ELSEVIER

Anxiety Disorders
19 (2005) 793–805

JOURNAL OF Anxiety Disorders

Autogenous/reactive obsessions and their relationship with OCD symptoms and schizotypal personality features

Han-Joo Lee, Michael J. Telch*

Laboratory for the Study of Anxiety Disorders, University of Texas, Austin, TX 78712-0187, USA

Received 24 May 2004; received in revised form 10 September 2004; accepted 1 October 2004

Abstract

This study was conducted to examine the autogenous-reactive model of obsessions [Behav. Res. Ther. 41 (2003) 11–29]. A large number of college students ($n = 932$) were administered a questionnaire battery assessing obsessional intrusions, schizotypal personality features, depressive symptoms, general anxiety and OCD symptoms. Hierarchical regression analyses revealed that autogenous obsessions were more strongly associated with schizotypal personality features than with OCD symptoms, general anxiety, or depression, whereas the relationship between reactive obsessions and schizotypal personality features was negligible. Moreover, autogenous obsessions were more strongly associated with covert OCD symptoms, whereas reactive obsessions were more strongly associated with overt OCD symptoms. These findings suggest that autogenous obsessions are more strongly associated with cognitive features (e.g., anomalous perception, obsessing), whereas reactive obsessions are more strongly associated with overt behavioral features (e.g., checking, washing, ordering). Theoretical and clinical implications are discussed.

Keywords: Autogenous obsessions; Reactive obsessions; OCD; Schizotypal personality features

Obsessions include recurrent and persistent thoughts, impulses, or images, which cause marked anxiety or distress and elicit attempts to ignore, suppress, or neutralize them. Obsessions encompass heterogeneous content and are also

* Corresponding author. Tel.: +1 512 475 8488; fax: +1 512 471 6175.
E-mail address: telch@mail.utexas.edu (M.J. Telch).

0887-6185/$ – see front matter
doi:10.1016/j.janxdis.2004.10.001

connected with various forms of neutralizations, which may give rise to remarkable diversity in clinical manifestations of obsessive-compulsive disorder (OCD). The most common obsessions are thoughts about contamination, doubts, a need to have things in particular order, aggressive or horrific impulses, and sexual imagery (American Psychiatric Association, 1994).

Recently, an obsession model has been proposed which classifies obsessions into two subtypes: *autogenous obsessions* and *reactive obsessions* (Lee & Kwon, 2003). Autogenous obsessions are highly aversive and unrealistic thoughts, images, or impulses that are perceived as threatening in their own right. Autogenous obsessions include sexual, aggressive, blasphemous or repulsive thoughts, images, or impulses. They tend to be perceived as very ego-dystonic and unacceptable, and evoke efforts to remove or control the thought(s) themselves. Moreover, they are likely to be elicited without clearly perceived triggers or by some triggers symbolically or remotely associated with the thoughts (e.g., the letter S triggering the thought of assaulting one's sister). In contrast, reactive obsessions are relatively realistic aversive thoughts, doubts, or concerns in which the perceived threat is not the obsession itself but rather its possible negative consequence(s). Reactive obsessions include thoughts, concerns, or doubts about contamination, mistakes, accidents, asymmetry or disarray. They tend to be perceived as relatively realistic and likely to come true, and elicit overt actions aimed at preventing the negative consequence(s). Moreover, they are likely to be triggered primarily by external cues, which correspond to specific core threats (e.g., exposure to dirt activating the threat of contamination, which is neutralized through washing rituals).

Lee and colleagues have demonstrated that the two subtypes of obsessions elicited different emotional reactions, cognitive appraisals, and control strategies in both non-clinical student and OCD patient populations (Lee & Kwon, 2003; Lee, Kwon, Kwon, & Telch, submitted for publication; Lee, Lee, Kim, Kwon, & Telch, in press). Autogenous obsessions were rated as more dislikable, bizarre, unacceptable, and guilt-provoking, whereas reactive obsessions evoked greater worries that the thought might come true. Autogenous obsessions were also perceived as more threatening to merely have in mind and controlling the thoughts themselves was considered more important. In contrast, reactive obsessions were perceived as more realistic and evoked a greater sense of personal responsibility to prevent harm. Moreover, autogenous obsessions elicited more avoidant thought control strategies (e.g., thought stopping, distraction), whereas reactive obsessions elicited more confrontational, behavioral control strategies (e.g., overt acts such as checking or washing, analyzing the thought).

The present study sought to examine the relationship between the autogenous-reactive subtypes and schizotypal personality features. Despite evidence suggesting that OCD and schizophrenia are easily distinguished (see Turner & Beidel, 1988), there is a growing line of research demonstrating a possible linkage between OCD and schizotypy. Schizotypy has been conceptualized as a non-specific psychosis-proneness (Claridge et al., 1996), a liability to schizophrenia

(Lenzenweger & Korfine, 1995), or minor manifestations of psychotic disorder in normal people (Rawlings, Claridge, & Freeman, 2001). Patients with OCD exhibited significantly greater schizotypal features on the Composite Schizotypy Questionnaire (CSTQ: Bentall, Claridge, & Slade, 1989) compared to a mixed group of patients with other anxiety disorders (Enright & Beech, 1990; Enright, Claridge, Beech, & Kemp-Wheeler, 1993). These authors also suggested that patients with OCD experience specific cognitions and signs of cognitive disorganization that might be a milder form of psychopathology found in patients with schizophrenia (Enright et al., 1993). Mild to severe levels of positive schizotypy signs were exhibited by 50% of OCD patients who were administered the Structured Interview of Schizotypy (Kendler, Lieberman, & Walsh, 1989), which has led to the speculation that there may exist a schizotypy subtype of OCD (Sobin et al., 2000). Interestingly, OCD patients were reported to be indistinguishable from either schizophrenic or bipolar patients on self-reported schizotypy scores, as measured by the Schizotypal Personality Questionnaire (SPQ; Raine, 1991), although all three groups scored higher than unipolar depressive patients (Rossi & Daneluzzo, 2002). Experimental studies employing a negative priming paradigm have also demonstrated that unlike patients with other anxiety disorders, patients with OCD displayed a deficit in cognitive inhibition similar to that observed among patients with schizophrenia (Enright & Beech, 1990, 1993a, 1993b; Enright, Beech, & Claridge, 1995). Moreover, high prevalence rates of OCD symptoms have been reported in patients with schizophrenia (Eisen, Beer, Pato, Venditto, & Rasmussen, 1997; Meghani et al., 1998; Porto, Bermanzohn, Pollack, Morrissey, & Siris, 1997; Poyurovsky et al., 2001; Tibbo, Kroetsch, Chue, & Warneke, 2000). It has been suggested that at least a subgroup of OCD patients may be linked to the schizophrenic spectrum along a multidimensionality of schizotypy (Pallanti, 2000).

Specifically, we hypothesized that compared to reactive obsessions, autogenous obsessions would be more highly associated with schizotypal personality features such as magical thinking and unusual perceptions, because the bizarre thought content of the autogenous subtype involving inappropriate sexual or aggressive thoughts, images or impulses appear more similar to schizophrenic thinking, compared to those of the reactive subtype. A secondary aim of the study was to investigate the relationship between autogenous/reactive obsessions and OCD symptoms. We hypothesized that autogenous obsessions would be more strongly associated with cognitive/covert (e.g., obsessing, mental compulsions, etc.) as opposed to behavioral symptoms of OCD, whereas reactive obsessions would be more strongly associated with behavioral symptoms of OCD (e.g., overt compulsions such as checking, washing, ordering, etc.). Taken together, autogenous obsessions would be more strongly linked to cognitive features such as anomalous perception, obsessing, or mental compulsions, whereas reactive obsessions would be more strongly linked to behavioral features.

1. Method

1.1. Participants

Nine hundred and thirty-two undergraduate students (633 women and 299 men) enrolled in introductory psychology classes at the University of Texas at Austin participated in this study in partial fulfilment of their research participation credit. Participants ranged in age from 16 to 50 ($M = 19.07$, S.D. = 2.16) and consisted of diverse ethnic groups: Caucasian (62.3%), Asian/Pacific Islander (17.0%), Hispanic (13.9%), African American (3.3%), and other (3.4%).

2. Measures

2.1. Revised Obsessional Intrusion Inventory—Part I (ROII; Purdon & Clark, 1993)

The ROII is a self-report measure assessing intrusive thoughts, images, and impulses (Purdon & Clark, 1993). In Part I of the ROII, respondents rate how frequently they experience each of 52 obsessions on a 7-point Likert scale (0 = never; 1 = once or twice; 2 = a few times a year; 3 = once or twice a month; 4 = once or twice a week; 5 = daily; 6 = frequently during the day). Lee and Kwon (2003) have conducted exploratory and confirmatory factor analyses demonstrating that these 52 obsessional thoughts constitute two distinct factors (i.e., autogenous vs. reactive obsessions) corresponding to the autogenous-reactive model. The autogenous-obsession factor includes 41 thoughts, images, and impulses concerning sex, violence, aggression, and blasphemies (e.g., thoughts of engaging in sexual activity that goes against my sexual preference, thoughts of stabbing one of close friends or family members with a knife or other sharp object), while the reactive-obsession factor includes 11 thoughts, concerns, and doubts concerning mistakes, accidents, dirt, or contamination (e.g., thoughts of leaving the heat, stove or lights on in the house which may cause a fire, thoughts of becoming dirty or contaminated by touching public door-knobs). The total frequency scores for the two subscales were used in the data analyses. Cronbach's alpha of the autogenous-obsession and reactive-obsession factors were .94 and .84, respectively.

2.2. The Schizotypal Personality Scale (STA; Claridge & Broks, 1984)

The STA is a widely used 37-item self-report measure of schizotypal personality traits based on DSM-III criteria (APA, 1980). Each item is presented in a Yes/No format so that the total scores can range from 0 to 37 with higher scores indicating greater proneness to psychosis. The STA was designed to identify a general psychosis-proneness by addressing multidimensional sets of

schizotypal traits. In accordance with the current multidimensional conceptualization of schizotypy (Joseph & Peters, 1995; Lenzenweger, 1999; Rossi & Daneluzzo, 2002), the STA assesses three robust factors (Hewitt & Claridge, 1989): (a) *Magical Thinking*, particularly belief in psychic phenomena (e.g., Have you ever felt that you were communicating with another person telepathically?); (b) *Unusual Perceptual Experiences* (e.g., Have you ever had the sensation of your body or part of it changing shape?); and (c) *Paranoid Suspiciousness* (e.g., Do you often feel that other people have it in for you?). This three-factor solution has received considerable empirical support (Joseph & Peters, 1995; Rawlings et al., 2001; Wolfradt & Straube, 1998). In addition to its three-factor solution, the STA has good construct and discriminant validity (Rawlings et al., 2001) and evidence suggests that individuals who score high on the STA resemble schizophrenics with respect to their performance on a number of experimental tasks, e.g., negative priming paradigm (Beech, Baylis, Smithson, & Claridge, 1989; Beech & Claridge, 1987; Beech, McManus, Baylis, Tipper, & Agar, 1991; Joseph & Peters, 1995).

2.3. The State-Trait Anxiety Inventory—trait version (STAI; Speilberger et al., 1983)

The STAI is a 40-item self-report measure of state and trait anxiety. This study employed only the trait version, which consists of 20 items assessing trait anxiety or how the respondent feels generally. The STAI has demonstrated sound reliability and validity (Speilberger et al., 1983).

2.4. The Beck Depression Inventory—II (BDI-II; Beck, Steer, & Brown, 1996)

This is the latest version of the BDI designed to render its symptom contents consonant with DSM-IV criteria for Major Depressive Disorder.

2.5. The Obsessive-Compulsive Inventory-Revised (OCI-R; Foa et al., 2002)

The OCI is a self-report measure of OC symptoms designed for use with both clinical and non-clinical samples. The revised OCI, relative to its 42-item original version, eliminates the redundant frequency scale, simplifies the scoring of the subscales, and reduces overlap across subscales. The OCI-R consists of 18 items forming 6 subscales: Checking (e.g., I check things more often than necessary), Hoarding (e.g., I have saved up so many things that they get in the way), Neutralizing (e.g., I feel compelled to count while I am doing things), Obsessing (e.g., I am upset by unpleasant thoughts that come into my mind against my will), Ordering (e.g., I need things to be arranged in a particular order), and Washing (e.g., I wash my hands more often and longer than necessary). Overall, the Checking, Hoarding, Ordering, and Washing subscales reflect overt symptoms, whereas the Obsessing and Neutralizing subscales

reflect cognitive or covert symptoms. The OCI-R has demonstrated excellent psychometric properties and successfully discriminated individuals with and without OCD (Foa et al., 2002).

2.6. Procedure

The participants were administered a computerized version of the questionnaire battery, which took approximately 30 to 40 min to complete.

3. Results

Means and standard deviations of the study measures are presented in Table 1. Kolmogorov–Smirnov tests revealed that all of the total scores of the study measures were positively skewed, so log-transformed scores were used in all data analyses. Zero-order correlations among the study measures are presented in Table 2.

3.1. Relationship between autogenous/reactive obsessions and schizotypal personality traits

The data from the 932 respondents were subjected to a series of hierarchical regression analyses to examine the hypothesized relationship between autogenous/reactive obsessions and schizotypal personality traits. In Step 1, scores from the STAI-T, BDI, and OCI were entered into the model to control for the severity of general distress as well as OCD symptoms. In Step 2, the total score of the STA was entered to examine the unique contribution of schizotypal

Table 1
Means and standard deviations of study measures

	Male ($n = 299$)		Female ($n = 633$)		Total ($n = 932$)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
AO	25.93	24.79	19.36	18.29	21.47	20.81
RO	6.31	7.10	9.26	7.79	8.32	7.70
BDI	6.68	6.22	9.49	8.21	8.59	7.74
OCI	15.47	10.25	15.88	10.44	15.75	10.37
STAI	35.93	10.11	39.12	11.10	38.09	10.89
STA	11.19	7.28	12.88	7.22	12.34	7.28
STA-M	2.70	1.94	3.00	1.97	2.90	1.96
STA-U	2.04	1.88	2.23	1.89	2.17	1.89
STA-P	2.05	1.94	2.21	1.93	2.16	1.93

AO: Autogenous Obsession Scores; RO: Reactive Obsession Scores; BDI: Beck Depression Inventory; OCD: Obsessive-Compulsive Inventory; STAI: State-Treat Anxiety Inventory—Trait; STA: Schizotypal Personality Questionnaire Total Scores; STA-M: magical thinking; STA-U: unusual perceptual experience; STA-P: paranoid suspiciousness.

Table 2
Zero-order correlations among study measures

	AO	RO	BDI	STAI	OCI	STA	STA-M	STA-U
RO	0.39**							
BDI	0.29**	0.27**						
STAI	0.29**	0.28**	0.64**					
OCI	0.23**	0.46**	0.32**	0.32**				
STA	0.45**	0.38**	0.42**	0.39**	0.38**			
STA-M	0.38**	0.31**	0.26**	0.22**	0.28**	0.79**		
STA-U	0.45**	0.33**	0.34**	0.29**	0.37**	0.78**	0.57**	
STA-P	0.34**	0.28**	0.44**	0.46**	0.35**	0.71**	0.42**	0.52**

AO: Autogenous Obsession Scores; RO: Reactive Obsession Scores; BDI: Beck Depression Inventory; OCD: Obsessive-Compulsive Inventory; STAI: State-Treat Anxiety Inventory—Trait; STA: Schizotypal Personality Questionnaire Total Scores; STA-M: magical thinking; STA-U: unusual perceptual experience; STA-P: paranoid suspiciousness.
** $P < .01$.

personality traits in predicting autogenous/reactive obsessions. This analysis was performed separately for autogenous and reactive obsession scores.

3.2. Relationship between schizotypal personality traits and autogenous obsessions

In Step 1, the STAI-T, BDI, and OCI accounted for 11.8% of the variance in autogenous obsessions ($R^2 = .118$, $F(3, 929) = 41.62$, $P < .001$). In Step 2, the STA explained an additional 10.6% of the variance in autogenous obsessions ($R^2 = .106$, $F(1, 928) = 127.49$, $P < .001$) suggesting a medium effect (Cohen, 1988). Moreover, the STA emerged as the most potent predictor of autogenous obsessions ($\beta = .38$, $t = 11.29$, $P < .001$). Once the STA was entered into the model, the BDI ($\beta = .06$, $t = 1.62$, $P = .11$), and the OCI ($\beta = .03$, $t = .96$, $P = .34$) were no longer predictive of autogenous obsessions, and the STAI-T's contribution was rendered nominal although it retained statistical significance ($\beta = .10$, $t = 2.50$, $P < .05$).

3.3. Relationship between schizotypal personality traits and reactive obsessions

A markedly different pattern of findings emerged in predicting reactive obsessions. In Step 1, the STAI-T, the BDI, and the OCI explained 23.7% of the variance in reactive obsessions ($R^2 = .237$, $F(3, 929) = 95.93$, $P < .001$). In Step 2, the STA explained only 3.1% of the variance in reactive obsessions suggesting a small effect ($R^2 = .031$, $F(1, 928) = 39.56$, $P < .001$). The OCI was the strongest predictor of reactive obsessions ($\beta = .35$, $t = 11.33$, $P < .001$). Relative to the OCI, the STA was a less potent predictor of reactive obsessions ($\beta = .21$, $t = 6.29$,

$P < .001$). Neither the BDI nor the STAI-T was predictive of reactive obsessions after the STA was entered into the model.

3.4. Relationship between schizotypal personality dimensions and autogenous/reactive obsessions

In order to determine the relative contribution of each of the schizotypal personality dimensions, we conducted hierarchical regression analyses with the three subscales of the STA (i.e., *Magical Thinking*, *Unusual Perceptual Experience*, and *Paranoid Suspiciousness*) entered in Step 2 after controlling for the STAI-T, BDI, and OCI in Step 1. Results showed that the three STA subscales explained an additional 13.5% of the variance in autogenous obsessions suggesting a medium effect ($R^2 = .135$, $F(3, 926) = 55.93$, $P < .001$). Among the three STA subscales, *Magical Thinking* ($\beta = .16$, $t = 4.59$, $P < .001$), and *Unusual Perceptual Experiences* ($\beta = .27$, $t = 7.13$, $P < .001$) emerged as significant predictors of autogenous obsessions.

In contrast, the three STA subscales explained only an additional 3.1% of the variance in reactive obsessions suggesting a small effect ($R^2 = .031$, $F(3, 926) = 12.94$, $P < .001$). Both *Magical Thinking* ($\beta = .13$, $t = 3.83$, $P < .001$) and *Unusual Perceptual Experience* ($\beta = .08$, $t = 2.21$, $P < .05$) emerged as significant predictors of reactive obsessions, although their predictive potency was low in terms of clinical significance. OCD symptoms, as measured by the OCI, were highly predictive of reactive obsessions ($\beta = .35$, $t = 11.24$, $P < .001$).

3.5. Relationship between autogenous/reactive obsessions and OCD symptoms

Hierarchical regression analyses were also conducted to examine the hypothesized relationships between OCD symptoms and autogenous/reactive obsessions. The BDI and the STAI-T were entered in Step 1 to control for the effect of general distress, and the six subscales of the OCI (i.e., Ordering, Hoarding, Neutralizing, Washing, Obsessing, and Checking) were entered in Step 2. Separate analyses were conducted for predicting autogenous and reactive obsessions.

The BDI and the STAI-T together accounted for 10.5% of the variance in autogenous obsessions ($R^2 = .105$, $F = 54.30$, $P < .001$), and the six OCI subscales explained an additional 3.9% of the variance ($R^2 = .039$, $F = 7.05$, $P < .001$). Of the six subscales of the OCI, Obsessing emerged as the only significant predictor of autogenous obsessions ($\beta = .21$, $t = 5.70$, $P < .001$). In contrast, the BDI and the STAI-T together accounted for 9.3% of the variance in reactive obsessions ($R^2 = .093$, $F = 47.92$, $P < .001$) and the six subscales of the OCI explained an additional 21.3% of the variance ($R^2 = .213$, $F = 47.33$, $P < .001$). Of the six subscales of the OCI, Checking ($\beta = .104$, $t = 2.92$, $P < .005$), Ordering ($\beta = .122$, $t = 3.72$, $P < .001$), and Washing ($\beta = .35$, $t = 10.65$, $P < .001$) emerged as significant predictors of reactive obsessions.

4. Discussion

Consistent with prediction, our data demonstrated that non-clinical obsessions of the autogenous subtype were significantly associated with schizotypal personality traits even after controlling for the effects of depression, general anxiety, and OCD symptoms. In contrast, the relationship between the reactive subtype and schizotypal personality traits proved to be negligible. The observed differences between autogenous and reactive obsessions in their relationship with schizotypal personality traits do not appear to be attributable merely to severity of general distress or OCD symptoms. Autogenous obsessions were best predicted by schizotypal personality traits, whereas reactive obsessions were best predicted by OCD symptoms. More specifically, Magical Thinking and Unusual Perceptual Experiences were more potent predictors of autogenous obsessions when compared to depression, general anxiety or OCD symptoms. We considered the possibility that the relation between autogenous obsessions and schizotypy was due to item overlap. However, close inspection of the two measures suggests that this is not the case. The present findings suggest the possibility that autogenous obsessions are linked to schizotypal personality features such as illogical thinking or distorted perceptions.

In line with the present findings, Lee and colleagues have reported elsewhere that OCD patients displaying autogenous obsessions as opposed to reactive obsessions as their primary subtype exhibited more severe perceptual distortions and illogical thinking (Lee, Kim, & Kwon, in press). Indeed, OCD patients displaying autogenous obsessions were found to be indistinguishable from patients with schizophrenia on several perceptual/ideational indices of the Comprehensive System (Exner, 1993) of the Rorschach Inkblot Test. In contrast, OCD patients primarily displaying reactive obsessions did not differ from other non-psychotic patients with other anxiety disorders (Lee, Kim, et al., in press; Lee, Lee, et al., in press). Our data also appear to be consistent with the earlier finding that OCD patients who reported aggressive or religious obsessions as their primary on the Y-BOCS had poorer insight and more perceptual distortions and magical ideation compared to OCD patients with other types of obsessions such as contamination, hoarding, symmetry/order, etc. (Tolin, Abramowitz, Kozak, & Foa, 2001). Other authors have also suggested that patients with schizophrenia display OCD-like symptoms if religious, sexual, aggressive, or somatic preoccupations are rated as obsessions and secondary repetitive behaviors are classified as compulsions (Berman, Kalinowski, Berman, Lengua, & Green, 1995; Bermanzohn & Siris, 1995; Samuel et al., 1993). Religious, sexual, and aggressive obsessions belong to the autogenous subtype according to the Lee and Kwon's model (2003). Moreover, diagnostic criteria for schizotypal personality disorder in ICD-10 include ''obsessive ruminations without inner resistance, *often with* dysmorphophobic, *sexual or aggressive contents*''. This criterion may indicate that obsessional ruminations manifested by patients with schizotypal personality disorder are more similar to autogenous obsessions than to reactive

obsessions. Taken together, autogenous obsessions, relative to reactive obsessions, may be more closely linked to schizotypal personality features such as magical thinking and unusual perceptions.

Autogenous and reactive obsessions may also be linked to different types of personality style. Lee et al. (submitted for publication) have reported that OCD patients who display reactive obsessions as their primary subtype are more likely to exhibit a perfectionistic personality style. In contrast, our findings present preliminary evidence of the possible linkage between autogenous obsessions and schizotypal personality features. Our findings also add to the growing literature supporting the presence of magical thinking in OCD (Einstein & Menzies, in press; Lee, Cougle, & Telch, in press; Sobin et al., 2000).

Our data partially supported the hypothesis of the relationship between autogenous/reactive obsessions and OCD symptoms. Autogenous obsessions were more strongly associated with cognitive OCD symptoms such as obsessing, whereas reactive obsessions were more strongly associated with behavioral OCD symptoms such as washing, checking, and ordering. However, our data failed to demonstrate the hypothesized relationship between autogenous obsessions and mental compulsions. It is possible that the failure to detect a relationship between autogenous obsessions and mental compulsions is due to the underrepresentation of mental compulsions in the OCI. Moreover, one of the three items intended to assess mental compulsions (i.e., I feel that there are good and bad numbers) does not appear to reflect mental compulsion. Indeed, recent research on diverse OCD symptom presentation has found that aggressive, sexual, or religious obsessions are more strongly related with mental compulsions (Abramowitz, Franklin, Schwartz, & Furr, 2003). Moreover, our previous findings also indicated that compared to reactive obsessions, autogenous obsessions are more strongly associated with covert rituals such as thought stopping, distractive thinking, counter-imaging, etc. (Lee & Kwon, 2003).

Taken together, our findings suggest that autogenous obsessions are more highly associated with cognitive features such as magical thinking, anomalous perception and obsessing, whereas reactive obsessions are more highly associated with overt compulsions. However, this study is not without its limitations. First, our data should be interpreted with caution given the non-clinical sample. The observed relationship between the two obsession subtypes and schizotypy needs to be replicated with clinical samples of OCD. Second, the observed relationship between autogenous obsessions and schizotypal personality features should be further investigated encompassing a variety of idiosyncratic obsessions beyond the limited coverage of the ROII. Third, our findings are based solely on questionnaires. Replications based on data derived from additional modes of assessment (e.g., structured interviews, behavioral assessments) are needed. Fourth, although we have chosen to categorically conceptualize autogenous and reactive obsessions, they may fall on a continuum that would support a dimensional approach. We should further inquire into the co-occurrence of these two subtypes of obsessions to clarify this issue. Finally, the present study did not

address the issue of subjective resistance, which may be the primary factor distinguishing obsessional thinking from schizotypal thinking. Investigation into the different degrees of subjective resistance across various mental intrusions is an important area for future research.

References

Abramowitz, J. S., Franklin, M. E., Schwartz, S. A., & Furr, J. M. (2003). Symptom presentation and outcome of cognitive-behavioral therapy for obsessive-compulsive disorder. *Journal of Consulting & Clinical Psychology, 71*, 1049–1057.

American Psychiatric Association (APA). (1980). *DSM-III: Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.

American Psychiatric Association (APA). (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX: The Psychological Corporation.

Beech, A., Baylis, G. C., Smithson, P., & Claridge, G. (1989). Individual differences in schizotypy as reflected in measures of cognitive inhibition. *British Journal of Clinical Psychology, 28*, 117–129.

Beech, A., & Claridge, G. (1987). Individual differences in negative priming: Relations with schizotypal personality traits. *British Journal of Psychology, 78*, 349–356.

Beech, A., McManus, D., Baylis, G., Tipper, S., & Agar, K. (1991). Individual differences in cognitive processes: Towards an explanation of schizophrenic symptomatology. *British Journal of Psychology, 82*, 417–426.

Bentall, R. P., Claridge, G. S., & Slade, P. D. (1989). The multidimensional nature of schizotypal traits: A factor analytic study with normal subjects. *British Journal of Clinical Psychology, 28*, 363–375.

Berman, I., Kalinowski, A., Berman, S. M., Lengua, J., & Green, A. I. (1995). Obsessive and compulsive symptoms in chronic schizophrenia. *Comprehensive Psychiatry, 36*, 6–10.

Bermanzohn, P., & Siris, S. (1995). *Comorbidity in schizophrenia*. Presented at the annual meeting of the American Psychiatric Association, Miami, FL.

Claridge, G., & Broks, P. (1984). Schizotypy and hemisphere function I. Theoretical considerations and the measurement of schizotypy. *Personality and Individual Differences, 5*, 633–648.

Claridge, G., McCreery, C., Mason, O., Bentall, R., Boyle, G., Slade, P., et al. (1996). The factor structure of schizotypal traits: A large replication study. *British Journal of Clinical Psychology, 35*, 103–115.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.

Einstein, D. A., & Menzies, R. G. (in press). The presence of magical thinking in obsessive compulsive disorder. *Behaviour Research and Therapy.*

Eisen, J. L., Beer, D. A., Pato, M. T., Venditto, T. A., & Rasmussen, S. A. (1997). Obsessive-compulsive disorder in patients with schizophrenia or schizoaffective disorder. *American Journal of Psychiatry, 154*, 271–273.

Enright, S. J., & Beech, A. R. (1990). Obsessional states: Anxiety disorders or schizotypes? An information processing and personality assessment. *Psychological Medicine, 20*, 621–627.

Enright, S. J., & Beech, A. R. (1993). Further evidence of reduced inhibition in obsessive-compulsive disorder. *Personality and Individual Differences, 14*, 387–395.

Enright, S. J., & Beech, A. R. (1993). Reduced cognitive inhibition in obsessive compulsive disorder. *British Journal of Clinical Psychology, 32*, 67–74.

Enright, S. J., Beech, A. R., & Claridge, G. S. (1995). A further investigation of cognitive inhibition in obsessive-compulsive disorder and other anxiety disorders. *Personality and Individual Differences, 19*, 535–542.

Enright, S. J., Claridge, G. S., Beech, A. R., & Kemp-Wheeler, S. M. (1993). A questionnaire study of schizotypy in obsessional states and the other anxiety disorders. *Personality and Individual Differences, 16*, 191–194.

Exner, J. E. (1993). (3rd ed.). *The Rorschach: A comprehensive system. Vol. I: Basic foundations*New York: Wiley.

Foa, E. B., Huppert, J. D., Leiberg, S., Langner, R., Kichic, R., Hajcak, G., et al. (2002). The Obsessive-Compulsive Inventory: Development and validation of a short version. *Psychological Assessment, 14*, 485–496.

Hewitt, J. K., & Claridge, G. (1989). The factor structure of schizotypy in a normal population. *Personality and Individual Differences, 10*, 323–329.

Joseph, S., & Peters, E. R. (1995). Factor structure of schizotypy with normal subjects: A replication of Hewitt and Claridge 1989. *Personality and Individual Differences, 18*, 437–440.

Kendler, K. S., Lieberman, J. A., & Walsh, D. (1989). The Structured Interview for Schizotypy (SIS): A preliminary report. *Schizophrenia Bulletin, 15*, 559–571.

Lee, H.-J., Cougle, J. R., & Telch, M. J. (2005). Thought–action fusion and its relationship to schizotypy and OCD symptoms. *Behaviour Research and Therapy*, *43*, 29–41.

Lee, H.-J., Kim, Z. S., & Kwon, S. M. (in press). Thought disorder in patients with Obsessive-Compulsive Disorder. *Journal of Clinical Psychology.*

Lee, H.-J., & Kwon, S.-M. (2003). Two different types of obsession: Autogenous obsessions and reactive obsessions. *Behaviour Research and Therapy, 41*, 11–29.

Lee, H.-J., Kwon, S.-M., Kwon, J. S., & Telch, M. J. (submitted for publication). Testing the autogenous-reactive model of obsessions.

Lee, H.-J., Lee, S.-H., Kim, H.-S., Kwon, S.-M., & Telch, M. J. (in press). A comparison of autogenous/reactive obsessions and worry in a nonclinical population: A test of the continuum hypothesis. *Behaviour Research and Therapy.*

Lenzenweger, M. F. (1999). Schizophrenia: Refining the phenotype, resolving endophenotypes. *Behaviour Research and Therapy, 37*, 281–295.

Lenzenweger, M. F., & Korfine, L. (1995). Tracking the taxon: On the latent structure and base rate of schizotypy. In: A. Raine, T. Lencz & S. A. Mednick (Eds.), *Schizotypal personality* (pp. 135–167). Cambridge: Cambridge University Press.

Meghani, S. R., Penick, E. C., Nickel, E. J., Othmer, E., Gabriella, W. F., Jr., Powell, B. J., et al. (1998). Schizophrenia patients with and without OCD. *151st annual meeting of the American Psychiatric Association*.

Pallanti, S. (2000). The anxiety-psychosis spectrum. *CNS Spectrum, 5*, 22.

Porto, L., Bermanzohn, P. C., Pollack, S., Morrissey, R., & Siris, S. G. (1997). A profile of obsessive-compulsive symptoms in schizophrenia. *CNS Spectrums, 1*, 21–25.

Poyurovsky, M., Hramenkov, S., Isakov, V., Rauchverger, B., Modai, I., Schneidman, M., et al. (2001). *Psychiatry Research, 102*, 49–57.

Purdon, C., & Clark, D. A. (1993). Obsessive intrusive thoughts in nonclinical subjects—Part I. Content and relation with depressive, anxious and obsessional symptoms. *Behaviour Research and Therapy, 31*, 713–720.

Raine, A. (1991). The SPQ: A scale for the assessment of schizotypal personality based on DSM-III-R criteria. *Schizophrenia Bulletin, 17*, 555–564.

Rawlings, D., Claridge, G., & Freeman, J. L. (2001). Principal component analysis of the Schizotypal Personality Scale (STA) and the Borderline Personality Scale (STB). *Personality and Individual Differences, 31*, 409–419.

Rossi, A., & Daneluzzo, E. (2002). Schizotypal dimensions in normals and schizophrenic patients: A comparison with other clinical samples. *Schizophrenia Research, 54*, 67–75.

Samuel, J., Nesdadt, G., Wolyniec, P., Adler, L., Liang, K. Y., & Pulver, A. E. (1993). Obsessive-compulsive symptoms in schizophrenia. *Schizophrenia Research, 9*, 139.

Sobin, C., Blundell, M. L., Weiller, F., Gavigan, C., Haiman, C., & Karayiorgou, M. (2000). Evidence of a schizotypy subtype in OCD. *Journal of Psychiatric Research, 34*, 15–24.

Speilberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the state-trait anxiety inventory.* Palo Alto, CA: Consulting Psychologists Press.

Tibbo, P., Kroetsch, M., Chue, P., & Warneke, L. (2000). *Obsessive-Compulsive Disorder in Schizophrenia, 34*, 139–146.

Tolin, D. F., Abramowitz, J. S., Kozak, M. J., & Foa, E. B. (2001). Fixity of belief, perceptual aberration, and magical ideation in obsessive-compulsive disorder. *Journal of Anxiety Disorders, 15*, 501–510.

Turner, S. M., & Beidel, D. C. (1988). *Treating obsessive-compulsive disorder.* (pp. 21–23) New York: Pergamon Press.

Wolfradt, U., & Straube, E. R. (1998). Factor structure of schizotypal traits among adolescents. *Personality and Individual Differences, 24*, 201–206.