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LETTER

Propensity to Sexual Response among Adults with Obsessive-Compulsive Disorder

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Abstract:

Background:

Propensity to sexual excitation and inhibition is one of the key dimensions of sexuality. Clinicians working with Obsessive-Compulsive Disorder (OCD) patients rarely assess this and other aspects of sexuality, since treatment targets generally symptom reduction. Literature on sexual functioning in OCD patients is scarce and no study has focused on symptom subtypes, nor investigated the psychological processes related to sexual response.

Objective:

In the present short report, we describe an exploratory study investigating the association between symptom subtypes and propensity towards sexual excitation/inhibition in OCD patients, controlling for gender, age and antidepressant treatment.

Methods:

Seventy-two OCD patients (mean age = 34.50 years, 37.50% women) completed the Obsessive-Compulsive Inventory-Revised and the Sexual Inhibition/Sexual Excitation Scales.

Results:

Patients with more severe compulsive washing habit had a lower propensity towards excitation and a higher one towards inhibition due to threat of performance consequences (*i.e.*, contamination with sexually transmitted diseases/having an unwanted pregnancy). Patients with more severe symptoms of checking showed a higher propensity towards inhibition due to the threat of performance consequences. Gender, age and antidepressant treatment were not related to sexual functioning.

Conclusion:

Specific OCD symptom subtypes may be associated with some psychological processes involved in sexual response. Sexual well-being should be carefully evaluated by practitioners and should be regarded as a treatment target. Future studies should investigate more comprehensively the processes involved in sexuality.

Keywords: Sexual functioning, Obsessive-compulsive disorder, Washing, Checking, Antidepressants, Selective serotonin reuptake inhibitors, Symptom subtypes, Sexual therapy.

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1. INTRODUCTION

Sexuality is a multifaceted construct and one of the most important dimensions which contributes to the identity and relational well-being of the individual [1]. Obsessive-Compulsive Disorder (OCD) is a psychiatric condition which

can strongly impact intimate relationships [2, 3]. Clinicians working with OCD patients rarely assess sexual well-being, since the targets of pharmacological/psychotherapeutic treatment generally are the reduction of symptoms [4]. The literature on sexual functioning in OCD patients is insufficient. The existing studies showed that OCD is often associated with a number of sexual dysfunctions, such as increased sexual dissatisfaction and avoidance, less desire and excitation, or

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orgasm difficulties. Compared with the 10-40% prevalence observed in the general population and in patients with anxiety disorders, sexual dysfunctions affect 50-80% of OCD patients [5 - 10].

The Dual Control Model of human sexual functioning assumes that a satisfactory sexual response is based upon the balance of the sexual excitation and sexual inhibition neurophysiological systems, which in turn are influenced by individual psychological characteristics [11]. The model identifies three psychological processes which drive sexual response: (a) sexual excitation, (b) inhibition due to threat of performance failure, (c) inhibition due to threat of performance consequences (*e.g.* contagion with sexually transmitted diseases, being seen by others during sexual encounters, having an undesired pregnancy). According to this model, low and high propensity of excitation and inhibition are indicative of a higher probability of having a sexual dysfunction confirming that such propensity is one of the most important dimensions related to sexuality [12, 13]. The empirical validity of this model has been further supported by cross-sectional and longitudinal studies demonstrating that propensity to sexual excitation/inhibition predicted sexual satisfaction and the development of sexual dysfunctions in both women and men beyond the effects of demographic, relationship and medical factors [11, 14 - 18]. In addition, research based on neuro-imaging methods showed that sexual excitation/inhibition is correlated with the activation of specific brain regions involved in sexual response [19, 20]. Some evidence showed gender differences, with women reporting a lower and higher propensity towards excitation and inhibition than men, respectively [21, 22].

A strength of this model is that it considers the psychological processes associated with the sexual response instead of focusing on sexual dysfunctions [12]. This strength can help researchers and clinicians in distinguishing these processes from the effects of pharmacological treatments in psychiatric patients. The knowledge of the psychological processes involved in sexuality may support the development of strategies aimed at improving patients' sexual well-being.

Given the dimensional nature of OCD [*e.g.* 23.], it may be expected that propensity to sexual response is impaired to a different extent across the various symptom subtypes. OCD is generally associated with a poorer perception of physical health and body than control individuals [24, 25]. There are a number of potential explanations why some subtypes may be related to a lower propensity towards excitation and inhibition. Symptoms of contamination/washing which include concerns regarding interpersonal and body/sexual contact, may be hypothesized to be more strongly related to impaired sexuality, particularly inhibition due to threat of performance consequences. Compulsive checking behaviour may also be related to impaired sexual response through the constant tendency to check bodily sexual signals and inner experiences (*i.e.* sexual fantasies/arousal). Moreover, the obsessing subtype (*i.e.* unacceptable/forbidden thoughts) may also be related to a poorer sexual response because this subtype involves morally and sexually unacceptable fantasies/thoughts which provoke anxiety/disgust. No study investigated the relationship between

symptom subtypes and psychological processes related to sexual response in OCD, since the majority of the previous studies evaluated only sexual dysfunctions.

In the present short report, we describe an exploratory study that aimed to investigate the association between symptom subtypes and propensity to sexual response based on the Dual Control Model in a group of OCD patients, controlling for the effects of gender, age and antidepressant treatment. We hypothesized that washing, checking and obsessing (forbidden thoughts) subtypes were the most closely associated with a lower propensity to excitation and a higher propensity to inhibition. Given gender differences found in the literature [21], we expected that female gender was associated with a lower excitation and a higher inhibition. We also focused on the impact of a concurrent antidepressant treatment given its expected negative effects on propensity to sexual response [26, 27].

2. MATERIALS AND METHODS

2.1. Participants' Eligibility Criteria and Procedure

To be included, subjects had (a) to meet the criteria for a primary diagnosis of OCD made by a mental health professional through the Structured Clinical Interview for DSM-IV-TR Axis I Disorders [SCID-I; 28], (b) to be 18-65 years old, and (c) to sign informed consent. Subjects were excluded if they had (a) any psychotic/bipolar/unipolar depressive disorder according to the SCID-I, (b) intellectual disability, (c) neurological diseases, (d) obsessive-compulsive symptoms induced by drugs/medical diseases, and (e) general medical diseases. The rationale for selecting the above-mentioned age group was related to the fact that the study focused on propensity to sexual response in adults with OCD. Propensity to sexual excitation/inhibition may be expected to vary across different age cohorts as shown by the previous research [29], particularly in adolescent (age lower than 18 years old) and older adult groups (age higher than 65 years old). The antidepressant treatment was not chosen as exclusion criterion because this type of medication is the first-line therapy for mild to moderate OCD and a concurrent anti-depressant treatment is a rule rather the exception in majority of the OCD patients accessing mental health services [30]. Subjects were recruited through referral from mental health specialists at public/private institutes.

Participation was voluntary and uncompensated. All the subjects were asked to provide written informed consent to their participation after a description of the aims and were informed about the possibility of withdrawing their consent at any time. Materials containing personal information about participants were stored on electronic supports protected by passwords. Ethical approval was obtained from the University of Florence ethics committee. The procedures followed were in accordance with the ethical standards of the University of Florence institutional committee on human experimentation and with the Helsinki Declaration of 1975, as revised in 1983.

2.2. Measures

2.2.1. Obsessive Compulsive Inventory - Revised [OCI-R; 31]

The OCI-R measures the severity of obsessive-compulsive

symptoms using 18 items grouped into 6 subscales which assess 6 subtypes (Washing, Obsessing, Hoarding, Ordering, Checking, and Mental Neutralising) through a 5-point Likert scale (0 = Not at all, 4 = Extremely) [31]. The Italian version showed good internal consistency (Cronbach's alpha > 0.70 for all the subscales), and test-retest reliability (Pearson's r > 0.70) [32]. In the present study, internal consistency was good for all the subscales (range of Cronbach's alpha = 0.83-0.88).

2.2.2. Sexual Inhibition/Sexual Excitation Scales [SIS/SES; 11]

The SIS/SES assesses individual differences in sexual functioning through 45 items divided into three scales: Sexual Excitation (SES); Inhibition Due to Threat of Performance Failure (SIS1); Inhibition Due to Threat of Performance Consequences (SIS2). Each item is evaluated on a 4-point Likert scale (1 = Strongly Agree, 4 = Strongly Disagree): lower scores suggest higher accordance. The Italian SIS/SES showed acceptable to good internal consistency [33]. In the present study, internal consistency was acceptable to good for all the scales (range of Cronbach's alpha = 0.76-0.82).

2.2.3. Statistical Analysis

We conducted three ANCOVAs analyses of the scores on the three SIS/SES scales to explore the effects of gender, age, symptom subtypes, concurrent antidepressant treatment and the interaction between antidepressant treatment and each symptom subtype. Partial Eta Squared (η^2) was calculated as effect size [34]. Values of 0.01, 0.06, and 0.14 suggest low, moderate, and large effect sizes, respectively [35]. Statistical analyses were conducted using SPSS 21.00 software [36] with a *p*-value of 0.05.

3. RESULTS

3.1. Effects of Symptom Subtypes on Propensity to Sexual Response

Seventy-two OCD patients were included [mean age \pm SD = 34.50 \pm 10.39 years; 37.50% women, 62.50% men] (Table 1). The findings of the ANCOVAs analyses (Table 2) showed that patients with more severe symptoms of compulsive washing experienced lower excitation ($\beta = 0.12$, $t = 2.92$, $p < .01$) and those with more severe compulsive washing habit and not on antidepressant treatment had higher excitation ($\beta = -.11$, $t = -2.36$, $p < .05$). Both the effects were associated with large effect sizes. The main effects of age, gender, antidepressant treatment and other symptoms subtypes did not emerge.

None of the considered predictors had significant effects on inhibition due to the threat of performance failure.

Patients with more severe symptoms of checking reported more elevated inhibition due to the threat of performance consequences ($\beta = -.10$, $t = -2.21$, $p < .05$) with a large effect size.

Table 1. Socio-demographic and clinical characteristics of the OCD group ($n = 72$).

	<i>M (SD; range) / n (%)</i>
Age (years)	34.50 (10.39; 18-58)
Gender	
<i>Female</i>	27 (37.50)
<i>Male</i>	45 (62.50)
Marital status	
<i>Single</i>	55 (76.40)
<i>Married</i>	15 (20.80)
<i>Divorced</i>	2 (2.80)
Education level	
<i>Elementary school</i>	3 (4.20)
<i>Middle school</i>	5 (6.90)
<i>High school</i>	35 (48.60)
<i>Degree</i>	24 (33.30)
<i>Post-graduate education</i>	4 (5.60)
Employment status	
<i>Undergraduate</i>	1 (1.40)
<i>Employed</i>	16 (22.20)
<i>Unemployed</i>	44 (61.10)
<i>Other</i>	9 (12.50)
Concurrent antidepressants	32 (44.40)
<i>Clomipramine</i>	3 (4.20)
<i>Clomipramine and Paroxetine</i>	1 (1.40)
<i>Clomipramine and Sertraline</i>	2 (2.80)
<i>Escitalopram</i>	2 (2.80)
<i>Fluvoxamine</i>	9 (12.50)
<i>Fluvoxamine and Escitalopram</i>	1 (1.40)
<i>Paroxetine</i>	3 (4.20)
<i>Sertraline</i>	8 (11.10)
<i>Sertraline and Paroxetine</i>	1 (1.40)
SES	2.58 (0.54)
SIS1	2.37 (0.59)
SIS2	2.10 (0.57)
OCI-R Total	27.14 (14.77)
OCI-R Hoarding	4.11 (3.35)
OCI-R Checking	5.26 (3.84)
OCI-R Ordering	4.93 (3.89)
OCI-R Obsessing	6.29 (3.69)
OCI-R Neutralizing	2.39 (2.57)

Note. OCI-R = Obsessive Compulsive Inventory-Revised, SES = Sexual Excitation scale, SIS1 = Inhibition Due to Threat of Performance Failure scale, SIS2 = Inhibition Due to Threat of Performance Consequences scale.

Table 2. Model of effects of symptoms, gender, age, and antidepressants on propensity to sexual response ($n = 72$).

(Table 2) contd.....

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Age (years)	.010	.922	.001	.098	.922	-.013	.014	.000
OCI-R Hoarding	2.114	.152	.014	.328	.744	-.069	.096	.002
OCI-R Checking	5.554	.022	-.100	-2.217	.031	-.191	-.010	.081
OCI-R Ordering	.847	.361	.037	.989	.327	-.038	.113	.017
OCI-R Obsessing	1.235	.271	.053	1.476	.146	-.019	.126	.037
OCI-R Mental Neutralizing	.030	.864	.039	.891	.377	-.049	.126	.014
OCI-R Washing	6.604	.013	-.082	-1.899	.063	-.168	.004	.061
Not on antidepressants * OCI-R Hoarding	.873	.354	.050	.934	.354	-.057	.156	.015
On antidepressants * OCI-R Hoarding	0 ^a							
Not on antidepressants * OCI-R Checking	1.634	.206	.070	1.278	.206	-.040	.180	.028
On antidepressants * OCI-R Checking	0 ^a							
Not on antidepressants * OCI-R Ordering	.413	.523	-.031	-.643	.523	-.126	.065	.007
On antidepressants * OCI-R Ordering	0 ^a							
Not on antidepressants * OCI-R Obsessing	1.697	.198	-.057	-1.303	.198	-.146	.031	.029
On antidepressants * OCI-R Obsessing	0 ^a							
Not on antidepressants * OCI-R Mental Neutralizing	1.167	.285	-.067	-1.080	.285	-.190	.057	.020
On antidepressants * OCI-R Mental Neutralizing	0 ^a							
Not on antidepressants * OCI-R Washing	.299	.587	.027	.547	.587	-.073	.128	.005
On antidepressants * OCI-R Washing	0 ^a							

Note. CI = confidence interval, OCI-R = Obsessive Compulsive Inventory-Revised, SES = Sexual Excitation scale, SIS1 = Inhibition Due to Threat of Performance Failure scale, SIS2 = Inhibition Due to Threat of Performance Consequences scale, ^a = This parameter is set to zero because it is redundant in the model.

4. DISCUSSION

While the focus of research and clinical practice is on symptom reduction, the propensity to sexual excitation and inhibition in OCD patients is under-assessed. An important area is the investigation of specific well-being domains beyond the symptomatology, because well-being in OCD may be impaired even when the patient shows mild symptoms [37]. The few existing studies in the literature focused on prevalence rates of sexual dysfunctions in OCD. In addition, the role of symptom subtypes has not been investigated. It may be useful to understand the psychological processes driving propensity to sexual activity across specific symptom subtypes. The present short report described the findings of the first exploratory study investigating the association between symptom subtypes and propensity to sexual excitation/inhibition in OCD patients. The strength of the work is the fact that we excluded comorbid major psychiatric conditions (*e.g.*, psychotic/bipolar/unipolar depressive disorders) and medical disorders, quite often observed in OCD patients, potentially impacting sexual functioning and intimate relations [38, 39]. We think that this *a-priori* methodological choice can control for potentially biased effects of factors such as other major psychiatric disorders and other diseases which can negatively impact propensity to sexual response.

We detected no gender differences in the propensity towards excitation and inhibition, in disagreement with previous data and even our hypotheses [*e.g* 21.]. These findings might be explained by the relatively small sample size with a preponderance of men. In addition, since symptoms of washing are often more severe among females than among males [40], it may be hypothesized that there is an interaction effect between gender and this subtype: women with more severe washing habits may be expected to have lower and higher tendencies towards excitation and inhibition, respectively. Due to the small sample size, we were not able to add other predictors in the statistical model to test such an interaction effect.

Approximately 40% of patients were on antidepressant treatment. We did not find a direct association between concurrent antidepressant treatment and both the propensity towards excitation and inhibition. These findings appear in contrast with the evidence showing that most of the antidepressants can influence the sexual response, particularly when prescribed at high dosages [26]. It should be noted however, that in our OCD group, only one-third of the patients on antidepressants were taking sertraline, which has been found to be one of the antidepressants associated with the highest incidence of sexual dysfunctions [26]. This lack of difference may also be due to the fact that the SIS/SES specifically measures the psychological processes related to impaired sexual functioning such as the fear of failure during sexual performance instead of focusing on dysfunctions. We may speculate that these mechanisms are not completely affected by antidepressant medication as they involve catastrophic misinterpretations of the outcome of sexual encounters. This evidence may support the hypothesis that impaired sexual functioning may not be related exclusively to the effects of an antidepressant treatment but also to psychological cognitive and emotional interpretations of sexuality to some extent. However, it should be noted that our study did not control for some variables potentially moderating the effects of antidepressant medication such as the type of antidepressants or the dosages, as a variety of antidepressants were prescribed to our patients. In addition, the cross-sectional design does not allow us to draw conclusions about the causal effect of medication and exclude the selection bias.

In accordance with our hypotheses, we observed that OCD patients with more severe compulsive washing habit had a lower propensity towards excitation and a higher one towards inhibition due to the threat of performance failure. It may be that patients with symptoms of washing experience lower excitation because the symptomatology focuses on interpersonal contact and the risk of contagion with sexually

transmitted diseases. Several processes may explain this relationship: for example, symptoms of washing are typically related to a more intense experience of disgust and also to a stronger focus on bodily signals which in turn may decrease excitation and increase inhibition [41, 42]. The lower levels of sexual excitation related to the washing subtype may be the effect of an avoidance coping mechanism protecting the patient from external and internal triggers of obsessions (*i.e.* sexual fantasies).

Another interesting result showed that patients with more intense washing behaviour and not on antidepressants experienced higher sexual excitation indicating an interaction effect between antidepressant treatment and this symptom subtype. This finding perhaps suggests that for washers with more severe symptoms, absence of an antidepressant treatment might have a protective effect on sexual functioning. The cross-sectional design of the study does not allow to ascertain this explanation and future longitudinal research is needed.

Consistent with our predictions, we also found a significant relationship between inhibition due to the threat of performance failure and the checking subtype. An explanation might be that symptoms of checking involve a constant self-monitoring of one's internal states or body signals (*i.e.* thoughts, mental images, impulses, emotions) which might increase the fear of performance consequences (*i.e.* undesired pregnancy and/or sexually transmitted diseases) thus inhibiting sexual functioning. Repetitive checking behaviours may also be directed to body contact during the sexual encounter and this might inhibit sexual response.

The association between symptom subtypes and propensity to sexual response may be interpreted as if sexuality has an effect on symptom subtypes. A clinical implication may be that adding elements of sexual therapy during treatment may lead to an improvement in symptom severity for patients with severe symptoms of washing/checking. In addition, using exposure therapy with exercises involving sexual/body contact might have beneficial effects on symptoms of washing.

In contrast with our hypotheses, we found no significant association between the subtype of obsession and propensity to sexual response. This result may be attributed perhaps to the method of assessment. It may be that the content of unacceptable/forbidden thoughts has a stronger impact on sexuality than the general subtype of obsession. The specific content of the obsessions/compulsions may be an alternative way to explore the effects of symptom subtypes on sexuality in OCD: *e.g.*, religious/aggressive/sexual obsessions may be hypothesized to be significant predictors of impaired sexual functioning.

We also did not observe any association between the other subtypes, including hoarding, mental neutralizing and ordering, and propensity to sexual response. It may be that the content of these subtypes is not focused on aspects related to sexuality. This may suggest that patients with higher symptoms of these subtypes may not need an assessment of sexual functioning. However, the assessment of the intensity of the symptom subtypes used in this study might have introduced a methodological bias which can explain the absence of a

significant association between sexuality and these subtypes. It may be that these subtypes, which are typically less frequent in the OCD population were under-represented in our sample. Future studies should use an alternative approach and should compare sexual functioning between OCD patients diagnosed with different subtypes instead of coding the symptom subtype as a dimensional variable.

In contrast with our expectations, we did not see an association between any of the subtypes and inhibition due to performance failure. This suggests that this sexual domain may not be relevant to OCD symptoms. An interpretation may be that most of the mental energy of OCD patients is spent on struggling with repetitive, distressing thoughts (*i.e.* obsessions) and this might make sexual performance failure a less important concern for the patient. Perhaps, other variables may have a role in inhibition due to performance failure such as fear of negative evaluation which is more specific to social anxiety disorder.

Future studies should establish more reliably the causal role of symptom subtypes on sexuality and also better control for other variables (*i.e.* type of antidepressant) through a longitudinal design. In addition, they should compare OCD patients with patients with other disorders (*i.e.* anxiety disorders) to ascertain whether the effects on propensity to sexual response are specific to OCD or represent a general consequence of emotional distress. Patients with other obsessive-compulsive spectrum conditions may also be considered as a comparator group, such as body dysmorphic disorder or skin picking disorder/trichotillomania because these patients have a negative relationship with their body [43, 44]. It may be interesting to explore whether the association between subtypes and excitation/inhibition processes mediates sexual dysfunctions, such as hypoactive sexual desire disorder which is quite frequent among OCD patients [45].

A main limitation of the present study was the lack of a systematic follow-up or stratification of psychopharmacological outcomes across different subtypes of OCD. Future research should investigate prospectively whether a concurrent psychopharmacological treatment is a predictor of long-term changes in propensity to sexual excitation/inhibition and also sexual dysfunctions. It may be interesting to assess whether the psychopharmacological treatment has a differential impact on propensity to sexual response for specific symptom subtypes.

Since sexuality is a multifaceted construct [46], another limitation concerns the lack of measures covering other aspects related to it. In addition to propensity to excitation/inhibition, other measures should be used to capture the wide complexity of sexuality such as psychophysiological response patterns, beliefs about sexual functioning, self-perceived sexual attractiveness, and sexual preferences and orientation [47-49].

Finally, further research should evaluate the role of other clinical characteristics related to symptoms such as comorbid personality disorders [50], which may impact interpersonal and intimate relations, including sexual life.

CONCLUSION

Sexuality is an overlooked dimension in OCD patients.

Our study assessed the psychological processes related to sexual response in this clinical population. It is the first investigation of the relationship between symptom subtypes and propensity to sexual response. Our findings support the heterogeneity of the clinical correlates of OCD, demonstrating that perhaps there are specific relationships between some subtypes and propensity towards excitation and inhibition. These results point out the importance of considering propensity to sexual response during the assessment of patients with OCD.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval was obtained from the Ethics Committee of University of Florence.

HUMAN AND ANIMAL RIGHTS

No Animals were used in this research. All human research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

CONSENT FOR PUBLICATION

Written and informed consent was obtained from all the participants prior to the study.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article are not publicly available but it can be made available by the corresponding author on reasonable request.

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None.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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AP designed the study, conducted the literature searches, collected the data, conducted the statistical analysis, wrote the paper. DM designed the study and critically reviewed the first and final drafts of the paper. FM reviewed the final draft of the paper. DD reviewed and edited the final version of the paper.

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