The relationship between autogenous vs. reactive obsessions and negative self-inferences

Jang-Won Seo[†]   Seok-Man Kwon

Department of Psychology, Seoul National University

It has been suggested that obsessions tend to induce negative inferences about the self. However, few if any studies have examined the relationship between the type of obsession and negative self-inferences. The present study aims to examine which types of obsession are more likely to induce negative self-inferences. 40 participants were assigned into two groups (i.e., the autogenous obsession group vs. the reactive obsession group). The two groups undertook a thought-suppression task that was designed to make the participants experience their most disturbing mental intrusions. We measured the negative self-evaluations and negative self-conscious emotions of the participants to assess the extent to which their mental intrusions induce negative self-inferences. Participants with autogenous obsessions evaluated themselves more negatively in terms of morality, dangerousness, and competence dimensions of the self, and they reported more negative self-conscious emotions after they completed the task, whereas those with reactive obsessions did not. These results suggest that the extent to which mental intrusions provoke negative self-inferences varies according to the type of obsession and that autogenous obsessions are more likely than reactive obsessions to induce negative self-inferences.

Key words : Obsessive-compulsive disorder (OCD), Autogenous obsessions, Reactive obsessions, Negative self-inferences, Thought-suppression

† 교신저자(Corresponding Author) : Jang-Won Seo / Department of Psychiatry, Asan Medical Center, 88, Olympic-Ro 43-Gil, Songpa-Gu, Seoul 138-736, Republic of Korea.
  Tel : +82 10 6360 0813 / Fax : +82 2 3010 8056 / E-mail : jangw.seo@gmail.com.

Obsessions are recurrent and persistent thoughts, impulses, or images that are experienced as intrusive and inappropriate and that cause marked anxiety or distress (American Psychiatric Association, 2000). People who experience recurrent obsessions are more likely than those who do not experience them to attach important, personal significance to their intrusive thoughts (Rachman, 1997). It has been suggested that those who experience obsessions interpret their obsessions as revealing important but hidden elements in their character, and they often attempt to remove the obsessions frantically (Rachman, 1997). Recently, Ferrier and Brewin (2005) compared an OCD sample to control groups (i.e., anxious controls and normal controls) to examine whether the OCD patients are more likely than other anxious patients or normal persons to make negative inferences about themselves with their mental intrusions. The OCD sample showed higher scores than the control groups on the measure of negative self-inferences in their study. These results have important clinical implications pertaining to OCD treatment options because the way people interpret mental intrusions in relation to their perceptions of themselves can be a crucial treatment target. However, should this be considered as a crucial treatment target for all persons with obsessions? Is there a possibility that people with a specific type of obsession can benefit from such a treatment whereas those with other types of obsession would not?

Unfortunately, researchers have not examined this issue.

Although there seems to be no agreed-upon taxonomy of OCD, much effort has been made to establish subgroups of OCD patients (Radomsky & Taylor, 2005), or symptom dimensions of OCD (e.g., Bloch, Landeros, Rosario-Campos, Pittenger, & Leckman, 2008; Mataix-Cols, Rosario-Campos, & Leckman, 2005). However, the taxonomic model proposed by Lee and Kwon (2003) appears to be unique in that it classifies obsessions based on the differences in their contents, cognitive appraisals, neutralization strategies, trigger stimuli, ego-dystonicity, and the perceived rationality of the thought contents. It classifies unwanted mental intrusions into two subtypes: autogenous obsessions (AOs) and reactive obsessions (ROs). AOs are highly aversive and unrealistic obsessions that usually take the form of thoughts, images, or impulses with th eir primary themes centered on unacceptable aggression, sexual behavior, blasphemy, and the like. These obsessions are perceived as highly ego-dystonic, and elicit efforts to remove or control the thoughts themselves and are activated without clearly perceived triggers or by triggers only symbolically related to the thoughts. ROs, in contrast, are relatively realistic aversive obsessions that usually take the form of thoughts, doubts, or concerns about contamination, mistakes, accidents, asymmetry, or disarray. These obsessions are perceived as less ego-dystonic and

lead to behaviors aimed to prevent the feared consequences and are triggered by identifiable external stimuli. Since the AO-RO model was proposed, research has demonstrated some meaningful differences between the two subtypes of obsessions in several important domains relevant for OCD: (a) subsequent cognitive appraisals and neutralization strategies focused on mental intrusions themselves (AO) vs. triggering situations (RO) (Lee & Kwon, 2003; Lee, Kwon, Kwon, & Telch, 2005; Lee, Lee, Kim, Kwon, & Telch, 2005), (b) associated OCD symptoms mostly manifested in covert ways (AO) vs. in overt ways (RO) (Lee & Telch, 2005; Moulding, Kyrios, Doron, & Nedeljkovic, 2007), (c) OCD-related dysfunctional beliefs (i.e., relative to AOs, ROs being more strongly related to 'intolerance of uncertainty', 'responsibility', and 'perfectionism'; Lee, Kwon, et al., 2005), (d) differential personality features associated with the two subtypes of obsessions (i.e., the close linkage between AOs and schizotypal personality features, and between ROs and perfectionistic personality features; Lee, Kim, & Kwon, 2005; Lee & Telch, 2005; Lee, Yost, & Telch, 2009), (e) deficient cognitive processes (i.e., poor inhibitory control) associated with AOs (Lee & Telch, 2010; Lee, Yost, & Telch, 2009), and (f) distinct neural abnormality (i.e., mesiotemporal lobe abnormality) associated with AOs (Besiroglu, et al., 2011). Moreover, research has also demonstrated meaningful differences among AOs, ROs, and worries. Lee, Lee, Kim, Kwon, and

Telch (2005) examined the relationship between the two types of obsessions and worries, and results of the study showed that ROs fall in between AOs and worries with respect to several thought characteristics concerning content appraisal (e.g., bizarre, unacceptable, realistic), perceived form (e.g., doubt apprehension, visual image), and thought triggers (e.g., recognize triggers, evoked by apprehension).

According to Rachman (1997), persons with obsessions inflate the personal significance of their obsessions because the main themes of those obsessions are mostly important to their moral systems. These themes include aggression, sex, blasphemy and other such subjects (Ferrier & Brewin, 2005; Rachman, 1997), which are very consistent with the main themes of AOs (Lee & Kwon, 2003). Thus, it is reasonable to conclude that AOs are likely to induce negative self-inferences. However, it is not clear whether ROs are regarded as important to the moral systems of those with the obsessions and are interpreted as revealing negative aspects of their characters. It is also not clear whether AOs are more likely than ROs to induce negative self-inferences or vice versa. Although there are no studies directly examine the contents of ROs in relation to the moral systems of those with the obsessions, we can find valuable clues from the initial studies about the AOs-ROs model. For example, Lee & Kwon (2003) proposed that ROs tend to be perceived as less aversive and less unacceptable. This suggests that contents of

ROs could be less inconsistent with the valued aspects of the self or moral principles of those with the obsessions, because the obsessions that are inconsistent with the valued aspects of the self tend to be regarded as unacceptable and induce severe discomforts (Rowa, Purdon, Summerfeldt, & Antony, 2005). Thus, ROs might be less likely than AOs to induce negative self-inferences. We tried to examine which type of obsession is more prone to be interpreted as revealing negative aspects of the self using an experimental task.

According to Wegner et al., trying to suppress a specific thought is usually unsuccessful, and people experience the thought at least once (Wegner, Schneider, Carter, & White, 1987). This 'paradoxical effect of thought-suppression' has been examined in numerous studies (e.g., Muris, Merckelbach, van den Hout, & de Jong, 1992; Purdon, 2004). Salkovskis and Campbell (1994) also suggested that efforts to suppress personally relevant negative intrusive thoughts result in an increased frequency of those mental intrusions. Rassin, Merckelbach, Muris, and Spaan (1999) developed a paradigm based on this idea using a bogus EEG recording procedure. In their experiment, participants were informed that the apparatus was able to pick up the word 'apple' and that thoughts of that word could result in the administration of electrical shocks to another person. The results showed that a strong effort to suppress the target thought paradoxically resulted in a higher frequency of the thought. In our study, we adapted and modified this procedure to make participants experience specific thoughts and to examine whether the participants would make negative inferences about themselves with the thoughts.

To examine whether a participant makes negative inferences about oneself with a specific obsessive thought, we measured three variables that have been regarded as closely related to negative self-inference:1) negative self-evaluations, 2) negative self-conscious emotions, and 3) depression. First, we measured negative self-evaluations. By definition, an inference is a reasoning-based proposition about a possible state of a certain affair (O'Connor, Aardema, & Pelissier, 2005), and an inference about oneself is a proposition about the possible characteristics of the self, which would be essential basis for an evaluation of oneself (Baldwin, 1997). Negative self-inference, therefore, can be defined as a proposition about the negative aspects of the self that is likely to provoke negative self-evaluation. Thus, we measured the negative self-evaluations of the participants to assess the extent to which specific obsessions induce negative self-inferences. Especially, we measured the negative self-evaluations in several specific domains that have been considered as having crucial influences on OC symptoms. Doron, Kyrios, and Moulding (2007) proposed that 'morality' and 'competence' are important domains of the self that are related to OC symptoms. Ferrier and

Brewin (2005) found that 'dangerousness' is the most feared aspects of the self in OCD patients. We included these domains to a measure designed by us to assess the negative self-evaluations of the participants. Since the contents of AOs (i.e., sexual, blasphemous, or aggressive contents) are mostly inconsistent with these self-domains (Rowa, et al., 2005), while the contents of ROs are less inconsistent with those domains (Lee & Kwon, 2003), AOs might be more closely related to negative self-evaluations. Second, it is well known that negative self-conscious emotions such as guilt, shame, or embarrassment are associated with negative self-inferences and negative self-evaluations (Leary, 2007; Tangney & Dearing, 2002). We, therefore, also measured the negative self-conscious emotions of the participants to determine which obsession is more likely to be related to negative self-inferences. It is important to note that previous studies consistently reported that AOs are more prone to provoke guilt feelings than ROs are (Lee & Kwon, 2003; Lee, Kwon, et al., 2005; Belloch, Morillo, & Garcia-Soriano, 2007). Since guilt feeling is one of the most frequently experienced negative self-conscious emotions in persons with OCD and it tends to overlap with other negative self-conscious emotions (e.g., shame) in several aspects (Leary, 2007), it is possible that AOs are more likely than ROs to provoke other negative self-conscious emotions as well. Third, although there are few studies that have examined the relationship between negative self-inferences and depression in persons with OCD, it has been suggested that negative self-inferences are associated with depressive symptoms (Smith, Calam, & Bolton, 2009). Thus, we measured depression of the participants along with the other two variables. It was expected that AOs would be more likely than ROs to provoke depression because immoral intrusive thoughts were suggested to be closely related to negative interpretations about oneself (Rachman, 1997) and depression in persons with obsessions (Shafran, Thordarson, & Rachman, 1996).

The principal aim of this study was to examine which type of obsession is more prone to induce negative self-inferences using an experimental task. We made the participants experience their most disturbing intrusive thoughts using a paradigm designed by us and examined changes in negative self-evaluations, negative self-conscious emotions, and d epression to determine which obsession is more prone to induce negative self-inferences. It was predicted that AOs would be more likely than ROs to provoke negative self-evaluations, negative self-conscious emotions and depression.

Methods

Participants

In order to participate in the present study,

participants need to be at least 18 years of age and to have been experiencing mental intrusions[1]. Further, participants must never have received a diagnosis of major depressive disorder, bipolar disorder, schizophrenia, schizoaffective disorder, schizophreniform disorder, brief psychotic disorder, generalized anxiety disorder, or posttraumatic stress disorder, as these mental disorders are known to be associated with unwanted intrusive thoughts. Potential participants did not engage in a diagnostic assessment, rather, they were asked about psychiatric history; if they reported any of the diagnoses listed above, then they were not permitted to participate. Undergraduate students ($n=45$) enrolled in introductory psychology courses at a national university in Seoul underwent an initial screening. They were given course credit for their participation. One participant was excluded because he had been diagnosed with major depressive disorder by a psychiatrist in a university medical center, and four participants who scored 0 in the Korean version of the ROII (K-ROII; Lee & Kwon, 2003) were also excluded. 40 students (22 males, 18 females) were participated in the task procedure. They were given course credit for their participation and were also given a small

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[1] A Korean version of the Revised Obsessional Intrusion Inventory (ROII; Purdon & Clark, 1993) was administered to the participants and those who scored 0 on the measure were regarded as not having mental intrusions. These participants were excluded from the study.

financial reward after the completion of the experiment. The participants were assigned to two groups: the AOs group and the ROs group.

Self-report Measures

Obsessive-Compulsive Inventory-Revised (OCI-R)

The OCI-R is a well-established 18-item questionnaire on which respondents rate the degree to which they have been bothered or distressed by 18 common symptoms of OCD in the past month on a scale from 0 (not at all) to 4 (very much) (Foa, et al., 2002). Scores for the 18 items are summed to yield a total score. It assesses six symptom domains: (1) washing, (2) checking/doubting, (3) obsessing, (4) neutralizing, (5) ordering, and (6) hoarding. Foa et al. (2002) found the OCI-R to possess good internal consistency, test-retest reliability, convergent validity and good discriminant validity. A recent study also found that the OCI-R was more strongly correlated with other OCD measures than with the measures of depression or pathological worry, using student samples (Hajcak, Huppert, Simons, & Foa, 2004). A Korean version of the OCI-R which has demonstrated good psychometric properties was administered here (Woo, Kwon, Lim, & Shin, 2010). Cronbach's alpha for the OCI-R was .89 in this study.

Revised Obsessional Intrusion Inventory (ROⅡ)

The ROII is a questionnaire that assesses intrusive thoughts, images, and impulses with good psychometric properties: good internal consistency, test-retest reliability, convergent validity and good discriminant validity (Purdon & Clark, 1993). It presents 52 items of mental intrusions and asks participants to rate how frequently they experience each of the thoughts on a 7-point Likert scale (0: never; 1: once or twice ever; 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). A total score is created by summing across 52 items. A Korean version of the ROII was administered here. This version has demonstrated good psychometric properties and has a two-factor structure corresponding to the autogenous and reactive obsessional subtypes (Lee & Kwon, 2003). Cronbach's alpha for the K-ROII was .95 in this study.

Center for Epidemiologic Studies Depression Scale (CES-D)

The CES-D is a 20-item questionnaire that assesses depressive symptoms (Radloff, 1977). Items are rated on a 4-point scale(from 0 to 3) according to the frequency with which symptoms were experienced during the preceeding week and are summed to compute a total score. It has demonstrated good psychometric properties. A Korean version of the CES-D, which has also demonstrated good psychometric properties, was administered here (Cho & Kim 1998). The cutoff score of CES-D for clinical depression in Cho and Kim(1998) was 25. Cronbach's alpha for the CES-D was .88 in this study.

Beck Anxiety Inventory (BAI)

The BAI is a widely used 21-item questionnaire assessing anxiety symptoms (Beck, Brown, Epstein, & Steer, 1988). Items are rated on a 4-point severity scale (from 0 to 3) referring to experience of anxiety symptoms over the past week. Scores for the 21 items are summed to yield a single anxiety score. A Korean version of the BAI, with good demonstrated reliability and validity, was administered here (Kwon, 1992). Cronbach's alpha for the BAI was .90 in this study.

Self-evaluation and Affect Scale (SAS)

The SAS was developed by us to evaluate a person's negative self-evaluations and negative affect. The SAS consists of two sections, a negative self-evaluation section and a negative affect section. The negative self-evaluation section consists of three self-domains that have been suggested as having crucial influences on OCD symptoms, as follows: (1) morality, (2) dangerousness, and (3) competence (Doron, et al., 2007; Ferrier & Brewin, 2005). We also included a 'global self-evaluation' dimension. The negative affect section is also consisted of four dimensions: (1) anxiety, (2) depression, (3) guilt,

and (4) shame. We included two negative self-conscious emotions ('guilt' and 'shame'), which have been frequently mentioned in the OCD literature (e.g., Lee & Kwon, 2003; Rachman, 1993; Rachman, 1997). 'Anxiety' is also included to check whether the participants actually experience their most disturbing thoughts while they are performing the task designed by us. Finally, we included the 'depression' dimension because it is also known to be related to negative self-inferences (Smith, et al., 2009).

We adapted the continuous rating scale method (i.e., a direct-judgment rating scale where the respondent is free to insert a tick mark along some line to represent one's judgment) for the SAS, which is a simplified version of a magnitude scale (Lodge, 1981). This method has several strengths: (1) it represents a respondent's judgment more accurately than other itemized scales because it provides larger numbers of points, and (2) it prevents habitual response behaviors and makes respondents think about what the question really means and how to respond to it (Gardner, Cummings, Dunham, & Pierce, 1998). These two features were important in our study because we measured participants' negative self-evaluations and instances of negative affect twice (i.e., (a) before they performed the task and (b) after they finished the task) in a relatively short time interval (about 10 minutes). Using this method allowed us to minimize the possibility of 'habitual responses' and detect slight changes of negative self-evaluations and negative affect.

In the negative self-evaluation section, subjects described their evaluations by making a mark on each of 4 linear scales, labeled "I am a bad person", "I am an immoral person", "I am an dangerous person", and "I am an incompetent person". Only the end points of the line were labeled as "Not at all" and "Very much". The responses were scored in millimeter increments. The possible range of response was 1 – 120, and we expected it would allow us to detect slight changes in responses of participants more accurately. In the negative affect section, subjects described their feelings by making a mark on each of 4 linear scales, labeled "Anxiety", "Depression", "Guilt", and "Shame". Only the end points of the line were labeled as "Do not feel at all" and "Feel very strongly". The responses were scored in millimeter increments. The possible range of response was 1-120.

Classification of autogenous vs. reactive obsession subgroups

Participants were divided into the AOs or ROs subgroup based on their primary obsession as identified by the K-ROII. Participants were instructed to indicate their primary obsession out of the 52 items listed on the K-ROII and were also instructed to write their unique primary obsession down on the form in the event that they could not identify it from the K-ROII. All

participants, however, were able to identify their primary obsessions from the items listed on the K-ROII. Participants were classified into either the AOs or ROs group based on whether their primary obsession was located on the autogenous vs. the reactive subscale of the K-ROII.

Of the 40 participants, 20 were classified as presenting with the AOs subtype (12 males, 8 females) and thus 20 were classified as presenting with the ROs subtype (10 males, 10 females). Because this classification of the AOs vs. the ROs subgroup was based on the participants' primary obsessions rather than their composite scores on the autogenous vs. the reactive subscale of the K-ROII, we examined whether the participants placed into the AOs group would display an overall pattern of intrusions that was more consistent with the ROs group by comparing the AOs and ROs groups on their overall patterns of mental intrusions as measured by the K-ROII subscale composite scores. Consistent with their primary obsession classification, the AOs group scored significantly higher than the ROs group on the autogenous subscale of the K-ROII [Mean$_{AOs}$ = 66.70 (SD = 25.38), Mean$_{ROs}$ = 30.90 (SD = 21.00), $t(38)$ = 4.86, $p<.001$] and significantly lower than the ROs group on the reactive subscale [Mean$_{AOs}$ = 16.10 (SD = 8.24), Mean$_{ROs}$ = 25.15 (SD = 9.44), $t(38)$ = - 3.23, $p<.01$].

Procedure

Study procedures were administered by the first author and by graduate research assistants of the second author and all examiners had extensive training in the administration of all components of the study. Upon their arrival at the laboratory, participants were provided with basic information about the experiment, after which we obtained signatures on informed written consent forms. They then completed several self-report measures.

Thought suppression task

We designed a task to make participants experience their most disturbing intrusive thoughts based on the task descriptions in Rassin et al. (1999). After the completion of the self-report measures, the participants were instructed to recall the most disturbing intrusive thought they selected from the K-ROII. They then received the following written instructions: "The object of this experiment is to measure your ability to control your thoughts. During the next five minutes you should try to suppress the most disturbing thought that you have selected. As you may know, the process of thinking is accompanied by electrical activity in the brain. Therefore, it is possible to read thoughts by monitoring the electrical activity in the brain. Particularly, because disturbing thoughts usually provoke a relatively strong electrical reaction, we can detect whether those

thoughts pop up in your mind through an EEG apparatus, which is a sensitive method for monitoring mental intrusions. Two electrodes will be placed on your head and your brain activity will be recorded. You should know that each time you think of the most disturbing thought, the apparatus will pick up the thought. If you think of the thought despite your all efforts to suppress it, you may undo your mistake by pressing the button in front of you immediately after the thought has surfaced in your stream of consciousness." After they read the instructions, two bogus electrodes were attached to the subjects' forehead. During the five minutes that followed, the number of times that the button was pressed was recorded.

Post-task self-report measures and debriefing

After they finished the task, they completed the SAS again and were then provided a debriefing by one of the researchers. We made sure that all of the participants were fully informed about the experiment and that they were not distressed by the experiment. We also checked if there was anyone who didn't believe what they were told about the task procedure, and we found that no one was suspicious of the task instruction.

Statistical analysis

Statistical analysis was performed with SPSS version 14. Negative self-evaluations and the instances of negative affect of the participants were analyzed by mean of two-way mixed design analysis of variance (ANOVA) with the type of obsessional group (AOs vs. ROs) as the between-groups variable and the time (pre-task vs. post-task) as the within-groups variable. We also conducted one-way repeated measures ANOVA with the time (pre-task vs. post-task) as the repeated-measure in each obsessional group.

Results

Demographic and clinical characteristics of the groups

Table 1 presents the basic demographic and clinical characteristics of the current sample between the two groups. There were no significant differences in age, anxiety, depression, and OCD symptoms between these two groups. For comparison, the mean BAI scores for nonclinical college students and anxiety disorders patients in Yook and Kim(1997) were 14.3 (SD=8.4) and 22.4 (SD=12.4) respectively. The cutoff score of CES-D for clinical depression in Cho and Kim(1998) was 25. Thus, the level of anxiety and depression in our participants can be regarded as mostly within the normal range. The mean OCI-R scores for nonclinical college students and OCD patients in Woo et al.

Table 1. Demographic and clinical characteristics between the two groups

| | AOs ($n=20$) | | ROs ($n=20$) | | |
	M	SD	M	SD	t [a]
Age	20.95	2.33	21.65	2.30	-.96
BAI	16.55	9.19	13.25	10.20	1.08
CES-D	19.50	8.68	14.95	7.63	1.76
OCI-R	16.80	10.00	19.30	10.97	-.75
K-ROII	33.15	15.77	22.95	18.18	1.90

Note: AOs = autogenous obsessions; ROs = reactive obsessions; BAI = Beck Anxiety Inventory; CES-D = Center for Epidemiologic Studies Depression Scale; OCI-R = Obsessive-Compulsive Inventory-Revised; K-ROII = Korean version of Revised Obsessional Intrusion Inventory.

[a] df=38

(2010) were 17.46 (SD=11.03) and 29.51 (SD=12.53) respectively. The mean ROII total scores for nonclinical community subjects and OCD patients in Morillo, Belloch, and Garcia-Soriano (2007) were 20.13 (SD=15.17) and 49.23 (SD=30.11) respectively.

Generating mental intrusions

The most frequently selected AOs as the primary intrusive thoughts in the AOs group were aggressive thoughts-impulses against others (55%) such as thoughts/impulses of 'hurting strangers', 'hurting family', 'pushing stranger-train, car', or 'choking family member'. These thoughts are also the most frequent intrusive thoughts in the OCD patients (Morillo et al., 2007). The ROs group reported the thoughts of contamination by touching neutral objects as the most disturbing intrusive thoughts (43%), and those thoughts are also one of the most frequent

obsessions in the OCD patients (Morillo et al., 2007).

We checked the frequency of mental intrusions through the key-pad system to find whether or not the thought-suppression task was effective. The average frequency of mental intrusions was 5.4 (SD=9.47, range 1~47) and every participant pressed the key-pad at least once while they were completing the task, which means that all of the participants had their most disturbing intrusive thoughts at least once. There was no significant difference in the frequency of mental intrusions between the two groups, t(38) = .37, *ns*.

Differences in negative self-evaluations

The pre-task values of negative self-evaluation in the AOs group did not significantly differ from the pre-task values in the ROs group

Table 2. Changes in negative self-evaluations

	Pre-task		Post-task		Possible range
	M	SD	M	SD	
AOs (*n*=20)					
Global	36.00	14.51	50.75	16.92	1 - 120
Morality	42.25	21.57	52.80	16.55	1 - 120
Dangerousness	36.10	23.15	48.90	25.35	1 - 120
Competence	37.30	11.54	43.95	11.40	1 - 120
ROs (*n*=20)					
Global	33.40	18.27	27.75	18.04	1 - 120
Morality	33.10	18.23	27.95	16.60	1 - 120
Dangerousness	31.45	19.40	29.80	17.73	1 - 120
Competence	31.70	8.84	27.75	15.11	1 - 120

Note: AOs = autogenous obsessions; ROs = reactive obsessions.

[Global, $t(38) = .50$, *ns*; Morality, $t(38) = 1.45$, *ns*; Dangerousness, $t(38) = .69$, *ns*; Competence, $t(38) = 1.72$, *ns*], and the group (AOs vs. ROs) x time (pre-task vs. post-task) interactions were significant in all of the dimensions [Global, $F(1, 38)=20.50$, $p<.001$, partial $\eta^2=.35$; Morality, $F(1, 38)=7.08$, $p<.05$, partial $\eta^2=.16$; Dangerousness, $F(1, 38)=4.27$, $p<.05$, partial $\eta^2 =.10$; Competence, $F(1, 38)=8.25$, $p<.001$, partial $\eta^2=.18$] (Table 2). The follow-up one-way repeated measures ANOVA indicated significant differences between the pre-task values and the matching post-task values of the AOs group in the global self-evaluation dimension, $F(1, 19) = 33.39$, $p<.001$, partial $\eta^2=.64$, the morality dimension, $F(1, 19) = 8.09$, $p<.05$, partial $\eta^2=.30$, the dangerousness dimension, $F(1, 19) = 6.64$, $p<.05$, partial $\eta^2=.26$, and the competence dimension, $F(1, 19) = 12.24$, $p<.01$, partial $\eta^2=.39$. In contrast, the ROs group did not show significant changes in any of the dimensions.

Differences in negative affect

The pre-task values of negative affect in the AOs group and the ROs group were not significantly different from each other [Anxiety, $t(38) = 1.63$, *ns*; Depression, $t(38) = .87$, *ns*; Guilt, $t(38) = 1.03$, *ns*; Shame, $t(38) = 1.70$, *ns*], and the group (AOs vs. ROs) x time (pre-task vs. post-task) interactions were significant in two dimensions (i.e., guilt and shame) [Guilt, $F(1, 38)=7.77$, $p<.01$, partial $\eta^2=.17$; Shame, $F(1, 38)=10.63$, $p<.01$, partial $\eta^2=.22$; Anxiety, $F(1, 38)=.60$, *ns*; Depression,

Table 3. Changes in negative affects

	Pre-task		Post-task		Possible range
	M	SD	M	SD	
AOs (*n*=20)					
Anxiety	56.65	19.71	62.35	18.66	1 - 120
Depression	55.40	23.71	60.20	23.45	1 - 120
Guilt	44.45	21.09	58.30	22.68	1 - 120
Shame	46.15	15.55	57.70	20.24	1 - 120
ROs (*n*=20)					
Anxiety	45.95	21.74	55.80	16.21	1 - 120
Depression	48.75	24.65	46.05	20.37	1 - 120
Guilt	37.25	23.29	32.85	21.39	1 - 120
Shame	36.35	20.53	29.95	20.05	1 - 120

Note: AOs = autogenous obsessions; ROs = reactive obsessions.

$F(1, 38)=1.77$, *ns* } (Table 3). The one-way repeated measures ANOVA revealed significant differences between the pre-task values and the matching post-task values of the AOs group in all of the dimensions [Anxiety, $F(1, 19) = 4.53$, $p<.05$, partial $\eta^2=.19$; Depression, $F(1, 19) = 4.42$, $p<.05$, partial $\eta^2=.19$; Guilt, $F(1, 19) = 15.96$, $p<.01$, partial $\eta^2=.46$; Shame, $F(1, 19) = 18.32$, $p<.001$, partial $\eta^2=.49$], but it revealed no significant differences between the pre-task values and the matching post-task values of the ROs group in all of the dimensions except in anxiety, $F(1, 19) = 5.33$, $p<.05$, partial $\eta^2=.22$. This result showed that the thought-suppression task successfully generated disturbing thoughts in the participants in both groups, as persons with obsessions can feel anxious when they are experiencing disturbing intrusive thoughts (Salkovskis, 1985).

Discussion

In this study, we examined which type of obsession is more likely to be related to negative self-inferences using an experimental task. We induced the most disturbing mental intrusions of each participant using a thought-suppression task and measured negative self-evaluations and negative affect. The results revealed that persons with AOs show significant changes in the global, morality, dangerousness, and competence dimensions of negative self-evaluations and in anxiety, depression, guilt, and shame after experiencing their disturbing mental intrusions, whereas persons with ROs show significant

changes only in the anxiety dimension. These findings suggest that those primarily displaying AOs are more prone to show negative self-inferences regarding their obsessions compared to those primarily displaying ROs.

Although the post-task values of depression were significantly higher than the matching pre-task values in the AOs group, the group (AOs vs. ROs) x time (pre-task vs. post-task) interaction in depression was not significant. There are several possible explanations for this result. First, it is possible that the sample size of this study was too small to detect meaningful differences between the two groups. Second, although depression is related to negative self-inferences (Smith, et al., 2009), it might be less closely associated with negative self-inferences than are negative self-conscious emotions. Therefore, future studies with larger sample sizes would be needed to confirm the results of our study.

There have been few studies covering the relationship between obsessions and negative self-inferences. We, however, can find a valuable clue in a study by Purdon and Clark (1999). They suggested that if someone has a thought that is grossly inconsistent with his/her sense of the self, he/she begins to question his/her self-view, which means that 'ego-dystonic' thoughts tend to make someone think about his/her hidden aspects of the self and doubt themselves. These types of thought also tend to be experienced as more upsetting than other intrusive thoughts (Rowa, et al., 2005). According to the AO-RO model, AOs are perceived as highly ego-dystonic and unrealistic, whereas ROs are perceived as relatively less ego-dystonic and realistic (Lee & Kwon, 2003). Thus, the results of our study are in line with the findings of Purdon and Clark (1999). More importantly, our findings suggest that there are specific obsessions that are not likely to induce negative self-inferences. These findings may have important clinical implications for OCD treatment. Since Rachman (1997) has mentioned the importance of negative inferences about oneself with obsessions in OCD symptomatology, the way that persons with obsessions interpret their mental intrusions in relation to the perception of themselves has been considered as an important treatment target. The findings of our study suggest that the therapeutic approach primarily focused on this target is more beneficial for persons with AOs than those with ROs. For example, individuals with AOs could be benefited from cognitive therapies that focused on cognitive errors they make when they interpret their mental intrusions in relation to the perception of themselves, and related underlying beliefs that influence on the interpretation of their mental intrusions. However, those with ROs are less likely to be benefited from these approaches because they are not prone to interpret their mental intrusions in relation to the perception of themselves.

Several limitations of the study and

recommendations for future studies should be noted. First, the use of undergraduate students with obsessive intrusions limits the generalizability of our findings. However, taxometric studies suggest that OC symptoms are continuous in nature (Olatunji, Williams, Haslam, Abramowitz, & Tolin, 2008), indicating that findings in non-clinical samples are relevant to clinical samples. A review also noted that associations between OC symptoms and cognitions are comparable in OCD and non-clinical samples (Gibbs, 1996). Rachman and de Silva (1977) examined differences and similarities between mental intrusions in nonclinical persons and obsessions in persons with OCD and found that contents of the two are very similar whereas the frequency were much higher in persons with OCD. In our study, the contents of the most disturbing mental intrusions were also similar to the most disturbing obsessions that were reported in other study. Thus, the results in our study might have some meaningful implications in understanding and treating obsessions in persons with OCD as well. Second, there may be another way to assess negative self-inferences more accurately. Further studies using other types of assessments are necessary to confirm the findings here. For example, directly assessing negative self-inferences with self-report methods would be an appropriate way. Although there are few measures directly assessing the extent to which a specific mental intrusion lead to negative

inferences about the self, Ferrier and Brewin(2005) developed a measure to assess the extent to which intrusive thoughts lead to negative self-inferences in general. Example items include "Some of my intrusive thoughts make me think that deep down I am a bad person" and "Some of my intrusive thoughts make me worry that I may do something that would cause others to disown me" (Ferrier & Brewin, 2005). Modified versions of this measure could be used in future studies. Third, we used only a self-report method to measure the participants' levels of affect. Although this is the most common way to measure emotional experiences (Robinson & Clore, 2002), other types of methods (e.g., galvanic skin response methods, functional magnetic resonance imaging methods) would be beneficial to add weight to the findings in this study. Fourth, the effect of the thought suppression task itself was not controlled well enough in our study. Although our primary object was to make the participants experience their intrusive thoughts using a thought suppression task, which was found to be successful, it would be better to control the effects of the task itself on the dependent variables. Future studies using a control group that are instructed to suppress any neutral thoughts would be helpful to control the effects of the task itself. Fifth, follow-up assessments of the participants would be beneficial to support the findings here. Although the baseline scores of the negative self-evaluations, the negative

self-conscious emotions, anxiety, and depression of the two groups were not significantly different from each other, assessing these variables once more when the effects of the task subside would be valuable to find out whether the changes in dependent variables are due to having specific mental intrusions or not. Despite these limitations, the current study presents data supporting that AOs are more likely than ROs to induce negative self-inferences, thus providing an empirical basis for further studies about the relationship between inferential processes and the AOs-ROs taxonomy in OCD.

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자생성/반응성 강박사고와 부정적 자기추론의 관계

서 장 원   권 석 만

서울대학교 심리학과

강박 사고는 부정적 자기 추론을 유발하는 경향이 있는 것으로 알려져 왔다. 하지만 강박사고의 유형과 부정적 자기추론의 관계를 다룬 연구는 매우 드물다. 본 연구의 목적은 어떤 유형의 강박사고가 부정적 자기추론을 유발하는 경향이 더 강한지를 살펴보는 것이다. 40명의 피험자들을 자생성 강박사고 집단과 반응성 강박사고 집단으로 나눈 후, 가장 불편하게 느끼는 침투적 사고를 실제로 경험하도록 고안된 사고 억제 과제를 수행하도록 하였다. 침투사고가 부정적 자기추론을 유발하는 정도를 평가하기 위해 부정적 자기평가와 부정적 자의식 정서를 측정하였다. 실험 결과, 자생성 강박사고를 주로 나타내는 피검자들은 사고 억제 과제를 수행한 후 도덕성과 위험성, 유능감의 측면에서 스스로를 더 부정적으로 평가했으며, 부정적 자의식 정서를 더 많이 경험하는 것으로 나타났다. 반면, 반응성 강박사고를 주로 나타내는 피검자들은 과제 수행 전과 후에 자기 평가 혹은 자의식 정서 측면에서 유의미한 변화가 없었다. 이러한 결과들은 강박사고의 유형에 따라 부정적 자기추론을 유발하는 정도가 다르며, 자생성 강박사고가 반응성 강박사고에 비해 부정적 자기추론을 유발할 가능성이 더 높다는 점을 시사한다.

주요어 : 강박 장애, 자생성 강박사고, 반응성 강박사고, 부정적 자기추론, 사고 억제