Examining the role of borderline personality traits in the relationship between major depression and nonsuicidal self-injury

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ABSTRACT

Background: Depression and borderline personality disorder (BPD) are highly comorbid conditions that are both associated with nonsuicidal self-injury (NSSI).

Aims: The purpose of this study was to determine if depression is associated with NSSI after controlling for BPD traits. A distinction was made between NSSI for emotional regulation and NSSI for interpersonal motives.

Method: Logistic regression analyses were conducted on cross-sectional data from a general population sample of 7370 adults who completed the 2007 Adult Psychiatric Morbidity Survey. Depressive symptoms were assessed with the revised Clinical Interview Schedule. NSSI and motives for NSSI were also assessed during clinical interviews. BPD traits were assessed with the participant-completed Structured Clinical Interview for DSM-IV Axis II Personality Disorders.

Results: Participants in a major depressive episode were more likely to have engaged in emotional-regulation NSSI and interpersonal NSSI than participants without depression. After controlling for BPD traits depression remained associated with emotional-regulation NSSI, whereas the association with interpersonal NSSI became nonsignificant. There were statistically significant relationships between depression and both types of NSSI occurring indirectly through BPD traits.

Conclusions: BPD traits account for a significant portion of the cross-sectional relationship between depression and past NSSI that varies in size depending on the motive for NSSI. People with depression are more likely to have engaged in NSSI for emotional regulation even in the absence of prominent BPD traits. In contrast, BPD traits may be more prominent in people with depression who have engaged in interpersonal NSSI.

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1. Introduction

Nonsuicidal self-injury (NSSI) was once considered indicative of borderline personality disorder (BPD), although it is now recognized that NSSI occurs in other disorders as well [1]. There is an ongoing debate regarding the extent to which self-harm with or without suicidal intent represent distinct concepts or versions of the same behaviour [2]. Along with BPD, depression is one of the strongest correlates of NSSI [3–5]. Depression and BPD frequently co-occur [6,7], yet to the best of our knowledge, no study has quantified the extent that BPD may account for the relationship between depression and NSSI.

Affect-regulation theories posit that NSSI represents a maladaptive strategy for coping with negative emotions that becomes reinforced over time [8,9]. Emotional regulation is the most common motive for NSSI, although interpersonal motives (e.g., changing one's external situation, influencing others) have also been described [10–16]. To explain the latter, Nock [17] proposed a social theory in which NSSI can effectively communicate distress (more strongly than words or typical displays of emotion), elicit care-giving and supportive responses, and strengthen relationships. Factor-analytic studies have consistently shown the separation of emotional-regulation from interpersonal NSSI functions [10,11,13–15]. Turner, Chapman, and Layden [15] demonstrated that emotional-regulation NSSI (but not interpersonal NSSI) was associated with measures of emotional dysregulation, whereas interpersonal NSSI (but not emotional-regulation NSSI) was associated with dysfunctional interpersonal styles involving the tendency to attempt to manipulate and control others, as well as the tendency to be inappropriately open, seek attention, and have difficulty being alone [18].

BPD and depression both involve difficult to control negative emotions that may predispose toward NSSI for emotional regulation [1,10,15]. Affective instability is a core feature of BPD that is also common in people with depression [19] and predicts the onset and maintenance of NSSI [20]. Interpersonally motivated NSSI may be more relevant to BPD, which, by definition, involves instability and dysfunction in interpersonal relationships [1]. On the other hand, depression can involve anaclitic tendencies (e.g., dependency, abandonment fear) that could also

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predispose toward interpersonal NSSI [21]. In support of this notion, one study found that depressive symptoms and BPD traits were both correlated with interpersonal motives for NSSI to a comparable degree, although no attempt was made to control for potential overlap between depression and BPD traits [10].

The purpose of this study was to determine if depression is associated with NSSI after controlling for BPD traits. It was hypothesized that (1) depression would be associated with past NSSI regardless of motive, (2) depression would be associated with past NSSI for emotional regulation even after controlling for BPD, and (3) controlling for BPD would account for most if not all of the relationship between depression and past interpersonal NSSI.

2. Material and methods

2.1. Sample

The sample consisted of 7370 adults aged 16 to 95 who completed the 2007 Adult Psychiatric Morbidity Survey (APMS) [22]. The APMS was a cross-sectional survey of 7403 adults living in private residences in England [22]. Data from 33 participants was incomplete for variables of interest and was not included in this study. The original investigators obtained ethical approval [22]. Participants provided written consent during the original survey [22]. As a secondary analysis of publicly available data, this study did not require ethical review.

2.2. Materials and measures

Depressive symptoms were assessed with the revised Clinical Interview Schedule (CIS-R) [23]. Multiple Yes/No and ordinal questions were used to assess each depressive symptom domain (e.g., depressed mood, anhedonia, fatigue, appetite/weight, sleep, concentration, depressive cognitions, suicidal thoughts) [23]. The ICD-10 diagnostic algorithm for a current major depressive episode of at least 2 weeks' duration was applied to CIS-R responses to create a variable coded as 1 (present) or 0 (not present).

BPD traits were assessed with the participant-completed Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II) [24]. The SCID-II contains 15 Yes/No items that assess the nine DSM-IV BPD diagnostic criteria (e.g., affective instability: "have a lot of sudden mood changes," abandonment fear: "become frantic when you thought that someone you really cared about was going to leave you") [24]. Two items describe instances of NSSI ("tried to hurt or kill yourself," "cut, burned, or scratched yourself on purpose") and were excluded to avoid artificially inflating the association between BPD and NSSI [24]. The remaining 13 items were coded as 1 (present) or 0 (not present) and summed to create a continuous variable representing overall BPD traits ($\alpha = 0.83$ in this study). A score of 8 or higher was used to diagnose likely BPD, which has demonstrated a good balance of sensitivity (0.78) and specificity (0.80) for identifying clinical interview-confirmed BPD cases [25]. Because we removed two items but used the same cut-off score it is likely that our diagnostic variable was more exclusive, which could have changed relationships compared to if we had used all SCID-II items. We used both the categorical and dimensional variables in the analysis.

NSSI was assessed in clinical interviews with the question "Have you ever deliberately harmed yourself in any way but not with the intention of killing yourself?" [22]. A variable representing any previous engagement in NSSI was coded as 1 (present) or 0 (not present). Participants were also asked their motives for NSSI with two separate follow-up questions. Those who indicated that they engaged in NSSI "because it relieved unpleasant feelings of anger, tension, anxiety or depression" were classified as having done so for emotional regulation with a variable (NSSI-ER) coded as 1 (present) or 0 (not present) [22]. NSSI that was done "to draw attention to your situation or to change your situation" was considered interpersonally motivated and classified as

such with a variable (NSSI-IP) coded as 1 (present) or 0 (not present) [22]. This question captures two motives similar to items (e.g., "to get attention," "to get control of a situation") from a social/interpersonal factor in the Functional Assessment of Self-Mutilation scale [13] as well as items (e.g., "to get care and attention," "get out of doing something," "avoid getting in trouble") from the social influence factor of the Ottawa Self-Injury Inventory [12]. It is also consistent with Turner et al.'s [15] definition of interpersonal NSSI as that which was intended to influence the external environment. Each motive was assessed with a separate Yes/No question so it was possible for participants to endorse both motives in which case they would have been included in both categories (i.e., both motive variables were coded as 1). Participants with a history of NSSI who did not answer affirmatively to either motive question were coded as 1 for the overall NSSI variable but 0 for the motive variables.

2.3. Analysis

The analysis used the KHB method of effect decomposition developed for Stata 13 [26]. The KHB method performs logistic regression mediation analyses by calculating (1) the total direct effect of a predictor variable on a criterion variable, (2) the indirect effect of a predictor variable on a criterion variable through a mediating variable, (3) the percentage of the total direct effect that occurred indirectly through the mediating variable, and (4) the remaining partial direct effect of a predictor variable on a criterion variable with the mediating variable also in the model [26]. We used a mediation analysis to examine the unique associations of depression with NSSI after controlling for overlap with BPD without making any assumptions about the causal or temporal nature of these relationships. Throughout the rest of this paper the term "control variable" was used to describe BPD instead of "mediator" because the former does not imply causal relationships.

First, three separate KHB analyses were conducted, each with a different criterion variable: NSSI, NSSI-ER, and NSSI-IP. In all analyses the predictor variable was depression (current CIS-R depressive episode) and the control variable was categorical BPD (SCID-II total score ≥ 8). Second, these analyses were repeated but stratified by age and sex. A single age cut-off of 35 was chosen to define two groups (16–35 vs. ≥36). We chose this method over using typical 10- or 20-year age bands because 34.5 was the mean age for participants with a history of NSSI, and due to the expected low prevalence of NSSI in this population [20], we wanted to balance cases of NSSI so the regression models did not have empty cells or become over-fitted. Lastly, all KHB analyses were repeated but with dimensional BPD traits (SCID-II total score) as the control variable. We also reported the partial effects of BPD on the NSSI variables. KHB analyses were conducted using probability weights designed for the APMS, and all other statistics were estimated with survey commands that also accounted for the multi-stage stratified design of the APMS [22].

3. Results

Descriptives with weighted means/proportions for the entire sample and participants with a history of NSSI are presented in Table 1. Results from the KHB analyses with the entire sample are presented in Table 2. Results from the KHB analyses according to age and sex subgroups are presented in Table 3 (using categorical BPD) and Table 4 (using dimensional BPD). The partial effects of BPD on the NSSI variables are presented in Table 5. The results are described further in the corresponding sections below.

3.1. Sample characteristics

Depression and BPD (according to the categorical variable) were present in 3.43% and 4.44% of the sample (unweighted), respectively. They were clearly more common among participants with a history of