



## The relationship between obsessive– compulsive and posttraumatic stress symptoms in clinical and non-clinical samples

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### Abstract

Although case reports suggest the existence of a unique relationship between obsessive–compulsive disorder (OCD) and posttraumatic stress disorder (PTSD), results from large-scale epidemiological and clinical studies have been more equivocal. Furthermore, symptom overlap may artificially inflate the significance of the relationship between OCD and PTSD. Utilizing the Obsessive–Compulsive Inventory [OCI; Psychol. Assess. 10 (1998) 206] and the Posttraumatic Diagnostic Scale [PDS; Psychol. Assess. 9 (1997) 445], this study examined the relationship between OCD and PTSD symptoms in 128 patients diagnosed with OCD, 109 patients diagnosed with PTSD, 63 patients diagnosed with another anxiety disorder, and 40 college students. Experts in OCD and PTSD independently rated items on the OCI and PDS for the degree of overlap across the disorders. On the basis of these ratings, we created a scale from each measure that included only non-overlapping items. Results revealed that overall symptoms of OCD and PTSD were related in all samples. However, after controlling for depression and overlapping symptoms

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simultaneously, this relationship was no longer significant in the OCD and PTSD samples, although it remained significant in the anxious and college student comparison groups. These results support the presence of a relationship between symptoms of OCD and PTSD that may be largely accounted for by a combination of symptom overlap and depression.  
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Case reports of trauma-induced obsessive–compulsive disorder (OCD) have stimulated interest in the comorbidity of OCD and posttraumatic stress disorder (PTSD; Becker, 2002; de Silva & Marks, 1999; Gershuny, Baer, Wilson, Radomsky, & Jenike, 2003; Jenike, 2001; Kimble, 2000; Pitman, 1993). However, empirical data on comorbidity between these two disorders are inconsistent across studies (see Table 1 for a summary) and epidemiological and clinical studies have failed to elucidate the relationship between OCD and PTSD.

Most of the existing studies focus solely on the presence or absence of syndromes when examining the comorbidity of OCD and PTSD. Recent data suggest that evaluation of symptoms on a continuum may yield higher levels of reliability (Brown, Di Nardo, Lehman, & Campbell, 2001) and may be more likely to reflect the complete spectrum of the disorders. In this vein, Solomon et al. (1991) found that patients with PTSD scored higher on obsessive–compulsive symptom severity than on other types of non-PTSD symptoms and suggested that the apparent overlap in syndromes might arise because both OCD and PTSD are characterized by intrusive thoughts and both include ritualized behaviors to ensure safety. We propose that, given the high co-occurrence of depression with both PTSD and OCD (Brown, Campbell, Lehman, Grisham, & Mancill, 2001), depression may also contribute to the overlap.

The current study aims to extend the literature on the comorbidity of OCD and PTSD by examining dimensional ratings of the disorders in four groups: individuals seeking treatment for (1) OCD, or (2) PTSD, or (3) another anxiety disorder (social phobia; AADs), and (4) college students. We examine the relationship between PTSD and OCD symptoms after controlling for symptom overlap and depression to determine whether these factors account for the relationship (cf. Foa & March, 1995).

## 1. Method

### 1.1. Participants

Demographic information for all of the study samples is presented in Table 2. As this was a study of the relationship between trauma symptoms and OCD symptoms, only individuals who endorsed a traumatic event on the Posttraumatic Diagnostic Scale (PDS; Foa, 1995) were included in the study analyses.

Table 1  
Summary of studies examining current rates of OCD and PTSD

Study	Population	N of sample	N of OCD (%)	N of PTSD (%)	N of PTSD with OCD (%)	N of OCD with PTSD (%)	PTSD in OCD > odds ratio than other anxiety disorders in OCD?	OCD in PTSD > odds ratios than other anxiety disorders in PTSD?
Denys et al. (in press)	Anxiety clinic	420	420 (100%)	–	–	7 (1.6%)	–	–
Slade and Andrews (2002); Andrews, Henderson, and Hall (2001)	Cross section of Australia	10641	53 (0.5%)	96 (.9%)	18 (19%)	18 (34%)	Y	Y
Brown, Campbell, et al. (2001); Perkonig, Kessler, Storz, and Wittchen (2000)	Anxiety clinic Cross section of Munich <sup>b</sup>	1127 3021	156 (14%) 10 (0.3%)	49 (4%) 39 (1%)	11 (22% ns) 2 (5%)	11 (7% ns) 2 (20%)	Y N	Y <sup>a</sup> N
Essau, Conrad, and Petermann (2000)	German adolescent students <sup>b</sup>	1035	13 (1%)	17 (2%)	3 (18%)	3 (23%)	–	–
Welkowitz, Struening, Pittman, Guardino, and Welkowitz (2000)	National anxiety screening sample	5867	910 (16%)	–	–	173 (19%)	–	–
McFarlane and Papay (1992)	Australian volunteer fire fighters exposed to bush fire	469	12 (3%)	70 (15%)	9 (13%)	9 (75%)	–	–
Green, Lindy, Grace, and Leonard (1992)	Survivors of the Buffalo Creek dam collapse	193	5 (3%)	48 (25%)	3 (6%)	3 (60%)	–	–
Davidson, Hughes, Blazer, and George (1991)	Cross section of North Carolina <sup>b</sup>	2985	48 (2%)	39 (1%); (13 (.4%) current)	6 (15%)	6 (12%)	–	N <sup>c</sup>
Breslau, Davis, Andreski, and Peterson (1991)	HMO <sup>b</sup> sample	1007	28 (3%)	93 (9%)	14 (15%)	14 (50%)	–	Y <sup>c</sup>
Jordan et al. (1991)	Male Vietnam theater veterans	1200	18 (2%)	–	–	–	–	–

Table 1 (Continued)

Study	Population	N of sample	N of OCD (%)	N of PTSD (%)	N of PTSD with OCD (%)	N of OCD with PTSD (%)	PTSD in OCD > odds ratio than other anxiety disorders in OCD?	OCD in PTSD > odds ratios than other anxiety disorders in PTSD?
Jordan et al. (1991)	Male Vietnam theater veterans exposed to high-war-zone stress	406	21 (5%)	–	–	–	–	–
Roszell, McFall, and Malas (1991)	Male Vietnam combat veterans with current PTSD	48	–	48 (100%)	2 (4.2%)	–	–	–
Shore, Vollmer, and Tatum (1989)	Two rural northwest America logging communities	1025	–	37 (4%)	4 (11%)	–	–	–
Helzer, Robins, and McEvoy (1987)	ECA <sup>b</sup>	2493	–	25 (1%)	–	–	–	Y <sup>c</sup>
Escobar et al. (1983)	Hispanic Vietnam Veterans	20	4 (20%; life-time)	20 (100%)	3 (15%; life-time)	–	–	–

<sup>a</sup> Not greater than risk for mood disorders.

<sup>b</sup> Lifetime prevalence only.

<sup>c</sup> Not statistically different from others.

Table 2  
Demographic information for study samples

Characteristic	Group			
	OCD	PTSD	AAD	Student
<i>N</i>	128	109	63	40
Female (%)	47	100	41	60
Age	33.9 (23.3–44.5)	32 (21.7–42.3)	32.5 (22.5–42.5)	–
Ethnicity	92% Caucasian	52% Caucasian/44% African American	51% Caucasian/41% African American	88% Caucasian

### 1.1.1. OCD group

We drew patients in this group from three sites: an outpatient treatment center (CTSA) in Philadelphia, Pennsylvania; an outpatient OCD Clinic (MGH) in Charlestown, MA; and a residential program Belmont, MA. Data from the sites did not differ on self-report measures and therefore were merged (all *Ps* > .05). Thirty-eight (66%) of the 58 patients from CTSA and 90 (97%) of 93 from both MGH programs endorsed a traumatic event on the PDS. Experienced clinicians evaluated patients using the Yale–Brown Obsessive–Compulsive Scale (Y–BOCS; Goodman, Price, Rasmussen, Mazure, Delgado, et al., 1989; Goodman, Price, Rasmussen, Mazure, Fleischman, et al., 1989) and confirmed diagnosis of OCD according to DSM-IV criteria.

### 1.1.2. PTSD group

This group consists of 109 female sexual or physical assault survivors who participated in one of two treatment outcome studies conducted at the CTSA. Victimization occurred at least 1 month prior to evaluation at the center. All participants met DSM-IV (American Psychiatric Association, 1994) diagnostic criteria for PTSD (except for the duration criteria in women traumatized fewer than 3 months prior to assessment) according to experienced clinicians who administered the PTSD Symptom Scale—Interview Version (PSS-I; Foa, Riggs, Dancu, & Rothbaum, 1993).

### 1.1.3. AAD group

Participants in this sample are 80 individuals recruited for a study examining the efficacy of CBT and pharmacotherapy for generalized social phobia (GSP) at the CTSA. Sixty-three (79%) of these patients reported a traumatic event. Although some patients did not receive a diagnosis of GSP, all were seeking treatment for anxiety symptoms.

### 1.1.4. College student group

This group consists of 78 University of Delaware (Newark, DE) undergraduates. Forty (51%) reported a traumatic event.

## 1.2. Measures and procedures

Prior to treatment, individuals completed a battery of self-report measures including the Obsessive–Compulsive Inventory (OCI; Foa, Kozak, Salkovskis, Coles, & Amir, 1998), PDS (Foa, 1995; Foa, Cashman, Jaycox, & Perry, 1997), and Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979).

Four expert psychologists with extensive experience in diagnosing and treating patients with OCD and patients with PTSD rated each of the items of the OCI and the PDS for symptom overlap. Raters judged items on the OCI in terms of whether the symptom overlapped with the symptoms one typically observes in a patient with PTSD and items of the PDS on the degree to which they seemed to describe symptoms of OCD. Items were rated as “definitely does not overlap,” “possibly does overlap,” or “definitely does overlap.”

Of the 42 items on the OCI, the consensus of experts rated 22 as definitely not overlapping with PTSD (hereafter *OCI-NP*). These items included a subset of all seven OCD subscales from the OCI. Three items, all of them from the obsessing subscale, were rated as definitely overlapping with PTSD by consensus: “unpleasant thoughts come into my mind against my will and I cannot get rid of them,” “I find it difficult to control my own thoughts,” and “I am upset by unpleasant thoughts that come into my mind against my will.”

Only three of the 17 PTSD symptoms were rated as definitely not overlapping with OCD (hereafter *PDS-NO*). These items were nightmares, not remembering important parts of the trauma, and feeling emotionally numb, and comprised the final scale. There were no items that all raters judged as definitely overlapping with OCD.

## 2. Results

Descriptive statistics for each of the samples are presented in Table 3. Generally, group differences were the same for the OCI and *OCI-NP* and for the PDS and *PDS-NO*. Alphas for the combined samples were .92 for the *OCI-NP* and .64 for the *PDS-NO*. In order to ensure that the items in the *OCI-NP* or *PDS-NO* were still related to the general features of PTSD or OCD correlations were conducted between each scale and the items that were not included in each scale (*OCI other* = sum of OCI items not included on the *OCI-NP* scale; *PDS other* = sum of the PDS items not included on the *PDS-NO* scale). The *OCI-NP* scale was correlated with the *OCI other* scale above .80 ( $P_s < .01$ ), and the correlations between the *PDS-NO* and the *PDS other* items were above .70 ( $P_s < .01$ ) in all groups except the PTSD group, where the correlation was .52 ( $P < .001$ ).

Pearson correlations were calculated among the measures for each of the groups (see Table 4). Correlations between the BDI and PDS were positive, ranging from .44 to .59 (all  $P_s < .01$ ). Similarly, correlations between the BDI and OCI ranged from .33 to .70 (all  $P_s < .01$ ). Partial correlations between the OCI and PDS,

Table 3  
Descriptive statistics for the OCI, PDS, BDI, *OCI-NP*, and *PDS-NO* in all samples

Measure	Statistic	OCD ( <i>N</i> = 128)	PTSD ( <i>N</i> = 109)	AAD ( <i>N</i> = 63)	Student ( <i>N</i> = 40)
OCI total	Mean	66 <sup>a</sup>	29.9 <sup>b</sup>	37.7 <sup>b</sup>	23.6 <sup>b</sup>
	S.D.	31.6	26.5	33.9	19
	Range	4–149	0–108	0–131	0–83
PDS total	Mean	16.7 <sup>a</sup>	31.9 <sup>b</sup>	13.8 <sup>a</sup>	6.7 <sup>c</sup>
	S.D.	15.5	9.1	12.8	9.1
	Range	0–49	9–51	0–47	0–35
BDI total	Mean	22.4 <sup>a</sup>	23.1 <sup>a</sup>	17.5 <sup>b</sup>	8 <sup>c</sup>
	S.D.	10.9	9.8	10.5	7.2
	Range	1–50	0–47	0–45	0–25
<i>OCI-NP</i>	Mean	1.3 <sup>a</sup>	0.6 <sup>b</sup>	0.8 <sup>b</sup>	0.5 <sup>b</sup>
	S.D.	0.8	0.6	0.8	0.5
	Range	0–3.3	0–2.5	0–3.0	0–2.1
<i>PDS-NO</i>	Mean	0.7 <sup>a</sup>	1.3 <sup>b</sup>	0.6 <sup>a,c</sup>	0.3 <sup>c</sup>
	S.D.	0.8	0.8	0.7	0.5
	Range	0–3	0–3	0–2.7	0–2

Note. Means with different letters (a, b, and c) in superscript were significantly different from one another, Tukey's pairwise comparisons,  $P < .05$ .

OCI, Obsessive–Compulsive Inventory; PDS, Posttraumatic Diagnostic Scale; BDI, Beck Depression Inventory; *OCI-NP*, mean item rating of OCI without PTSD overlap; *PDS-NO*, mean item rating of PDS with no OCD overlap; OCDs, patients diagnosed with obsessive–compulsive disorder; PTSDs, patients diagnosed with posttraumatic stress disorder; AADs, patients seeking treatment for another anxiety disorder.

controlling for the BDI, yielded lower correlations between the OCI and the PDS total scores in all samples. After controlling for the BDI, correlations between the *OCI-NP* and *PDS-NO* were no longer significant in the OCD and PTSD samples, but remained significant in the AAD and college student groups.

### 3. Discussion

This study extends the extant literature by providing evidence for a significant relationship between OCD and PTSD symptoms in both clinical and non-clinical samples. Unlike earlier work that focused on diagnostic comorbidity, the present study demonstrated symptom relationships using continuous ratings (cf. Brown, Di Nardo, et al., 2001). Furthermore, these symptom relationships remained after separately controlling for overlapping symptoms and depression. However, when accounting for symptom overlap and depression simultaneously, the relationship between OCD and PTSD symptoms remained significant in the anxious and college student comparison groups only. The finding that correlations between the PDS and OCI were generally stronger in the comparison groups than in the groups

Table 4

Correlations among OCD and PTSD measures: total scores, partial correlations with BDI partialled out, and correlations when symptom overlap is removed and BDI is partialled out

Measure 1	Measure 2	Group				
		OCDs ( <i>N</i> = 128)	PTSDs ( <i>N</i> = 109)	AADs ( <i>N</i> = 63)	Students ( <i>N</i> = 40)	
OCI total	PDS total	.31**	.32**	.49**	.59**	
OCI total	PDS total	BDI total partialled out <sup>a</sup>	.20*	.11	.21 <sup>†</sup>	.44**
<i>OCI-NP</i>	<i>PDS-NO</i>		.22*	.21*	.57**	.35*
<i>OCI-NP</i>	<i>PDS-NO</i>	BDI total partialled out <sup>b</sup>	.12	.05	.39**	.32*

*Note.* When *OCI-NP* items were correlated with the PDS total, correlations remained essentially the same as the correlations between the total scores. Spearman's and Pearson's correlations were the same except for the student group due to the non-normal distribution of the symptom measures.

OCI, Obsessive–Compulsive Inventory; PDS, Posttraumatic Diagnostic Scale; *OCI-NP*, OCI without PTSD overlap; *PDS-NO*, PDS with no OCD overlap; BDI, Beck Depression Inventory; OCDs, patients diagnosed with obsessive–compulsive disorder; PTSDs, patients diagnosed with posttraumatic stress disorder; AADs, patients seeking treatment for another anxiety disorder.

<sup>a</sup> OCD (*N* = 124), PTSD (*N* = 109), AAD (*N* = 60), student (*N* = 37).

<sup>b</sup> OCD (*N* = 124), PTSD (*N* = 109), AAD (*N* = 60), student (*N* = 37).

<sup>†</sup> *P* < .10.

\* *P* < .05.

\*\* *P* < .01.

seeking treatment for PTSD or OCD raises the possibility that the factors that contribute to the overlap are different for individuals who do not meet the diagnostic criteria than for patients who do. Perhaps the relationship that exists within individuals who do not meet criteria for OCD or PTSD is due to an underlying factor common to the anxiety disorders such as trait anxiety. However, once an individual exceeds the threshold for either OCD or PTSD, the severity may be related to other factors, such as avoidance or distress tolerance.

Future studies should attempt to determine whether or not the relationship between OCD and PTSD is unique by adequately assessing other disorders and determining time course of symptoms. Both continuous and categorical measures should be included to allow for a careful examination of the possibility that sub-syndromal overlap and the comorbidity of diagnosable PTSD and OCD result from different factors. Future studies should also attempt to relate questions of comorbidity to the process and outcome of treatment for PTSD and OCD, especially given recent data suggesting that comorbid PTSD interferes with successful treatment for OCD (e.g., de Silva & Marks, 1999; Gershuny, Baer, Jenike, Minichiello, & Wilhelm, 2002; Gershuny et al., 2003; Pitman, 1993).

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