5.26)	10.93 (4.11)	$t(157) = 6.17$	<.001	$d = 0.98$
UCLA Loneliness	27.12 (6.66)	22.29 (6.15)	$t(154) = 4.69$	<.001	$d = 0.76$

Note: DERS = Difficulties in Emotion Regulation Scale.
[a] $n = 98$.
[b] $n = 100$.
[c] Dimensional group differences were examined using independent-samples *t* tests and Cohen's *d* for effect size. Categorical group differences were examined using Pearson chi-square tests and Cramer's phi coefficients (Φ) for effect size.
[d] Grade refers to the last grade of school completed.
[e] *Alcohol/Substance use* disorder includes presence of *current* alcohol abuse/dependence or substance abuse/dependence. *Anxiety disorder* includes presence of any of the following *current* disorders: panic disorder, agoraphobia, social phobia, specific phobia, obsessive-compulsive disorder, post-traumatic stress disorder, or generalized anxiety disorder. *ADHD/Disruptive behavior disorder* includes presence of *current* attention-deficit hyperactivity disorder, conduct disorder or oppositional defiant disorder. *Mood disorder* includes presence of *current* bipolar I, bipolar II, major depressive disorder, or dysthymia. *Total Number of Disorders* is count score of the Axis I disorders listed above (scores range 0–13).

NSSI disorder group in the past month than in the clinical comparison group (*p*s < .01; see Table 2). In addition, the NSSI disorder group reported greater emotion dysregulation and loneliness than the clinical comparison group (all *p*s < .01; see Table 2).

Next, we examined the contribution of NSSI disorder in predicting the same measures of clinical impairment over and above a diagnosis of BPD. Simultaneous logistic regression analyses were conducted to predict past month suicide ideation and attempts using NSSI disorder and BPD as predictors (see Table 4). First, current suicide ideation was predicted from NSSI disorder status (YES/NO) and BPD status (YES/NO). Results indicated that NSSI disorder exhibited a significant contribution to the prediction model ($p < .001$) over and above BPD, whereas the contribution of BPD over and above NSSI was nonsignificant ($p = .243$). Then, presence of past month suicide attempts was predicted from NSSI disorder status and BPD status (see Table 4). Similar to the ideation results, NSSI disorder exhibited a significant contribution to the prediction model ($p = .021$), whereas BPD's contribution was nonsignificant ($p = .780$).

For the emotional and interpersonal measures of clinical impairment, a series of simultaneous linear regression analyses were conducted to assess the contribution of

TABLE 3
Diagnostic Overlap Between Borderline Personality Disorder (BPD) and Other Axis I Disorders

		BPD		*Statistical Test*			*Effect Size*	
		Yes	*No*	χ^2	*df*	*p*	*OR*	*95% CI*
NSSI Disorder	Yes	26%	24%	25.48	1, 174	<.001	6.10	2.96–12.58
	No	7%	43%					
Alcohol/Substance Use Disorder	Yes	21%	20%	16.29	1, 164	<.001	3.97	2.00–7.88
	No	12%	47%					
Anxiety Disorder	Yes	28%	30%	22.46	1, 166	<.001	6.24	2.78–13.97
	No	5%	37%					
Bulimia	Yes	7%	2%	12.36	1, 165	<.001	6.84	2.07–22.67
	No	26%	65%					
ADHD/ Disruptive Behavior Disorder	Yes	27%	42%	7.07	1, 165	.008	2.93	1.30–6.60
	No	6%	25%					
Mood Disorder	Yes	26%	24%	27.09	1, 168	<.001	6.54	3.10–13.80
	No	7%	43%					

Note: *Alcohol/Substance use* disorder includes presence of *current* alcohol abuse/dependence or substance abuse/dependence. *Anxiety disorder* includes presence of any of the following *current* disorders: panic disorder, agoraphobia, social phobia, specific phobia, obsessive-compulsive disorder, posttraumatic stress disorder, or generalized anxiety disorder. *ADHD/Disruptive behavior disorder* includes presence of *current* attention-deficit hyperactivity disorder (ADHD), conduct disorder or oppositional defiant disorder. *Mood disorder* includes presence of *current* bipolar I, bipolar II, major depressive disorder, or dysthymia. NSSI = nonsuicidal self-injury.

NSSI disorder when controlling for BPD (see Table 5). Both NSSI disorder and BPD related to the emotion dysregulation and loneliness measures. Findings indicated that NSSI disorder accounted for unique variance in almost all emotion dysregulation domains (all $ps < .05$ except for Awareness, $p = .059$), as well as in loneliness scores ($p = .003$), over and above BPD. BPD also accounted for unique variance in almost all emotion dysregulation domains (all $ps < .05$ except for Goals, $p = .088$), as well as in loneliness scores ($p < .001$), over and above NSSI.

Finally, we examined these same associations in participants without a BPD diagnosis. That is, we examined relationships between NSSI disorder and indices of clinical impairment in the non-BPD NSSI disorder and non-BPD clinical comparison groups only. Results indicated that NSSI disorder exhibited a significant association with suicide ideation ($\beta = 1.68$, Wald $\chi^2 = 14.88$, $p < .001$, $OR = 5.35$); emotion dysregulation ($\beta = .39$), $t(93) = 4.09$, $p < .001$; loneliness ($\beta = .21$), $t(90) = 2.05$, $p = .044$; and with suicide attempts ($\beta = 1.06$, Wald $\chi^2 = 3.48$, $p = .062$, $OR = 2.90$) at a trend level. Moreover, the patterns of associations remained when controlling for BPD symptoms: NSSI disorder remained significantly related to suicide ideation ($\beta = 1.66$, Wald $\chi^2 = 14.25$, $p < .001$, $OR = 5.23$); suicide attempts ($\beta = 1.11$, Wald $\chi^2 = 3.67$, $p = .056$, $OR = 3.05$); and emotion dysregulation ($\beta = .29$), $t(92) = 3.23$, $p = .002$, over and above BPD symptoms. However, the association between NSSI disorder and loneliness did not reach statistical significance ($\beta = .17$), $t(89) = 1.61$, $p = .11$, after controlling for BPD symptoms.

DISCUSSION

In the current version of the *DSM* (*DSM–IV–TR*), NSSI appears only once, as a symptom of BPD. Implicit in this

TABLE 4
Simultaneous Logistic Regression Predicting Suicide Ideation and Attempts From Nonsuicidal Self-Injury (NSSI) Disorder and Borderline Personality Disorder (BPD)

Predictor	*β*	*SE β*	*Wald* χ^2	*df*	*p*	*Odds Ratio*	*95% CI*
Predicting Past Month Suicide Ideation							
Constant	−0.97	0.26	14.03	1	<.001	0.38	
BPD	0.44	0.38	1.36	1	.243	1.56	0.74–3.28
NSSI Disorder	1.46	0.36	16.49	1	<.001	4.31	2.13–8.72
Predicting Past Month Suicide Attempts							
Constant	−2.35	0.41	33.84	1	<.001	0.10	
BPD	0.13	0.46	0.08	1	.780	1.14	0.46–2.81
NSSI Disorder	1.15	0.50	5.36	1	.021	3.17	1.19–8.43

TABLE 5
Simultaneous Linear Regression Analyses Predicting Difficulties in Emotion Regulation (DERS) and Loneliness From Nonsuicidal Self-Injury (NSSI) Disorder and Borderline Personality Disorder (BPD)

Dependent Variable	*Predictors*	*β*	*T*	*df*	*p*	R^2
DERS Total						.32
	BPD	.29	3.84	2, 139	<.001	
	NSSI Disorder	.40	5.31	2, 139	<.001	
DERS Nonacceptance						.15
	BPD	.19	2.25	2, 139	.026	
	NSSI Disorder	.28	3.31	2, 139	.001	
DERS Goals						.13
	BPD	.15	1.72	2, 139	.088	
	NSSI Disorder	.28	3.24	2, 139	.001	
DERS Impulse						.13
	BPD	.24	2.79	2, 139	.006	
	NSSI Disorder	.20	2.34	2, 139	.021	
DERS Awareness						.13
	BPD	.26	3.10	2, 139	.002	
	NSSI Disorder	.16	1.90	2, 139	.059	
DERS Strategies						.33
	BPD	.23	3.09	2, 139	.002	
	NSSI Disorder	.45	6.05	2, 139	<.001	
DERS Clarity						.25
	BPD	.23	2.87	2, 139	.005	
	NSSI Disorder	.37	4.66	2, 139	<.001	
UCLA Loneliness						.26
	BPD	.39	5.12	2, 137	<.001	
	NSSI Disorder	.23	3.05	2, 137	.003	

Note: UCLA = University of California Los Angeles.
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

classification is that NSSI (a) rarely occurs outside the context of BPD, and, moreover, (b) has limited clinical significance beyond its association with BPD. The current study was designed to examine these two assumptions as testable and falsifiable hypotheses, and to address proposals that NSSI be classified as an independent diagnostic syndrome in future versions of the *DSM*.

Findings from the current study refute the *DSM–IV* classification of NSSI and provide support for the reclassification of NSSI as its own diagnostic entity. Regarding overlap with BPD, results indicate that co-occurrence between NSSI disorder and BPD is moderate and similar to co-occurrence of BPD with mood and anxiety disorders. Regarding clinical significance, findings suggest that NSSI disorder is associated with clinical impairment over and above a diagnosis of BPD. Specifically, compared to a non-NSSI disorder clinical comparison group, adolescents with NSSI disorder exhibited higher rates of all internalizing disorders (i.e., anxiety disorders and mood disorders), and bulimia nervosa. Moreover, adolescents with NSSI disorder were more likely to report past month suicide ideation and suicide attempts, as well as greater emotion dysregulation and loneliness, compared to a clinical comparison group not meeting criteria for NSSI disorder. It is important to note that associations between NSSI disorder and indices of clinical impairment—suicide ideation and attempts, emotion dysregulation, and loneliness—remained significant when controlling for BPD (diagnosis or symptoms). Moreover, the pattern of results was similar when participants with BPD were excluded. Taken together, findings indicate that NSSI occurs independently of BPD and has clinical significance beyond its association with BPD, suggesting that NSSI would be more accurately classified as its own diagnostic entity, rather than as a symptom of BPD.

Accurate classification of NSSI has both significant research and clinical implications. First, classifying NSSI as its own diagnostic entity is not only supported by current research but also can meaningfully enhance future research on NSSI. An NSSI disorder would provide a consensus, research-based definition of NSSI that would help both researchers and clinicians avoid confusing NSSI with BPD or suicidal behavior. The *DSM–IV* classification can sometimes lead individuals engaging in NSSI to be misdiagnosed with BPD or mistaken as having attempted suicide (Kumar et al., 2004), which in turn leads to inappropriate treatment and a misallocation of valuable resources. In addition, an NSSI disorder would encourage research on NSSI specifically; this is important because much of the research to date has focused on NSSI in BPD populations, thus limiting knowledge about NSSI

in the majority of adolescents who engage in the behavior. Moreover, an NSSI disorder could also increase research on treatments for NSSI. The only existing empirically supported treatment that targets NSSI is Dialectical Behavior Therapy for BPD (Linehan, 1987), which is a long-term and intensive therapy that may not be appropriate for self-injurers without BPD or feasible in certain treatment settings. It is essential that the field develop treatments that meet the needs of individuals who struggle with NSSI but do not meet criteria for BPD.

Although the present study provides needed support for establishing an NSSI disorder, there are limitations that suggest important avenues for future research. First, because data were collected prior to the initially proposed *DSM–5* NSSI disorder criteria, the current study was unable to directly assess these criteria. The field would benefit from the development of diagnostic measures specifically keyed to the proposed NSSI disorder criteria to enable the future research necessary to determine whether NSSI should be included as a distinct disorder in future editions of the *DSM*. Second, the current study was a cross-sectional examination of NSSI disorder. In line with the Robins and Guze (1970) diagnostic validity criteria, follow-up studies are needed to understand the course of NSSI disorder over time. Such research could help establish guidelines for remission and recurrence of the disorder, as well as provide basic information regarding prognosis and risk for the development of other disorders and clinically significant behaviors (e.g., suicide-related thoughts and behaviors). Third, although the current study employed three markers of clinical distress across multiple domains, future research would benefit from the inclusion of an overall global measure of psychiatric impairment, such as the Children's Global Assessment Scale (Shaffer et al., 1983). Finally, the current adolescent sample was mainly female and Caucasian, and was drawn from an urban, northeastern United States hospital. Large-scale epidemiological studies are needed to obtain population-based data regarding the prevalence, incidence, and clinical characteristics of NSSI disorder in various sociodemographic groups of adolescents.

REFERENCES

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.

American Psychiatric Association. (2001). Practice guideline for the treatment of patients with borderline personality disorder—introduction. *American Journal of Psychiatry*, *158*. doi:10.1176/appi.books.9780890423363.54853

American Psychiatric Association Task Force on DSM-5 Development. (n.d.). *Non-Suicidal Self-Injury*. Retrieved from http://www.dsm5.org/ProposedRevisions/Pages/proposedrevision.aspx?rid=443

Andover, M. S., Pepper, C. M., Ryabchenko, K. A., Orrico, E. G., & Gibb, B. E. (2005). Self-mutilation and symptoms of depression, anxiety, and borderline personality disorder. *Suicide and Life-Threatening Behavior*, *35*, 581–591. doi:10.1521/suli.2005.35.5.581

Angold, A., Costello, E. J., & Erklanli, A. (1999). Comorbidity. *Journal of Child Psychology and Psychiatry*, *40*, 57–87. doi:10.1111/1469-7610.00424

Ariga, M., Uehara, T., Takeuchi, K., Ishige, Y., Nakano, R., & Mikuni, M. (2008). Trauma exposure and posttraumatic stress disorder in delinquent female adolescents. *The Journal of Child Psychology and Psychiatry*, *49*, 79–87. doi:10.1111/j.1469-7610.2007.01817.x

Asarnow, J. R., Porta, G., Spirito, A., Emslie, G., Clarke, G., Wagner, K. D., ... Brent, D. A. (2011). Suicide attempts and nonsuicidal self-injury in the treatment of resistant depression in adolescents: Findings from the TORDIA study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *50*, 772–781.

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society. Series B (Methodological)*, *57*, 289–300.

Buckner, J. D., Lopez, C., Dunkel, S., & Joiner, T. E. (2008). Behavior management training for the treatment of reactive attachment disorder. *Child Maltreatment*, *13*, 289–297. doi:10.1177/1077559508318396

Casey, B. J., Jones, R. M., Levita, L., Libby, V., Pattwell, S., Ruberry, E., ... Somerville, L. H. (2010). The storm and stress of adolescence: Insights from human imaging and mouse genetics. *Developmental Psychobiology*, *52*, 225–235.

Darche, M. A. (1990). Psychological factors differentiating self-mutilating and non-self-mutilating adolescent inpatient females. *The Psychiatric Hospital*, *21*, 31–35.

DiClemente, R. J., Ponton, L. E., & Hartley, D. (1991). Prevalence and correlates of cutting behavior: Risk for HIV transmission. *Journal of the American Academy of Child and Adolescent Psychiatry*, *151*, 1305–1311. doi:10.1016/S0890-8567(10)80007-3

Favazza, A. R., & Conterio, K. (1989). Female habitual self-mutilators. *Acta Psychiatrica Scandinavica*, *79*, 283–289. doi 10.1111/j.1600-0447.1989.tb10259.x

Favazza, A. R., & Rosenthal, R. J. (1990). Varieties of pathological self-mutilation. *Behavioural Neurology*, *3*, 77–85.

Glenn, C. R., & Klonsky, E. D. (2009a). Emotion dysregulation as a core feature of borderline personality disorder. *Journal of Personality Disorders*, *23*, 18–26. doi:10.1521/pedi.2009.23.1.20

Glenn, C. R., & Klonsky, E. D. (2009b). Social context during non-suicidal self-injury indicates suicide risk. *Personality and Individual Differences*, *46*, 25–29. doi:10.1016/j.paid.2008.08.020

Glenn, C. R., & Klonsky, E. D. (2011). One year test–retest reliability of the Inventory of statements about Self-Injury (ISAS). *Assessment*, *18*, 375–378. doi:10.1177/1073191111411669

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, *26*, 41–54. doi:10.1023/B:JOBA.0000007455.08539.94

Herpertz, S. (1995). Self-injurious behavior: Psychopathological and nosological characteristics in subtypes of self-injurers. *Acta Psychiatrica Scandinavica*, *91*, 57–68. doi:10.1111/j.1600-0447.1995.tb09743.x

International Society for the Study of Self-Injury. (n.d.). *About self-injury*. Retrieved from http://www.isssweb.org/aboutnssi.php

Jacobson, C. M., Muehlenkamp, J. J., Miller, A. L., & Turner, J. B. (2008). Psychiatric impairment among adolescents engaging in different types

of deliberate self-harm. *Journal of Clinical Child and Adolescent Psychology*, *37*, 363–375. doi:10.1080/15374410801955771

Jane, J. S., Pagan, J. L., Turkheimer, E., Fiedler, E. R., & Oltmanns, T. F. (2006). The interrater reliability for the Structured Interview for *DSM–IV* Personality. *Comprehensive Psychiatry*, *47*, 368–375. doi:10.1016/j.comppsych.2006.01.009

Kahan, J., & Pattison, E. M. (1984). Proposal for a distinctive diagnosis: The deliberate self-harm syndrome (DSH). *Suicide and Life-Threatening Behavior*, *14*, 17–35.

Kar, N., & Bastia, B. K. (2006). Post-traumatic stress disorder, depression and generalised anxiety disorder in adolescents after a natural disaster: A study of comorbidity. *Clinical Practice and Epidemiology in Mental Health*, *2*, 17–23. doi:10.1186/1745-0179-2-17

Klonsky, E. D. (2007). The functions of deliberate self-injury: A review of the evidence. *Clinical Psychology Review*, *27*, 226–239. doi:10.1016/j.cpr.2006.08.002

Klonsky, E. D., & Glenn, C. R. (2009). Assessing the functions of non-suicidal self-injury: Psychometric properties of the Inventory of Statements About Self-injury (ISAS). *Journal of Psychopathology and Behavioral Assessment*, *31*, 215–219.

Klonsky, E. D., Oltmanns, T. F., & Turkheimer, E. (2003). Deliberate self-harm in a nonclinical population: Prevalence and psychological correlates. *American Journal of Psychiatry*, *160*, 1501–1508. doi:10.1176/appi.ajp.160.8.1501

Kumar, G., Pepe, D., & Steer, R. A. (2004). Adolescent psychiatric inpatients' self-reported reasons for cutting themselves. *Journal of Nervous and Mental Disease*, *192*, 830–836. doi:10.1097/01.nmd.0000146737.18053.d2

Larson, R. W., Moneta, G., Richards, M. H., & Wilson, S. (2002). Continuity, stability, and change in daily emotional experience across adolescence. *Child Development*, *73*, 1151–1165.

Laye-Gindhu, A., & Schonert-Reichl, K. A. (2005). Nonsuicidal self-harm among community adolescents: Understanding the 'whats' and 'whys' of self-harm. *Journal of Youth and Adolescence*, *34*, 447–457. doi:10.1007/s10964-005-7262-z

Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1994). Psychosocial risk factors for future adolescent suicide attempts. *Journal of Consulting and Clinical Psychology*, *62*, 297–305.

Linehan, M. M. (1987). Dialectical behavior therapy: A cognitive behavioral approach to parasuicide. *Journal of Personality Disorders*, *4*, 328. doi:10.1521/pedi.1987.1.4.328

Linehan, M. M., Comtois, K. A., Murray, A. M., Brown, M. Z., Gallop, R. J., Heard, H. L., … Lindenboim, N. (2006). Two-year randomized controlled trial and follow-up of dialectical behavior therapy vs. therapy by experts for suicidal behaviors and borderline personality disorder. *Archives of General Psychiatry*, *63*, 757–766.

Mahon, N. E., Yarcheski, T. J., & Yarcheski, A. (1995). Validation of the revised UCLA loneliness scale for adolescents. *Research in Nursing and Health*, *18*, 263–270. doi:10.1002/nur.4770180309

Miller, A. L., Muehlenkamp, J. J., & Jacobson, C. M. (2008). Fact or fiction: Diagnosing borderline personality disorder in adolescents. *Clinical Psychology Review*, *28*, 969–981. doi:10.1016/j.cpr.2008.02.004

Muehlenkamp, J. J. (2005). Self-injurious behavior as a separate clinical syndrome. *American Journal of Orthopsychiatry*, *75*, 324–333. doi:10.1037/0002-9432.75.2.324

Muehlenkamp, J. J., Claes, L, Havertape, L, & Pleanr, P. L. (2012). International prevalence of adolescent non-suicidal self-injury and deliberate self-harm. *Child and Adolescent Psychiatry and Mental Health*, *6*, 1–9.

Nock, M. K., Joiner, T. E., Gordon, K. H., Lloyd-Richardson, E., & Prinstein, M. J. (2006). Non-suicidal self-injury among adolescents: Diagnostic correlates and relation to suicide attempts. *Psychiatry Research*, *144*, 65–72. doi:10.1016/j.psychres.2006.05.010

Nock, M. K., & Prinstein, M. J. (2004). A functional approach to the assessment of self-mutilative behavior. *Journal of Consulting and Clinical Psychology*, *72*, 885–890. doi:10.1037/0022-006X.72.5.885

Pfohl, B., Blum, N., & Zimmerman, M. (1997). *Structured interview for DSM–IV personality*. Washington DC: American Psychiatric Press.

Pilkonis, P. A., Heape, C. L., Proietti, J. M., Clark, S. W., McDavid, J. D., & Pitts, T. E. (1995). The reliability and validity of two structured diagnostic interviews for personality disorders. *Archives of General Psychiatry*, *52*, 1025–1033.

Robins, E., & Guze, S. B. (1970). Establishment of diagnostic validity in psychiatric illness: Its application to schizophrenia. *American Journal of Psychiatry*, *126*, 983–987.

Ross, S., & Heath, N. (2002). A study of the frequency of self-mutilation in a community sample of adolescents. *Journal of Youth and Adolescence*, *31*, 67–77. doi:10.1023/A:1014089117419

Russell, D. (1996). The UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of Personality Assessment*, *66*, 20–40. doi:10.1207/s15327752jpa6601_2

Selby, E. A., Bender, T. W., Gordon, K. H., Nock, M. K., & Joiner, T. E. (2012). Non-suicidal self-injury (NSSI) disorder: A preliminary study. *Personality Disorders: Theory, Research, and Treatment*, *3*, 167–175.

Shaffer, D., Gould, M. S., Brasic, J., Ambrosini, P., Fisher, P., Bird, H., & Aluwahlia, S. (1983). A children's global assessment scale (CGAS). *Archives of General Psychiatry*, *40*, 1228–1231.

Sheehan, D., V., Sheehan, K. H., Shytle, R. D., Janavs, J., Bannon, Y., Rogers, J. E., … Wilkinson, B. (2010). Reliability and validity of the MINI international neuropsychiatric interview for children and adolescents (MINI–KID). *Journal of Clinical Psychiatry*, *71*, 313–326. doi:10.4088/JCP.09m05305whi

Sheehan, D., Shytle, D., Milo, K., Janavs, J., & Lecrubier, Y. (2009). *MINI International Neuropsychiatric Interview for Children and Adolescents, English Version 6.0*. Tampa: University of South Florida.

Steiner, J. L., Tebes, J. K., Sledge, W. H., & Walker, M. L. (1995). A comparison of the Structured Clinical Interview for *DSM–III–R* and clinical diagnoses. *Journal of Nervous and Mental Disease*, *183*, 365–369.

Walsh, B. W., & Rosen, P. M. (1998). *Self-mutilation: Theory, research, and treatment*. New York, NY: Guilford.

Weinberg, A., & Klonsky, E. D. (2009). Measurement of emotion dysregulation in adolescents. *Psychological Assessment*, *21*, 616–621. doi:10.1037/a0016669

Whitlock, J., Eckenrode, J., & Silverman, D. (2006). Self-injurious behaviors in a college population. *Pediatrics*, *117*, 1939–1948. doi:10.1542/peds.2005-2543

Wilkinson, P., Kelvin, R., Roberts, C., Dubicka, B., & Goodyer, I. (2011). Clinical and psychosocial predictors of suicide attempts and nonsuicidal self-Injury in the Adolescent Depression Antidepressants and Psychotherapy Trial (ADAPT). *American Journal of Psychiatry*, *168*, 495–501.

Zanarini, M. C., Frankenburg, F. R., Reich, D. B., Silk, K. R., Hudson, J. I., & McSweeney, L. B. (2007). The subsyndromal phenomenology of borderline personality disorder: A 10-year follow-up study. *American Journal of Psychiatry*, *164*, 929–935. doi:10.1176/appi.ajp.164.6.929

Zlotnick, C., Mattia, J. I., & Zimmerman, M. (1999). Clinical correlates of self-mutilation in a sample of general psychiatric patients. *Journal of Nervous and Mental Disease*, *187*, 296–301. doi:10.1097/00005053-199905000-00005