Published in final edited form as:

Psychiatry Res. 2017 June ; 252: 134–138. doi:10.1016/j.psychres.2017.02.054.

The 10-year Course of Adult Aggression toward Others in Patients with Borderline Personality Disorder and Axis II Comparison Subjects

Mary C. Zanarini^{a,b,1}, Christina M. Temes^{a,b}, Alexandra M. Ivey^c, Danielle M. Cohn^d, Lindsey C. Conkey^a, Frances R. Frankenburg^e, and Garrett M. Fitzmaurice^b

^aLaboratory for the Study of Adult Development, McLean Hospital, Belmont, MA, USA

^bDepartment of Psychiatry, Harvard Medical School, Boston, MA, USA

^cDepartment of Psychology, University of Hartford, Hartford, CT, USA

^dDepartment of Psychology, American University, Washington, DC, USA

^eDepartment of Psychiatry, Boston University School of Medicine, Boston, MA, USA

Abstract

This study had two aims. The first was to assess and compare various types of aggressive behavior toward others reported by borderline patients and axis II comparison subjects over time. The second was to determine the best baseline and time-varying predictors of aggressive behavior in these borderline patients. At baseline, a series of interviews and self-report measures were administered to 290 borderline patients and 72 axis II comparison subjects. Measures assessing aggression toward others, axis I and II disorders as well as adult adversity were re-administered every two years over the course of ten years. It was found that borderline patients reported significantly higher rates of verbal, emotional, and physical aggression toward others than comparison subjects but the rates of these forms of aggression toward others declined significantly for those in both study groups. Multivariate analyses indicated that the strongest predictors of adult aggression towards others were severity of adult adversity and a substance use disorder. Taken together, these results suggest that borderline patients commonly report aggression toward others but that this aggression declines significantly over time. These results also suggest that this aggression toward others is most strongly associated with adult experiences of adversity and concurrent substance abuse.

Keywords

borderline personality disorder; aggression toward others; longitudinal

¹Address reprint requests to Dr. Zanarini, McLean Hospital, 115 Mill Street, Belmont, Massachusetts 02478; phone: 617-855-2660; fax: 617-855-3580, zanarini@mclean.harvard.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

1. Introduction

Borderline personality disorder (BPD) has long been described by theorists as a disorder characterized by an excess of aggression (Kernberg, 1975). The unique tendency for patients with BPD to engage in inwardly directed aggression (i.e., by self-destructive actions) has been well-documented. Externally-focused aggression in BPD has been less well-studied, although several studies have found a relationship between BPD symptoms and higher levels of aggression directed toward others, including violent behavior and other forms of relational aggression (Koenigsberg, Harvey, Mitropoulou, et al., 2001; McCloskey, New, Siever, et al., 2009; Sansone & Sansone, 2012; Stepp, Smith, Morse, et al., 2012). Further, many of these studies have indicated that most aggressive actions take place in the context of close relationships among those with BPD (Newhill, Eack, & Mulvey, 2009; Sansone & Sansone, 2012).

Given the risk of aggression within BPD, a growing number of studies have focused on which characteristics differentiate borderline individuals who are aggressive toward others vs. those who are not. One area of research has highlighted the degree to which childhood and adult adversity contribute to perpetration of aggressive acts. One study found that borderline patients with a history of childhood maltreatment had a greater likelihood of committing aggressive acts than those without this history (Tikkanen, Holi, Lindberg, et al., 2009). Further, a number of studies have shown that individuals with BPD are at an elevated risk both of perpetrating aggression/violence but also being a victim of aggression/violence, with these processes likely influencing one another (Cloitre, Tardiff, Marzuk, et al., 2001; McGowan, King, Frankenburg, et al., 2012; Newhill et al., 2009; Stepp et al., 2012; Zanarini, Frankenburg, Reich, et al., 1999).

Another area of research has focused on the role of comorbid conditions as elevating risk for aggressive behavior in BPD. One study found that severity of substance use was a significant predictor of aggression (accounting for more variance than BPD symptoms) among those with BPD (Haller and Miles, 2003). Additional studies have focused on the interplay between symptoms of antisocial personality disorder (ASPD) and BPD in predicting aggression. This literature has been somewhat mixed, with some studies finding that controlling for ASPD symptoms accounts for any association between BPD and aggression (Allen & Links, 2012; Newhill et al., 2009) and others finding that a unique association between BPD and aggression remains even after controlling for ASPD (Newhill, Eack, & Mulvey, 2012; Weinstein, Gleason, & Oltmanns, 2012). Other studies have indicated that both BPD and ASPD confer risk for aggression, albeit through different mechanisms and/or for different types of aggression. For example, one study found that both BPD and ASPD symptoms were associated with aggression; this relationship was mediated by emotion dysregulation for BPD symptoms, whereas the relationship between ASPD symptoms and aggression was direct (Scott, Stepp, & Pilkonis, 2014).

To date, no studies have examined the longitudinal course of externally-focused aggression in patients with BPD compared to a relevant clinical control group. Many existing studies of aggression with BPD are likewise limited by small, selected samples (e.g., violent offenders with alcoholism) that are not generalizable to the larger population of people with BPD.

Additionally, no studies have examined the mutual influence of multiple risk factors for aggression within BPD prospectively over time.

The current study has two aims. The first is to assess and compare the prevalence of various types of aggressive behavior (i.e., verbal, emotional, physical, and sexual aggression directed toward others) in borderline patients with those reported by axis II comparison subjects over ten years of prospective follow-up. The second is to determine the best baseline and time-varying predictors of aggressive behavior toward others in patients with borderline personality disorder. To do so, we will examine the effects of several clinically meaningful and research-informed predictors of aggression, including childhood adversity, adult adversity, substance use disorders, and ASPD. This study also follows this large and well-characterized sample of borderline patients and patients with other personality disorders prospectively over a decade.

2. Methods

The current study is part of the McLean Study of Adult Development (MSAD), a multifaceted longitudinal study of the course of borderline personality disorder. 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, et al., 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 of 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.

2.1 Measures

2.1.1 Axis I and II disorders—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 diagnostic assessment. Three semi-structured interviews were administered. These diagnostic interviews were: (1) the Structured Clinical Interview for DSM-III-R Axis I Disorders (SCID-I; Spitzer, Williams, Gibbon, et al., 1992), (2) the Revised Diagnostic Interview for Borderlines (DIB-R; Zanarini, Gunderson, Frankenburg, et al., 1989), and (3) the Diagnostic Interview for DSM-III-R Personality Disorders (DIPD-R; Zanarini, Frankenburg, Chauncey, et al., 1987). The inter-rater and test-retest reliability of these measures have been found to be good-excellent (Zanarini and Frankenburg, 2001; Zanarini, Frankenburg, & Vujanovic, 2002).

2.1.2 The Aggressive Behavior Questionnaire – Revised—Lifetime instances of aggressive behavior reported by subjects were assessed at baseline using a semi-structured Interview—the Aggressive Behavior Questionnaire-Revised (ABQ-R; Zanarini, 1992). The ABQ-R assesses four types of aggressive behavior: verbal, emotional, physical, and sexual. Examples of each type are provided to subjects, and subsequently they are asked to describe their behavior in their own words. Verbal aggression is defined as repeatedly putting someone down, blaming someone for things that weren't his or her fault, and yelling or

screaming at him or her. Emotional aggression is defined as repeatedly shaming or humiliating someone, or repeatedly frustrating someone by giving him or her mixed messages or putting him or her in impossible situations. Physical aggression is defined as shoving, slapping, hitting, kicking, punching, or hurting someone in some other way. Sexual aggression is defined as engaging in some kind of sexual contact with someone that was unwanted or forcing someone into some kind of sexual activity. Both inter-rater (median=.90) and test-retest (median=.85) reliability were in the excellent range.

2.1.3 The Revised Childhood Experiences Questionnaire—Childhood experiences of adversity before the age of 18 were assessed using the Revised Childhood Experiences Questionnaire (CEQ-R), which was administered at baseline (Zanarini, Williams, Lewis, et al., 1997). This interview assesses four forms of abuse (verbal, emotional, physical, and sexual abuse). It also assesses seven forms of neglect (physical neglect, emotional withdrawal, inconsistent treatment, denial of feelings, lack of a real relationship, parentification of patient, and failure to protect patient). Both reported childhood experiences of abuse and neglect are assessed for three separate childhood periods: early childhood (0–5), latency (6–12), and adolescence (13–17). This interview has demonstrated reliability and psychometric properties have been described elsewhere (Zanarini et al., 1997).

2.1.4 The Abuse History Interview—Lifetime experiences of adult abuse were assessed at baseline using the Abuse History Interview (AHI; Zanarini, Frankenburg, Reich, et al., 2005). The AHI assesses four types of abuse: verbal, emotional, physical, and sexual abuse. Examples of each type are provided to subjects and subsequently they are asked to describe their experience of abuse in their own words. Verbal abuse is defined as someone often putting you down or screaming and yelling at you. Emotional abuse is defined as someone often shaming or humiliating you, or repeatedly frustrating you by giving you mixed messages or putting you in impossible situations. Examples of physical abuse include someone often slapping you, throwing things at you, or beating you until you have bruises. Examples of sexual abuse include someone repeatedly fondling you, forcing you to perform sexual acts, or having intercourse with you against your will. This interview has demonstrated reliability and full psychometric properties have been described elsewhere (Dubo, Zanarini, Lewis, et al., 1997).

2.2 Follow-up procedures

At each of the study's five two-year follow-up periods, staff members obtained informed consent from all of the continuing subjects. Each subject was then interviewed by a staff member who was blind to the patient's baseline diagnoses. The interview battery consisted of measures similar to those at baseline and included the SCID I, the DIB-R, and the DIPD-R. Good-excellent inter-rater reliability has been maintained throughout the course of the study for both axis I and II disorders (Zanarini and Frankenburg, 2001; Zanarini et al., 2002). Aggression exhibited during each follow-up period was assessed with the Follow-Up Version of the ABQ-R (ABQ-R FUV; Zanarini, 1992). Abuse experienced during each follow-up period was assessed with the Follow-Up Version of the AHI (AHI-FUV; Zanarini et al., 2005).

2.3 Statistical analyses

Rates of adult aggressive behavior are reported in terms of frequency (n) and percentages (prevalence rates), separately for borderline patients and axis II comparison subjects at baseline and over ten years of prospective follow-up. Initial analyses considered the pattern of change in prevalence of adult aggressive behavior over time (i.e., presence/absence of each type of aggressive behavior), and whether the pattern of change differed between borderline and axis II comparison subjects. To properly account for the correlation among repeated measures over time, generalized estimating equations (GEE), with diagnosis and time as main effects and their interaction, were used in longitudinal analyses of the prevalence data. An exchangeable working correlation structure was assumed and standard errors were based on the empirical or so-called sandwich variance estimator. The test for diagnosis by time interaction provides a statistical comparison of whether the pattern of change in the prevalence rates differed between borderline and axis II comparison subjects. Specifically, in separate analyses of the five types of aggression, these analyses model the log prevalence of adult aggressive behavior over time; these analyses included gender as an additional covariate (as borderline patients were significantly more likely than axis II comparison subjects to be female). The results of each of the longitudinal analyses yielded an adjusted relative risk ratio (RRR) and 95% confidence interval (95%CI) for diagnosis, time, and their interaction.

Generalized estimating equations were also used in analyses of predictors of the outcome aggression toward others among borderline patients. Six clinically meaningful variables were assessed for significance in a bivariate manner (three forms of childhood adversity, the severity of adult adversity, a substance use disorder, and antisocial personality disorder). These variables have been found in our study to be common among borderline patients at baseline and/or over a decade of follow-up (Zanarini et al, 1997; Zanarini et al, 2005; Zanarini and Frankenburg, 2001). In addition, clinical experience and research suggests that these variables may be associated with aggression toward others in this population (for a review, see Allen & Links, 2012). Those variables that were significant in bivariate analyses were then assessed in a multivariate model. Probability was set at an alpha level of <0.05.

3. Results

3.1 Diagnostic groups and demographics

At baseline, two hundred and ninety patients met both DIB-R and DSM-III-R criteria for BPD and 72 met DSM-III-R criteria for at least one nonborderline axis II disorder (and neither criteria set for BPD). Of these 72 comparison subjects, 4% met DSM-III-R criteria for an odd cluster personality disorder, 33% met DSM-III-R criteria for an anxious cluster personality disorder, 18% met DSM-III-R criteria for a nonborderline dramatic cluster personality disorder, and 53% met DSM-III-R criteria for personality disorder not otherwise specified (which was operationally defined in the DIPD-R as meeting all but one of the required number of criteria for at least two of the 13 axis II disorders described in DSM-III-R).

Baseline demographic data have been reported before (Zanarini et al., 2003). Briefly, 77.1% (n = 279) of the subjects were female and 87% (n = 315) were white. The average age of the subjects was 27 years (SD = 6.3), the mean socioeconomic status was 3.3 (SD = 1.5), where 1 = highest and 5 = lowest (Hollingshead, 1957), and their mean GAF score was 39.8 (SD = 7.8) indicating major impairment in several areas, such as work or school, family relations, judgment, thinking, or mood.

3.2 Retention

Retention rates have remained high throughout the duration of the study. At the time of the ten-year follow-up wave, 91.9% (n = 249/271) of surviving borderline patients and 84.5% of surviving axis II comparison subjects (60/71) were reinterviewed at all five follow-up waves.

3.3 Adult aggressive behaviors

Table 1 details the prevalence rates of adult aggressive behavior for both borderline and axis II comparison subjects over ten years of prospective follow-up. The table details the prevalence rates for five types of aggression (verbal, emotional, physical, sexual, and any aggression). It was found that verbal, emotional, physical, and any aggression were significantly more common among borderline patients than axis II comparison subjects. For both borderline and axis II comparison subjects, the rate of sexual aggression within the sample was very low; due to the sparseness of data, statistical analyses are not presented. In addition, for those in both study groups, verbal, emotional, physical, and any aggression declined significantly between baseline and the ten-year follow-up period.

Table 1 also reports relative risk ratios (RRRs) for diagnosis and time. Of note, there was no evidence of diagnosis by time interaction effects for any of the four types of aggression, indicating that the pattern of change over time is the same for both groups (i.e., between-group differences in prevalence were of similar magnitude at all time points). As this type of analysis is complex and might be difficult to understand, we indicate what these RRRs mean. In terms of verbal aggression, the RRR of 1.42 indicates that borderline patients are almost one and a half times more likely to report verbally aggressive behavior than axis II comparison subjects. The RRRs of 1.59, 2.0, and 1.42 for emotional, physical, and any aggression respectively indicate that borderline patients are approximately 60% more likely to report emotional aggression, twice as likely to report physical aggression, and slightly more than 40% more like to report any type of aggression toward others. In terms of change over time, the RRR of 0.24 for verbal aggression indicates that for both groups the rates of this type of aggression decreased by 76% ($1 - 0.24 \times 100\% = 76\%$) over the 10 years of follow-up. Similarly, emotionally aggressive behavior decreased by 88%, physically aggressive behavior decreased by 91%, and any aggression toward others decreased by 75% over the 10 years of follow-up. As noted above, the incidence of sexual aggressive behavior in borderline patients and axis II comparison subjects was too low to make meaningful statistical comparisons between the groups; with that caveat, results indicated no significant differences between groups or change over time (albeit this analysis has low power to detect any differences due to sparseness of data).

Next we consider predictors of any aggressive behavior towards others as reported by borderline patients only. Table 2 shows bivariate results for six childhood and adult predictors of aggressive behavior toward others, which, as noted above, were chosen based on the clinical experience of the research team. Analyses indicated that the three childhood adversity predictors were not significant predictors of any aggressive behavior.

However, the severity of verbal/emotional/physical/sexual abuse in adulthood (severity of adult adversity), a substance use disorder, and antisocial personality disorder were all significant bivariate predictors of adult aggression towards others. Specifically, for every one point increase in severity of adult adversity the likelihood of being aggressive increased by a factor of 1.20, or 20%. Substance abuse increased the likelihood of being aggressive by a factor of 1.53, or 53%, and the diagnosis of antisocial personality disorder increased the likelihood of being aggressive toward others by a factor of 1.49, or 49%.

Because the adult predictors might be correlated or overlapping, we next considered analyses that examined the unique effects of these factors when adjusted for the others. Table 3 shows the results of a multivariate analysis of the most salient predictors of adult aggression towards others. In the latter analysis, severity of adult adversity and substance abuse remain significant predictors, with every one point increase in severity of adult adversity increasing the likelihood of aggression toward others by a factor of 1.25, or 25% (when adjusted for substance abuse), and substance abuse over time increasing the likelihood of aggression by a factor of 1.38, or 38% (when adjusted for adult adversity).

4. Discussion

4.1 Main findings

This study has three main findings. The first finding is that a significantly higher percentage of borderline patients than axis II comparison subjects reported being verbally, emotionally, and physically aggressive toward others over time. They were also significantly more likely to report any aggression toward others. In contrast, sexual aggression was reported so infrequently in both study groups that reliable between-group comparisons were not possible. Taken together, this finding indicates that the borderline patients in this study reported relatively high rates of aggression toward others, particularly at baseline. More specifically, the following rates were found at baseline for the five types of aggression that were studied: verbal (57%), emotional (35%), physical (31%), sexual (4%), and any aggression (65%). These high rates of reported aggression have clinical importance as they indicate a degree of self-awareness that many clinicians do not believe that borderline patients possess.

The second finding is that prevalence rates of all types of aggression toward others except sexual aggression, which as noted above were not analyzed due to scarcity, decreased significantly over 10 years of prospective follow-up for those in both groups. More specifically, the following rates were found for borderline patients at 10-year follow-up: verbal (19%), emotional (4%), physical (2%), sexual (0%), and any aggression (21%).

The third finding is that only two adult predictors of aggression toward others were found to be significant multivariate predictors of this outcome. Severity of adult adversity and a substance use disorder together predicted an increased occurrence of aggressive behavior toward others by borderline patients. It may be that the experience of being abused as an adult leads to believing that these behaviors are acceptable forms of behavior for an adult. In addition, being a victim of adversity in adulthood may lead borderline patients to identify with their abusers and exhibit more aggressive behavior themselves. The disinhibition associated with a substance use disorder may interact with these factors to heighten the risk of being verbally, emotionally, and/or physically aggressive with others.

4.2 Limitations

This study has some limitations. First, all subjects in the study were initially inpatients. Therefore, findings may not generalize to non-inpatient populations. Another limitation is that about 90% of those in both patient groups were in individual therapy and taking psychotropic medications at baseline and about 70% were participating in each of these outpatient modalities during each follow-up period (Zanarini, Frankenburg, Reich, et al., 2015). Thus, it is difficult to know if these results would generalize to people meeting criteria for BPD who are not in any treatment. The third limitation is that all information was collected by means of patient report. However, patients were asked to report detailed vignettes of their experiences and ambiguous events were not counted. In addition, these results may represent under-reporting as aggression toward others is generally viewed as socially inappropriate or unacceptable, and these reports were not corroborated with other records (e.g., police records). Finally, although clinically relevant and supported by existing research, only a limited number of predictors were examined in the present study.

Taken together, these results suggest that borderline patients commonly report aggression toward others but that this aggression declines significantly over time. These results also suggest that this aggression toward others is most strongly associated with adult experiences of adversity and concurrent substance abuse.

Acknowledgments

Funding:

This study was supported by NIMH grants MH47588 and MH62169.

References

- Allen A, Links PS. Aggression in borderline personality disorder: Evidence for increased risk and clinical predictors. *Curr Psychiatr Reports*. 2012; 14:62–69.
- Cloitre M, Tardiff K, Marzuk P, Leon A, Portera L. Consequences of childhood abuse among male psychiatric inpatients: Dual roles as victims and perpetrators. *J Traumatic Stress*. 2001; 14:47–61.
- Dubo ED, Zanarini MC, Lewis RE, Williams AA. Childhood antecedents of self-destructiveness in borderline personality disorder. *Can J Psychiatry*. 1997; 42:63–69. [PubMed: 9040926]
- Haller DL, Miles DR. Victimization and perpetration among perinatal substance abusers. *J Interpers Violence*. 2003; 18:760–780. [PubMed: 14675508]
- Hollingshead, AB. Two factor index of social position. Yale University; New Haven, CT: 1957.
- Kernberg, OF. Borderline conditions and pathological narcissism. Aronson; New York: 1975.

- Koenigsberg HW, Harvey PD, Mitropoulou V, New AS, Goodman M, Silverman J, Serby M, Schopick F, Siever LJ. Are the interpersonal and identity disturbances in the borderline personality disorder criteria linked to the traits of affective instability and impulsivity? *J Pers Disord.* 2001; 15:358–370. [PubMed: 11556702]
- Newhill CE, Eack SM, Mulvey EP. Violent behavior in borderline personality. *J Pers Disord.* 2009; 23:541–554. [PubMed: 20001173]
- Newhill CE, Eack SM, Mulvey EP. A growth curve analysis of emotion dysregulation as a mediator for violence in individuals with and without borderline personality disorder. *J Pers Disord.* 2012; 26:452–467. [PubMed: 22686232]
- McCloskey MS, New AS, Siever LJ, Goodman M, Koenigsberg HW, Flory JD, Coccaro EF. Evaluation of behavioral impulsivity and aggression tasks as endophenotypes for borderline personality disorder. *J Psychiatr Res.* 2009; 43:1036–1048. [PubMed: 19232640]
- McGowan A, King H, Frankenburg FR, Fitzmaurice G, Zanarini MC. The course of adult experiences of abuse in patients with borderline personality disorder and Axis II comparison subjects: A 10-year follow-up study. *J Pers Disord.* 2012; 26:192–202. [PubMed: 22486449]
- Sansone RA, Sansone LA. Borderline personality and externalized aggression. *Innov in Clin Neuro.* 2012; 9:23–26.
- Scott LN, Stepp SD, Pilkonis PA. Prospective associations between features of borderline personality disorder, emotion dysregulation, and aggression. *Personal Disord.* 2014; 5:278–288. [PubMed: 24635753]
- Spitzer RL, Williams JBW, Gibbon M, First MB. Structured Clinical Interview for DSM-III-R (SCID) I: History, rational, and description. *Arch Gen Psychiatry.* 1992; 49:624–629. [PubMed: 1637252]
- Stepp SD, Smith TD, Morse JQ, Hallquist MN, Pilkonis PA. Prospective associations among borderline personality disorder symptoms, interpersonal problems, and aggressive behaviors. *J Interpers Violence.* 2012; 27:103–124. [PubMed: 21859760]
- Spitzer RL, Williams JBW, Gibbon M, First MB. Structured Clinical Interview for DSM-III-R (SCID) I: History, rational, and description. *Arch Gen Psychiatry.* 1992; 49:624–629. [PubMed: 1637252]
- Tikkanen R, Holi M, Lindberg N, Tiihonen J, Virkkunen M. Recidivistic offending and mortality in alcoholic violent offenders: a prospective follow-up study. *Psychiatr Res.* 2009; 168:18–25.
- Weinstein Y, Gleason ME, Oltmanns TF. Borderline but not antisocial personality disorder symptoms are related to self-reported partner aggression in late middle-age. *J Abnorm Psych.* 2012; 121:692–698.
- Zanarini MC. The Aggressive Behavior Questionnaire Revised (ABQ-R). Mclean Hospital; Belmont, MA: 1992.
- Zanarini MC, Frankenburg FR. Attainment and maintenance of reliability of axis I and II disorders over the course of a longitudinal study. *Compr Psychiatry.* 2001; 42:369–374. [PubMed: 11559863]
- Zanarini MC, Frankenburg FR, Chauncey DL, Gunderson JG. The Diagnostic Interview for Personality Disorders: Interrater and test-retest reliability. *Compr Psychiatry.* 1987; 28:467–480. [PubMed: 3691072]
- Zanarini MC, Frankenburg FR, Hennen J, Silk KR. The longitudinal course of borderline psychopathology: 6-year prospective follow-up of the phenomenology of borderline personality disorder. *Am J Psychiatry.* 2003; 160:274–283. [PubMed: 12562573]
- Zanarini MC, Frankenburg FR, Reich DB, Conkey LC, Fitzmaurice GM. Treatment rates for patients with borderline personality disorder and other personality disorders: a 16-year study. *Psychiatr Serv.* 2015; 66:15–20. [PubMed: 25270039]
- Zanarini MC, Frankenburg FR, Reich DB, Hennen J, Silk KR. Adult experiences of abuse reported by borderline patients and axis II comparison subjects over six years of prospective follow-up. *J Nerv Ment Dis.* 2005; 193:412–416. [PubMed: 15920382]
- Zanarini MC, Frankenburg FR, Reich DB, Marino MF, Haynes MC, Gunderson JG. Violence in the lives of adult borderline patients. *J Nervous and Mental Dis.* 1999; 187:65–71.
- Zanarini MC, Frankenburg FR, Vujanovic AA. The interrater and test-retest reliability of the Revised Diagnostic Interview for Borderlines (DIB-R). *J Personal Disord.* 2002; 16:270–276.

- Zanarini MC, Gunderson JG, Frankenburg FR, Chauncey DL. The revised diagnostic interview for borderlines: Discriminating BPD from other axis II disorders. *J Personal Disord.* 1989; 3:10–18.
- Zanarini MC, Williams AA, Lewis RE, Reich DB, Vera SC, Marino MF, Levin A, Yong L, Frankenburg FR. Reported pathological childhood experiences associated with the development of borderline personality disorder. *Am J Psychiatry.* 1997; 154:1101–1106. [PubMed: 9247396]

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Highlights

- Verbal, emotional, and physical aggression toward others were reported by a significantly higher percentage of borderline patients than axis II comparison subjects over a decade of prospective follow-up
- Both study groups reported a significant decline in these behaviors over time
- The best multivariate predictors of any form of aggression toward others among borderline patients were two time-varying variables—the severity of adult adversity (i.e., the severity of verbal, emotional, physical, and sexual abuse combined) and a substance use disorder

Table 1

Prevalence Rates (n) of Adult Aggressive Behavior Towards Others Reported by Borderline Patients and Axis II Comparison Subjects over Ten Years of Prospective Follow-up

	BL	2 YR FU	4 YR FU	6 YR FU	8 YR FU	10 YR FU	RRR Diagnosis Time	95% CI Diagnosis Time	p-value Diagnosis Time
Verbal Aggression									
BPD	56.6 (164)	30.9 (85)	23.0 (62)	16.3 (43)	21.2 (54)	18.9 (47)	1.42 0.24	1.08, 1.88 0.19, 0.32	0.013 <0.001
OPD	47.2 (34)	13.4 (9)	12.5 (8)	11.1 (7)	11.5 (7)	5.0 (3)			
Emotional Aggression									
BPD	34.8 (101)	11.6 (32)	9.3 (25)	9.1 (24)	7.1 (18)	4.0 (10)	1.59 0.12	1.03, 2.46 0.07, 0.19	0.036 <0.001
OPD	22.2 (16)	7.5 (5)	6.3 (4)	7.9 (5)	6.6 (4)	1.7 (1)			
Physical Aggression									
BPD	31.4 (91)	10.9 (30)	8.2 (22)	4.5 (12)	7.8 (20)	2.4 (6)	2.00 0.09	1.25, 3.20 0.05, 0.16	0.004 <0.001
OPD	20.8 (15)	1.5 (1)	0.0 (0)	6.3 (4)	3.2 (2)	1.7 (1)			
Sexual Aggression									
BPD	3.8 (11)	0.0 (0)	0.7 (2)	0.0 (0)	0.0 (0)	0.0 (0)	—	—	—
OPD	2.8 (2)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)			
Any Aggression									
BPD	64.8 (188)	35.6 (98)	27.9 (75)	20.0 (53)	25.9 (66)	20.9 (52)	1.42 0.25	1.12, 1.79 0.20, 0.32	0.003 <0.001
OPD	55.6 (40)	16.4 (11)	12.5 (8)	12.7 (8)	13.1 (8)	8.3 (5)			

Note: For all analyses, effect of the time by group interaction was non-significant. Statistics for effects of the interactions include the following: 1) Verbal Aggression: $z = 1.75$, $p = 0.08$; 2) Emotional Aggression: $z = -0.76$, $p = 0.45$; 3) Physical Aggression: $z = 0.085$, $p = 0.93$; 4) Any Aggression: $z = 1.91$, $p = 0.06$.

Bivariate Predictors of Any Aggression Toward Others Reported by Borderline Patients Over 10 years of Prospective Follow-up

Table 2

	RRR	SE	z-score	p-value	95% Confidence Interval
Childhood Sexual Abuse [*]	1.07	0.09	0.75	0.453	0.90, 1.27
Severity of Other Forms of Childhood Abuse/5 ^{*,*}	1.08	0.04	1.94	0.053	1.00, 1.16
Severity of Childhood Neglect/10 [*]	1.03	0.04	0.88	0.377	0.96, 1.12
Severity of Adult Adversity (0–4) ^{***}	1.20	.04	6.08	<0.001	1.13, 1.27
Substance Use Disorder ^{***}	1.53	0.12	5.54	<0.001	1.32, 1.79
Antisocial Personality Disorder ^{***}	1.49	0.14	4.28	<0.001	1.24, 1.78

^{*} Baseline predictors;^{***} Time-varying predictors

Table 3
Multivariate Predictors of Any Aggression Toward Others Reported by Borderline Patients Over 10 years of Prospective Follow-up

	RRR	SE	z-score	p-value	95% Confidence Interval
Severity of Adult Adversity (0-4) ^{**}	1.25	0.04	7.14	<0.001	1.18, 1.33
Substance Use Disorder ^{**}	1.38	0.11	3.92	<0.001	1.17, 1.62

^{**}Time-varying predictors