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Reasons for Self-mutilation Reported by Borderline Patients over 16 Years of Prospective Follow-up

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Abstract

The main objective of this study was to assess the reasons for episodes of self-mutilation engaged in by patients with borderline personality disorder (BPD) over 16 years of prospective follow-up. Two hundred and ninety patients meeting both DIB-R and DSM-III-R criteria for BPD were interviewed every two years. We divided the borderline patients into two groups: those with a more and less extensive lifetime history of self-mutilation at study entry. These groups were not significantly different than one another on either of the interpersonally-directed reasons for self-mutilation studied. However, those in the more extensive group were significantly more likely to report each of the five internally-directed reasons studied. The results of this study suggest that borderline patients with a more extensive history of self-mutilation are best distinguished from those with a less extensive history by episodes of self-harm that are motivated, at least in part, by dysphoric inner states.

Keywords

borderline personality; self-mutilation; reasons for self-harm; longitudinal course; prevalence of self-harm

Self-mutilation is a common and concerning behavioral symptom of borderline personality disorder (BPD) (Dulit, Fyer, Leon, Brodsky, & Frances, 1994; Sabo, Gunderson, Najavits, Chauncey, & Kisiel, 1995; Soloff, Lis, Kelly, Cornelius, & Ulrich, 1994; Zanarini, Gunderson, Frankenburg, & Chauncey, 1990). Over a quarter of a century ago, Leibenluft, Gardner, and Cowdry (1987) described their clinical impressions of the inner experiences of borderline patients who engaged in self-mutilation. However despite the importance of this symptom, which we defined as any intentional self-inflicted injury without intent to die (e.g., punching or burning oneself), only four cross-sectional studies have assessed the reasons that borderline patients report for deliberating harming themselves physically (Brown, Comtois, & Linehan, 2002; Hulbert & Thomas, 2010; Kleindienst et al., 2008; Shearer, 1994). The earliest study by Shearer (1994) asked 41 borderline inpatients about 17 possible functions of self-injury. These reasons were drawn from the literature and from clinical experience. The three most common reasons patients with BPD reported were: “to punish myself for being bad in some way,” “to reduce anxiety and despair,” and “to feel concrete pain.”

Similar reasons are reflected in the results of a more recent study (Brown et al., 2002). Participants were asked about 29 potential reasons for self-harm. The list of reasons was generated from earlier unstructured interviews with borderline patients about reasons for parasuicide. The results were grouped into three categories with 96% of participants reporting “emotional relief” as a reason for self-harming acts. Sixty-one percent of participants reported “interpersonal influence,” and 54% reported “feeling generation” as a reason for self-mutilation.

Congruent with these results are findings by Hulbert and Thomas (2010). In this study, which used the same interview to assess self-harm as Brown et al. (2002) in a separate sample, it was found that emotional relief was the most frequent reason given for episodes of self-harm.

Kleindienst et al. (2008) examined 12 categories of expectations or motives that 101 borderline inpatients (10%) and outpatients (90%) had for nonsuicidal self-injury (NSSI). The measure used for this study was based on past behavioral and functional analysis of NSSI. The study results found the three most important reasons for NSSI to be “tension relief” (51%), “reduction of unpleasant feelings” (13%), and “self-punishment” (12%). In addition to these motives, the only other consistent reasons (more than 5% of participants) for NSSI were reasons related to dissociation.

The current study builds upon these four cross-sectional studies by following a large and carefully diagnosed group of inpatients with BPD over 16 years of prospective follow-up. We divided our sample of 290 borderline patients, 90.3% or 262 of whom had a baseline history of self-mutilation, into a more and less extensive baseline history group as we believed the reasons for self-harm might be different for those for whom NSSI was an occasional behavior and those for whom it was habitual and chronic.

Methods

Participants

The current study is part of a multifaceted longitudinal study of the course of borderline personality disorder – the McLean Study of Adult Development (MSAD). The methodology of this study, which was reviewed and approved by the McLean Hospital Institutional Review Board, has been described in detail elsewhere (Zanarini, Frankenburg, Hennen, & Silk, 2003). Briefly, all subjects were initially inpatients at McLean Hospital in Belmont, Massachusetts. Each patient was first screened to determine that he or she: 1) was between the ages of 18-35; 2) had a known or estimated IQ of 71 or higher; 3) had no history or current symptoms of schizophrenia, schizoaffective disorder, bipolar I disorder, or an organic condition that could cause serious psychiatric symptoms; and 4) was fluent in English.

Assessment

After the study procedures were explained, written informed consent was obtained. Each patient then met with a masters-level interviewer blind to the patient's clinical diagnoses for a thorough psychosocial and treatment history as well as diagnostic assessment. Three semistructured diagnostic interviews were administered. These interviews were: 1) the Structured Clinical Interview for DSM-III-R Axis I Disorders (Spitzer, Williams, Gibbon, & First, 1992), 2) the Revised Diagnostic Interview for Borderlines (Zanarini, Gunderson, Frankenburg, & Chauncey, 1989) and 3) the Diagnostic Interview for DSM-III-R Personality Disorders (Zanarini, Frankenburg, Chauncey, & Gunderson, 1987). The inter-rater and test-retest reliability of these three diagnostic measures (Zanarini & Frankenburg, 2001; Zanarini, Frankenburg, & Vujanovic, 2002) have all been found to be good-excellent.

Past experiences of self-mutilation were assessed at baseline using the Lifetime Self-Destructiveness Scale (LSDS) (Zanarini et al., 2006). This semistructured interview assessed the number of episodes of self-mutilation and the reasons reported for these episodes prior to study entry. The inter-rater and test-retest reliability of this measure has been found to be excellent (Zanarini et al., 2006).

At each of eight follow-up waves, separated by 24 months, the Lifetime Self-destructiveness Scale: Follow-up Version (LSDS-FUV) was administered. This semistructured interview is the follow-up analog to the LSDS and assesses the number of episodes of self-mutilation and the reasons reported for these episodes of self-harm during each two-year follow-up period. Good-excellent follow-up interrater reliability (within a generation of raters) (median kappa=1.0; median ICC=.73) and follow-up longitudinal reliability (between generations of raters) (median kappa=1.0; median ICC=.83) were achieved in the current study using separate samples of 48 and 36 subjects respectively (Zanarini et al., 2008).

Statistical Analyses

Loglinear regression models, estimated using generalized estimating equations (GEE), were used in longitudinal analyses of the prevalence of reasons for self-harm. With reason for self-harm as the binary outcome, these analyses included the main effects of group (more versus less extensive baseline histories of self-harm) and time and their interaction (as necessary). These analyses modeled the log prevalence, yielding an adjusted relative risk ratio (RRR) and 95% confidence interval (95%CI) for group, time, and their interaction (if significant). Alpha was set at 0.05, two-tailed.

Results

Two hundred and ninety patients met both Revised Diagnostic Interview for Borderlines and DSM-III-R criteria for borderline personality disorder and 262 (90.3%) of these patients had a history of deliberate self-harm. The analyses that follow pertain to these 262 patients.

We divided the sample based upon the median number (N=35) of self-harm episodes in their pre-study history. We believed that the more and less extensive groups that resulted would be demographically and clinically different.

In terms of demographic data, the more (N=133) and less (N=129) extensive history of self-harm groups were very similar in the percentage who were female (76.7% vs. 83.0%, $\chi^2=1.59$, $p=0.21$) and the percentage who were white (86.5% vs. 87.6%, $\chi^2=0.07$, $p=0.79$). However, those with a more extensive history of self-harm were slightly but not significantly older than those in the less extensive group (27.6 [SD=5.9] vs. 26.3 [SD=5.4], $t=1.96$, $df=260$, $p=0.051$). Those with a more extensive history also reported coming from a significantly lower socioeconomic background (3.7 [SD=1.4] vs. 3.1 [SD=1.5], $t=-3.23$, $df=260$, $p<0.002$) and having a significantly lower level of functioning as indicated by their GAF score (37.0 [SD=7.5] vs. 40.1 [SD=7.2], $t=3.38$, $df=260$, $p<0.001$). In terms of self-harm history, those in the more extensive group had begun harming themselves at a mean age of 13.2 (SD=6.9), while those in the less extensive group had begun harming themselves at a mean age of 18.6 (SD=6.7) ($t=6.48$, $df=260$, $P<0.0001$). Because the number of prior episodes of self-harm and the lifetime number of months of self-injurious behavior were highly skewed, we report the median value of these two variables and compare between-group differences using the Wilcoxon rank-sum test. As expected, those in the more extensive group had a significantly higher median number of prior episodes of self-harm (127 vs. 10; $z=-8.18$, $p<0.0001$) and a significantly longer median history (in months) of self-injury (180 vs. 48 months; $z=-13.99$, $p<0.0001$).

The rates of retention in these two groups were similar to the overall rate of retention in the 290 borderline patients in the MSAD study: 87.5% (N=231/264) of surviving patients completed all eight waves of follow-up. They were also similar to one another: more extensive group (85.5%, N=100/117) and less extensive group (89.3%, N=108/121). In the former group, seven subjects died of suicide and nine died of other causes. In the latter group, five subjects died of suicide and three died of other causes.

For context, we compared the two study groups on the severity of their borderline psychopathology over time. Using longitudinal linear regression models, we explored between-group differences on the four section scores of the DIB-R. We found that those with a more extensive history had significantly higher scores on the affect ($z=2.80$, $p=0.005$) and cognition sections ($z=5.94$, $p<0.001$) of the DIB-R but the groups did not differ on the impulsivity ($z=1.16$, $p=0.246$) and interpersonal sections ($z=1.35$, $p=0.178$) of this interview.

We also examined the prevalence of the six specific forms of self-harm we studied over time. Using generalized estimating equations, we found that all six were significantly more common over time among the group with the more extensive history of self-harm: cutting ($z=2.49$, $p=0.013$), burning ($z=5.26$, $p<0.001$), punching self ($z=2.52$, $p=0.012$), punching walls ($z=3.90$, $p<0.001$), putting hand through windows ($z=3.90$, $p<0.001$), and head banging ($z=4.59$, $p<0.001$).

Figure 1 details the prevalence of episodes of self-mutilation by both study groups over time. While both groups had a prevalence rate of 100% at baseline, 18% of those in the more extensive group and 11.6% of those in the less extensive group reported self-harm at 16-year follow-up. Those in the more extensive group were significantly more likely to report episodes of self-harm over time than those in the less extensive group (RRR=1.56, 95% CI=1.42-1.71, $z=9.57$, $p<0.001$). However, the rate of decline in both groups was very similar but highly significant (an 89% relative decline or RRR=0.11, 95% CI=0.08-0.15, $z=-13.81$, $p<0.001$).

We divided our seven reasons for self-harm into two of an interpersonal nature and five of an internally-directed nature; a division that is consistent with Nock and Prinstein's functional model of the purpose of self-injury (Nock & Prinstein, 2004); the latter five were further divided into reasons of an affective and cognitive nature. This division also reflects the implicit division described in Leiftenluft et al.'s 1987 article.

Table 1 details the percentage of those in both study groups who reported each of the study's interpersonal reasons for self-harm at each of the study's nine time periods (feeling angry/frustrated or to get attention). As can be seen, the rates of these interpersonal reasons for self-mutilation did not significantly distinguish the two study groups. However, the rates of both reasons declined significantly over time.

As the relative risk ratios (RRRs) for group and time in this and subsequent tables contain more fine grained information, we believe that an example would be useful. As can be seen, about 42% of those in the more extensive group (and about 35% of those in the less extensive group) reported hurting themselves to get attention at baseline. By the time of their 16-year follow-up, these prevalence rates had declined to about 11% and 20% respectively. The RRR of 1.14 for study group indicates that those in the more extensive group were about 14% more likely to report this reason for self-mutilation as those in the less extensive group. The RRR of 0.47 for time indicates that this reason for self-harm decreased by 53% ($[1-0.47]\times 100\%$) for both groups over the course of 16 years of prospective follow-up.

Table 2 details the percentage of those in both study groups who reported each of the study's internally-directed reasons of an affective nature at each of the study's nine time periods. Both reasons were significantly more common among the more extensive group. Both of these reasons also increased significantly over time.

However, the interaction between group and time found for relieving anxiety is more difficult to interpret. As can be seen, 71% of borderline patients in the more extensive group (and about 52% of borderline patients in the less extensive group) reported hurting themselves to relieve anxiety at baseline. By the time of their 16-year follow-up, these prevalence rates had increased to 78% and 67%. The relative difference of 1.29 for group indicates that those with a more extensive history were about 29% more likely at baseline than those in the less extensive group to have harmed themselves to relieve anxiety. The relative difference of 1.42 for time indicates that the relative change from baseline to 16-year follow-up resulted in an approximately 42% (or $[1.42-1] \times 100\%$) increase for those in the less extensive group. In contrast, the significant interaction between group and time indicates that the relative increase from baseline to 16-year follow-up is approximately 4% (or $[1.42 \times 0.73 - 1] \times 100\%$) for those in the more extensive group. That is, there was a less steep increase in this reason over time for those in the more extensive group.

Table 3 details the percentage of those in both study groups who reported each of the study's internally-directed reasons of a cognitive nature at each of the study's nine time periods. Each of these three reasons was found to be significantly more common among those with a more extensive history of self-harm. Two reasons (to punish oneself and to prevent being hurt in a worse way) declined significantly for those in both groups. However, the rate of the third reason (feeling numb or dead) remained relatively constant over time for those in both study groups.

Due to sparseness of data, we reran our analyses for two of the reasons for self-harm: getting attention and to prevent being hurt in a worse way. In these analyses, we collapsed our data into three time periods: baseline, 2-8-year follow-up, and 10-16-year follow-up. Our results for getting attention were very similar to those from our original analyses (RRR for group=1.14 and for time=0.59). In terms of to prevent being hurt in a worse way, our results were also very similar to those from our original analyses. However, while study group remained significant (RRR=1.94), the effect of time was attenuated (RRR=0.80) and no longer significant.

Discussion

This study has three main findings. The first is that borderline patients with both a more or less extensive history of self-harm at baseline reported about the same significant rate of decline in the prevalence of episodes of self-harm over time. This result is consistent with our prior findings at 10-year follow-up (Zanarini et al., 2008).

The second is that borderline patients with a more extensive and less extensive baseline history of self-mutilation were equally likely to report interpersonal reasons for self-harm over time. More specifically, these two groups of borderline patients were about as likely as one another to report being angry or frustrated or trying to get attention as one of their reasons for hurting themselves over 16 years of prospective follow-up.

The third main finding is that borderline patients with a more extensive baseline history of self-mutilation were significantly more likely to report internally-directed reasons for self-harm over time than those with a less extensive baseline history. More specifically, they were more likely to report both reasons of an affective nature (relieve anxiety and lessen

emotional pain) and cognitive nature (feeling numb or dead, to punish oneself, and to prevent being hurt in a worse way).

Our second finding confirms the interpersonal nature of the reasons for self-harm that many clinicians find so troubling. However, our third finding suggests that internally-directed reasons are the more salient reasons for ongoing self-harm reported by borderline patients with a more extensive history of self-mutilation at baseline. Or looked at another way, this subset of more severely ill borderline patients are motivated to self-harm by deeply dysphoric inner states as much or more than they are motivated by interpersonal reasons for this type of maladaptive behavior.

These internally-directed episodes of self-harm may be self-soothing in nature. This seems particularly true of the affective reasons for self-harm. Patients may be trying to relieve their often very high levels of anxiety (Zanarini et al., 1998) or lessen their often very high levels of emotional pain (Zanarini et al., 1998).

However, internally-directed reasons may also be cognitive in nature. This includes efforts to combat states of feeling numb or dead. In addition, these reasons may involve aggression turned toward oneself (to punish oneself) or magical thinking (to prevent being hurt in a worse way). Taken together, this set of results seems to suggest that borderline patients with a more extensive baseline history of self-mutilation deliberately harm themselves physically for reasons that are more private and thus, more difficult for mental health professionals to know and understand. More specifically, these borderline patients are reporting hurting themselves while depersonalized or in response to concerns about punishing oneself or warding off punishment that might be inflicted by others.

Implications

These findings, when taken together, have important clinical implications. Clinicians may overestimate the importance of the interpersonal reasons for self-harm. Or looked at another way, they may not be mindful of the ways that borderline patients are using self-injury to try to soothe themselves, punish themselves, or prevent further punishment or harm. Awareness of this inner-directed set of reasons may lead to more empathic or validating responses to the threat of self-harm or actual episodes of self-mutilation. It may also help clinicians to encourage their borderline patients to be more curious and more forthright about their motivations for self-harm.

Limitations

This study has a number of limitations. One is that the subjects were all inpatients at study entry and thus, our results may not generalize to healthier outpatients or non-patients with borderline personality disorder. In addition, a substantial percentage of our subjects were in non-intensive outpatient treatment over time (Hörz, Zanarini, Frankenburg, Reich, & Fitzmaurice, 2010). Our results might be different than those for an untreated sample or a sample that had been treated with an empirically-based treatment for borderline personality disorder rather than the treatment as usual received by the vast majority of our subjects.

Taken together, the results of this study suggest that borderline patients with a more extensive history of self-mutilation are about as likely to report interpersonal reasons for self-harm as those with a less extensive history. However, they are best distinguished from those with a less extensive history by episodes of self-harm that are motivated, at least in part, by dysphoric inner states of both an affective and cognitive nature.

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Figure 1.
Prevalence of Self-mutilation for Borderline Patients with More and Less Extensive Histories of Self-harm

Table 1
Interpersonal Reasons for Self-Mutilation Reported by Two Groups of Borderline Patients over 16 Years of Prospective Follow-up

	BL	2 YR FU	4 YR FU	6 YR FU	8 YR FU	10 YR FU	12 YR FU	14 YR FU	16 YR FU	RRR	95%CI
Angry/Frustrated^a											
More Extensive	84.2 (112)	65.1 (56)	55.4 (36)	51.0 (25)	40.5 (15)	53.6 (15)	34.4 (11)	40.0 (8)	38.9 (7)	1.01	0.91, 1.11
Less Extensive	83.0 (107)	68.5 (37)	46.7 (14)	50.0 (13)	40.0 (8)	25.0 (4)	45.8 (11)	50.0 (12)	26.7 (4)	0.33	0.25, 0.44
Get Attention^b											
More Extensive	42.1 (56)	36.1 (31)	20.0 (13)	20.4 (10)	21.6 (8)	46.4 (13)	15.6 (5)	30.0 (6)	11.1 (2)	1.14	0.87, 1.50
Less Extensive	34.9 (45)	27.8 (15)	16.7 (5)	30.8 (8)	15.0 (3)	18.8 (3)	20.8 (5)	16.7 (4)	20.0 (3)	0.47	0.31, 0.72
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^aP-level results for group, NS and for time, <0.001

^bP-level results for group, NS and for time, 0.001

Table 2

Internally Directed Reasons of an Affective Nature for Self-Mutilation Reported by Two Groups of Borderline Patients over 16 Years of Prospective Follow-up

	BL	2 YR FU	4 YR FU	6 YR FU	8 YR FU	10 YR FU	12 YR FU	14 YR FU	16 YR FU	RRR	95%CI
										Diagnosis Time Interaction	Diagnosis Time Interaction
Relieve Anxiety^a											
More Extensive	71.4 (95)	73.3 (63)	70.8 (46)	77.6 (38)	70.3 (26)	82.1 (23)	84.4 (27)	75.0 (15)	77.8 (14)	1.29	1.09, 1.52
Less Extensive	51.9 (67)	53.7 (29)	73.3 (22)	76.9 (20)	85.0 (17)	75.0 (12)	91.7 (22)	75.0 (18)	66.7 (10)	1.42 0.73	1.12, 1.80 0.55, 0.97
Control Emotional Pain^b											
More Extensive	75.2 (100)	76.7 (66)	76.9 (50)	87.8 (43)	89.2 (33)	78.6 (22)	84.4 (27)	90.0 (18)	100.0 (18)	1.15	1.04, 1.27
Less Extensive	60.5 (78)	77.8 (42)	83.3 (25)	65.4 (17)	85.0 (17)	75.0 (12)	91.7 (22)	75.0 (18)	66.7 (10)	1.22 --	1.11, 1.33 --

^aP-level results for group, 0.003; time, 0.004; interaction, 0.029

^bP-level results for group, 0.005; time, <0.001

Table 3

Internally-Directed Reasons of a Cognitive Nature for Self-Mutilation Reported by Two Groups of Borderline Patients over 16 Years of Prospective Follow-up

	BL	2 YR FU	4 YR FU	6 YR FU	8 YR FU	10 YR FU	12 YR FU	14 YR FU	16 YR FU	RRR	95%CI
Numb or Dead^a											
More Extensive	42.1 (56)	48.8 (42)	41.5 (27)	36.7 (18)	35.1 (13)	46.4 (13)	37.5 (12)	55.0 (11)	55.6 (10)	1.45	1.11, 1.88
Less Extensive	22.5 (29)	40.7 (22)	23.3 (7)	46.2 (12)	45.0 (9)	62.5 (10)	33.3 (8)	25.0 (6)	33.3 (5)	1.02	0.77, 1.36
Punish Self^b											
More Extensive	68.4 (91)	73.3 (63)	60.0 (39)	69.4 (34)	56.8 (21)	57.1 (16)	53.1 (17)	60.0 (12)	55.7 (10)	1.28	1.09, 1.50
Less Extensive	47.3 (61)	57.4 (31)	63.3 (19)	57.7 (15)	50.0 (10)	81.3 (13)	45.8 (11)	37.5 (9)	66.7 (10)	0.76	0.61, 0.95
Prevent Being Hurt in Worse Way^c											
More Extensive	33.8 (45)	43.0 (37)	44.6 (29)	36.7 (18)	21.6 (8)	21.4 (6)	28.1 (9)	25.0 (5)	11.1 (2)	1.96	1.46, 2.63
Less Extensive	15.5 (20)	20.4 (11)	16.7 (5)	23.1 (6)	25.0 (5)	12.5 (2)	20.8 (5)	16.7 (4)	13.3 (2)	0.59	0.36, 0.96

^a P-level results for group, 0.006; time, NS

^b P-level results for group, 0.003; time, 0.016

^c P-level results for group, <0.001; time, 0.032