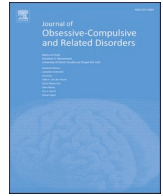




Contents lists available at ScienceDirect

Journal of Obsessive-Compulsive and Related Disorders

journal homepage: www.elsevier.com/locate/jocrd

The relationship between obsessive-compulsive disorder symptom subtypes and social adjustment

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ARTICLE INFO

Keywords:

Obsessive-compulsive disorder
Dimensions
Functioning
Impairment

ABSTRACT

Background: Although it has been widely established that poor social functioning is a characteristic of obsessive-compulsive disorder (OCD), little research has examined the relationship between OCD symptom subtypes and domains of social functioning. Thus, the present study sought to examine the specific ways in which impairment in social adjustment occurs in each symptom subtype of OCD.

Methods: A total of 325 adult participants with a primary diagnosis of OCD were included in the study. Hierarchical linear regressions were used to compare the extent to which OCD symptom subtypes predicted social adjustment domains after controlling for OCD and depression severity.

Results: Hoarding was shown to be significantly associated with work functioning. Whereas both contamination and symmetry subtypes were significantly associated with social functioning, only the contamination subtype was associated with functioning within the family unit. The symptom subtypes of doubt and taboo thoughts were not significantly associated with any domains of social adjustment.

Conclusion: Consistent with previous research, our results suggest a differential impact of OCD symptom subtypes on social adjustment. They offer important implications for the specific domains to target in treatment for different symptom subtypes.

1. Introduction

It has been widely established that poor psychosocial functioning is a characteristic of obsessive-compulsive disorder (OCD) (Bystritsky et al., 2001; Didie et al., 2007; Huppert et al., 2009; Mancebo et al., 2008; Steketee, 1997). Individuals with OCD report lower functioning compared to published community norms (Didie et al., 2007) and healthy populations (Huppert et al., 2009). This impairment in psychosocial functioning among individuals with OCD can include various aspects of life such as work, social, and family relationships (Cain et al., 2015; Himle et al., 2017; Huppert et al., 2009; Mancebo et al., 2008; Steketee, 1997). Mancebo et al. (2008) reported a substantial portion (38%) of individuals with OCD as being unable to work for psychiatric reasons. Similarly, Steketee (1997) found that individuals with OCD were more likely to be unemployed compared to those without the disorder. For interpersonal social functioning, the majority of previous research in adults with OCD focused on the familial aspect: in marriage,

individuals with OCD experience increased marital distress, less intimacy, and sexual dysfunction (Kasalova et al., 2020); previous research has also shown that individuals with OCD reported significantly more negative family interactions, compared to people who did not (Chambless et al., 2007; Himle et al., 2017). However, it is worth noting that relationship impairment is likely multifactorial as high expressed emotion is often characteristic of families of those with OCD (Chambless et al., 2007). Other than family relationships, very limited research exists on examining other relationship variables. Himle et al. (2017) showed that OCD symptoms did not have a significant impact on friendships.

Previous studies have suggested that individuals with OCD are not all uniformly socially impaired (Albert, et al., 2010; Schwartzman et al., 2017; Vorstenbosch et al., 2012). Past research has found differential relationships between OCD symptoms types and domains of functional impairment. After controlling for the presence of a comorbid mood disorder and OCD severity, Vorstenbosch et al. (2012) found that the

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<https://doi.org/10.1016/j.jocrd.2023.100826>

Received 13 April 2023; Received in revised form 7 July 2023; Accepted 10 July 2023

Available online 11 July 2023

2211-3649/© 2023 Published by Elsevier Inc.

obsessions/checking and hoarding subtypes were associated with functional impairment, but not symmetry/ordering and contamination/cleaning subtypes. Specifically, the subtype of obsessions/checking predicted overall impairment and lifestyle impairment such as health and recreation; the subtype of hoarding predicted overall impairment and impairment in activity involvement such as work and social relations. Although Vorstenbosch et al. (2012) found that no individual OCD symptom subtype was associated with relationship impairment, other studies have found high severity of symmetry symptoms to be associated with divorce status (Muhlbauer et al., 2021) and poor quality of life in social relationships (Schwartzman et al., 2017). Poor quality of life in social relationships is also shown to be associated with contamination symptoms in OCD (Schwartzman et al., 2017). Taken together, previous studies suggested that individuals with OCD were not uniformly socially impaired. Thus, it is important to further investigate how domains of functional impairments vary based on OCD symptom subtypes.

The present study sought to understand the relationship between five OCD symptom subtypes (symmetry/ordering, hoarding, doubt/checking, contamination/cleaning, and taboo thoughts) (Pinto et al., 2007) and six domains of social adjustment (work, social and leisure, extended family, marital, parental, and family unit domains) (Weissman & Bothwell, 1976). We hypothesized that OCD symptom subtypes would have differential impacts on domains of social adjustment. Specifically, we hypothesized that all symptom subtypes of OCD will be significantly associated with impaired social functioning in marital, parental, and family unit domains. Other than those, hoarding will be associated with impaired work functioning; symmetry/ordering, doubt/checking, and contamination/cleaning will be associated with impaired functioning in social leisure.

2. Methods

2.1. Participants

A total of 325 adult participants who were part of the Brown Longitudinal Obsessive Compulsive Study were included in this study. A detailed description of the methods of the study can be found in Pinto et al. (2006). In the study, participants were recruited from psychiatric treatment settings between July 2001 and February 2006. Inclusion criteria were age 19 or older, a primary diagnosis of DSM-IV OCD (defined as the disorder that participants considered their biggest problem overall across their lifetime), having sought treatment for OCD, and willingness to participate in annual interviews. Individuals with organic mental disorders were excluded from the study. The study was approved by the institutional review boards of Brown University and Butler Hospital, and all subjects signed statements of informed consent prior to enrollment. The current study only includes data from the intake assessment.

2.2. Measures

The Structured Clinical Interview for DSM-IV Axis I Disorders-Patient Version (SCID-I/P) was used to diagnose DSM-IV psychiatric disorders (First, 1997). The Butler Hospital OCD Database, a semi-structured, rater-administered questionnaire, was used to collect participants' demographic information (Rasmussen & Eisen, 1994).

The Yale-Brown Obsessive Compulsive Scale (Goodman et al., 1989a, Goodman et al., 1989b), a 10-item rater-administered interview, was used to assess severity of obsessions and compulsions. Prior to the Y-BOCS, raters administered the Y-BOCS Symptom Checklist to gather information on specific current symptoms. The reliability and validity of the Y-BOCS is well-established (Goodman et al., 1989a, Goodman et al., 1989b). Internal consistency in this sample was excellent ($\alpha=.93$).

Modified Hamilton Rating Scale for Depression (Miller et al., 1985), a rater-administered interview with strong reliability and validity, was

used to measure depression severity. Higher scores indicate greater depression severity (Miller et al., 1985). The MHRSD exhibited strong internal consistency in this sample ($\alpha=.89$).

Social Adjustment Scale Self-Report (SAS) was used to measure participants' current social functioning (Weissman & Bothwell, 1976). This scale contains a total of 42 questions that measure role performances in six subscales of social functioning: work including work for pay and housework; social and leisure activities; relationships with extended family; marital role as a spouse; role as a parent; and role as a member of the family unit. Internal consistency reliability ranged from acceptable to good ($\alpha=.61-0.79$). For each domain, items include four categories: the amount of friction with others; interpersonal behaviors; feelings and satisfactions; and behavior performance. Each item is rated on a five-point Likert-type scale, with higher scores indicating more severe impairment. The SAS differentiates individuals with psychiatric disorders from healthy controls (Gameroff et al., 2012; Weissman et al., 1978, 2001) as well as individuals with current OCD from those in remission (Huppert et al., 2009).

2.3. Data analysis plan

R version 4.2.1 was used to perform data analysis. Five symptom subtypes (symmetry/ordering, hoarding, doubt/checking, contamination/cleaning, and taboo thoughts) were derived using a principal components analysis, reported in detail elsewhere (see Pinto et al., 2007). Briefly, in an exploratory factor analysis, scores were computed for each of the symptoms endorsed on the YBOCS Symptom Checklist divided by the number of items present in each of the 14 categories. We used an interval scoring system, rather than a dichotomous (present/absent) (Cullen et al., 2007) or a three-point ordinal rating (Mat-aix-Cols et al., 1999), to increase the range of category scores and to maximize the variance in our dataset. Proportions, unlike the symptom counts used in Leckman et al. (1997), do not give undue weights to categories composed of numerous items. Criteria for retention of factors were Kaiser's criterion (eigenvalues >1), Cattell's scree test, pattern of factor loadings, and factor interpretability. Initial factors were extracted using the principal components method, followed by varimax rotation, with loadings ≥ 0.45 considered significant. These five symptom subtypes have been supported in large-scale genetic studies (Pinto et al., 2008) and have been shown to differentially predict course and outcome in this sample (Eisen et al., 2013). Hierarchical linear regressions were used to compare the extent to which OCD symptom subtypes predicted SAS domains after controlling for OCD and depression severity. Prior research has suggested that the relationship between OCD symptom subtypes and social adjustment or QoL was significantly accounted for by these two factors (Eisen et al., 2006; Fontenelle et al., 2010; Jacoby et al., 2014; Kugler et al., 2013; Masellis et al., 2003; Schwartzman et al., 2017; Stengler-Wenzke et al., 2007; Vorstenbosch et al., 2012). For each SAS domain, OCD and depression severity were entered into the first step, with OCD symptom subtypes added into the second step. All assumptions underlying regression were met.

3. Results

Our sample was predominantly white (97.5%), female (54.5%), college-educated (56.6%), employed (58.2%), and married (44.3%). The mean age was 40.1 years ($SD = 12.8$). Participants reported a moderate level of OCD symptoms ($M = 20.6$, $SD = 8.4$) and a mild level of depression symptoms ($M = 10.9$, $SD = 9.9$). As reported on SAS, participants' mean score of overall social adjustment was 2.0 ($SD = 0.5$). Participants' mean scores for each domain were as follows: work ($M = 1.8$, $SD = 0.5$), social and leisure ($M = 2.4$, $SD = 0.7$), extended family ($M = 1.9$, $SD = 0.5$), marital ($M = 2.2$, $SD = 0.6$), parental ($M = 1.6$, $SD = 0.6$), and family unit ($M = 2.1$, $SD = 0.8$). These mean SAS scores were similar to the scores reported in prior studies examining individuals with OCD (Didie et al., 2007; Huppert et al., 2009).

Results for the hierarchical linear regression models comparing the extent to which OCD symptom subtypes predicted SAS domains are shown in Table 1. After controlling for OCD and depression severity, symmetry ($B = 0.05, p < .05$), hoarding ($B = 0.08, p < .05$), and contamination ($B = 0.14, p < .05$) subtypes were associated with overall social adjustment. Hoarding was the only subtype significantly associated with the work domain of SAS ($B = 0.14, p < .01$). Contamination was the only symptom subtype significantly associated with the marital ($B = 0.27, p < .01$), family unit ($B = 0.27, p < .05$), and extended family ($B = 0.16, p < .05$) domains. Symmetry ($B = 0.09, p < .01$) and contamination ($B = 0.23, p < .01$) subtypes were significantly associated with the social and leisure domain. Symptom subtypes were not significantly associated with the parental domain of SAS. Doubt and taboo thoughts symptom subtypes were not significantly associated with any domain or the overall score of SAS.

4. Discussion

Many researchers have proposed that substantial heterogeneity exists in OCD symptoms with more homogeneity in symptom subtypes (Ball et al., 1996; Mataix-Cols et al., 2002; Pinto et al., 2007, 2010; Ravindran et al., 2020; Sookman et al., 2005; Starcevic & Brakoulias, 2008). The present study examined how social adjustment is associated with symptom subtypes of OCD. Consistent with our hypothesis, the results suggest a differential impact of OCD symptom subtypes on social adjustment, even when taking into account OCD and depression severity. Although individuals with OCD experience poor overall social adjustment, not all symptom subtypes are associated with all domains of social adjustment.

First, our results show that for individuals with hoarding symptoms, work functioning is uniquely impacted, including employment and/or housework. Previous research has shown hoarding as uniquely impairing and disabling in various aspects of life (Saxena et al., 2011; Schwartzman et al., 2017; Vorstenbosch et al., 2012). Due to these individuals' inability to discard items, their house or workspace might be too cluttered for them to function effectively in these spaces, causing significant social and occupational impairment (Saxena et al., 2011).

Second, our study shows significant associations between the contamination subtype and the marital, extended family, and family unit domains of social functioning. These three domains encompass all familial relationships examined in the SAS besides the parental domain, which refers to the individuals' relationship with their children. It implies the extent that contamination symptoms can negatively impact familial role functioning. For the marital domain, this result is consistent with previous studies showing that contamination obsessions negatively impact intimacy and relationship satisfaction (Abbey et al., 2007) and sexual functioning (Aksaray et al., 2001). In general, contamination symptoms often generalize across settings increasing overall avoidance and limiting social mobility; compulsive behaviors of excessive washing and cleaning can be time-consuming and interfere with their ability to connect with others (Jacoby et al., 2014). This association between contamination symptoms and familial relationships also suggests the importance of considering family accommodation. It refers to family members' assisting or participating in the rituals performed by individuals with OCD, and has been shown to be particularly prevalent for family members cohabiting with individuals with contamination symptoms since their rituals are often excessive and take place at home (Albert et al., 2010, 2017; Stewart et al., 2008). Some of these accommodations are daily occurrences (Stewart et al., 2008) and require substantial changes in the family's daily activities, so they often create a significant amount of distress in family members (Albert et al., 2010). Research has shown that OCD symptom reduction with treatment is significantly associated with reduction in family accommodation. Of note, family-based interventions or treatments that target reducing family accommodation have shown to be particularly helpful for individuals with the contamination subtype of OCD (Lebowitz et al.,

2012).

Third, our results show that for individuals with both symmetry and contamination subtypes, functioning related to social and leisure activities is impaired. Individuals with these symptoms might make attempts to avoid such social and leisure activities altogether, or if they do try to engage in them, the possibility of things being out of order and getting contaminated makes them anxious. Thus, both their social functioning and satisfaction levels would be negatively impacted (Schwartzman et al., 2017). Specifically, for the symmetry/ordering subtype. Ecker et al. (2014) found strong positive relationship between the OCD symptom of ordering and obsessive-compulsive personality traits, incompleteness, and "not just right experiences". The rigid perfectionism embedded in these traits and feelings may increase these individuals' anxiety in social settings (Seretis et al., 2022) and decrease their ability to enjoy leisure time.

Lastly, our study shows that the symptom subtypes of doubt/checking and taboo thoughts are not associated with impairment in social functioning. Individuals with these symptoms might not reveal those intrusive thoughts and routines to others, even those who are close family members or friends of theirs. Thus, even though they experience significant distress, their role functioning might not be significantly impacted. The results from previous research are mixed. Vorstenbosch et al. (2012) found that the subtype of obsessions and checking were related to both overall and lifestyle impairment. In contrast, Fontenelle et al. (2010) did not find these symptom subtypes to be associated with any functional impairment; Albert, et al. (2010) also stated that the symptom subtypes of religious, sexual, and somatic obsessions and aggressive obsessions and checking compulsions are not associated with social functioning or role limitations. This discrepancy might be due to the varying measures used and varying ways of deriving symptom subtypes.

This study has several strengths, such as its large sample size and its recruitment from various clinics. However, this study also has a few limitations. First, participants are predominantly treatment-seeking non-Hispanic White/Caucasian individuals. Thus, the results we obtained might not be applicable to non-treatment-seeking or more racially diverse groups. Second, our method of categorizing symptoms of OCD into five different symptom subtypes has its limitations. These are not mutually exclusive subtypes and an individual with OCD could endorse symptoms that are present in multiple subtypes. It remains unclear if phenotypic categorization (e.g., doubting and checking) is the most meaningful way to approach the heterogeneity in OCD or if other classification schemes warrant greater consideration (Boisseau et al., 2018). Third, this study only included data at intake. It is unclear whether participants' social adjustment would fluctuate both within and across domains over time or in response to treatment. Future research should incorporate diverse samples and examine the stability of these social functioning impairments over time, in relation to OCD symptom subtypes.

In conclusion, our study shows that different OCD symptom subtypes impact different domains of social adjustment. These findings help us further distinguish OCD symptom subtypes and their functioning impairments, and highlights the importance of considering social impairments when assessing and treating individuals with OCD. They offer important implications for the specific social impairment domains to target in treatment for different symptom subtypes, instead of the overall social maladjustment. For individuals with hoarding symptoms, work functioning should be targeted in treatment. For individuals with contamination symptoms, special attention needs to be paid to their family functioning. For individuals of both symmetry and contamination subtypes, functioning related to social and leisure activities should be prioritized. Thus, enhancing targeted domains of social adjustment could potentially lead to more effective treatment plan and symptom reduction.

Table 1
Hierarchical linear regression models predicting Social Adjustment Scale (SAS) domains.

SAS overall score					
Variable	B	SE	p-value	R ²	ΔR ²
Step 1				0.358	
OCD severity	0.018	0.004	<.001		
Depression severity	0.019	0.003	<.001		
Step 2				0.408	0.05
OCD severity	0.010	0.004	.013		
Depression severity	0.016	0.003	<.001		
Symmetry factor	0.045	0.022	.048		
Hoarding factor	0.080	0.034	.021		
Doubt factor	-0.009	0.049	.852		
Contamination factor	0.140	0.059	.019		
Taboo factor	0.083	0.060	.172		
SAS: Work domain					
Variable	B	SE	p-value	R ²	ΔR ²
Step 1				0.211	
OCD severity	0.016	0.005	.001		
Depression severity	0.016	0.005	.001		
Step 2				0.239	0.028
OCD severity	0.011	0.006	.064		
Depression severity	0.012	0.005	.009		
Symmetry factor	-0.004	0.033	.898		
Hoarding factor	0.140	0.051	.007		
Doubt factor	-0.064	0.072	.378		
Contamination factor	0.098	0.084	.243		
Taboo factor	0.110	0.077	.158		
SAS: Marital domain					
Variable	B	SE	p-value	R ²	ΔR ²
Step 1				0.132	
OCD severity	0.014	0.006	.025		
Depression severity	0.017	0.005	.003		
Step 2				0.167	0.035
OCD severity	0.006	0.007	.386		
Depression severity	0.015	0.006	.009		
Symmetry factor	0.005	0.038	.892		
Hoarding factor	0.077	0.060	.203		
Doubt factor	-0.075	0.086	.388		
Contamination factor	0.266	0.097	.007		
Taboo factor	0.121	0.100	.230		
SAS: Parental domain					
Variable	B	SE	p-value	R ²	ΔR ²
Step 1				0.158	
OCD severity	0.004	0.007	.561		
Depression severity	0.023	0.006	<.001		
Step 2				0.142	-0.016
OCD severity	0.0007	0.008	.930		
Depression severity	0.023	0.006	<.001		
Symmetry factor	0.046	0.042	.272		
Hoarding factor	0.020	0.061	.747		
Doubt factor	0.104	0.101	.305		
Contamination factor	-0.006	0.109	.958		
Taboo factor	-0.093	0.110	.403		
SAS: Family unit domain					
Variable	B	SE	p-value	R ²	ΔR ²
Step 1				0.226	
OCD severity	0.032	0.007	<.001		
Depression severity	0.020	0.006	.001		
Step 2				0.275	0.049
OCD severity	0.017	0.008	.022		
Depression severity	0.018	0.006	.004		
Symmetry factor	0.063	0.041	.127		
Hoarding factor	0.096	0.060	.111		
Doubt factor	0.113	0.091	.219		
Contamination factor	0.265	0.104	.011		
Taboo factor	0.063	0.109	.564		
SAS: Extended family domain					
Variable	B	SE	p-value	R ²	ΔR ²

(continued on next page)

Table 1 (continued)

SAS: Extended family domain					
Variable	B	SE	p-value	R ²	ΔR ²
Step 1					
OCD severity	0.018	0.004	<.001	0.160	
Depression severity	0.011	0.004	.003		
Step 2					
OCD severity	0.010	0.005	.030	0.188	0.028
Depression severity	0.010	0.004	.010		
Symmetry factor	0.044	0.025	.079		
Hoarding factor	0.055	0.036	.124		
Doubt factor	-0.011	0.055	.841		
Contamination factor	0.155	0.063	.015		
Taboo factor	0.067	0.058	.248		
SAS: Social and leisure domain					
Variable	B	SE	p-value	R ²	ΔR ²
Step 1					
OCD severity	0.019	0.005	<.001	0.263	
Depression severity	0.029	0.004	<.001		
Step 2					
OCD severity	0.007	0.005	.187	0.297	0.034
Depression severity	0.028	0.004	<.001		
Symmetry factor	0.089	0.030	.003		
Hoarding factor	0.005	0.042	.912		
Doubt factor	-0.015	0.066	.820		
Contamination factor	0.229	0.075	.002		
Taboo factor	0.041	0.069	.557		

Funding sources

This study was supported by National Institute of Mental Health grant (R01 MH060218).

Author statement

Yiqing Fan: Conceptualization, Methodology, Formal Analysis, Writing – Original Draft. Jane L. Eisen: Investigation, Writing – Review and Editing, Funding Acquisition. Steven A Rasmussen: Investigation, Writing – Review and Editing, Funding Acquisition. Christina L Boisseau: Investigation, Data Curation, Conceptualization, Supervision, Writing – Review and Editing, Funding Acquisition.

Declaration of competing interest

The authors have no conflict of interest to declare.

Data availability

Data will be made available on request.

References

- Abbey, R. D., Clopton, J. R., & Humphreys, J. D. (2007). Obsessive-compulsive disorder and romantic functioning. *Journal of Clinical Psychology, 63*(12), 1181–1192. <https://doi.org/10.1002/jclp.20423>
- Aksaray, B. Y., Kaptanoğlu, C., Ofli, S., Özalın, M., & Gökay. (2001). Sexuality in women with obsessive compulsive disorder. *Journal of Sex & Marital Therapy, 27*(3), 273–277.
- Albert, U., Baffa, A., & Maina, G. (2017). Family accommodation in adult obsessive-compulsive disorder: Clinical perspectives. *Psychology Research and Behavior Management, 10*, 293–304. <https://doi.org/10.2147/prbm.S124359>
- Albert, U., Bogetto, F., Maina, G., Saracco, P., Brunatto, C., & Mataix-Cols, D. (2010a). Family accommodation in obsessive-compulsive disorder: Relation to symptom dimensions, clinical and family characteristics. *Psychiatry Research, 179*(2), 204–211. <https://doi.org/10.1016/j.psychres.2009.06.008>
- Albert, U., Maina, G., Bogetto, F., Chiarle, A., & Mataix-Cols, D. (2010b). Clinical predictors of health-related quality of life in obsessive-compulsive disorder. *Comprehensive Psychiatry, 51*(2), 193–200. <https://doi.org/10.1016/j.comppsy.2009.03.004>
- Ball, S. G., Baer, L., & Otto, M. W. (1996). Symptom subtypes of obsessive-compulsive disorder in behavioral treatment studies: A quantitative review. *Behaviour Research and Therapy, 34*(1), 47–51. [https://doi.org/10.1016/0005-7967\(95\)00047-2](https://doi.org/10.1016/0005-7967(95)00047-2)

- Boisseau, C. L., Sibrava, N. J., Garnaat, S. L., Mancebo, M. C., Eisen, J. L., & Rasmussen, S. A. (2018). The Brown Incompleteness Scale (BINCS): measure development and initial evaluation. *Journal of obsessive-compulsive and related disorders, 16*, 66–71.
- Bystritsky, A., Liberman, R. P., Hwang, S., Wallace, C. J., Vapnik, T., Maindment, K., & Saxena, S. (2001). Social functioning and quality of life comparisons between obsessive-compulsive and schizophrenic disorders. *Depression and Anxiety, 14*(4), 214–218.
- Cain, N. M., Ansell, E. B., Simpson, H. B., & Pinto, A. (2015). Interpersonal functioning in obsessive-compulsive personality disorder. *Journal of Personality Assessment, 97*(1), 90–99. <https://doi.org/10.1080/00223891.2014.934376>
- Chambless, D. L., Floyd, F. J., Rodebaugh, T. L., & Steketee, G. S. (2007). Expressed emotion and familial interaction: A study with agoraphobic and obsessive-compulsive patients and their relatives. *Journal of Abnormal Psychology, 116*(4), 754.
- Cullen, B., Brown, C. H., Riddle, M. A., Grados, M., Bienvenu, O. J., Hoehn-Saric, R., Shugart, Y. Y., Liang, K., Samuels, J., & Nestadt, G. (2007). Factor analysis of the Yale-Brown Obsessive Compulsive Scale in a family study of obsessive-compulsive disorder. *Depression and Anxiety, 24*, 130–138.
- Didie, E. R., Walters, M. M., Pinto, A., Menard, W., Eisen, J. L., Mancebo, M., Rasmussen, S. A., & Phillips, K. A. (2007). A comparison of quality of life and psychosocial functioning in obsessive-compulsive disorder and body dysmorphic disorder. *Annals of Clinical Psychiatry: Official Journal of the American Academy of Clinical Psychiatrists, 19*(3), 181–186. <https://doi.org/10.1080/10401230701468685>
- Ecker, W., Kupfer, J., & Gönner, S. (2014). Incompleteness as a link between obsessive-compulsive personality traits and specific symptom dimensions of obsessive-compulsive disorder. *Clinical Psychology & Psychotherapy, 21*(5), 394–402. <https://doi.org/10.1002/cpp.1842>
- Eisen, J. L., Mancebo, M. A., Pinto, A., Coles, M. E., Pagano, M. E., Stout, R., & Rasmussen, S. A. (2006). Impact of obsessive-compulsive disorder on quality of life. *Comprehensive Psychiatry, 47*(4), 270–275. <https://doi.org/10.1016/j.comppsy.2005.11.006>
- Eisen, J. L., Sibrava, N. J., Boisseau, C. L., Mancebo, M. C., Stout, R. L., Pinto, A., & Rasmussen, S. A. (2013). Five-year course of obsessive-compulsive disorder: Predictors of remission and relapse. *Journal of Clinical Psychiatry, 74*(3), 233–239.
- First, M. B. (1997). *Structured clinical interview for DSM-IV axis I disorders*. Biometrics Research Department.
- Fontenelle, I. S., Fontenelle, L. F., Borges, M. C., Prazes, A. M., Rangé, B. P., Mendlowicz, M. V., & Versiani, M. (2010). Quality of life and symptom dimensions of patients with obsessive-compulsive disorder. *Psychiatry Research, 179*(2), 198–203. <https://doi.org/10.1016/j.psychres.2009.04.005>
- Gameroff, M. J., Wickramaratne, P., & Weissman, M. M. (2012). Testing the short and screener versions of the social adjustment scale-self-report (SAS-SR). *International Journal of Methods in Psychiatric Research, 21*(1), 52–65. <https://doi.org/10.1002/mpr.358>
- Goodman, W. K., Price, L. H., Rasmussen, S. A., Mazure, C., Delgado, P., Heninger, G. R., & Charney, D. S. (1989b). The yale-brown obsessive compulsive scale: II. Validity. *Archives of general psychiatry, 46*(11), 1012–1016.
- Goodman, W. K., Price, L. H., Rasmussen, S. A., Mazure, C., Fleischmann, R. L., Hill, C. L., ... Charney, D. S. (1989a). The Yale-Brown Obsessive Compulsive Scale. I. Development, use, and reliability. *Archives of general psychiatry, 46*(11), 1006–1011.

- Himle, J. A., Taylor, R. J., Nguyen, A. W., Williams, M. T., Lincoln, K. D., Taylor, H. O., & Chatters, L. M. (2017). Family and friendship networks and obsessive-compulsive disorder among African Americans and Black Caribbeans. *Behav Ther (N Y N Y)*, 40(3), 99–105.
- Huppert, J. D., Simpson, H. B., Nissenon, K. J., Liebowitz, M. R., & Foa, E. B. (2009). Quality of life and functional impairment in obsessive-compulsive disorder: A comparison of patients with and without comorbidity, patients in remission, and healthy controls. *Depression and Anxiety*, 26(1), 39–45.
- Jacoby, R. J., Leonard, R. C., Riemann, B. C., & Abramowitz, J. S. (2014). Predictors of quality of life and functional impairment in obsessive-compulsive disorder. *Comprehensive Psychiatry*, 55(5), 1195–1202.
- Kasalova, P., Prasko, J., Ociskova, M., Holubova, M., Vanek, J., Kantor, K., Minarikova, K., Hodny, F., Slepecky, M., & Barnard, L. (2020). Marriage under control: Obsessive compulsive disorder and partnership. *Neuroendocrinology Letters*, 41(3), 134–145.
- Kugler, B. B., Lewin, A. B., Phares, V., Geffken, G. R., Murphy, T. K., & Storch, E. A. (2013). Quality of life in obsessive-compulsive disorder: The role of mediating variables. *Psychiatry Research*, 206(1), 43–49. <https://doi.org/10.1016/j.psychres.2012.10.006>
- Lebowitz, E. R., Panza, K. E., Su, J., & Bloch, M. H. (2012). Family accommodation in obsessive-compulsive disorder. *Expert Rev Neurother*, 12(2), 229–238. <https://doi.org/10.1586/ern.11.200>
- Leckman, J. F., Grice, D. E., Boardman, J., Zhang, H., Vitale, A., Bondi, C., Alsobrook, J., Peterson, B. S., Cohen, D. J., Rasmussen, S. A., Goodman, W. K., McDougle, C. J., & Pauls, D. L. (1997). Symptoms of obsessive-compulsive disorder. *American Journal of Psychiatry*, 154, 911–917.
- Mancebo, M. C., Greenberg, B., Grant, J. E., Pinto, A., Eisen, J. L., Dyck, I., & Rasmussen, S. A. (2008). Correlates of occupational disability in a clinical sample of obsessive-compulsive disorder. *Comprehensive Psychiatry*, 49(1), 43–50. <https://doi.org/10.1016/j.comppsy.2007.05.016>
- Masellis, M., Rector, N. A., & Richter, M. A. (2003). Quality of life in OCD: Differential impact of obsessions, compulsions, and depression comorbidity. *Canadian Journal of Psychiatry*, 48(2), 72–77. <https://doi.org/10.1177/070674370304800202>
- Mataix-Cols, D., Rauch, S. L., Baer, L., Eisen, J. L., Shera, D. M., Goodman, W. K., Rasmussen, S. A., & Jenike, M. A. (2002). Symptom stability in adult obsessive-compulsive disorder: Data from a naturalistic two-year follow-up study. *American Journal of Psychiatry*, 159(2), 263–268. <https://doi.org/10.1176/appi.ajp.159.2.263>
- Mataix-Cols, D., Rauch, S. L., Manzo, P. A., Jenike, M. A., & Baer, L. (1999). Use of factor-analyzed symptom dimensions to predict outcome with serotonin reuptake inhibitors and placebo in the treatment of obsessive-compulsive disorder. *American Journal of Psychiatry*, 156, 1409–1416.
- Miller, I. W., Bishop, S., Norman, W. H., & Maddever, H. (1985). The modified Hamilton rating scale for depression: Reliability and validity. *Psychiatry Research*, 14(2), 131–142.
- Muhlbauer, J. E., Ferrão, Y. A., Eppingstall, J., Albertella, L., do Rosário, M. C., Miguel, E. C., & Fontenelle, L. F. (2021). Predicting marriage and divorce in obsessive-compulsive disorder. *Journal of Sex & Marital Therapy*, 47(1), 90–98. <https://doi.org/10.1080/0092623x.2020.1804021>
- Pinto, A., Eisen, J. L., Mancebo, M. C., Greenberg, B. D., Stout, R. L., & Rasmussen, S. A. (2007). Taboo thoughts and doubt/checking: A refinement of the factor structure for obsessive-compulsive disorder symptoms. *Psychiatry Research*, 151(3), 255–258. <https://doi.org/10.1016/j.psychres.2006.09.005>
- Pinto, A., Grados, M. A., & Simpson, H. B. (2010). Challenges in OCD research: Overcoming heterogeneity. In *Anxiety disorders: Theory, research, and clinical perspectives* (pp. 69–79). Cambridge University Press.
- Pinto, A., Greenberg, B. D., Grados, M. A., Bienvenu, O. J., Samules, J. F., Murphy, D. L., ... Nestadt, G. (2008). Further development of YBOCS dimensions in the OCD Collaborative Genetics Study: Symptoms vs. Categories. *Psychiatry Research*, 160, 83–93.
- Pinto, A., Mancebo, M. C., Eisen, J. L., Pagano, M. E., & Rasmussen, S. A. (2006). The Brown longitudinal obsessive compulsive study: Clinical features and symptoms of the sample at intake. *The Journal of Clinical Psychiatry*, 67(5), 703–711. <https://doi.org/10.4088/jcp.v67n0503>
- Rasmussen, S. A., & Eisen, J. L. (1994). The epidemiology and differential diagnosis of obsessive compulsive disorder. *The Journal of Clinical Psychiatry*, 55, 5–10. ; discussion 11.
- Ravindran, A., Richter, M., Jain, T., Ravindran, L., Rector, N., & Farb, N. (2020). Functional connectivity in obsessive-compulsive disorder and its subtypes. *Psychological Medicine*, 50(7), 1173–1181. <https://doi.org/10.1017/S0033291719001090>
- Saxena, S., Ayers, C. R., Maidment, K. M., Vapnik, T., Wetherell, J. L., & Bystritsky, A. (2011). Quality of life and functional impairment in compulsive hoarding. *Journal of Psychiatric Research*, 45(4), 475–480. <https://doi.org/10.1016/j.jpsychires.2010.08.007>
- Schwartzman, C. M., Boisseau, C. L., Sibrava, N. J., Mancebo, M. C., Eisen, J. L., & Rasmussen, S. A. (2017). Symptom subtype and quality of life in obsessive-compulsive disorder. *Psychiatry Research*, 249, 307–310. <https://doi.org/10.1016/j.psychres.2017.01.025>
- Seretis, D., Hart, C. M., & Maguire, T. (2022). Validity of a revised obsessive-compulsive personality disorder (OCPD) trait profile and its relationship with social interaction anxiety and coping. *Journal of Personality Assessment*, 1–10. <https://doi.org/10.1080/00223891.2022.2145963>
- Sookman, D., Abramowitz, J. S., Calamari, J. E., Wilhelm, S., & McKay, D. (2005). Subtypes of obsessive-compulsive disorder: Implications for specialized cognitive behavior therapy. *Behavior Therapy*, 36(4), 393–400. [https://doi.org/10.1016/S0005-7894\(05\)80121-2](https://doi.org/10.1016/S0005-7894(05)80121-2)
- Starcevic, V., & Brakoulias, V. (2008). Symptom subtypes of obsessive-compulsive disorder: Are they relevant for treatment? *Australian and New Zealand Journal of Psychiatry*, 42(8), 651–661. <https://doi.org/10.1080/00048670802203442>
- Steketee, G. (1997). Disability and family burden in obsessive-compulsive disorder. *Canadian Journal of Psychiatry*, 42(9), 919–928.
- Stengler-Wenzke, K., Kroll, M., Riedel-Heller, S., Matschinger, H., & Angermeyer, M. C. (2007). Quality of life in obsessive-compulsive disorder: The different impact of obsessions and compulsions. *Psychopathology*, 40(5), 282–289. <https://doi.org/10.1159/000104744>
- Stewart, S. E., Beresin, C., Haddad, S., Egan Stack, D., Fama, J., & Jenike, M. (2008). Predictors of family accommodation in obsessive-compulsive disorder. *Annals of Clinical Psychiatry : Official Journal of the American Academy of Clinical Psychiatrists*, 20(2), 65–70. <https://doi.org/10.1080/10401230802017043>
- Vorstenbosch, V., Hood, H. K., Rogojanski, J., Antony, M. M., Summerfeldt, L. J., & McCabe, R. E. (2012). Exploring the relationship between OCD symptom subtypes and domains of functional impairment. *Journal of Obsessive-Compulsive and Related Disorders*, 1(1), 33–40.
- Weissman, M. M., & Bothwell, S. (1976). Assessment of social adjustment by patient self-report. *Archives of General Psychiatry*, 33(9), 1111–1115. <https://doi.org/10.1001/archpsyc.1976.01770090101010>
- Weissman, M. M., Olfson, M., Gameroff, M. J., Feder, A., & Fuentes, M. (2001). A comparison of three scales for assessing social functioning in primary care. *American Journal of Psychiatry*, 158(3), 460–466. <https://doi.org/10.1176/appi.ajp.158.3.460>
- Weissman, M. M., Prusoff, B. A., Thompson, W. D., Harding, P. S., & Myers, J. K. (1978). Social adjustment by self-report in a community sample and in psychiatric outpatients. *The Journal of Nervous and Mental Disease*, 166(5), 317–326. <https://doi.org/10.1097/00005053-197805000-00002>