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Autogenous and reactive obsessions:

Further evidence for a two-factor model of obsessions.

Richard Moulding¹, Michael Kyrios², Guy Doron¹, and Maja Nedeljkovic²

¹University of Melbourne, Melbourne, Australia
²Swinburne University of Technology, Melbourne, Australia

Author Note

Richard Moulding and Guy Doron, Department of Psychology, University of Melbourne; Michael Kyrios and Maja Nedeljkovic, Faculty of Life and Social Sciences, Swinburne University of Technology.

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Correspondence concerning this article should be addressed to Prof. Michael Kyrios, Department of Psychology, Swinburne University of Technology, PO Box 218, Hawthorn, VIC 3122, Australia. Email: mkyrios@swin.edu.au, Fax: +61 3 9819 0574.
Abstract

Obsessive-compulsive disorder is a highly disabling anxiety disorder, characterized by the occurrence of intrusive, unwanted thoughts (obsessions), which lead to the performance of repetitive compulsions and/or rituals in order to reduce distress. Recently, it has been proposed that obsessions may be divided into two categories, termed autogenous and reactive obsessions (Lee & Kwon, 2003). In this study, we aimed to further validate this subtyping of obsessions, and to investigate the cognitive and emotional correlates of the subtypes. Evidence was found for the division, using a confirmatory factor analysis in an analogue sample (N=372). It was found that the frequency of reactive obsessions related more strongly to distress caused by overt OC symptoms (e.g., washing, checking), whereas the frequency of autogenous obsessions related to distress from impulses of harm. Compared to autogenous obsessions, the frequency of reactive obsessions correlated more strongly with all OC-related beliefs. Few differences were found between autogenous and reactive obsessions with respect to depression, anxiety, and view about self (self-ambivalence, self-esteem). It is suggested that existing OC-belief measures are more relevant to reactive obsessions. Implications for theory and treatment are discussed.

Key Words: Obsessions; Cognitive behavior therapy; Obsessive compulsive disorder; factor structure; irrational beliefs
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Further evidence for a two-factor model of obsessions.

Obsessive-compulsive disorder (OCD) is a highly disabling anxiety disorder characterized by persistent and recurrent obsessive thoughts, images, or impulses, and by compulsive and ritualized behaviors (American Psychiatric Association [APA], 2000). Common obsessive themes include fears of contamination, pathological doubt about harm, the need for symmetry, and fears of performing aggressive or immoral actions (Attiullah, Eisen, & Rasmussen, 2000). Compulsive behaviors and/or rituals are performed in response to obsessive thoughts, in order to reduce distress or prevent some feared outcome from occurring (APA, 2000).

The identification of reliable subtypes of OCD may be of critical importance to refining theory and treatment, and has been the focus of recent developments in cognitive theory and research (e.g., Salkovskis, Forrester, & Richards, 1998). Rachman (1997, 1998, 2002, 2004) developed separate cognitive-models for particular obsessive compulsive (OC) symptoms. In the first of these models, Rachman (1997, 1998) proposed that obsessions without compulsions are caused by the catastrophic misinterpretations of the individual’s mental phenomena (thoughts, images or impulses). That is, the individual’s belief that their thoughts reveal unwanted, hidden aspects of themselves leads to attempts to neutralise the thought through thought-suppression or covert compulsions. The content of such obsessions (aggression, sex and blasphemy) serve as an initial trigger for such dysfunctional appraisals (cf. Clark, 2004; Doron & Kyrios, 2005; Wells, 1997). In contrast, individuals with checking symptoms and contamination/washing behaviours are particularly likely to overestimate threat and their
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responsibility for preventing harm, as such individuals perceive there to be an external
danger within the environment or the future (Rachman, 2002; 2004). This leads to
enacting of overt behavioral responses to mollify the danger within the environment (cf.
Salkovskis, 1985).

Recently, Lee and Kwon (2003) proposed a model of obsessive thoughts that is
pertinent to theories of OCD such as proposed by Rachman (1997, 2002, 2004). They
suggest that obsessive thoughts can be classified into two subtypes (autogenous and
reactive obsessions) based on their content and form. Autogenous obsessions include
sexual, aggressive, and immoral thoughts or impulses, which intrude rapidly into
consciousness and are not associated with identifiable triggers (i.e., they are “self-
generated”). They are perceived as ego-dystonic and irrational, and individuals attempt to
expel or suppress them, often through avoidant control strategies, such as by using
magical or superstitious compulsive behaviors, or through thought-control strategies. In
contrast, reactive obsessions include thoughts regarding contamination, mistakes,
accidents, symmetry and loss, and are triggered by identifiable external stimuli (i.e., they
are reactions). Such thoughts are perceived as relatively realistic and rational, and lead to
coping behaviors such as attempting to avoid or circumvent the possible negative
consequences signified by the thought. The differences between the two subtypes has
been investigated in an number of studies (Lee & Kwon, 2003; Lee, Kwon, Kwon, &
Telch, 2005; Lee, Lee, Kim, Kwon, & Telch, 2005; Lee & Telch, 2005; Lee, Zoung-Soul,
& Kwon, 2005). In these studies, Lee and colleagues found support for the division
between autogenous and reactive obsessions, in terms of their content, appraisal and
control strategies. This article aims to further examine the evidence for the model of
obsessions, while extending examination of the correlates of the different obsessive subtypes.

Evidence for the proposed division of obsessions is based largely upon Lee and Kwon’s (2003) analysis of responses to the Revised Obsessive Intrusions Inventory (ROII, Purdon & Clark, 1993, 1994); an inventory where respondents mark the frequency with which they experience common intrusive thoughts. Lee and Kwon found a two-factor structure corresponding to autogenous and reactive obsessions using an exploratory factor analysis (EFA) in a moderately sized student sample (N=185), which they subsequently corroborated using a confirmatory factor analysis (CFA) in a similar sized sample. Two other exploratory factor analyses of the ROII have been performed, with Purdon and Clark (1993) finding a similar two factor structure in women (sex/aggression and dirt/contamination), while only a one-factor structure for males (primarily dealing with sex/aggression). The lack of a dirt/contamination factor for males is likely due to an exclusion of many of these items for males, due to low endorsement by respondents (see Belloch, Morillo, Lucero, Cabedo, & Carrio, 2004). In a Spanish translation of the ROII, Belloch et al. (2004) found a similar two-factor structure to Lee and Kwon, with the factors indicating (1) aggression, sexually and socially inappropriate behaviors; and (2) doubt, checking and cleanliness.

There are several methodological difficulties that threaten the distinction between autogenous and reactive obsessions. Of the previous studies, only Lee and Kwon (2003) performed a confirmatory factor analysis, and this was in a moderately sized sample. CFA affords a more comprehensive evaluation of latent structure than exploratory factor analysis, and allows the use of hypothesis testing for the goodness-of-fit of models.
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However, an assumption of these factor analytic techniques is that items are independent, whereas the ROII has an inherent structure, consisting of sentence stems (e.g. “While driving, I have had unacceptable thoughts of:”) followed by a series of items related to that stem. It would be expected that items within each sentence grouping would more highly correlate due to this method. If such items are placed across statistical parcels this would increase the likelihood of a common factor due to similarity of systematic error variance rather than the relationships due to the latent variable of interest (Hall, Snell & Foust, 1999; Little, Cunningham, Shahar & Widaman, 2002). These difficulties suggest the need for further examination of the division between the obsessions, using larger sample sizes and better accounting for the limitations of the ROII’s structure. The first aim of the study was to replicate the division of obsessions found by Lee and Kwon (2003) accounting for these suggestions.

The second aim of this study was to further examine how autogenous and reactive obsessions relate to symptom dimensions and beliefs associated with OCD. Lee and Telch (2005) found that autogenous obsessions link with covert OC symptoms (i.e., obsessional subscale of the Obsessive Compulsive Inventory [OCI]), whereas reactive obsessions link with behavioral symptoms (i.e., checking, ordering and washing subscales). In contrast, Lee, Lee and colleagues (2005) found that the overall level of OC-symptoms on the OCI was more highly related to the frequency of reactive than autogenous obsessions, which is likely to be due to the higher levels of compulsive items in the overall OCI scale. To extend this analysis, we examined the relationship between the obsessions and perhaps the most commonly-used measure of distress caused by OC symptoms, the Padua Inventory-Revised (Burns, Keortge, Formea, & Sternberger, 1996).
This analysis would aid research through contextualizing the division of obsessions within existing dimensional models of OC-symptoms. It was predicted that the frequency of autogenous obsessions would associate more strongly than the frequency of reactive obsessions with distress related to cognitive symptoms (obsessional thoughts of harm and obsessional impulses of harm). The frequency of reactive obsessions was predicted to more strongly associate with distress related to overt behavioral dimensions (checking compulsions, contamination obsessions/cleaning compulsions).

Lee and Kwon (2003) also found different levels of endorsement of OCD-related beliefs related to autogenous and reactive obsessions, regardless of whether such obsessions are typically experienced by the individual. Thus, they found that in comparison to reactive obsessions, individuals rated autogenous obsessions more highly on items assessing the need to control the thought and the importance of the thought, and rated autogenous obsessions as lower on responsibility. This approach to analyzing obsessions is in contrast to attempts by many researchers in the field, including the international Obsessive Compulsive Cognitions Working Group (OCCWG, 2005), to analyze pan-situational beliefs, which are independent of the content of the intrusion. Lee and Kwon’s research suggests that the content of intrusions may evoke specific beliefs that are characteristic of OCD. This would expand our conceptualization of the development of the disorder; for instance, the content of some intrusions could trigger beliefs about responsibility (as implied by Lee and Kwon), while inflated responsibility beliefs may contribute to subsequent appraisals (as indicated by the OCCWG), in a negative vicious cycle. It is therefore of interest to investigate whether the typical obsessions experienced by participants relate to more trait-like measures of OCD-relevant
beliefs, such as the OCCWG’s Obsessive Beliefs Questionnaire (OBQ). In the only study to date, Lee, Kwon, et al. (2005) classified patients with OCD as either having a reactive thought or an autogenous thought as their most distressing. They found that the reactive group reported higher beliefs of perfectionism, intolerance of uncertainty, and responsibility. However, contrary to predictions, groups did not differ on ratings of threat, the need to control thoughts, or the overimportance of thoughts.

Based on Lee and Kwon’s (2003) model, the frequency of reactive obsessions was expected to relate more strongly than autogenous obsessions to beliefs of responsibility/threat and perfectionism/intolerance of uncertainty. In contrast, consistent with Rachman’s model (1997), autogenous obsessions were hypothesized to relate more strongly to beliefs about the importance of and need to control thoughts.

The final aim of this study was to examine how the frequencies of different obsessions relate to beliefs about the self and depression. Theoretical models of OC-phenomena suggest that one of the aspects triggering further processing of intrusions is the contrast between thoughts and the individual’s self-view (Purdon & Clark, 1999; Rachman, 1997; Wells, 1997; for a review see Doron and Kyrios, 2005), particularly for those obsessions without compulsions (Rachman, 1997, 1998). Lee and Kwon (2003) found that autogenous obsessions are more ego-dystonic than reactive obsessions. Therefore, we hypothesized that the autogenous intrusions would have a greater negative impact on the individual’s self-esteem. The impact of autogenous obsessions on the individual’s self-concept is also likely to lead to greater levels of uncertainty about the individual’s self-concept (Purdon & Clark, 1999). Therefore, it was hypothesized that autogenous obsessions would also be more highly related to self-ambivalence (a concept
referring to the extent to which an individual’s self-concept is dichotomized and changeable; Bhar & Kyrios, 2000; Bhar, 2004; Guidano & Liotti, 1983).

The relationship between OCD and depression is well established, with individuals with OCD being at higher risk for a significant depressed mood (Attiullah et al., 2000). A number of studies have suggested that depression is related more strongly to obsessional than compulsive symptoms (Arts, Hoogduin, Schaap, & de Haan, 1993; Bhar & Kyrios, 2005; Ricciardi & McNally, 1995). Compulsive acts may serve to give the individual a sense of control over otherwise uncontrollable obsessive thoughts, serving to protect the individual from feelings of helplessness (Bhar & Kyrios, 2005; Moulding & Kyrios, 2006). As autogenous obsessions are thought to be less likely to lead to compulsive acts (Lee & Kwon, 2003), and may also impact more highly on the individual due to their higher level of ego-dystonicity, it was hypothesized that autogenous obsessions would relate more strongly than reactive obsessions to levels of depression.

In sum, this paper aimed to investigate: (1) whether the division of obsessions into autogenous and reactive can be replicated using a confirmatory factor analysis; and if so, (2) the relationships between the two types of obsessions and OCD-related cognitions and distress related to different dimensions of OCD-symptoms, and (3) the relationship between obsessional frequency and self-variables (self-esteem, self-ambivalence).

Method

Participants

To investigate the structure of the obsessions, a combined sample of non-clinical student participants (N=278; 79.5% female; $M$ age=20.73, $SD$=5.54) and a non-clinical
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A community group (N=94; 61.7% female; M age=30.65 years, SD=9.48; M education=17.6 years, SD=9.47) completed the measure of obsessional frequency. For the community sample, most spoke English at home (89.4%), with the majority born in Australia (68%), followed by Europe (11.7%), Asia (10.6%), and other (16%). Participants were excluded if they reported that they currently had a psychiatric disorder or alcohol abuse, or were receiving treatment for a psychiatric disorder, on a screening questionnaire.

While the overall sample completed only the measure of obsessional frequency, two sub-samples completed different batteries of additional measures to investigate the relationship of obsessions to obsessive beliefs, mood, self-beliefs, and distress related to OCD-symptoms. Sample 1 consisted of the community participants (N=94) and 55 student participants, and they completed the measures of obsessional-beliefs (OBQ), mood (BDI-II and BAI), and distress due to OC symptoms (PI-R). Sample 2 consisted of 143 student participants who completed measures of self-view (RSE, SAM), depression (BDI-I) and distress due to OC symptoms (PI-R).

The use of non-clinical populations within research on OCD is a common practice, and is consistent with previous investigations into the structure of obsessions (e.g., Belloch et al., 2004; Lee & Kwon, 2003; Lee, Lee et al., 2005). Such studies follow findings that non-clinical populations experience similar intrusive thoughts to clinical populations, albeit with lesser frequency and resulting distress (Rachman & de Silva, 1978; Purdon & Clark, 1993). As such, cognitive models of OCD follow a dimensional model of beliefs and symptomatology (OCCWG, 2005).
Measures

The Revised Obsessional Intrusions Inventory (ROII) Part I (Purdon & Clark, 1993, 1994). The ROII is a 52-item self-report questionnaire measuring the frequency of intrusive-thoughts on a 7 point scale. Purdon and Clark found the ROII to have high concurrent and discriminant validity with anxiety and depression, high internal consistency, and that 99% of a student sample endorsed at least one of the 52 thoughts listed.

The Padua Inventory – Revised (PI-R, Burns et al., 1996). The PI-R is a 39-item inventory measuring the degree of disturbance/distress caused by a range of intrusive thoughts and compulsive behaviors. The measure has adequate internal consistency and test–retest reliability (Burns et al., 1996). Four subscales from the PI-R were examined: (a) thoughts of harm to self or others; (b) impulses of harm to self or others; (c) contamination and washing; (d) checking. The three-item dressing/grooming rituals subscale was not examined due to poor psychometric properties.

The revised Obsessional Beliefs Questionnaire (OBQ, OCCWG, 2005). The OBQ is a 44-item self-report measure of pan-situational cognitions associated with OCD developed by the international Obsessive Compulsive Cognitions Working Group. The revised instrument loads on three domains: (1) inflated responsibility for harm/overestimation of threat; (2) perfectionism/intolerance of ambiguity; and (3) the importance of/need to control thoughts. This scale demonstrated reasonable internal consistency, good convergent validity, modest divergent validity, and moderate-to-high test-retest correlations.
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The Beck Depression Inventory–I and II (BDI, Beck, Rush, Shaw & Emery, 1979; Beck, Steer, & Brown, 1996). The BDI-I and BDI-II both comprise of 21 self-report items, each assessing a different component of depression. Extensive evidence suggests that both versions of the BDI are reliable and well-validated measures of depressive and dysphoric symptoms (Beck et al., 1996). As the two forms are not identical, findings will be presented separately in the result section.


Rosenberg Self-Esteem Scale (RSE, Rosenberg, 1965). The RSE is a 10-item self-report measure of global self-esteem, with widely established validity and reliability.

Self Ambivalence Measure (SAM, Bhar, 2004; Bhar & Kyrios, 2000). The SAM is a 19-item self-report measure of ambivalent self-worth. It was constructed to reflect three processes: uncertainty, dichotomy and preoccupation involved in the assessment of personal self-esteem pertaining to global, social or moral aspects of self-worth. Recent studies have indicated that the scale has acceptable criterion validity and convergent validity (Bhar, 2004).

Procedure

Students were recruited via the research participation program at the University of Melbourne and received course credit for their participation. Community participants were recruited via flyers, newspaper advertisements, and through people in the
researchers’ social networks. Community participants did not receive reimbursement for participation, and returned the questionnaires by reply-paid mail.

Results

Analyses were performed through SPSS 14.0, and AMOS 6.0. Initial screening of the ROII revealed low levels of missing data, which were replaced using the SPSS expectation maximization algorithm. Screening indicated that 8 ROII items were rated with responses of 0 (“I have never had this thought”) by 80% or more of the sample. Following Belloch and colleagues (2004), these items were excluded from analysis. After excluding these items, there were ten remaining item-subgroups (from the original 13) with two or more items. The means of these 10 domains were used to form the 10 parcels of items, thus placing similar items within each parcel (akin to the isolated uniqueness parceling strategy; Hall et al., 1999; Holt, 2004). While somewhat controversial, the use of item parcels in structural equation modeling procedures has a number of advantages, including improving reliability, improving variable distributions, and necessitating the estimation of less model parameters, thus improving model fit (Little et al., 2002; Holt, 2004). The parcels all had acceptable internal reliability (see Table 1), consistent with requirements of unidimensionality (Little et al., 2002), with thoughts of doubting/mistakes being the most highly endorsed.

A confirmatory factor analysis using Maximum Likelihood extraction was performed on two models, the two-factor structure proposed by Lee and Kwon (2003),
and a contrasting one-factor model. As the items and the stem-sentences for the two item-parcels relating to sexual obsessions was highly similar, the residual variances of the two parcels were specified \textit{a priori} as covarying. To reduce multivariate kurtosis, inverse transformations of parcels were undertaken prior to analysis. Following the recommendations of Hu and Bentler (1999), a 2-index presentation strategy will be utilized, with the fit indices of Standardized Root-Mean Squared Residuals (SRMR) supplemented by the Root Mean Square Error of Approximation (RMSEA). Hu and Bentler suggest a combinational rule with cut-offs of SRMR<.08, and RMSEA<.06. Results indicated that the one factor model had poor fit (SRMR=.0622, RMSEA=.082), whereas the two-factor model was within suggested cut-offs (SRMR=.0425, RMSEA=.050). The superiority of the two-factor model was further indicated by examination of the residual matrix, with the three reactive items having a significant standardized residual for their covariation in the one-factor model. In contrast, no items had a significant standardized residual covariation in the two-factor model, suggesting the model adequately reproduced the data. Parameter estimates are presented in Table 1. In the two-factor model, the reactive and autogenous latent factors were moderately interrelated ($\beta=.533, p<.001$).1

Following selection of the two-factor model, the model was tested for differences in fit between genders, and for the community and student groups. For multiple group analyses, this involves comparing models where both groups are constrained to have the

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1 Analyses were also run using untransformed data. Model fit was somewhat worse (one factor RMSEA=.099, SRMR=.0720; two factor RMSEA=.067, SRMR=.0519), although standardized parameter estimates and standardized residual covariances were similar for the transformed and untransformed models. However, multivariate kurtosis for the untransformed model was unacceptable (85.09, $z=52.971$) and thus transformed results are presented for the factor analysis.
same model parameters, to those where model parameters are free to vary between groups. If the chi-square statistic is significant it indicates the constrained model is significantly worse than the non-constrained, and thus the model varies across groups. Examining overall frequency of obsessions by gender indicated that males had lower levels of reactive obsessions, 3.29, 370 < .001, but not autogenous obsessions, 0.789, 370 > .05. Constraining the factor loadings, variances and covariances to be equal for males and females did not significantly worsen the model, 12(22) = 23.283, 370 > .05, suggesting there are no differences in factor structure between the genders. Similarly, compared to the community group the student group had higher overall frequencies of reactive obsessions, 4.05, 370 < .001, and autogenous obsessions, 2.76, 370 < .01. However, no differences were found in model-fit for the community and student groups when factor loadings, variances and covariances were constrained across samples, 12(22) = 16.182, 370 > .05, suggesting the model structure was constant across groups.

In sum, while differences in fit between the one and two-factor models was not as large as that reported by Lee and Kwon (2003), the CFA did support the two factor structure of autogenous and reactive obsessions. Further, while there were differences in overall frequencies of obsessions in community and student groups, and across the genders, the two-factor model fit equally well across genders and groups.

Following this, we examined the relationship of the obsessions to OC-symptoms, beliefs and affect. The frequency items from the ROII were summed to form reactive and autogenous frequency scales. The autogenous and reactive subscales showed adequate
reliabilities (Cronbach’s $\alpha=.93$ and .82 respectively). To improve normality, square root transformations of the ROII subscales, depression and anxiety, and the PI-R scales were undertaken. The two frequency scales had a moderate positive correlation ($r=.374$, $p<.001$). Zero-order correlations, and partial correlations controlling for depression, between the ROII scales and other measures are presented in Table 2 for sub-samples 1 and 2. Internal consistency was also examined for the scales in each sample, and were generally acceptable, although obsessions of harm in sample one and self-esteem in sample two were below an alpha of .70 (see Table 2).

Examination of correlations across the two samples indicates a consistent pattern of relationships between obsessional frequency scales and distress associated with OC symptoms. Of the two subscales assessing distress due to obsessions on the PI-R, the obsessional thoughts of harm scale correlated most highly with the frequency of reactive obsessions in both samples, while the obsessional impulses correlated only with the frequency of autogenous obsessions. In both samples, the frequency of reactive obsessions was more highly correlated with the scales assessing distress due to compulsions (checking, contamination) than was the frequency of autogenous obsessions. These differences in correlations with OCD symptom dimensions were significant using Meng, Rosenthal and Rubin’s (1992) test for non-independent correlation coefficients (for sample one, $3.42<z<3.88$; sample two, $2.01<z<5.03$).

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2 The reactive scale consisted of items 22 to 24, 45 to 47, and 50 to 52. The autogenous scale consisted of items 2 to 4, 14 to 19, 25 to 33, and 40 to 44. Results did not differ when using the grouping suggested by Lee and Kwon (2003), and also did not differ when taking the mean of item subgroups prior to summation.  
3 Additional partial correlation analyses were run for sample 1 controlling for anxiety in addition to depression, but the results did not change appreciably. Details available from the contact author.
While the PI-R measures distress related to OCD symptoms and the ROII measures the frequency of obsessions, some items from the ROII and PI-R have similar wording, particularly within the PI-R impulses and ROII autogenous subscales. Thus, subscale correlations may be inflated due to method variance or item overlap. To examine this possibility, the correlational analyses were rerun with the most similar items removed from the autogenous scale of the ROII. The reduced scale was found to correlate highly with the original scale ($r=.970$ and $r=.975$ in samples one and two respectively), and results from this analysis did not differ appreciably from the previous analyses. In particular, the relationship between PI-R impulses of harm and ROII autogenous obsessions fell by a small amount (difference of $r=.05$ in both samples)\(^4\), but remained significant. Thus, the pattern of relationships between frequency of obsessions and distress due to OCD symptoms are unlikely to simply be a result of item overlap.

In sample 1, the relationships of obsessions to mood and beliefs identified as OCD-relevant were examined. Both obsessional scales had a small-to-moderate positive relationship to depression, whereas neither measure correlated with anxiety. The differences in correlations of mood with autogenous and reactive frequency were not significant ($z<.18$). The frequency of reactive obsessions was significantly more highly related to all OBQ beliefs ($1.99<z<2.73$). Indeed, after controlling for depression, the frequency of autogenous obsessions was not related to any OCD-relevant belief domain.

In sample 2, the relationship of obsessional frequency to self-beliefs and depression was examined. Again, both scales of obsessions correlated positively with depression, with no significant difference between the correlations ($z=.38$). There were no

\(^4\) Specifically, items 2 to 5, 32, 33, were removed from the autogenous scale; leaving items 14 to 19, 25 to 31, 35 to 38, 40 to 44. Full details of supplemental analyses are available from the contact author.
significant differences in the relation of autogenous and reactive frequency with self-esteem ($z=0.12$) or self-ambivalence ($z=0.54$). That is, neither obsessional scale was related to self-esteem, while both scales correlated similarly with self-ambivalence, but only prior to controlling for depression.

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Insert Table 2 about here
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Discussion

In this study, we aimed to provide more evidence for the two-category division of obsessions, and to extend previous studies by relating the division to dimensions of OC-symptoms and beliefs, mood-state, and views of self. Consistent with hypotheses, it was found that the two-factor structure provided a reasonable approximation to the data in the confirmatory factor analysis. This factor structure did not vary across sample groups or gender. Examination of the relationship of symptom dimensions to obsessional frequency was generally as predicted, with the frequency of autogenous obsessions relating more strongly than reactive obsessions to distress caused by impulses of harm whereas reactive obsessions related to checking and contamination/washing. Contrary to predictions, reactive-obsession frequency related more strongly than autogenous-obsession frequency to all general OC-relevant beliefs. Also, no difference was found in the relationship between the frequency of the two types of obsessions and mood or self-view.

The relationship of distress caused by particular OC symptom dimensions and obsessional frequency is generally consistent with past research. In particular, distress due to overt symptoms (checking and cleaning) related more strongly to reactive
obsession frequency, whereas covert symptoms of impulses of harm related more strongly to autogenous obsession frequency. While covert symptoms of distress due to obsessional thoughts of harm related more strongly to the frequency of reactive obsessions, this is likely to be due to the content of the subscale. The scale concerns thoughts that harm may occur to others, rather than ego-dystonic thoughts that the individual may themselves commit harm, as in the case of the impulses of harm subscale. Indeed, obsessional thoughts of harm have often been linked to checking (McKay et al., 2004).

This grouping of autogenous obsessions is consistent with analyses of OCD where religious, sexual and aggressive obsessions load upon a single factor (e.g., Abramowitz, Franklin, Schwartz, & Furr, 2003; Baer, 1994; cf. Leckman et al., 1997; for a review, see McKay et al., 2004). Abramowitz et al. (2003) termed this cluster “unacceptable thoughts”, noting that patients generally used mental or checking rituals to neutralize these obsessions. Such patients are noted throughout the clinical literature, and are often termed obsessionals due to the absence of observable compulsive acts to neutralize the obsessional thoughts (e.g., Rachman, 1971). The content of autogenous obsessions is also consistent with Rachman’s (1997, 1998) theory of obsessions. In contrast, reactive obsessions are consistent with previously identified symptoms subtypes of OCD, comprising washing/cleaning obsessions and checking obsessions (Haslam, Williams, Kyrios, McKay, Taylor, 2006; McKay et al., 2004). Thus, the division of obsessions is robust, and may underlie some of the previously noted divisions of symptoms within the disorder.
In contrast to the hypotheses, it was found that the frequency of reactive obsessions was more strongly related to all dimensions of OC-relevant beliefs than was the frequency of autogenous obsessions; indeed, autogenous obsession frequency did not relate to any OCD-relevant belief domain. In particular, the lack of statistically significant relationship between autogenous thought frequency and importance of thoughts was unexpected, although Lee, Kwon and colleagues (2005) also failed to find a difference between groups of autogenous and reactive OCD patients on beliefs about the importance of thoughts or the need to control thoughts. They suggest that all OCD patients are likely to experience a need to control their thoughts, regardless of the content of their intrusions. However, this study suggests that beliefs measured by the OBQ may not be as relevant to autogenous obsessions compared to reactive obsessions. This is consistent with recent research suggesting that some groups of patients do not hold high levels of beliefs measured by the OBQ (Calamari et al., 2006; Taylor et al., 2006). Future investigations should consider the relevance of other beliefs to autogenous obsessions, particularly beliefs identified as OCD relevant that are not measured adequately by the OBQ, such as Thought-Action Fusion (Rachman, 1993), not-just right experiences (Coles, Heimberg, Frost, & Steketee, 2005), or more general assumptions about justice and control in the world (Doron & Kyrios, 2005; Moulding & Kyrios, 2006).

Future research could also consider using experimental designs to examine the causal relationship between obsessions and OC-related beliefs; that is, whether the content of obsessions lead to particular appraisals and OC-related beliefs (as implied by Lee & Kwon, 2003), or does the individual’s level of the different OC-beliefs increase the likelihood that particular intrusive thoughts will spiral into problematic obsessions.
Such an analysis could help elucidate the temporal pattern of the cognitive processes within OCD, leading to more detailed and finely-grained models of the disorder.

Against predictions, it was found that mood state related equally to the frequency of reactive and autogenous obsessions in both samples studied. This is contrary to past suggestions that purely obsessional symptoms relate more strongly to depression than compulsive symptoms (Arts et al., 1993; Bhar & Kyrios, 2005; Ricciardi & McNally, 1995). However, two previous studies have failed to find reliable differences of mood between the obsessional subtypes (Lee & Telch, 2005; Lee et al., 2005). Thus, the different types of obsessions seem to have an equal impact with depressed mood; alternatively, depressed mood may be a vulnerability for experiencing greater levels of all types of obsessions (see Rachman, 1998).

Self-esteem and self-ambivalence also did not differentially relate to obsessional frequency. The lack of differences on measures of self suggests that the occurrence of reactive and autogenous obsessions may have similar general effects on the individual’s general view of self. However, recent theory (Doron & Kyrios, 2005) and research (Doron, Kyrios & Moulding, in press) has found that the individual’s view of specific domains of self (e.g., morality, job competence) differentially relate to OC-symptom dimensions. Future research may benefit from examining how the relationship between the individuals’ perceptions of particular domains of self relates to the frequency of autogenous and reactive obsessions. Low perceptions of competency in valued domains (“sensitive self domains”) such as morality may be more closely linked to autogenous obsessions, whereas sensitivity in other domains of self (e.g., job competence) may link more closely with reactive obsessions.
This analysis of obsessional content has implications for treatment. As noted by Lee and Kwon (2003), autogenous obsessions may be less amenable to treatment through exposure-based strategies, as they are accompanied by fewer overt behaviors. However, Purdon (2004) details a number of strategies that may be useful for repugnant obsessions, such as the client detailing the feared scene onto audiotape, before repeated exposure to the recording; intentionally triggering and riding out urges (e.g. swerving into traffic); as well as cognitive-restructuring techniques (for further treatment suggestions, see Clark, 2004). Traditional CBT for OCD, along with techniques that are useful for worry/generalized anxiety disorder, may be useful for treating individuals with predominantly reactive obsessions (Clark, 2004; Wells, 1997). However, the findings of this study await replication. While non-clinical individuals experience intrusions and OC-type symptoms, they differ from individuals with OCD in some ways (e.g. severity, related distress), necessitating further use of clinical samples in research. For example, it could be that beliefs regarding the importance of thoughts become more important to autogenous obsessions when the frequency of such obsessions is at clinical levels. Furthermore, the cognitive correlates of the obsessional beliefs should be investigated across more diverse samples.

In conclusion, this study found further evidence for a division between reactive and autogenous obsessions in a non-clinical sample. Our findings suggest that reactive obsessions were linked with thoughts of harm and checking behaviors; contamination obsessions and washing behaviors; perfectionism/intolerance of uncertainty, inflated responsibility/overestimation of threat, and the need to control/importance of thoughts. In contrast, autogenous obsessions were linked with impulses of harm. However,
autogenous obsessions did not relate to the OC beliefs domains measured by the
OCCWG. Our results also suggest that general self-esteem and mood variables impact on
the distress caused by both type of obsession to an equal degree.
References


Table 1. Mean score on items, SD, Number of Items, and Cronbach’s α for parcels of ROII items, with factor loadings for one and two-factor model (N=372).

<table>
<thead>
<tr>
<th>Item Grouping</th>
<th>M</th>
<th>SD</th>
<th>items</th>
<th>α</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>Factor</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. While driving</td>
<td>.75</td>
<td>.86</td>
<td>2-5</td>
<td>.81</td>
<td>.135</td>
<td>.014</td>
<td>.506</td>
<td>A</td>
<td>.136</td>
<td>.014</td>
<td>.507</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Hurting Others</td>
<td>.51</td>
<td>.78</td>
<td>14-17</td>
<td>.82</td>
<td>.189</td>
<td>.011</td>
<td>.768</td>
<td>A</td>
<td>.191</td>
<td>.011</td>
<td>.774</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Hurting family</td>
<td>.67</td>
<td>.96</td>
<td>18, 19</td>
<td>.75</td>
<td>.196</td>
<td>.014</td>
<td>.688</td>
<td>A</td>
<td>.195</td>
<td>.014</td>
<td>.686</td>
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<tr>
<td>4. Causing a public scene</td>
<td>.52</td>
<td>.75</td>
<td>25-28</td>
<td>.78</td>
<td>.187</td>
<td>.011</td>
<td>.768</td>
<td>A</td>
<td>.188</td>
<td>.010</td>
<td>.762</td>
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<td></td>
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<tr>
<td>5. Impulsive damage</td>
<td>.42</td>
<td>.59</td>
<td>29-33</td>
<td>.77</td>
<td>.167</td>
<td>.010</td>
<td>.747</td>
<td>A</td>
<td>.168</td>
<td>.010</td>
<td>.752</td>
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<td>6. Sexual acts</td>
<td>.77</td>
<td>.82</td>
<td>35-38,40</td>
<td>.77</td>
<td>.159</td>
<td>.012</td>
<td>.657</td>
<td>A</td>
<td>.158</td>
<td>.012</td>
<td>.652</td>
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<td>7. Sexual acts/nakedness</td>
<td>.70</td>
<td>.84</td>
<td>41-44</td>
<td>.78</td>
<td>.165</td>
<td>.012</td>
<td>.669</td>
<td>A</td>
<td>.164</td>
<td>.012</td>
<td>.665</td>
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<td></td>
<td></td>
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<tr>
<td>8. Doubt/Mistake</td>
<td>1.09</td>
<td>1.10</td>
<td>22-24</td>
<td>.81</td>
<td>.097</td>
<td>.014</td>
<td>.361</td>
<td>R</td>
<td>.155</td>
<td>.018</td>
<td>.575</td>
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<td>9. Disease/contamination</td>
<td>.67</td>
<td>.95</td>
<td>45-47</td>
<td>.79</td>
<td>.094</td>
<td>.015</td>
<td>.341</td>
<td>R</td>
<td>.162</td>
<td>.018</td>
<td>.590</td>
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<td>10. Order/dirt</td>
<td>.50</td>
<td>.95</td>
<td>50-52</td>
<td>.90</td>
<td>.061</td>
<td>.014</td>
<td>.238</td>
<td>R</td>
<td>.125</td>
<td>.017</td>
<td>.486</td>
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</tbody>
</table>

Note: Mean score and SD per item in grouping. Model statistics after inverse transformations. Factor A=Autogenous, Factor R=Reactive. All factor loadings significant in both one and two-factor models.
Table 2. Alpha levels for all scales, and zero-order correlations and partial correlations controlling for depression, between obsessional scales and OCD symptoms, beliefs, and self-view variables in samples one (N=149) and two (N=143).

<table>
<thead>
<tr>
<th>Covariatea</th>
<th>PI-R</th>
<th>OBQ</th>
<th>Mood</th>
<th>Self</th>
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<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Obs thought</td>
<td>Obs Imp</td>
<td>Contam/Wash</td>
</tr>
<tr>
<td>Sample 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability (α)</td>
<td>.89</td>
<td>.67</td>
<td>.82</td>
<td>.74</td>
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<tr>
<td>Reactive</td>
<td>.60*</td>
<td>.53*</td>
<td>.04</td>
<td>.47*</td>
</tr>
<tr>
<td>BDI-II</td>
<td>.55*</td>
<td>.46*</td>
<td>-.06</td>
<td>.44*</td>
</tr>
<tr>
<td>Autogenous</td>
<td>.33*</td>
<td>.26*</td>
<td>.40*</td>
<td>.13</td>
</tr>
<tr>
<td>BDI-II</td>
<td>.24*</td>
<td>.16</td>
<td>.35*</td>
<td>.07</td>
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<tr>
<td>Sample 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability (α)</td>
<td>.91</td>
<td>.72</td>
<td>.81</td>
<td>.84</td>
</tr>
<tr>
<td>Reactive</td>
<td>.60+</td>
<td>.49+</td>
<td>.08</td>
<td>.48+</td>
</tr>
<tr>
<td>BDI-I</td>
<td>.56+</td>
<td>.44+</td>
<td>-.00</td>
<td>.43+</td>
</tr>
<tr>
<td>Autogenous</td>
<td>.39+</td>
<td>.32+</td>
<td>.54+</td>
<td>.16</td>
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<tr>
<td>BDI-I</td>
<td>.30+</td>
<td>.23+</td>
<td>.49+</td>
<td>.07</td>
</tr>
</tbody>
</table>

Note: PI-R = Padua Inventory-Revised; Contam/wash=contamination obsessions and washing compulsions; check=checking compulsions; obs thought=obsessional thoughts of harm; obs imp=obsessional impulses of harm; OBQ = Obsessive Beliefs Questionnaire; Threat/resp=overinflated threat/responsibility; Perfect/uncert=perfectionism/uncertainty; imp. Th=importance of/need to control thoughts; BDI=Beck Depression Inventory; BAI=Beck Anxiety Inventory; RSE=Rosenberg Self-esteem scale; SAM=Self-ambivalence measure. Autogenous and reactive scales, PI-R, BDI and BAI scales are square root transformations.

a Partial correlations when controlling for the BDI-I or II.
b BDI-II for sample one, BDI-I for sample two.
* p<.0086 (Sidak-adjusted significance for intercorrelated variables). ²p<.0085 (Sidak-adjusted significance for intercorrelated variables).