International Journal of Psychiatry in Clinical Practice, 2011; Early Online, 1–5

informa
healthcare

ORIGINAL ARTICLE

The relationship between childhood trauma and borderline personality symptomatology in a consecutive sample of cardiac stress test patients

RANDY A. SANSONE[1,2,3], HARVEY S. HAHN[2,4,5], NATHANIEL DITTOE[5] & MICHAEL W. WIEDERMAN[6]

Departments of [1]Psychiatry and [2]Internal Medicine, Wright State University School of Medicine, Dayton, OH, USA, [3]Psychiatry Education, Kettering Medical Center, Kettering, OH, USA, [4]Cardiovascular Fellowship Training Program and the Cardiac Noninvasive Laboratory, Kettering Medical Center, Kettering, OH, USA, [5]Department of Cardiology, Kettering Medical Center, Kettering, OH, USA, and [6]Department of Human Relations, Columbia College, Columbia, SC, USA

Abstract

Objective. In this study, we examined relationships between five types of childhood trauma and two measures of borderline personality symptomatology in a non-psychiatric clinical population in order to assess a potential association between these variables in a non-psychiatric-treatment-seeking population. *Method.* Using a cross-sectional sample and a survey approach in 250 consecutive patients presenting for cardiac stress testing, we explored self-reported histories of five types of childhood trauma (i.e. witnessing violence, physical neglect, emotional abuse, physical abuse, sexual abuse), several aspects of past mental healthcare, and borderline personality symptomatology using two self-report measures (the borderline personality disorder scale of the Personality Diagnostic Questionnaire-4 and the Self-Harm Inventory). *Results*. *All* relationships between the individual forms of trauma and total number of childhood traumas, and measures of borderline personality symptomatology, attained statistical significance. Using multiple regression analysis, sexual abuse in childhood was an independent predictor for borderline personality symptomatology in addition to past psychiatric/counseling care, with the latter finding suggesting some inter-drift of psychiatric patients into this cardiac stress test sample. *Conclusions.* In this non-psychiatric-treatment-seeking population, there appear to be relationships between various forms of trauma (especially sexual abuse) and borderline personality symptomatology, reinforcing the role of childhood trauma in borderline personality disorder.

KeyWords: *Borderline personality, borderline personality disorder, borderline personality symptomatology, childhood trauma, emotional abuse, physical abuse, Self-Harm Inventory, sexual abuse, witnessing violence*

Introduction

Borderline personality disorder (BPD) is a complex Axis II dysfunction that appears to be multi-determined [1,2] (i.e. it is the result of multiple risk factors). As for identified risk factors, genetics appears to meaningfully contribute to the development of BPD. For example, Distel et al. [3] found that genetics accounted for 42% of the variance in BPD. However, what appears to be inherited is *non-specific* [4]. It may be that core biological vulnerabilities are genetically passed on, such as affective instability, poor impulse management, and/or dysfunctional cognitive/perceptual styles [5]. In keeping with this impression, in a review of the literature, White et al. [6] compared the relatives of individuals with BPD with the relatives of normal controls, and found that the former group evidenced greater frequencies of impulse spectrum disorders as well as BPD, itself.

In addition to genetics, parental psychopathology and family dysfunction appear to contribute to the development of BPD [7]. Common psychological themes in affected cases include neglect and a lack of empathy [8]; "biparental failure" [9]; poor relationships

Correspondence: Randy A. Sansone, MD, Sycamore Primary Care Center, 2115 Leiter Road, Miamisburg, OH 45342, USA. Tel: + 1 937 384 6850. Fax: + 1 937 384 6938. E-mail: randy.sansone@khnetwork.org

(Received 25 October 2010; accepted 27 May 2011)

ISSN 1365-1501 print/ISSN 1471-1788 online © 2011 Informa Healthcare
DOI: 10.3109/13651501.2011.593263

with parents [10]; and family interactions that are invalidating, conflictual, negative, and/or critical [11].

In addition to genetics and parental/family psychopathology, repetitive trauma in childhood is a noted risk factor for the development of BPD, which is the focus of the present study. In this regard, a majority of empirical studies has confirmed a statistical association between various types of childhood trauma and BPD in adulthood [12]. The identified types of childhood trauma associated with BPD traditionally include physical, sexual, and emotional abuses as well as possibly the witnessing of violence. As an example, in a large sample of patients with BPD, Zanarini et al. [13] found that 85% of participants reported histories of childhood trauma. As for cases without evidence of childhood trauma, some authors broach the possibility of non-traumatic pathways to BPD [14]. However, early traumatic experiences are *widely* believed to be relevant contributory factors [15] – an impression that is empirically supported by the high rate of comorbidity between BPD and post-traumatic stress disorder [16] and is substantiated by the ongoing controversy about re-naming BPD as "complex post-traumatic stress disorder" [15].

Given the observed statistical association between childhood trauma and BPD, one has to wonder about possible confounds with these data, including the effects of sampling bias due to studying treatment-seeking populations (i.e. samples composed of psychiatric participants). Explicitly, are BPD individuals with childhood trauma over-represented in mental-health treatment settings, which are the sites for the majority of this type of research? Indeed, differences between treatment-seeking and non-treatment seeking populations have been previously reported. For example, Wilfley and colleagues described such differences among participants with binge eating disorder [17]. In the present case of childhood trauma, such a sampling effect could artificially create or inflate a statistical association between childhood trauma and BPD. In the following study, we examined the association between five types of self-reported childhood traumas and borderline personality symptomatology, which was assessed using 2 self-report measures for the disorder, in a non-psychiatric clinical sample.

Method

Participants

Participants in this study were consecutive patients, ages 18 or older, male or female, undergoing cardiac stress testing in a community hospital from 6/6/10 to 9/3/10. Exclusion criteria were medical (e.g., pain), psychiatric (e.g., psychosis), or intellectual disturbances that would preclude the successful completion of a survey booklet. Two recruiters approached 302 candidates and enrolled 251 participants, for a response rate of 83.1%.

Among the 251 participants, 250 completed all of the measures analyzed in the present study. For these 250 respondents, 117 were male and 133 female, who ranged in age from 20 to 91 years ($M = 58.02$, $SD = 13.88$). The large majority was white (93.2%), followed by black (3.2%), Native American (1.6%), Other (1.2%), and Asian (0.4%). One respondent (0.4%) did not indicate ethnicity. With regard to educational attainment, 19 (7.6%) had not finished high school, 73 (29.2%) had only a high school diploma, 73 (29.2%) had attended college but had no degree, 12 (4.8%) had earned a 2-year degree, 31 (12.4%) had earned a 4-year degree, and 39 (15.6%) had earned a graduate degree. Three respondents (1.2%) did not indicate their educational attainment.

Procedure

Following an explanation of the research project and the signing of consent forms, each participant completed a survey booklet that explored demographic information, five types of childhood trauma, rudimentary history of mental healthcare, and borderline personality symptomatology using two self-report measures: (1) the BPD scale of the Personality Diagnostic Questionnaire-4 (PDQ-4) [18] and (2) the Self-Harm Inventory (SHI) [19].

Assessment of childhood trauma. With regard to the five types of childhood trauma, participants were asked if, "Prior to the age of 12, did you *ever* experience…" with yes/no response options. Individual items were: (1) the witnessing of violence (i.e. "the first-hand observation of violence that did not directly involve you"); (2) physical neglect (i.e. "not having your basic life needs met); (3) emotional abuse (i.e. "verbal and nonverbal behaviors by another individual that were purposefully intended to hurt and control you, not kid or tease you"); (4) physical abuse (i.e. "any physical insult against you that would be considered inappropriate by either yourself or others and that left visible signs of damage on your body either temporarily or permanently or caused pain that persisted beyond the 'punishment'"); and (5) sexual abuse (i.e. any sexual activity against your will).

Assessment of mental healthcare. Mental healthcare utilization was measured with three yes/no questions: (1) Have you ever been seen by a psychiatrist? (2) Have you ever been in counseling? (3) Have you ever been on medication for your nerves?

Assessment of borderline personality symptomatology. Borderline personality symptomatology was assessed with two self-report measures. The first measure was the BPD scale of the PDQ-4 [18], a nine-item, true/false, self-report measure that consists of the diagnostic criteria for BPD that are listed in the DSM-IV. A score of 5 or higher is highly suggestive of the diagnosis of BPD. Previous versions of the PDQ have been found to be useful screening tools for BPD in both clinical [20,21] and nonclinical [22] samples, including the use of the freestanding BPD scale [23].

The second measure for borderline personality symptomatology assessment was the SHI [19], a 22-item, yes/no, self-report measure that explores participants' histories of self-harm behavior. Each item in the inventory is preceded by the statement, "Have you ever intentionally, or on purpose…", and items include "overdosed", "cut yourself on purpose", "burned yourself on purpose", and "hit yourself". Each endorsement is in the pathological direction and the SHI total score is the summation of "yes" responses. SHI total scores of 5 or higher are highly suggestive of the diagnosis of BPD. Specifically, in comparison with the Diagnostic Interview for Borderlines [24], a benchmark for the diagnosis of BPD in research settings, the SHI demonstrated an 84% accuracy in diagnosis [19].

The survey booklet took participants about 15 min to complete. All responses were anonymous. Completion of the survey was assumed to function as implied consent. After completion, survey booklets were placed in sealed envelopes and stored, pending statistical analysis. The institutional review boards of both the community hospital and university approved this project.

Results

Of the 250 participants, 68 (27.2%) reported the witnessing of violence, 14 (5.6%) physical neglect, 64 (25.6%) emotional abuse, 38 (15.2%) physical abuse, and 33 (13.2%) sexual abuse. Comparisons between the various individual types of trauma and the two measures of borderline personality symptomatology are shown in Table I. In addition, the correlation between the total number of different childhood traumas and the PDQ-4 score was $r = 0.39$ ($P < 0.001$), and the SHI score was $r = 0.42$ ($P < 0.001$).

Of the 250 participants, 61 (24.4%) indicated having seen a psychiatrist, 95 (38.0%) having been in counseling, and 84 (33.6%) having been on medications for their "nerves". Most (82.0%) respondents who indicated having seen a psychiatrist also indicated having been in counseling. However, a slight majority (51.2%) of those respondents who indicated having been on medication for their "nerves" denied having ever seen a psychiatrist. The two distinct, albeit related, dimensions of mental healthcare seemed to be having seen a mental healthcare professional (psychiatrist or counselor) versus having been on medications for one's "nerves". Accordingly, we created a variable indicating whether each respondent had seen a counselor or psychiatrist (42.4% of the total sample) versus never having seen either mental health professional (57.6% of respondents). Although a slight majority (54.7%) of respondents

Table I. Scores on the PDQ-4, the SHI, and the combined measure as a function of childhood trauma experiences ($N = 250$)

	Did not experience		Experienced			
	M	(SD)	M	(SD)	*F*	*P*<
Scores on the PDQ-4						
Witnessing violence	0.95	(1.45)	1.89	(2.03)	17.78	0.001
Physical neglect	1.08	(1.55)	2.93	(2.37)	7.34	0.01
Emotional abuse	0.92	(1.44)	1.92	(2.01)	14.65	0.001
Physical abuse	1.00	(1.51)	2.18	(2.08)	12.40	0.001
Sexual abuse	0.94	(1.37)	2.76	(2.40)	31.20	0.02
Seen psychiatrist/counselor	0.78	(1.17)	1.71	(2.03)	21.00	0.001
Been on meds for "nerves"	0.90	(1.50)	1.73	(1.82)	14.72	0.001
Scores on the SHI						
Witnessing violence	0.58	(1.17)	2.05	(2.72)	45.58	0.001
Physical neglect	0.84	(1.70)	2.64	(2.59)	7.51	0.01
Emotional abuse	0.63	(1.47)	1.84	(2.31)	22.16	0.001
Physical abuse	0.77	(1.60)	1.92	(2.48)	11.89	0.001
Sexual abuse	0.70	(1.31)	2.58	(3.25)	46.42	0.001
Seen psychiatrist/counselor	0.34	(0.69)	1.76	(2.42)	44.92	0.001
Been on meds for "nerves"	0.59	(1.58)	1.44	(2.09)	9.97	0.01

df = 1,248; PDQ-4, borderline personality disorder scale of the Personality Diagnostic Questionaire-4; SHI, Self-Harm Inventory.

who had seen a mental healthcare professional had also been on medications, sizeable minorities of the total sample had been on medications for "nerves" yet never saw a mental healthcare professional (10.4%) or saw a mental healthcare professional but had *not* taken medications for "nerves" (19.2%). The relationship between mental healthcare utilization and scores on the PDQ-4 and the SHI are presented in Table I.

To investigate whether the primary predictor of scores on the PDQ-4 and the SHI was childhood trauma, mental healthcare utilization, or both, we performed two multiple regression analyses. In the first, each of the five forms of childhood trauma and the two measures of mental healthcare utilization were entered simultaneously to predict scores on the PDQ-4. The resulting regression equation was statistically significant: $F(7,242) = 9.19$, $P < 0.001$, $R = 0.46$. However, only two of the seven predictor variables in the equation were statistically significant: sexual abuse ($\beta = 0.25$, $t = 3.87$, $P < 0.001$) and having seen a psychiatrist/counselor ($\beta = 0.13$, $t = 1.98$, $P < 0.05$). In the second analysis, each of the five forms of childhood trauma and the two measures of mental healthcare utilization were entered simultaneously to predict scores on the SHI. The resulting regression equation was statistically significant: $F(7,242) = 13.45$, $P < 0.001$, $R = 0.53$. However, only three of the seven predictor variables in the equation were statistically significant: sexual abuse ($\beta = 0.22$, $t = 3.53$, $P < 0.001$), witnessing violence ($\beta = 0.25$, $t = 3.88$, $P < 0.001$), and having seen a psychiatrist/counselor ($\beta = 0.28$, $t = 4.47$, $P < 0.05$).

Discussion

Individually, *all* forms of trauma demonstrated statistically significant associations with borderline personality symptomatology. However, multiple regression analyses indicated that sexual abuse was the only independent predictor of borderline personality symptomatology, suggesting the higher impact of this type of trauma in comparison with the others. Given the apparent overlap among the various forms of childhood trauma, it may be that general childhood adversity is the important stimulus for this type of character pathology. For example, in a recent study, we found statistically significant relationships between childhood bullying and BPD [25]. This finding supports the impression that multiple, general, noxious events in childhood may play a role in the development of BPD. (It is important to note that childhood trauma is a non-specific developmental factor for a number of other types of psychopathology, as well – it is not specifically linked with BPD.)

In addition, we found that there were relationships between some aspects of past mental healthcare and borderline personality symptomatology. These findings indicate that in this non-psychiatric-treatment-seeking sample, some participants reported previous mental healthcare. This observation suggests some population drift between mental health and primary care settings.

This study has a number of potential limitations, including the use of non-standardized self-report measures for the assessment of childhood trauma and the use of self-report measures for the assessment of past mental healthcare and borderline personality symptomatology. With regard to the assessment of borderline personality symptomatology, self-report measures for personality disorder assessment tend to generate false positives (i.e. be over-inclusive). Some of this over-inclusiveness may be attributed to limited divergent validity (i.e. the degree to which items in a given measure result in an overall construct that is dissimilar from other diagnostic constructs). For example, individuals with depressive and anxiety disorders may have endorsed specific PDQ-4 or SHI items seemingly relating to these syndromes (e.g., on the PDQ-4: "I have tried to hurt or kill myself"; "I am a very moody person"), but suggesting borderline personality psychopathology rather than mood and anxiety syndromes.

Despite the preceding potential limitations, the sample in this study is reasonably large and consecutive, we used two measures for borderline personality symptomatology, and the findings demonstrate statistical consistency. These findings support the observations of the majority of current studies and suggest that multiple forms of childhood trauma are related to borderline personality symptomatology in adulthood, particularly sexual abuse; however, many of the participants in this study had received mental healthcare treatment, indicating that there is psychiatric/medical inter-drift among a portion of the sample. Only further research will determine if these types of adversities extend beyond the family environment to include other noxious elements (e.g., bullying).

Key points

- According to empirical studies, borderline personality disorder is a multi-determined disorder, with one of the contributory variables being childhood trauma
- The majority of studies examining relationships between childhood trauma and borderline personality symptomatology has been undertaken in clinical mental health samples and verified this relationship. However, psychological

treatment-seeking samples may differ from non-treatment seeking samples in a number of ways

- In a non-mental-health sample (i.e. a cardiac stress test sample), we found statistically significant correlations between individual as well as the total number of childhood traumas, and borderline personality symptomatology, with sexual abuse emerging as the only statistically significant predictor following multiple regression analysis. We also found relationships between borderline personality symptomatology and psychiatric/counseling care, suggesting some inter-drift of the sample between mental health and cardiac stress test settings
- The findings of this study underscore the relationship between childhood trauma and borderline personality symptomatology in adulthood

Acknowledgements

We wish to thank Brandi Palmer, M.S., and Michele Jewell, M.A., for their role in data collection.

Statement of Interest

None to declare.

References

[1] Bandelow B, Krause J, Wedekind D, Broocks A, Hajak G, Ruther E. Early traumatic life events, parental attitudes, family history, and birth risk factors in patients with borderline personality disorder and healthy controls. Psychiatry Res 2005;134:169–79.
[2] Paris J. The development of impulsivity and suicidality in borderline personality disorder. Dev Psychopathol 2005;17:1091–104.
[3] Distel MA, Trull TJ, Derom CA, Thiery EW, Grimmer MA, Martin NG, et al. Heritability of borderline personality disorder features is similar across three countries. Psychol Med 2008;38:1219–29.
[4] Skodol AE, Siever LJ, Livesley WJ, Gunderson JG, Pfohl B, Widiger TA. The borderline diagnosis II: Biology, genetics, and clinical course. Biol Psychiatry 2002;51:951–63.
[5] Goodman M, New A, Siever L. Trauma, genes, and the neurobiology of personality disorders. Ann NY Acad Sci 2004;1032:104–16.
[6] White CN, Gunderson JG, Zanarini MC, Hudson JI. Family studies of borderline personality disorder: A review. Harv Rev Psychiatry 2003;11:8–19.
[7] Sansone RA, Sansone LA. The families of borderline patients: The psychological environment revisited. Psychiatry (Edgemont) 2009;6:19–24.
[8] Yatsko CK. Etiological theories of borderline personality disorder: A comparative multivariate study. Diss Abstr Int 1996;56:4628B.
[9] Zanarini MC, Frankenburg FR, Reich DB, Marino MF, Lewis RE, Williams AA, et al. Biparental failure in the childhood experiences of borderline patients. J Pers Disord 2000;14:264–73.
[10] Norden KA, Klein DN, Donaldson SK, Pepper CM, Klein LM. Reports of the early home environment in DSM-III-R personality disorders. J Pers Disord 1995;9:213–23.
[11] Fruzzetti AE, Shenk C, Hoffman PD. Family interaction and the development of borderline personality disorder: A transactional model. Dev Psychopathol 2005;17:1007–30.
[12] Sansone RA, Sansone LA. Borderline personality disorder: The enigma. Prim Care Rep 2000;6:219–26.
[13] Zanarini MC, Dubo ED, Lewis RE, Williams AA. Childhood factors associated with the development of borderline personality disorder. In: Zanarini MC, editor. Role of sexual abuse in the etiology of borderline personality disorder. Washington, DC: American Psychiatric Press; 1997 p 29–44.
[14] Graybar SR, Boutilier LR. Nontraumatic pathways to borderline personality disorder. Psychotherapy 2002;39: 152–62.
[15] Lewis KL, Grenyer BF. Borderline personality or complex post-traumatic stress disorder? An update on the controversy. Harv Rev Psychiatry 2009;17:322–8.
[16] Pagura J, Stein MB, Bolton JM, Cox BJ, Grant B, Sareen J. Comorbidity of borderline personality and post-traumatic stress disorder in the U.S. population. J Psychiatr Res 2010;44:1190–8.
[17] Wilfley DE, Pike KM, Dohm F-A, Striegel-Moore RH, Fairburn CG. Bias in binge eating disorder: How representative are recruited clinic samples? J Consult Clin Psychol 2001;69:383–8.
[18] Hyler S. Personality Diagnostic Questionnaire-4 (PDQ-4). New York: New York State Psychiatric Institute; 1994.
[19] Sansone RA, Wiederman MW, Sansone LA. The Self-Harm Inventory (SHI): Development of a scale for identifying self-destructive behavior and borderline personality. J Clin Psychol 1998;54:973–83.
[20] Dubro AF, Wetzler S, Kahn MW. A comparison of three self-report questionnaires for the diagnosis of DSM-III personality disorders. J Pers Disord 1988;2:256–66.
[21] Hyler SE, Lyons M, Rieder RO, Young L, Williams JB, Spitzer RL. The factor structure of self-report DSM-III Axis II symptoms and their relationship to clinicians' ratings. Am J Psychiatry 1990;147:751–7.
[22] Johnson JG, Bornstein RF. Utility of the Personality Diagnostic Questionnaire-Revised in a nonclinical population. J Pers Disord 1992;6:450–7.
[23] Patrick J, Links P, Van Reekum R, Mitton MJE. Using the PDQ-R BPD scale as a brief screening measure in the differential diagnosis of personality disorder. J Pers Disord 1995;9:266–74.
[24] Kolb JE, Gunderson JG. Diagnosing borderline patients with a semistructured interview. Arch Gen Psychiatry 1980;37:37–41.
[25] Sansone RA, Lam C, Wiederman MW. Being bullied in childhood: Correlations with borderline personality in adulthood. Compr Psychiatry 2010;51:458–61.