The Relationship Between Adverse Childhood Experiences and Symptom Severity, Chronicity, and Comorbidity in Patients With Obsessive-Compulsive Disorder

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ABSTRACT

Background: Studies on the relationship between adverse childhood experiences (ACEs) and obsessive-compulsive disorder (OCD) symptom severity are scarce. Available studies leave a considerable degree of uncertainty. The present study examines the relationship between ACEs and symptom severity, chronicity, and comorbidity in a sample of patients with OCD.

Method: Baseline data of the Netherlands Obsessive Compulsive Disorder Association (NOCDA) study, in which 382 referred patients with *DSM-IV*–diagnosed OCD participated, were analyzed. ACEs (physical abuse, sexual abuse, witnessing interparental violence, maternal dysfunction, paternal dysfunction, and early separation from a parent) were measured using a structured interview. Data were collected between September 2005 and November 2009.

Results: None of the ACEs were related to OCD symptom severity or chronicity, nor was there a dose-response relationship between ACEs and OCD severity or chronicity, but results of linear regression analysis revealed that ACEs were related to comorbidity in patients with OCD ($P < .001$), in particular to comorbid affective disorders ($P < .01$), substance use disorders ($P < .01$), and eating disorders ($P < .01$), but not to comorbid anxiety disorders.

Conclusions: Results of the study suggest that unlike in other psychiatric disorders, ACEs play no significant role in symptom severity and chronicity of OCD. This study was the first to reveal evidence for a relationship between ACEs and comorbidity in patients with OCD. Conclusions about trauma-relatedness of OCD based on studies finding higher trauma rates or severity among patients with OCD than among healthy controls, should be critically reconsidered, since presence of comorbidity might account for these differences.

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The relationship between adverse childhood experiences (ACEs), such as emotional and physical neglect; emotional, physical, and sexual abuse; and severity of adult psychopathology is firmly stated.[1–5] Several studies found that, compared to healthy controls, patients with obsessive-compulsive disorder (OCD) report more traumatic events[6–9]; however, little is known about the relationship between ACEs and severity of OCD. Until now, the relationship between ACEs and chronicity of OCD has not been studied.

The available studies on the relationship of ACEs and severity of OCD symptoms have found conflicting results between community samples and clinical samples of patients with OCD. Results of studies in the general population indicate that there is some evidence that childhood emotional abuse and physical neglect are associated with severity of OCD symptoms.[10] In addition, the overall severity of ACEs was found to be associated with severity of OCD symptoms,[11] although this association appeared to be fully mediated by general anxiety and depression. In contrast, in clinical samples of adult patients with OCD, no significant relationships between overall severity of ACEs and OCD symptom severity were found[12,13] (apart from 1 study in which only a small and borderline significant difference in OCD symptom severity between patients with and without a history of childhood sexual and/or physical abuse was found[14]). Limitations of these clinical studies are the use of rather small samples ($N = 41$)[14] and the fact that only self-report questionnaires were used to assess ACEs.[12,13] In 1 study on pediatric OCD, higher OCD symptom severity was found among patients with posttraumatic stress disorder (PTSD) or traumatic experiences than among those without these experiences.[7]

This topic needs further examination because the presence or absence of a relationship between ACEs and severity or chronicity of OCD might have implications for the relevance of addressing ACEs in OCD treatment. Furthermore, since ACEs are associated with an increase in the risk of developing psychiatric illnesses,[4,15] ACEs might be related to comorbidity in patients with OCD. This would be of interest considering that comorbid disorders are associated with severity[16,17] and chronicity[18] in OCD. Since comorbidity rates are exceedingly high in OCD,[19] comorbidity might be a mediator in the potential relationships between ACEs and severity or chronicity of OCD. However, the relationship between ACEs and comorbidity in OCD has not yet been studied. The purpose of this study was to better understand the relationship between ACEs and severity and chronicity of OCD, taking into account the role of comorbidity. We investigated in a large clinical sample whether (1) specific categories of ACEs are associated with OCD symptom severity, (2) there is a dose-response relationship between ACEs and severity of OCD, (3) specific categories of ACEs are related to chronicity in OCD, and (4) ACEs are related to comorbidity in patients with OCD.

METHOD

Participants

Data are drawn from the baseline measurement of the Netherlands Obsessive Compulsive Disorder Association (NOCDA) study.[20] The NOCDA study is an ongoing multicenter 6-year longitudinal naturalistic cohort study to examine the course of OCD. The participants are patients diagnosed with lifetime OCD, aged 18 years and over, and referred to the OCD programs within 1 of the participating second- and third-line mental health care centers (N = 419). No formal exclusion criteria were applied except for an inadequate understanding of the Dutch language. The study was approved by the local ethics committee, and all participants gave written informed consent. Detailed sample characteristics and methodology of NOCDA are described elsewhere.[20]

In this study, we included all patients who fulfilled *DSM-IV-TR* criteria for OCD at time of enrollment (N = 382); 372 of them (97.4%) had a primary diagnosis of OCD. This sample consisted of 56.5% women and 43.5% men. The mean age was 36.4 years (SD = 10.9). The mean score on the Yale-Brown Obsessive Compulsive Scale (YBOCS) was 20.92 (SD = 7.5), reflecting a moderate general severity of OCD; 61.7% of the participants reported a chronic course. With regard to comorbidity features, 77.7% of the participants were diagnosed with at least 1 additional lifetime Axis I mental disorder. The number of lifetime Axis I disorders ranged from 1 to 8; the mean (SD) was 2.72 (1.5) with the 3 most common comorbid disorders being major depressive disorder (56.5%), social phobia (24.1%), and panic disorder with or without agoraphobia (19.1%). PTSD occurred in 4.7% of the respondents.

Measures

OCD symptom severity. OCD symptom severity was assessed using the YBOCS-severity scale.[21] The YBOCS-severity scale is a 10-item structured interview of current severity of obsessions and compulsions with total scores ranging from 0 to 40. This scale is a widely used, reliable, and valid instrument for assessing the severity of OCD symptoms.[21]

Chronicity of OCD. *Chronicity of OCD* was defined as "continuous presence of at least moderately severe OCD symptoms during at least 2 years," as proposed by Visser et al,[18] and was assessed retrospectively using the structured Life Chart Interview (LCI) developed by Lyketsos et al.[22] This instrument is thoroughly studied in samples of affective disorders, and its methodology has shown high validity and reliability.[23] The LCI uses a calendar method (with help of age and calendar-linked personal memory cues) to determine the course of life history and OCD during the past 5 years. Except for chronicity, the duration of OCD symptoms during the past 5 years was determined. Duration could vary from 0.25 years (symptoms during a small part of 1 of the 5 years) to 5 years (symptoms during the whole year, in all 5 years).

Clinical Points

- To date, no evidence exists for a relationship between adverse childhood experiences and obsessive-compulsive disorder (OCD) symptom severity or chronicity in adulthood.
- Unknowns still remain; however, pending more research, it seems generally advisable to first start treating OCD just by means of evidence-based treatment if an adult patient with a primary diagnosis of OCD reports adverse childhood experiences.

Comorbidity. To establish OCD and other DSM-IV-TR Axis I disorders, the Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Patient Edition (SCID-I/P[24]) was administered at baseline. The SCID-I/P is a widely used semistructured interview for assessing psychopathology and was conducted by trained and supervised clinical research staff. The Dutch version of the SCID-I/P has good interrater reliability rates,[25] ranging from 0.60 to 0.83.

Adverse childhood experiences. To assess ACEs, the Structured Trauma Interview (STI)[26] was administered at baseline. The STI is a structured clinical interview. Validity of the STI has been shown by comparisons with other instruments for the assessment of childhood trauma[27–29] and childhood neglect.[1] Interrater reliability (κ) of the childhood trauma types of the Turkish version of the STI[30] ranged from 0.86 to 0.94.

The STI addresses the following childhood experiences shown to be risk factors for adult psychopathology[1]:

- *Early separation* from parents was defined as the loss of or separation from a parent by death, divorce, illness, foster care, or other reasons up to and including age 12.
- *Parental dysfunction* is a conceptualization of emotional neglect, referring to the unavailability of parents up to and including age 16.[1] Respondents were asked the following questions with regard to their father and mother respectively: Was he/she often ill? Was he/she often nervous? Was he/she often depressed? Did he/she use a lot of alcohol? Did he/she use sedatives/tranquilizers? Was he/she ever in a psychiatric hospital? Answers were coded in a yes/no format. A score on the dichotomous outcome variables "paternal dysfunction" or "maternal dysfunction" was based on the presence of a positive answer on 1 or more of these questions.
- *Witnessing interparental violence* up to and including age 16 was assessed by a single question. Answers were coded in a yes/no format (unclear answers were coded no).
- *Physical abuse* was defined as severe parental aggression including recurrent and chronic forms of physical violence frequently resulting in injuries, such as repeatedly being kicked or struck, up to and including age 16.

- *Sexual abuse* was defined as any pressure to engage in sexual contact or any forced sexual contact up to and including age 16, originally ranging from fondling to penetration.[1] In the present study, merely fondling was not taken into account because it lacks a clear definition and its relation with adult psychopathology lacks evidence.[6]

Because in several studies a dose-response relationship was found between the number of ACEs and adult health risk behaviors,[31] somatic[31] and psychiatric symptoms,[5,31–33] and diseases,[5,31,32,34] we calculated the sum of different categories of ACEs for every participant.

Statistical Analysis

The relationships between OCD symptom severity (dependent variable) and all separate categories of ACEs were tested using a multiple regression analysis. To explore a potential dose-response relationship between OCD symptom severity and ACEs, a simple linear regression analysis was performed with OCD symptom severity as dependent variable and the number of different categories of ACEs as independent variable. Likewise, logistic regression analyses were performed to determine whether chronic versus nonchronic OCD (dependent variable) is associated with separate categories of ACEs and the number of ACEs.

To examine whether comorbidity in OCD is associated with ACEs, the group with only OCD (pure OCD) was compared with a group with OCD and 1 or more comorbid lifetime Axis I disorders. Logistic regression analysis was performed with comorbidity (yes/no) as dependent variable. To further unravel this relationship, 4 separate logistic regression analyses were performed to determine whether the number of ACEs was associated with comorbid lifetime affective, anxiety, eating, and substance use disorders in patients with OCD. To control for family-wise error rate, Bonferroni correction was applied to each research question, *P* values were 2-tailed, and statistical significance was set at $P < .025$ for the first 2 questions (in each of which 2 tests were performed) and at $P < .01$ for the last question (examined by 5 tests). To test for multicollinearity, the variance inflation factor and tolerance were calculated. Statistical analyses were performed using the Statistical Package for Social Sciences version 18 (Chicago, Illinois; SPSS Inc). Since proportions of missing values were very low (0.8%–2.1%), complete case analyses were done.

RESULTS

Prevalence of ACEs in the Sample

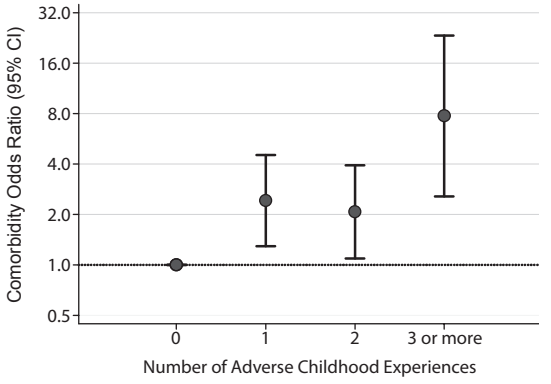
In the total sample (N = 382), the total number of ACEs ranged from 0 to 6, the mean (SD) was 1.46 (1.21), 22.7% of the respondents reported no ACEs, and 77.2% reported 1 or more ACEs. Most frequently reported categories of ACEs were maternal and paternal dysfunction. The correlation between the categories of ACEs ranged from 0.07 to 0.39. Table 1 summarizes the distribution of the total number of categories of ACEs in the sample and the prevalence of each ACEs category.

Table 1. Number of Different Categories of Adverse Childhood Experiences (ACEs) and Prevalence of Each Category

	Total Sample (N = 382)	
	N	%[a]
Number of different categories of ACEs		
No ACEs	85	22.7
One category of ACEs	125	33.4
Two categories of ACEs	106	28.3
Three or more categories of ACEs	58	15.5
Type of ACE		
Sexual abuse before age 16 y		
Yes	23	6.1
No	351	93.9
Physical abuse before age 16 y		
Yes	37	9.9
No	338	90.1
Maternal dysfunction		
Yes	211	57.0
No	159	43.0
Paternal dysfunction		
Yes	173	47.3
No	193	52.7
Early separation		
Yes	56	14.8
No	323	85.2
Witnessing parental violence		
Yes	49	13.4
No	316	86.6

[a]Valid proportions (not including missing values; proportion of missing values of the number of different types of ACEs was 2%; mean proportion of missing values of the different categories of ACEs was 2.7%).

Figure 1. Odds Ratios (95% Confidence Intervals) for Comorbidity on Number of Adverse Childhood Experiences



Relationship Between ACEs and Severity of OCD

Multiple regression analysis was used to test if the ACEs were related to severity of OCD. This was not the case. The results of the regression indicated that the 6 factors explained only 1% of the variance of OCD severity ($R^2 = 0.01$, $F_{6,352} = 0.80$, $P = .57$).

Results of the linear regression analysis testing the potential dose-response relationship between the number of ACEs and severity of OCD showed that there is no significant relationship ($R^2 = 0.003$, $F_{1,372} = 1.11$, $P = .29$).

Relationship Between ACEs and Chronicity of OCD

No significant relationships between any of the different ACEs and chronicity of OCD were found. Multiple logistic regression analysis indicated that the 6 ACEs did not distinguish between nonchronic and chronic OCD ($\chi^2_6 = 5.31$, $P = .51$). No significant dose-response relationship between the number of ACEs and chronicity of OCD was found (odds ratio [OR] [95% CI] = 1.08 [0.90–1.28], $P = .41$).

Post hoc extra analyses were done to test if ACEs were related to the duration of OCD symptoms during the past 5 years. Duration of OCD symptoms ranged from 1.25 to 5 years, and the mean (SD) was 4.47 (0.9) years. Respectively, multivariate and linear regression analysis revealed that none of the separate ACEs was significantly related to duration of OCD symptoms and that there was no dose-response relationship between the number of ACEs and the duration of OCD symptoms.

Table 2. Prevalence of Each Category of Adverse Childhood Experience (ACE) Among Patients With Pure Obsessive-Compulsive Disorder (OCD) and Patients With Comorbidity

	Pure OCD (N = 85)		OCD With Comorbidity (N = 297)			
Category of ACE	N	%[a]	N	%[a]	Odds Ratio (95% CI)	*P*
Sexual abuse before age 16						
Yes	0	0	23	7.9	NA[b]	
No	82	100	269	92.1		
Physical abuse before age 16						
Yes	6	7.3	31	10.6	1.50 (0.60–3.73)	.38
No	76	92.7	262	89.4		
Maternal dysfunction						
Yes	32	39.5	179	61.9	2.49 (1.50–4.13)	.000
No	49	60.5	110	38.1		
Paternal dysfunction						
Yes	31	38.8	142	49.7	1.56 (0.94–2.59)	.09
No	49	61.3	144	50.3		
Early separation						
Yes	10	12.0	46	15.5	1.34 (0.65–2.79)	.43
No	73	88.0	250	84.5		
Witnessing parental violence						
Yes	3	3.8	46	16.0	4.77 (1.44–15.79)	.000
No	75	96.2	241	84.0		

[a]Valid proportions (not including missing values; proportion of missing values of the number of different types of ACEs was 2%; mean proportion of missing values of the different categories of ACEs was 2.7%).
[b]Because zero respondents in the pure OCD group reported sexual abuse, the odds ratio could not be calculated.

Relationship Between ACEs and Comorbidity in Patients With OCD

The number of ACEs was related to having 1 or more comorbid disorders in OCD patients (OR [95% CI] = 1.64 [1.27–2.10], $P < .001$). We computed ORs for comorbidity per number of ACEs (Figure 1). The OR (95% CI) for comorbidity was, respectively, 2.42 (1.29–4.52), 2.07 (1.09–3.93), and 7.75 (2.56–23.46) higher for participants reporting 1, 2, or 3 or more categories of ACEs than for participants with no ACEs. This relationship between the number of ACEs and comorbidity was independent of age, sex, and education (OR [95% CI] = 1.59 [1.24–2.05], $P < .001$). Also, when participants with a lifetime diagnosis of PTSD (n = 18, 4.7% of the total sample) were left out of the analysis, the number of ACEs remained significantly related to comorbidity (OR [95% CI] = 1.59 [1.23–2.06], $P < .001$). Table 2 summarizes prevalences of the separate ACEs among patients with and patients without 1 or more comorbid disorders.

To further unravel this relationship, 4 additional analyses were carried out, specifying comorbid disorders in affective, anxiety, eating, and substance use disorders. The number of ACEs was significantly related to comorbid lifetime affective, eating, and substance use disorders, but not to anxiety disorders (see Table 3).

Table 3. Relationships Between the Number of Adverse Childhood Experiences (ACEs) and Comorbidity: Results of Logistic Regression Analyses

Comorbidity	Odds Ratio (95% CI)	*P*
Any comorbid Axis I disorder	1.64 (1.27–2.10)	.000[a]
Any comorbid affective disorder	1.37 (1.13–1.67)	.001[a]
Any comorbid anxiety disorder (including posttraumatic stress disorder)	1.25 (1.05–1.49)	.011
Any comorbid eating disorder	1.40 (1.09–1.79)	.008[a]
Any comorbid substance use disorder	1.37 (1.10–1.72)	.006[a]

[a]Statistically significant after Bonferroni correction.

DISCUSSION

In this study, no evidence was found for a relationship between ACEs and severity of OCD among patients with current OCD. This finding is in line with earlier studies finding no significant relationship between ACEs and severity of OCD in clinical samples.[12–14] Also, in community studies, the relationship between total severity of ACEs and severity of OCD symptoms did not hold up for participants with heightened severity scores ("probable OCD")[10] or were no longer significant after correcting for general anxiety and depression.[11] In 1 study among children with OCD, a relationship between adverse experiences or PTSD and severity of OCD was found; however, the role of comorbidity in this relationship was not examined.[7] We may conclude that until now there was no evidence for a (direct) relationship between ACEs and OCD symptom severity in adult patients with OCD. What is more, we found no evidence for a relationship between ACEs and chronicity of OCD.

The absence of a relationship between ACEs and OCD symptom severity and chronicity contradicts findings about relationships between ACEs and symptom severity in other psychiatric disorders. For example, Kuo et al[35] found significant relationships between childhood emotional abuse and neglect and severity of social anxiety disorder (SAD) symptoms in a sample of patients with current SAD, which remained significant after controlling for depressive symptoms. Wiersma et al[5] found ACEs to be associated with severity of depression and to be independently associated with

chronicity of depression, after controlling for severity and comorbidity, in a sample of patients with current depression. Positive relationships between ACEs and severity of psychotic symptoms were found among adolescents and young adults identified with prodromal symptoms of psychotic illness[36] and among patients with schizophrenia.[37] The divergent findings for OCD imply that ACEs are less important in OCD symptom severity and chronicity than in symptom severity (and chronicity) of other psychiatric disorders.

We did find a relationship between the number of ACEs and comorbidity among patients with current OCD. This relationship appeared to hold for comorbid affective, eating, and substance use disorders, but not for comorbid anxiety disorders. A scientific implication of this finding is that comorbidity might indeed be a mediator in studies examining relationships between ACEs and severity of OCD and a moderator in studies comparing trauma rates among patients with OCD and healthy controls. An indication for this hypothesis is that the positive relationship between ACEs and obsessive compulsive symptoms that was found in the general population appeared to be fully mediated by general anxiety and depression.[11] Earlier findings on heightened trauma rates among patients with (pediatric) OCD compared to healthy controls[6–9] should be critically reconsidered, since they might not apply to the participants in those studies with pure OCD, but only to the participants with 1 or more other lifetime Axis I disorders comorbid to OCD. If this were the case, conclusions about possible trauma-relatedness of OCD based on these findings are no longer tenable. A secondary finding that might underscore this is that the rates of ACEs found in our sample (especially among the patients with pure OCD) are low compared to rates found in samples of patients with other mental disorders[1,3,29] in which the same instrument was used to assess ACEs. Additional studies are needed in which trauma rates of patients with pure OCD and patients with OCD and comorbid mental disorders are compared to those of healthy controls.

A clinical question that is not answered by the present study is if therapeutic efforts should be focused on processing trauma when a patient with a primary diagnosis of OCD reports ACEs. The fact that there is no evidence for relatedness of ACEs and severity of OCD does not necessarily imply that trauma can be left untreated when pursuing OCD symptom reduction. Data on the impact of traumatic experiences on treatment response in patients with OCD are contradictory. In a German study, no relationship between traumatic experiences and failure of OCD treatment was found.[14] Even when PTSD has developed in reaction to traumatic events, the influence on OCD treatment response is unclear. In an unblinded naturalistic treatment study (N = 15), the presence of PTSD was related to a poorer treatment outcome,[38] but in a randomized controlled trial (N = 215), neither the presence of a history of trauma nor PTSD was related to a poorer treatment response; patients with PTSD even presented a greater magnitude of response when compared with OCD patients without PTSD.[39] However, the best way to examine whether treating trauma is necessary when pursuing stable OCD symptom reduction is to conduct a randomized controlled trial among patients with OCD and a history of (childhood) trauma, comparing treatment addressing trauma alongside evidence-based treatment of OCD symptoms and evidence-based treatment of OCD symptoms alone. So long as such studies are lacking, it seems, in light of the present findings, generally advisable to first start treating OCD just by means of evidence-based treatment.

Strengths of this study include the use of a large, well-diagnosed, representative clinical OCD sample. However, a limitation of the current study is the fact that part of the data was collected retrospectively, including data on ACEs. Patient reports might represent recollections of childhood trauma or absence of childhood trauma that are influenced by their condition, or be subject to rater bias,[40] therefore cautious interpretation of our results is necessary. Furthermore, despite indications of satisfying validity and reliability of the STI, further examination of its psychometric properties is needed, so we need to be cautious about the generalizability of our findings.

Another strength of this study is that a broad range of ACEs were assessed. However, a history of being bullied by peers, which is an ACE that is related to adult psychopathology,[41,42] was not examined. Although being bullied often co-occurs with family dysfunction and maltreatment,[42] theoretically, respondents in the current study with a low number of ACEs might in fact have been bullied. In future research on the relationship between ACEs and OCD, a history of bullying should be assessed.

CONCLUSION

To date, there is no evidence for a relationship between ACEs and OCD symptom severity or chronicity in adulthood. The results of this study suggest that there is a relationship between ACEs and comorbidity in patients with OCD; that is, patients with OCD with 1 or more lifetime comorbid Axis I disorders experienced more adversities during childhood than patients with pure OCD. Conclusions about trauma-relatedness of OCD, based on studies finding higher trauma rates among patients with OCD than among healthy controls should be critically reconsidered since presence of comorbidity might account for these differences.

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Additional information: The NOCDA data are property of the Netherlands Obsessive Compulsive Disorder Association, an association founded by several Dutch mental health care institutions and universities (see www.nocda.amstad.nl and see Schuurmans et al[20]). The headquarters of NOCDA is located at GGZ InGeest (1 of the participating mental health care institutions), Amsterdam, the Netherlands. The NOCDA data reside at GGZ InGeest, Amsterdam, the Netherlands. To get access to the data, a written request can be sent to the president of NOCDA, P. van Oppen (p.vanoppen@ggzingeest.nl).

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