

Running head: disgust propensity and trait guilt in OCD

**The role of disgust propensity and trait guilt in OCD symptoms: a multiple regression model  
in a clinical sample**

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## **ABSTRACT**

The relationship between disgust propensity (DP) and obsessive-compulsive disorder (OCD), particularly with contamination-related OCD symptoms, has been widely recognized. The relationship between trait guilt (TG) and OCD has been less investigated, although some studies have explored the role of guilt in OCD, and found that it may precede, motivate or be a consequence of OCD symptoms. The present study analyzed the role of TG and DP in OCD, focusing on different types of OCD symptoms. Dimensional self-report measures of DP, TG and OCD were administered to a clinical sample (98 OCD patients), and measures of depression and anxiety were also included as control variables. At a bivariate level, DP was moderately correlated with only the *Contamination* and *Symmetry* dimensions of OCD. There were weak but significant correlations between TG and the *Responsibility for harm and mistakes* and *Unacceptable thoughts* OCD dimensions only. Results from subsequent hierarchical regression analyses indicated that DP was predictive of contamination and symmetry OCD symptoms above and beyond depression and anxiety. Unexpectedly, TG did not significantly predict any OCD symptom. Theoretical implications and directions for future research are discussed.

**Keywords:** obsessive-compulsive disorder, OCD, trait guilt, disgust propensity, predictors.

## Introduction

Obsessive compulsive disorder (OCD) is characterized by the occurrence of persistent thoughts, urges, or images that are experienced as intrusive and unwanted (i.e., obsessions), and compulsive actions that the individual feels driven to perform in response to an obsession or according to rules that must be applied rigidly aimed at preventing or reducing anxiety or distress, or preventing some dreaded event or situation (DSM-5; American Psychiatric Association [APA], 2013).

A small number of studies have explored the role of guilt in OCD (Shafran, Watkins, & Charman, 1996; Steketee, White, & Quay, 1991). For example, it has been suggested that the fear of guilt for acting irresponsibly may lead to OCD symptoms (Gangemi, Mancini, & van den Hout, 2007; Mancini, D'Olimpio, & Cieri, 2004; Mancini & Gangemi, 2004), and OCD patients consistently report more guilt than healthy controls (Shafran et al., 1996). Although some authors have suggested that the association between guilt and OCD is specific for patients with obsessions about responsibility for causing harm or making mistakes (Foa, Amir, Bogert, Molnar, & Prezworsky, 2001; Foa, Sacks, Tolin, Prezworsky, & Amir, 2002; Salkovskis et al., 2000), other studies have demonstrated a positive association between guilt and OCD symptoms in patients with contamination obsessions (Menzies, Harries, Cumming, & Einstein, 2000; Sica, Taylor, Arrindell, & Sanavio, 2006; Taylor et al., 2010; Tolin, Brady, & Hannan, 2008). However, one of the main limitations of these studies was that they analyzed different features of guilt (e.g. fear of guilt, guilt avoidance), and only a few of them specifically explored the construct of trait guilt (TG) – a personality predisposition to experience guilt extending beyond immediate circumstances. In a recent study of a large Italian community sample (Melli et al., in press), TG emerged as a predictor of contamination-related OCD symptoms, independent of anxiety and depression. Unfortunately, this study did not consider any other symptom dimension. Consistently, D'Olimpio et al. (2013) found that OCD patients were more prone to feelings of guilt than both non-clinical participants and anxious patients.

Research on OCD has also investigated the role played by disgust propensity (DP) - an individual's predisposition to experience disgust (David et al., 2009; Olatunji, Sawchuk, Lohr, & De Jong, 2004; Olatunji, Williams, Lohr, & Sawchuk, 2005; Schienle, Stark, Walter, & Vaitl, 2003). A number of correlational studies have found significant positive associations between measures of DP and washing rituals in OCD (Cougale, Lee, Horowitz, Wolitzky-Taylor, & Telch, 2008; David et al., 2009; Melli, Bulli, Carraresi, & Stopani, 2014; Olatunji, 2010; Olatunji et al., 2005; Sawchuk, Olatunji, & De Jong, 2006; Schienle et al., 2003; Tolin, Woods, & Abramowitz, 2006) and DP emerged as a predictor of washing and checking behaviors in non-clinical samples (Mancini, Gragnani, & D'Olimpio, 2001; Nicholson & Barnes-Holmes, 2012; Olatunji, 2010; Olatunji et al., 2004). These results suggested that DP could be involved in the development and maintenance of OCD symptoms (Olatunji et al., 2004). For instance, a study using structural equation modeling demonstrated a linear relationship between high DP and fear of contamination in OCD (Moretz & McKay, 2008) and implicit measures of DP have also been shown to predict obsessive-compulsive symptoms (Nicholson & Barnes-Holmes, 2012). These results are consistent with previous findings in both non-clinical and clinical samples (c.f. Olatunji, 2010), and support the claim that DP is an important affective factor underlying fear of contamination. Other authors reported that DP also predicts checking compulsions (Berle et al., 2012; Mancini et al., 2001; Schienle et al., 2003, Thorpe, Patel, & Simonds, 2003).

Although independent lines of research suggest that both TG and DP contribute to OCD, only two recent studies considered these variables together and hypothesized that they may be related to one another. D'Olimpio et al. (2013) found that OCD patients had a high propensity to experience feelings of both guilt and disgust, and that disgust was higher in patients with obsessions about contamination and about responsibility for causing harm or making mistakes. However, TG and DP were highly correlated in the OCD sample, but not in the non-clinical group, suggesting that the association between guilt and disgust may be a characteristic of OCD patients only. Using a large non-clinical sample, Melli et al. (in press) reported significant correlations between

contamination fears and both trait guilt and disgust propensity. In particular, they found support for a model in which disgust propensity partially mediates the relationship between trait guilt and fear of contamination, after controlling for confounding variables. The authors concluded that both guilt and disgust play a role in contamination fears, at least in non-patients.

Nonetheless, the aforementioned studies considered only specific sub-types of OCD symptoms. To our knowledge, no study has explored the relationship between both TG and DP and all the OCD symptom dimensions. In particular, the role of these constructs in OCD patients with unacceptable thoughts and obsessions about order and symmetry is unexplored. Besides, all the cited studies, with the exception of D'Olimpio et al. (2013), involved only non-clinical participants. In view of the limitations of the previous findings, the aim of the present study was to investigate the specific role of TG and DP in all the OCD symptom dimensions, using a heterogeneous and relatively large clinical sample. More specifically, on the basis of previous studies, we predicted that: (1) DP would be specifically associated with OCD symptoms related to contamination and (2) TG would be specifically associated with OCD symptoms related to responsibility for harm and mistakes and to contamination.

## **Method**

### ***Participants***

112 OCD patients had been 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 the research team (all doctoral psychologists experienced in diagnosing psychiatric disorders) using the Anxiety Disorder Interview Schedule IV (Brown, Di Nardo, & Barlow, 1994) to establish diagnoses. Each case was audio-recorded and carefully reviewed in supervisory meetings, and all diagnoses were reached by raters' consensus. Some participants had one or more secondary diagnoses, including anxiety disorders (social phobia [ $n = 2$ ], panic disorder [ $n = 3$ ] and generalized anxiety disorder [ $n = 8$ ]) and mood disorders (major depressive disorder [ $n = 14$ ]). Potential participants with a secondary or tertiary diagnosis of OCD were excluded. Five

participants were excluded as they were under 18 years old. The presence of psychosis, current mania, and/or substance dependence were other exclusionary criteria.

The final sample included 98 OCD patients (53.1% males), with a mean age of 32 years ( $SD = 10.4$ ). Two thirds of all participants were unmarried, and almost eighty-seven percent of the sample had at least 12 years of education.

### ***Procedure***

After signing the consent form, participants were given a brief explanation of the study and asked to complete a set of self-report questionnaires that included the Italian version of the Disgust Propensity Questionnaire (DPQ; Melli, Chiorri, Bulli, Stopani, & Carraresi, 2012), the Trait Guilt Short Scale (TGSS; Melli, Primi, Bulli, Carraresi, & Stopani, in preparation), the Dimensional Obsessive-Compulsive Scale (DOCS; Abramowitz et al., 2010), the Beck Anxiety Inventory (BAI; Beck & Steer, 1990), and the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). Questionnaires were presented to participants in random order. A research assistant waited until the participant had completed all the questionnaires and provided assistance if the participant did not understand the meaning of any question.

### ***Measures***

*Disgust Propensity Questionnaire (DPQ)*. This thirty-three-item scale was recently developed to improve the assessment of individual DP in Italian samples, as the Italian version (Melli, Chiorri, & Smurra, 2013) of the Disgust Scale-Revised (DS-R; Olatunji et al., 2007) - the best-known scale for the assessment of DP - has shown satisfactory, but not excellent psychometric properties, and some of the items of this scale are not appropriate to the Italian cultural context. Participants are asked to rate each item on a five-point Likert scale from 0 ("not at all") to 4 ("very much"). This questionnaire was found to have a one-factor structure, excellent internal consistency ( $\alpha = .95$ ), adequate test-retest reliability ( $r = .87$ ) and construct validity. In the present study, this scale showed excellent internal consistency ( $\alpha = .95$ ).

*Trait Guilt Short Scale (TGSS)*. This eleven-item self-report measure is a shortened version of the Trait Guilt subscale of the Guilt Inventory (Kugler & Jones, 1992), developed to address the psychometric limitations of the Italian version of the original Trait Guilt subscale, which has shown unsatisfactory factor validity and reliability (Melli, Primi, Bulli, Carraresi, & Stopani, in preparation). Response choices are scored from 1 ('strongly agree') to 5 ('strongly disagree') and total scores range from 11 to 55. The scale was found to have a one-factor structure, good internal consistency ( $\alpha = .84$ ), test-retest reliability ( $r = .84$ ) and construct validity (Melli et al., in preparation). In the present study internal consistency was also good ( $\alpha = .83$ ).

*Dimensional Obsessive-Compulsive Scale (DOCS)*. The DOCS is a twenty-item scale that assesses the main obsessive-compulsive symptom dimensions of OCD: contamination obsessions and washing and cleaning compulsions; obsessions about responsibility for causing harm and checking compulsions; obsessions about order and symmetry and ordering or arranging compulsions; repugnant obsessive 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 5 severity parameters in relation to the past month. The subscales were found to be highly valid and reliable (Abramowitz et al., 2010). The Italian version of the DOCS (Melli et al., 2014) replicates the four-factor structure of the original version and has shown good internal consistency ( $\alpha > .80$  for all subscales), adequate temporal stability (ICC  $> .75$  for all scales), and good construct validity. In the present study all the subscales showed excellent internal consistency ( $\alpha$  between .92 and .95).

*Beck Anxiety Inventory (BAI)*. This is a twenty-one-item self-report inventory that assesses the severity of state anxiety. Statement choices are scored from 0 ('not at all') to 3 ('severely') and total scores range from 0 to 63. The original version has shown good psychometric properties, and in a series of studies the Italian version of the BAI has shown a one-factor structure, good internal consistency ( $\alpha > .80$ ), adequate test-retest reliability ( $r > .62$ ), and good construct validity (Sica,

Coradeschi, Ghisi, & Sanavio, 2006; Sica & Ghisi, 2007). In the present study internal consistency was also good ( $\alpha = .84$ ).

*Beck Depression Inventory-II* (BDI-II). This twenty-one-item self-report inventory is used to assess depressive symptoms over the previous two weeks. Response choices are scored from 0 ('absent') to 3 ('severe') and total scores range from 0 to 63. The BDI-II has shown good psychometric properties, and the Italian version of the BDI-II (Ghisi, Flebus, Montano, Sanavio, & Sica, 2006; Sica & Ghisi, 2007) has been shown to have a one-factor structure, adequate internal consistency ( $\alpha$ s in the range .80-.87), test-retest reliability ( $r = .76$ ), and construct validity. In the present study, internal consistency was very good ( $\alpha = .89$ ).

#### ***Statistical analysis***

To test the hypotheses about the relationships between DP and TG, on the one side, and dimensions of OCD symptoms, on the other, the Pearson zero-order correlations between the DPQ, the TGSS, and DOCS subscales were examined. Following Cohen's (1988) guidelines, correlations larger than .50 were referred to as strong, correlations between .30 and .49 as moderate and correlations between .10 and .29 as weak. A series of hierarchical multiple regression analyses were then conducted to test the robustness of these associations and determine whether DP and TG contributed to the prediction of OCD symptoms above and beyond depression and general anxiety. Separate regressions were run using the four DOCS subscales as dependent variables. In the first step (Model 1) of each regression model BDI-II and BAI scores were entered as control variables. In the second step (Model 2) TGSS and DPQ were then entered simultaneously to examine whether TG and DP could independently account for a further proportion of variance of OCD symptoms.

### **Results**

#### ***Descriptive statistics***

Mean scores, standard deviations, ranges, and Cronbach's alphas for each measure are reported in Table 1. The sample mean scores on all measures fell within the normal range reported



in other Italian clinical samples (e.g., Melli et al., submitted; Melli et al., 2012; Sica & Ghisi, 2007).

Internal consistency estimates for all measures were good or better (Cronbach's alpha > .83).

[Table 1]

### ***Zero-order correlations***

Table 1 also shows the zero-order correlations between DPQ, TGSS and each of the DOCS subscales and the other study variables. There was a strong correlation between TGSS score and BDI-II score and a moderate correlation between TGSS score and BAI score, but TGSS was only weakly associated with measures of obsessive-compulsive symptoms (statistically significant for the DOCS-*Responsibility for harm and mistakes* and the DOCS-*Unacceptable thoughts* subscales). DPQ score was significantly and moderately correlated with the DOCS-*Contamination* and the DOCS-*Symmetry* subscales, and was not significantly associated with either BDI-II or BAI scores.

### ***Regression analysis***

The Variance Inflation Factor (VIF) was computed for each predictor and it always fell within the range (1.05 – 2.05) which is considered as evidence of a lack of substantial multicollinearity (Menard, 1995). Further examination of the data also indicated that the assumptions of linearity and homoscedasticity were met.

Results of the hierarchical multiple regression analyses predicting each DOCS subscale are presented in the next subsections. A summary of the results of these analyses is reported in Table 2.

[Table 2]

### ***Contamination***

In the first step of the hierarchical multiple regression analysis predicting DOCS-*Contamination* scores, BDI-II and BAI scores did not explain a significant proportion of variance ( $R^2 = .02$ ;  $p > .05$ ). In the second step, entering the TGSS and the DPQ measures significantly increased the variance explained ( $R^2$  change = .20;  $p < .001$ ). This indicates that the TGSS and DPQ scores accounted for an additional 20% of the variance in DOCS-*Contamination* scores when the variance explained by the BDI-II and BAI was controlled. The final model accounted for 22% of

the variance and was statistically significant ( $R^2 = .22$ ;  $p < .001$ ). In this model only DPQ score emerged as significant individual predictor ( $\beta = .41$ ;  $p < .001$ ).

#### *Responsibility for harm and mistakes*

In the first step of the regression analysis predicting DOCS-*Responsibility for harm and mistakes* scores, the BDI-II and BAI scores explained a significant proportion of variance ( $R^2 = .22$ ;  $p < .001$ ). In the second step, adding the TGSS and the DPQ scores did not significantly increase the variance accounted for ( $R^2$  change =  $.01$ ;  $p > .05$ ). This indicates that the TGSS and DPQ scores did not account for additional variance in DOCS-*Responsibility for harm and mistakes* scores when the variance explained by the BDI-II and BAI was controlled. The final model accounted for 23% of the variance and was statistically significant ( $R^2 = .23$ ;  $p < .001$ ). In this model only the BAI emerged as significant individual predictor ( $\beta = .41$ ;  $p < .01$ ).

#### *Unacceptable thoughts*

In the first step of the regression analysis predicting DOCS-*Unacceptable thoughts* scores, the BDI-II and BAI scores explained a significant proportion of variance ( $R^2 = .21$ ;  $p < .001$ ). In the second step, adding the TGSS and the DPQ scores did not significantly increase the proportion of variance accounted for ( $R^2$  change =  $.002$ ;  $p > .05$ ). This indicates that the TGSS and DPQ scores did not account for additional variance in DOCS-*Unacceptable thoughts* score when the variance explained by the BDI-II and BAI was controlled. The final model accounted for 21% of the variance and was statistically significant ( $R^2 = .21$ ;  $p < .001$ ). In this model only the BAI emerged as significant individual predictor ( $\beta = .28$ ;  $p < .05$ ).

#### *Symmetry*

In the first step of the regression analysis predicting DOCS-*Symmetry* scores, BDI-II and BAI scores explained a significant proportion of the variance ( $R^2 = .14$ ;  $p < .01$ ). In the second step, adding the TGSS and the DPQ scores significantly increased the proportion of variance accounted for ( $R^2$  change =  $.06$ ;  $p < .05$ ). This indicates that TGSS and DPQ scores accounted for an additional 6% of the variance in DOCS-*Symmetry* score when the variance explained by the BDI-II and BAI

was controlled. The final model accounted for 20% of the variance and was statistically significant ( $R^2 = .20$ ;  $p < .001$ ). In this model both BDI-II ( $\beta = .29$ ;  $p < .05$ ) and DPQ ( $\beta = .26$ ;  $p < .01$ ) scores emerged as significant individual predictors.

## **Discussion**

This study examined the relationship between TG, DP and OCD symptoms in a sample of OCD patients, controlling for depression and anxiety and using self-report measures of these constructs.

There were weak but significant correlations between TG and the *Responsibility for harm and mistakes* and *Unacceptable thoughts* OCD dimensions only. These results partially replicated previous findings (D'Olimpio et al., 2013; Steketee, White, & Quay, 1991) of significant large correlations between trait guilt measures and all the OCD symptoms investigated. However, the present study somewhat unexpectedly failed to identify significant associations between TG and contamination or symmetry symptoms. Moreover, when considering the results of regression analyses, somehow unexpectedly TG was not a significant predictor of any dimension of OCD symptomatology. This result is surprising given the findings of previous studies which have stressed the role of guilt in OCD (Rachman et al., 1995; Savoie, 1996; Shafran et al., 1996; Steketee et al., 1991). In particular, in a recent study of a large Italian community sample (Melli et al., in press) both TG and DP emerged as significant predictors of contamination-related OCD symptoms. The discrepancies with the current study might be due to the different samples (non-clinical vs. OCD) and the different measures used to assess DP (Disgust Scale-Revised vs. DPQ) and OCD (Vancouver Obsessional Compulsive Inventory vs. DOCS) symptoms. For instance, in this study the DOCS (Abramowitz et al., 2010) was used as a measure of OCD symptoms. This questionnaire has recently emerged as a more valid and reliable measure of OCD symptom dimensions, since it overcomes the limitations of other measures (e.g., Padua Inventory-Revised, Vancouver Obsessional Compulsive Inventory). The DOCS does not confound severity with the range of symptoms present, is not biased by the heterogeneity and idiosyncratic nature of the obsessions and

compulsions listed in the items, and assesses symptom severity independent of the number, range, or types of different obsessions and compulsions (see Abramowitz et al., 2010 for a more detailed discussion). Therefore, it might be possible that the discrepancy between the results of this study and those of previous studies is due to the different operationalization of OCD symptom dimensions. The lack of a strong correlation between TG and DP ( $r = .19$  vs  $r = .49$  as in D'Olimpio et al. 2013) can also be explained in terms of the different and/or revised measures of disgust propensity and trait guilt that were used in this study. However, this issue might be conclusively addressed only with replication studies.

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The lack of association of TG with OCD symptoms could also be explained by the relatively high homogeneity of the sample and the relatively low variance of the TGSS score: TGSS coefficient of variation (CV) was 22.51, while the lowest CV of the other variables was 42.06 (DPQ). Since the low variance of a variable is known to affect the significance of its correlation coefficient with other variables, this could account for the lack of significance of TG in this and other studies that recruited only OCD patients. Conversely, TG could be a significant predictor of OCD in studies that recruited also non-clinical participants, in which the variability of TG scores was presumably higher.

However, the present findings are still consistent with previous results. For instance, D'Olimpio and colleagues (2013) found that, when considering both DP and TG as possible predictors of OCD symptoms, guilt was no longer a significant predictor. These authors suggested that the strong correlation between feelings of guilt and disgust in OCD may apply to a specific kind of guilt, namely 'deontological guilt', which arises when the individual violates an inner moral rule (Mancini, 2008). Indeed, in non-clinical samples functional magnetic resonance imaging (fMRI) data have consistently shown that induction of deontological guilt is associated with activation in the insula, a brain area involved in the experience of disgust (Basile et al., 2011).

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Consistent with previous findings (David et al., 2009; Olatunji et al., 2005; Schienle et al., 2003), DP was significantly and moderately correlated with only the *Contamination* and *Symmetry*

dimensions of OCD. Moreover, DP was predictive of *Contamination* and *Symmetry* OCD symptoms, above and beyond depression and general anxiety, but it was not a predictor for the *Responsibility for harm and mistakes* and *Unacceptable thoughts* dimensions of OCD symptoms. This result provided further evidence that DP should be considered a significant construct in relation to OCD, and that its relevance is not limited to contamination-related symptoms (Berle et al., 2012; Mancini et al., 2001; Schienle et al., 2003; Thorpe et al., 2003). While there are strong theoretical grounds for predicting an association between DP and contamination obsessions, results showed that DP may also play an important role in other types of OCD symptom clusters such as symmetry-related symptoms. The symmetry subscale of DOCS is intended to measure the feeling that actions performed are incompletely achieved or do not produce the satisfaction that was sought, leading to a compensatory urge to reduce the “not-just-right” experience (NJRE). Previous studies have shown that some individuals perform compulsive behaviors in order to get rid of feelings of incompleteness and NJREs (Ecker & Gönner, 2008). These individuals do not report fear of harm as the main reason for their compulsive behavior, but rather discomfort resulting from not being able to carry out compulsions. Such patients may engage in cleaning, washing or symmetry compulsions when they feel disgusted not because they feel a need to avoid possible future harm, but rather because they cannot get rid of feelings of incompleteness if they do not perform their compulsive behaviors. The relationship between a feeling of incompleteness and the emotion of disgust has not been investigated in detail and clearly requires further research. From a clinical point of view, it may be important to show that there is potentially a group of OCD patients whose symptoms are driven by the need to reduce their feelings of disgust rather than their anxiety; it follows that treatment for contamination and symmetry obsessions focused solely on the reduction of anxiety at the expense of disgust may not lead to clinical gains. Disgust has been shown to respond to tailored exposure treatments (c.f. McKay, 2006) and the results of this study support the claim that this may be a necessary component of successful treatment for contamination-related OCD symptoms, as well as suggesting that it may also be useful in the treatment of symmetry-related OCD symptoms.

The present findings should be considered in light of some limitations of the study. First, a control group was not included, and without a non-clinical control or another psychiatric comparison group it is impossible to know whether the reported relationships are unique to OCD. Second, participants were self-selected: therefore, the sample may not have been representative of the relevant clinical population. Third, although multiple regression analysis allowed to speculate about the direction of the relationships between the variables the current study was cross-sectional and the temporal dynamics of the interactions cannot be defined. Alternative temporal orders have not been ruled out and it is also possible that the identified relationships are bi-directional in nature. Although DP and TG have been conceptualized as trait-like variables, it is also possible that the presence of OCD symptoms may lead to an increase in DP or TG, similar to the effect observed with other trait-like variables (e.g. anxiety sensitivity; Marshall, Miles, & Stewart, 2010). Longitudinal data are needed to investigate the nature of the relationships between these constructs. In particular, further studies should assess pre-post changes on these two variables in treated OCD patients. For example, they might use using multilevel mediation to examine within-individual and between-individual changes in OCD symptoms and whether these are mediated by changes in DP and/or TG as in Olatunji et al. (2011). Fourth, TG and DP are only two of many variables that are likely to contribute to OCD symptoms. Future research would benefit from the inclusion of measures of additional potential vulnerability factors for OCD, such as disgust sensitivity. This factor could not be considered here as there is no validated Italian measure of it. Fifth, all data were derived from self-report measures; relying exclusively on self-report data tends to inflate associations among variables due to shared method variance. Finally, the use of the TGSS to assess TG had some drawbacks. The TGSS is a shortened and revised version of the Trait Guilt subscale of the Guilt Inventory comprising items that assess TG as a general propensity to feel guilty about one's own past behaviors (e.g. "I have made a lot of mistakes in my life", "There is something in my past that I deeply regret"); it is therefore not wholly appropriate for the assessment of guilt in a clinical OCD sample, as OCD patients' feelings of guilt typically relate to violations of a moral

rule. In spite of these limitations the present study identified factors that would benefit from further evaluation and may have important implications for the prevention and treatment of OCD symptoms.

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Table 1

*Descriptive statistics and correlations among the study measures.*

Measure	M	SD	Range	$\alpha$	1	2	3	4	5	6	7
1. TGSS	34.16	7.69	13-51	.83							
2. DPQ	64.79	27.25	6-129	.95	.19						
3. DOCS-Contamination	7.33	6.05	0-20	.94	.19	.42**					
4. DOCS-Responsibility	9.06	6.49	0-19	.95	.27**	.07	.07				
5. DOCS-Unacceptable thoughts	10.36	6.35	0-20	.95	.25*	.12	-.07	.24*			
6. DOCS-Symmetry	5.97	5.39	0-20	.92	.19	.32**	.07	.34**	.34**		
7. BDI-II	20.95	11.24	0-45	.89	.50**	.19	-.01	.36**	.41**	.37**	
8. BAI	19.07	9.71	0-42	.85	.42**	.17	.09	.47**	.43**	.30**	.68**

Note: M=Mean score; SD = Standard deviation;  $\alpha$ =Cronbach's alpha; TGSS = Trait Guilt Short Scale; DPQ = Disgust Propensity Questionnaire; DOCS = Dimensional Obsessive-Compulsive Scale; BDI-II = Beck Depression Inventory-II; BAI = Beck Anxiety Inventory.

\* $p < .05$ , \*\* $p < .01$

Table 2

*Hierarchical multiple regression analyses predicting obsessive compulsive disorder symptomatology from depression, anxiety, trait guilt and disgust (n = 98)*

Predictor	Model 1	Model 2
Criterion: DOCS Contamination		
$R^2$	.02	.22***
BDI-II	-.13(.93)	-.26(1.96)
BAI	.17(1.25)	.11(.89)
TGSS		.19(1.77)
DPQ		.41(4.36)***
Criterion: DOCS Responsibility		
$R^2$	.22***	.23***
BDI-II	.07(.58)	.07(.30)
BAI	.42(3.42)**	.41(3.29)**
TGSS		.09(.80)
DPQ		-.03(.29)
Criterion: DOCS Unacceptable thoughts		
$R^2$	.21***	.21***
BDI-II	.21(1.70)	.19(1.46)
BAI	.29(2.31)*	.28(2.21)*
TGSS		.03(.27)
DPQ		.03(.37)
Criterion: DOCS Symmetry		
$R^2$	.14**	.20***
BDI-II	.31(2.38)*	.29(2.17)*
BAI	.08(.66)	.07(.54)
TGSS		-.04(.35)
DPQ		.26(2.71)**

Note: Standard errors in parentheses; DOCS = Dimensional Obsessive-Compulsive Scale; BDI-II = Beck Depression Inventory-II; BAI = Beck Anxiety Inventory; TGSS = Trait Guilt Short Scale; DPQ = Disgust Propensity Questionnaire;

\* =  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$