



# Disgust propensity and contamination-related OCD symptoms: The mediating role of mental contamination



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## ABSTRACT

Fear of contamination within obsessive compulsive disorder (OCD) is traditionally conceptualized as a physical phenomenon. Research has also supported the notion of mental contamination (MC), in which people feel contaminated in the absence of contact with a physical pollutant. In the last decades, a growing number of studies has been centered on the role of disgust propensity (DP) in contamination-related OCD (OCD-C) symptoms. However, the relationship between MC, DP and OCD-C symptoms has not been thoroughly explored. The aims of this study were: (1) to investigate the prevalence of MC in a sample of OCD-C patients; (2) to explore the association between MC, DP and OCD-C symptoms in a sample of OCD patients; and (3) to analyze the role of MC as a mediator in this relationship. Sixty-three patients with OCD-C symptoms completed a series of self-report questionnaires that assessed mental contamination, disgust propensity, OCD symptoms, anxiety, and depression. Significant correlations were found between DP, MC and OCD-C symptoms, controlling for anxiety and depression. Mediation analysis indicated that MC plays a mediating role in the relationship between DP and OCD-C symptoms. These data support the need for specific assessment of MC in clinical settings, particularly where feelings of disgust are involved.

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## 1. Introduction

Traditionally, fear of contamination in obsessive-compulsive disorder (OCD) has been analyzed with a focus on physical contaminants, where the threat was perceived to be a consequence of direct contact (Rachman, 2004). However, as Fairbrother and Rachman (2004) acknowledge, there is more than one type of dirtiness, and it has been recognized that individuals may also feel dirty, and experience an associated urge to wash, in the absence of a contact contaminant. This relatively new conceptualization has been termed 'mental contamination' (Rachman, 2004, 2006), and refers to feelings of internal dirtiness and urges to wash that arise in the absence of contact with a physical source of contamination.

The 'internal sense of dirtiness' stemming from mental contamination is experienced as similar to ordinary 'external dirtiness' associated with contact contamination. However, Rachman (2004, 2006) described as the main differences between these two kinds of contamination include the nature of the contamination process (resulting from physical contact vs. occurring in the absence of direct contact), the effectiveness of washing (washing

is helpful when the contaminant is physical, but ineffective when it is not), the perceived source (a known and tangible source for contact contamination vs. an intangible and obscure source for mental contamination), the kind of source (inanimate dirty/harmful substances for contact contamination vs. usually human persons for mental contamination), the vulnerable persons (self and others for contact contamination vs. uniquely self for mental contamination), and the range of contamination provocations (dirt, germs or harmful substances vs. thoughts, memories, betrayal, etc.).

The pioneering work on mental contamination involving sexual assault victims has demonstrated that a traumatic experience and the deliberate recall of the victimization (as opposed to deliberate recall of a pleasant memory) are sufficient conditions to evoke both subjective experiences of mental contamination in the form of feelings of dirtiness and urges to wash, and sometimes washing behavior (Fairbrother & Rachman, 2004).

A following series of experiments (Elliott & Radomsky, 2009, 2012; Fairbrother, Newth, & Rachman, 2005; Herba & Rachman, 2007; Radomsky & Elliott, 2009) tested this phenomenon in a laboratory setting involving non-clinical subjects in an imagined non-consensual sexual experience ('dirty kiss scenario'). Several factors (e.g. immoral behavior, imagined physical dirt, betrayal, appraisals associated with responsibility, violation, and immorality) were shown to exacerbate and amplify feelings of contamination

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and the urge to rinse or wash (Elliott & Radomsky, 2009, 2012, 2013; Rachman, Radomsky, Elliott, & Zysk, 2012). The non-consensual scenarios were followed by substantial increases in negative emotions, notably disgust, and these increases were boosted over successive enhancements of the procedure (Rachman et al., 2012). Furthermore, an additional experiment has demonstrated that mental contamination can be evoked by the recall of unwanted memories associated with betrayal and immorality, which do not involve physical violation (Lee et al., 2013). Similarly, imagining wearing clothing that belongs to undesirable and immoral people leads to feelings of contamination and to washing behaviors (Coughtrey, Shafraan, & Rachman, 2014).

A preliminary study of the prevalence of mental contamination in a clinical sample of patients with obsessive-compulsive symptoms found that 10% of patients reported mental contamination in the absence of contact contamination, 15% reported contact contamination in the absence of mental contamination, and 36% experienced both mental and contact contamination. These findings demonstrated that mental contamination is a construct that overlaps, but is distinct from, contact contamination (Coughtrey, Shafraan, Knibbs, & Rachman, 2012).

Research has also explored how the construct of disgust propensity – an individual's tendency to experience disgust – contributes to the etiology and phenomenology of contamination-related OCD symptoms (David et al., 2009; Olatunji, Sawchuk, Lohr, and de Jong 2004; Olatunji, Williams, Lohr, & Sawchuk, 2005; Schienle, Stark, Walter, & Vaitl, 2003). Many studies have found significant associations between measures of disgust propensity and washing rituals in OCD (David et al., 2009; Nicholson & Barnes-Holmes, 2012; Olatunji et al., 2004; Olatunji et al., 2005; Olatunji, 2010; Sawchuk, Olatunji, & De Jong, 2006; Schienle et al., 2003; Tolin, Woods, & Abramowitz, 2006). Consistent with these results, Moretz and McKay (2008) used structural equation modeling to demonstrate a linear relationship between high disgust propensity and fear of contamination in OCD.

Although disgust in the context of OCD has received increasing attention, the role that disgust propensity actually plays in the experience of mental contamination remains unexplored. However, in an interesting study involving a sample of female sexual assault victims, Badour, Feldner, Blumenthal, and Bujarski (2013) found a significant association between disgust sensitivity (distinct from disgust propensity, since it consists of the individual vulnerability to interpret feelings of disgust as negative or harmful), feelings of mental contamination, and the severity of post-traumatic stress symptoms. The results of this study suggested that the association of disgust sensitivity with increased feelings of mental contamination is one mechanism through which it might relate to the severity of post-traumatic stress symptoms.

The first study to investigate the association between these constructs showed that in a heterogeneous sample of OCD patients disgust propensity, mental contamination and OCD symptoms are significantly correlated with each other when anxiety and depressive symptoms are controlled for (Carrarese, Bulli, Melli, & Stopani, 2013). Furthermore the mediation analysis suggested that mental contamination could play a mediating role in the relationship between disgust propensity and contamination-related OCD symptoms.

The main limitation of this study was that only a small percentage of the patients (19%;  $n=16$ ) had contamination-related symptoms, so the present investigation aimed to confirm these results in a large sample of OCD patients with these specific symptoms.

The aims of the present study were to: (1) investigate the prevalence of mental contamination in a sample of OCD patients with contamination-related symptoms; (2) analyze the association between mental contamination, disgust propensity, and contamination-related

OCD symptoms; and (3) investigate the role of mental contamination as a mediating factor in the relationship between disgust propensity and OCD symptoms. Our hypothesis was that we would find a high prevalence of mental contamination, strong associations between the considered constructs, and a significant mediational role of the mental contamination in the model.

## 2. Method

### 2.1. Participants

OCD patients were referred to an Italian private center for adult psychotherapy for evaluation and treatment. During the routine assessment phase, patients were interviewed by one of the members of our research team (all Ph.D. level psychologists experienced with diagnosing psychiatric disorders) using the Anxiety Disorder Interview Schedule IV (Brown, Di Nardo, & Barlow, 1994), to establish diagnoses. Although inter-rater reliability for the main diagnosis was not examined formally, each case was audio-recorded and carefully reviewed in supervisory meetings, and all diagnoses were reached by rater consensus. The clinician-rated version of the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989a, 1989b) was also administered to participants who met the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association, 2000) criteria for OCD as the primary diagnosis. Participants were excluded if they scored below 16 on the Y-BOCS. Some participants had one or more secondary diagnoses, including anxiety (Social phobia [ $n=4$ ], panic disorder [ $n=2$ ], or generalized anxiety disorder [ $n=6$ ]) and mood (major depressive disorder [ $n=8$ ]) disorders. Potential participants with a secondary or tertiary diagnosis of OCD were excluded. Five participants were excluded as they were under 18 years. Other exclusion criteria were an IQ below 90 and psychosis. In total, 106 participants with OCD were recruited.

Because we were only interested in studying OCD patients with contamination-related symptoms we selected participants ( $n=63$ ) who scored above the suggested threshold (4.5; Melli et al., submitted for publication) on the Dimensional Obsessive-Compulsive Scale (DOCS) Contamination subscale (31 patients scored above the threshold on the DOCS responsibility subscale, 36 on the unacceptable thoughts subscale, and 21 on the symmetry subscale).

The final sample included 63 patients (50.8% males), with a mean age of 33.4 years ( $SD=10.3$ ). More than two thirds of all participants ( $N=44$ ) were not married, and almost 90% of the sample had at least a medium level of education ( $\geq 12$ –13 years of education).

All participants were treated in accordance with the *Ethical Principles of Psychologists and Code of Conduct* (American Psychological Association, 2002).

### 2.2. Measures

*Vancouver Obsessional Compulsive Inventory-Mental Contamination scale* (VOCI-MC; Rachman, 2006). This 20-item scale assesses aspects of mental contamination. Participants rate each item on a 5-point scale from 0 ('not at all') to 4 ('very much'). The original VOCI-MC (Rachman, 2006) consisted of 27 items. The revised version has been shortened to 20 items and has shown good psychometric properties (Radomsky, Rachman, Shafraan, Coughtrey, & Barber, in press). The questionnaire has been translated into Italian and validated; confirmatory factor analysis has confirmed the 1-factor structure, and the scale has shown good internal consistency (Cronbach's  $\alpha=.85$ –.95), test-retest reliability ( $r=.88$ ), and construct validity (Melli, Carrarese, Stopani, & Bulli, in preparation). In the present study, the internal consistency was also excellent ( $\alpha=.93$ ).

*Disgust Propensity Questionnaire* (DPQ; Melli, Chiorri, Bulli, Stopani, & Carrarese, 2012). This 33-item scale has recently been developed to improve the assessment of individual propensity for disgust in an Italian sample, because the Italian version of the Disgust Scale-Revised (DS-R; Olatunji et al., 2007; Melli, Chiorri, & Smurra, 2013) – the best-known scale for the assessment of disgust propensity – has shown satisfying, but not excellent, psychometric properties, and some of the items of this scale are not adequate for the Italian cultural context. Statement choices are scored on a 5-point Likert scale from 0 ('not at all') to 4 ('very much'); total score may range from 0 to 132. This questionnaire has been found to have a 1-factor structure, excellent internal consistency ( $\alpha=.95$ ), very good test-retest reliability ( $r=.87$ ) and construct validity (Melli et al., 2012). In the present study, this scale showed excellent internal consistency ( $\alpha=.95$ ).

*Dimensional Obsessive-Compulsive Scale* (DOCS; Abramowitz et al., 2010). The DOCS is a 20-item scale that assesses the main obsessive-compulsive symptom dimensions of OCD, namely contamination obsessions and washing/cleaning compulsions; obsessions about responsibility for causing harm and checking compulsions; obsessions about order and symmetry and ordering/arranging compulsions; repugnant obsessional thoughts and mental compulsive rituals or other covert neutralizing strategies. Within each symptom dimension, items – rated on a scale ranging from 0 ('no symptoms') to 4 ('extreme symptoms') – assess

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