한국심리학회지: 일반
Korean Journal of Psychology
2007, Vol. 26, No. 2, 261-277

What makes repressors good suppressors?:
The effect of trait anxiety[1)]

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The current study investigated whether individuals with a repressive coping style would differ in their ability to strategically control unwanted memories from nonrepressors within the think / no－think (TNT) paradigm. Results revealed that unlike repressors who exhibited successful memory inhibition regardless of the valence of to－be－suppressed materials, nonrepressors were less successful at suppressing negative memories. Most importantly, however, these group differences were found to be solely due to the effect of trait anxiety rather than interaction of trait anxiety and defensiveness (i.e., repressive coping per se). Individuals with low trait anxiety were better at suppressing negative memories than individuals with high trait anxiety. There also existed individual differences in self-initiated thought control strategies in that individuals with high trait anxiety reported more use of negative avoidance strategy than their counterparts and this strategy was negatively correlated with suppression success. Suggesting it is trait anxiety that matters when strategically control negative memories, the present study provides insight for understanding the voluntary control mechanism of unwanted memories in repressive and nonrepressive copers.

Key words: repressive coping, memory suppression, thought control, think / no－think

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1) This research was supported by Brain Korea 21 project (2007-8-0028).

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Individuals often encounter reminders to things that they desire not to think about such as painful loss of loved one or past traumatic events. There would be no problem if it were easy to avoid those reminders to unwanted memories. Frequently, however, it is quite difficult and so individuals need to control memory, suppressing unwanted episodes. Are there individual differences in such ability of memory control? More specifically, are certain individuals better than others at voluntarily forgetting a bad experience by intentionally suppressing it? In fact, growing body of literature has demonstrated individual differences in forgetting (Barnier, Levin, & Maher, 2004; Hertel & Gerstle, 2003; Myers, Brewin, & Power, 1998), and among them, a promising line of research has focused on the memory performance of individuals with a 'repressive coping style'.

The repressive coping style refers to a trait-like tendency to underreport negative experience, reflecting a habitual style of avoidant coping with aversive events. Weinberger, Schwartz, and Davidson (1979) classified individuals into one of four groups based on varying levels of anxiety and defensiveness: low-anxious (low anxiety, low defensiveness), repressor (low anxiety, high defensiveness), high-anxious (high anxiety, low defensiveness), and defensive high-anxious (high anxiety, high defensiveness). Repressors were characterized by high levels of autonomic reactivity while reporting low levels of anxiety and negative affect under highly stressful conditions. This lack of concordance with psycho-physiological, behavioral and cognitive correlates of emotional experience (Brown, Tomarken, Orth, Loosen, Kalin, & Davidson, 1996; Shane & Peterson, 2004) places them at an increased risk for physical illness (e.g., Esterling, Antoni, Kumar, & Schneiderman, 1993).

Evidence has been accumulated indicating that the repressive coping style accompanies an enhanced capability of retrieval inhibition. Repressors suppress negative memories of both autobiographical events (Myers & Brewin, 1994; Myers & Derakshan, 2004) and experimentally generated materials (Derakshan, Myers, Hansen, & O'Leary, 2004; Myers et al., 1998) better than nonrepressors do. For example, repressors, compared with nonrepressors, recalled significantly fewer negative autobiographical events and took longer to retrieve them (Myers & Brewin, 1994; Myers & Derakshan, 2004). When tested with the so-called 'white bear' paradigm, in which conscious efforts to avoid particular thoughts ironically increase the incidence of the unwanted thoughts, repressors reported fewer incidences of target thoughts for emotionally negative events, even when not instructed to suppress (Barnier et al., 2004). Therefore, repressors appear to be natural suppressors who are skilled in avoiding negative thoughts.

Some of recent findings, however, suggest that there might be no relation between repressive coping and suppression (Luciano & Algarabel, 2006; Myers, Vetere, & Derakshan, 2004). Myers et al. (2004), for example, investigated whether repressive coping style would relate to a self-report measure of suppression of various affect (depression, anger, and anxiety) and found that group differences in the suppression of anxiety were solely due to differential level of trait anxiety (i.e., repressors and low-anxious groups vs. high-anxious and defensive high-anxious groups). Luciano and

Algarabel (2006) also found that there was no significant difference either between repressor and low－anxious groups or between high－anxious and defensive high－anxious groups in the self－report measures of chronic thought suppression and of perceived ability to control unwanted intrusive thoughts. These results raised a possibility that the individual difference in memory suppression might be accounted for by the level of trait anxiety alone, rather than by the combination of trait anxiety and defensiveness (i.e., repressive coping).

Aforesaid quite contradicting results might be arisen, in part, from the differing research methods. Self－report measures and thought suppression paradigm are both susceptible to reporting bias. For example, in a thought suppression task which relies on a behavioral self－report of subjective experience, repressors' performance might reflect reporting bias rather than limited awareness per se. It is also possible that repressors use a different criterion for what counts as a certain topic－related thought (Barnier et al., 2004). As for the directed forgetting paradigm, direct instruction to forget might heighten repressors' tendency to behave in socially desirable ways, which might result in repressors' high motivation to meet perceived experimental demands. To minimize the possible influence of reporting bias and other confounding factors, a research method which indexes the impact of thought control on incidental recall of avoided items such as the think/no－think (TNT) paradigm (Anderson & Green, 2001) is strongly desired.

The TNT paradigm consists of three phases (Anderson & Green, 2001). In the first phase, participants memorize a list of cue－target word pairs until a predetermined criterion of accuracy is reached. In the second phase, participants control their memories of target words when cue words are presented. Participants elaborate some target words by repetitively thinking of them ('Think' condition) or suppress the other target words by repetitively not letting them enter consciousness ('No－think' condition). Typical results reveal a linear increase or decrease in memory retrieval success with the number of times a particular type of cognitive control is exerted over associative memory. In the Think condition, the more time a cue word is repeated, the better its target associate is recalled. In the No－think condition, the more time a cue word is repeated, the worse its target associate is recalled. Of critical importance, this pattern of results is amplified with emotionally－charged materials in that both facilitation and suppression effects increased for negative information relative to neutral one (Depue, Banich, & Curran, 2006; Depue, Curran, & Banich, 2007). Anderson and colleagues intepreted voluntary suppression of unwanted memories in terms of inhibition; avoiding conscious awareness of certain items reduces its activation level in long－term memory causing long－lasting impairments at recalling those items (Anderson & Green, 2001; Anderson et al., 2004; Levy & Anderson, 2002). The demonstration of memory inhibition in a simple laboratory setting leads to the plausible assumption that there must be stronger inhibition effect for unwanted memories central to individuals' everyday lives (Conway, 2001).

Along with cognitive control of unwanted memories, possible self－initiated strategies exerted to suppress unwanted thoughts deserve a full

consideration. Given that memory suppression is subjected to ironic control processes in which successful suppression requires the re-checking of unwanted memory (Wegner, 1994), it is important to examine the relation between individuals' self-initiated strategies and their success or failure in memory suppression. So far, only one study directly addressed this question within the TNT paradigm and found that thinking about something else ("thought substitution") aided individuals' intentional forgetting substantially (Hertel & Calcaterra, 2005). At present, however, no previous finding exists in regard to the relation between repressors' thought control strategies and their actual memory suppression performance in an experimental setting.

Taken together, the current study explored three important features within the TNT paradigm: (1) the overall tendency of memory control and the effect of emotional valence on suppression in repressors and nonrepressors, (2) the effect of repressive coping (interaction of trait anxiety and defensiveness) on memory control performance, and (3) the difference in self-initiated memory control strategies between repressors and nonrepressors and the effectiveness of these strategies. The current study may provide insights regarding whether repressors are just better at self-deceiving than nonrepressors or whether they are actually skillful forgetters of negative emotional events. Critically, the examination of differential levels of trait anxiety and defensiveness on memory suppression may reveal what contributes to the difference in memory control among repressive and nonrepressive individuals.

Method

Participants and Design

An initial sample of 268 undergraduates at Yonsei University completed the Manifest Anxiety Scale (MAS; Bendig, 1956) and the Marlowe-Crowne Social Desirability Scale (MCSDS; Crowne & Marlowe, 1964). Median splits initially classified participants into four groups: 73 repressors, 38 low-anxious, 73 high-anxious, and 40 defensive high-anxious. The median scores for MAS and MCSDS were 8 and 14 respectively. Among initial participants, a total of 79 individuals (47 females, mean age 21.91, age range of 18-29 years) participated in a subsequent experiment for course credits or pecuniary compensation of $ 15. Among them, four participants who failed to meet the criterion for the learning phase (± 3 *SD* from the mean number of learning cycle) were excluded from analysis, leaving a final sample of 75. The resulting classification of the participants for the main experiment was 29 repressors and 46 nonrepressors (10 low-anxious, 23 high-anxious, and 13 defensive high-anxious). Table 1 presents mean scores and standard deviations on the trait anxiety and defensiveness for the final sample according to the group classification.

The design of the current study was 2 (group; repressors vs. nonrepressors) × 2 (valence; neutral vs. negative) × 2 (instruction; respond vs. suppress) × 4 (number of trials; 0, 1, 8, 16). Only the group variable was a between-subject factor.

Instruments

Prescreening measures

Bendig short form of the Manifest Anxiety Scale (MAS; Bendig, 1956). This measure is a 20-item true-false questionnaire that presents various physiological and subjective symptoms of anxiety. The total scores range between 0 (low anxiety) and 20 (high anxiety). The internal consistency and 2-week test-retest reliability of the Korean version (Lee, 2000) were .84 and .86 respectively. The internal consistency for the present study was .84.

Marlowe-Crowne Social Desirability Scale (MCSDS; Crowne & Marlowe, 1964). MCSDS was developed by Crowne and Marlowe (1964) to assess individuals' tendency to distort self-presentation toward socially desirable ways and the level of defensiveness. This measure comprises 33 true-false items and the total scores range between 0 (low defensiveness) and 33 (high defensiveness). The internal validity and 2-week test-retest reliability were both .76 for the Korean version (Lee, 2000). For the present study, the internal consistency was .74.

Post-experimental measures

State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970). STAI was developed to measure individuals' level of anxiety. This measure is composed of 20 items for state anxiety measuring how the subjects feel right now (STAI-S) and 20 items for trait anxiety measuring how the subjects generally feel (STAI-T). The current study used only STAI-S to measure participants' level of state anxiety induced by the negative experimental materials. Total scores on the STAI-S vary from 0 to 60, with higher scores indicating more state anxiety. The internal consistency of Korean STAI-S (Kim, 1978) was .86.

Korean-Revised Obsession Intrusion Inventory (K-ROII; Purdon & Clark, 1993, 1994). Purdon and Clark (1993, 1994) developed ROII to evaluate the experience of the intrusive thought, image, and impulses in normal adults. The Korean version was developed by Lee (1999) and shortened by Lee (2000). In the current study, only Part Ⅱ of the K-ROII measuring control strategies with 15 items was used to explore general tendencies of using certain strategies in everyday life. Control strategies consist of three dimensions: negative avoidance, neutral avoidance, and confrontation. The internal consistencies of items for each dimension were .64, .66, and .70, respectively.

Strategy Questionnaire (Hertel & Calcaterra, 2005). This measure was adapted from a work of Hertel and Calcaterra (2005) to understand possible strategies used to suppress unwanted memories in

Table 1. Means (and standard deviations) for trait anxiety (MAS) and defensiveness (MCSDS) for the repressor (REP), low-anxious (LA), high-anxious (HA), and defensive high-anxious (DHA) groups.

	REP (n=29)	LA (n=10)	HA (n=23)	DHA (n=13)
MAS	3.10 (2.24)	4.30 (2.35)	13.17 (3.55)	11.54 (3.46)
MCSDS	18.34 (2.62)	9.10 (2.99)	9.35 (2.52)	16.85 (1.28)

the TNT phase. This questionnaire consists of 5 items (See Table 2) and subjects rate how frequently they used each of 5 strategies on a 5-point Likert Scale.

Experimental Materials

The stimuli were 50 neutral-neutral and 50 neutral-negative noun pairs. Initially, 260 nouns matched for the length, frequency of use, and emotional distinctiveness (Hahn & Kang, 2000; Park & Min, 2005) were chosen and later evaluated on their valence and familiarity by 16 graduate students in psychology. The final set of words was at a near median level of familiarity on a scale from 1 to 7 (neutral: M=4.91, SD=0.64; negative: M=4.84, SD=0.58). The two word groups of words differed in valence (neutral: M=4.03, SD=0.09; negative: M=1.78, SD=0.12).

Procedure

After signing informed consent, participants completed two TNT blocks (neutral vs. negative), each consisting three phases: learning, think/no-think and final recall. The order of blocks was counter-balanced. The experiment was designed with Matlab software, which was used to display the stimuli. Paper-and-pencil-based tests were used to measure participants' recall performance in the learning and final recall phases.

Learning phase The cue-target word pairs were exposed individually in the center of a computer screen for 4000 ms with a 600 ms interstimulus interval. Participants were instructed to memorize the association for a later memory test. After the initial learning cycle, learning was assessed by requesting recall of the target word for each cue. If fewer than 50% of the responses were correct, learning cycle was repeated for a maximum of 5 cycles, in which word pairs were presented 4 s, 3 s, 2 s, 1 s, and 500 ms respectively.

Think/no-think phase Trials consisted of a 200 ms fixation cross and 4000 ms cue presentation (green: respond vs. red: suppress) with an intertrial interval of 400 ms. Upon presentation of each cue, participants were instructed to either say the target out loud and simultaneously press a predetermined key (respond condition) or to withhold their response (suppress condition). The presentation lasted

Table 2. Items on the Strategy Questionnaire.

1.	I made sure I still knew the associated word first, and *then* tried to *not think* of this associated word.
2.	I tried to not think of the associated response, but then *after the trial was over* I made sure I still remembered the response word.
3.	I kept myself from *saying/responding* the associated word, but kept repeating the response word to myself to improve my memory for it.
4.	I kept myself from *thinking* about the associated word by thinking about something else (another word or image, for example).
5.	I kept myself from *thinking* about the response word by keeping my mind completely blank.

up to 4000 ms when no key response was detected. In the suppress condition, contrary to instructions, if the computer registered a key response, an error beep was delivered. Participants were explicitly instructed not only to withhold their verbal / motor response, but also to prevent the target word from entering consciousness. In addition, while suppressing the target, they were instructed to fully attend to the cue word. In both the respond and suppress conditions, cues were presented 0, 1, 8 or 16 times.

Final recall phase All the cues were presented for 4000 ms. Participants were instructed to write down a target associate to each cue as quickly as possible regardless of prior instruction to think or not to think. Intertrial intervals were 400 ms.

Right after both experimental blocks were over, three questionnaires (STAI－S, K－ROII, and Strategy Questionnaire) were administered. Upon the completion of questionnaires, participants were fully debriefed and were thanked.

Results

Manipulation check for level of state anxiety

The scores on the STAI－S showed a significant difference according to the order of blocks, $p<.01$ (after the neutral block: $M=15.47$, $SD=4.44$; after the negative block: $M=31.57$, $SD=5.06$) indicating that the valence of stimuli elicited differential level of participants' inward anxiety in an expected way. Importantly, the scores after the negative block did not significantly differ across groups, $p>.7$ (REP: $M=33.47$, $SD=5.87$; LA: $M=34.80$, $SD=2.30$; HA: $M=30.27$, $SD=4.28$; DHA: $M=26.50$, $SD=6.04$) assuring that negative materials did not exert differential influence across groups.

Repressive coping－related differences

Low－anxious, high－anxious, and defensive high－anxious groups were combined as one nonrepressor group in the main analysis to examine group differences in memory control. The percentages of targets recalled on the final test were submitted to a mixed－design analysis of variance, with a between－subjects factor for group (repressors vs. nonrepressors). Within－subjects factors included valence (neutral vs. negative), instruction (respond vs. suppress) and the number of trials (0, 1, 8 or 16).[1] This analysis yielded a significant main effect of instruction (i.e., a difference between the numbers of targets recalled in the respond versus suppress conditions), $F(1, 73)=40.70$, $MSE=1089.70$, $p<.001$, and significant interaction of instruction and the number of trials (i.e., an increasing difference in recall between conditions with the number of cue presentations), $F(3, 219)=17.55$, $MSE=334.71$, $p<.001$, reflecting the basic TNT effects.

The most important result from the overall analysis was a significant 3－way interaction of group, valence, and instruction, $F(1, 73)=4.08$, $MSE=459.23$, $p<.05$. Figure 1 depicts no group difference in the recall of responded targets in both

1) The significance level was set at .05. Gender and the order of the blocks were included as factors in initial analyses but were removed from subsequent analyses because none of their effects was significant.

blocks (neutral: M=89% for repressors, M=91% for nonrepressors; negative: M=91%, M=90%, for repressors and nonrepressors, respectively). However, compared with repressors who recalled similar number of suppressed targets in both blocks (M=71% for both blocks), nonrepressors recalled significantly more targets subjected to no-think condition in the negative block than in the neutral block (neutral: M=73%; negative: M=81%).

To further examine whether the group difference in suppression performance in the negative block was due to the effects of trait anxiety or defensiveness alone or due to the interaction of trait anxiety and defensiveness, a follow-up 2 (trait anxiety: low vs. high) × 2 (defensiveness: low vs. high) analysis of variance was performed on a measure of experimental suppression in the negative block: suppressed recall (number of suppressed items recalled on the final recall test, omitting baseline). This analysis yielded only a significant effect of trait anxiety, F(1, 71)=5.64, MSE=337.76, p<.03; neither the main effect of defensiveness, F(1, 71)=0.35, p>.5, nor the interaction of trait anxiety and defensiveness, F(1, 71)=0.19, p>.6, was significant. Individuals with low trait anxiety (LA and REP: M=71.79%) recalled significantly fewer suppressed items than did individuals with high trait anxiety (HA and DHA: M=84.07%). The suppression performance of each group in both the neutral and negative blocks is presented in Table 3.

Differences in memory control strategies in the experiment

Participants' responses to the first three items on the Strategy Questionnaire were summed to constitute a score for noncompliance. The fourth and fifth items on the questionnaire were named substitution and blanking, respectively, for convenience. Three 2 (trait anxiety: low vs. high) × 2 (defensiveness: low vs. high) analyses of variance were performed on scores for noncompliance, substitution and blanking separately. On noncompliance scores, there was no effect of trait anxiety, F(1, 71)=1.33, p>.2 or defensiveness, F(1, 71)=0.23, p>.6, as well as no interaction of trait anxiety and defensiveness, F(1, 71)=1.92, p>.1. This confirmed that any group difference in suppression performance was not due to how well the participants reportedly complied with suppression instructions.

For substitution scores, only the main effect of defensiveness was significant, F(1, 71)=5.49, MSE=0.54, p<.03, indicating that highly defensive individuals (REP and DHA: M=4.79, SD=0.68) reported more frequently having thought about something else than did low-defensive individuals (LA and HA: M=4.39, SD=0.78). As for scores on blanking, there were main effect of trait anxiety, F(1, 71)=9.91, MSE=1.77, p<.01, and an interaction of trait anxiety and defensiveness, F(1, 71)=6.82, MSE=1.77, p<.02. As a whole, individuals with low trait anxiety (LA and REP: M=3.46, SD=1.39) reported more frequent use of blanking strategy than did those with high trait anxiety (HA and DHA: M=2.69, SD=1.39). Among individuals with low trait anxiety, those who are less defensive reported having more frequently kept their mind completely blank than their counterparts did (LA: M=4.50, SD=1.27 vs. REP: M=3.10, SD=1.26). However, participants with

high trait anxiety exhibited the opposite pattern, in

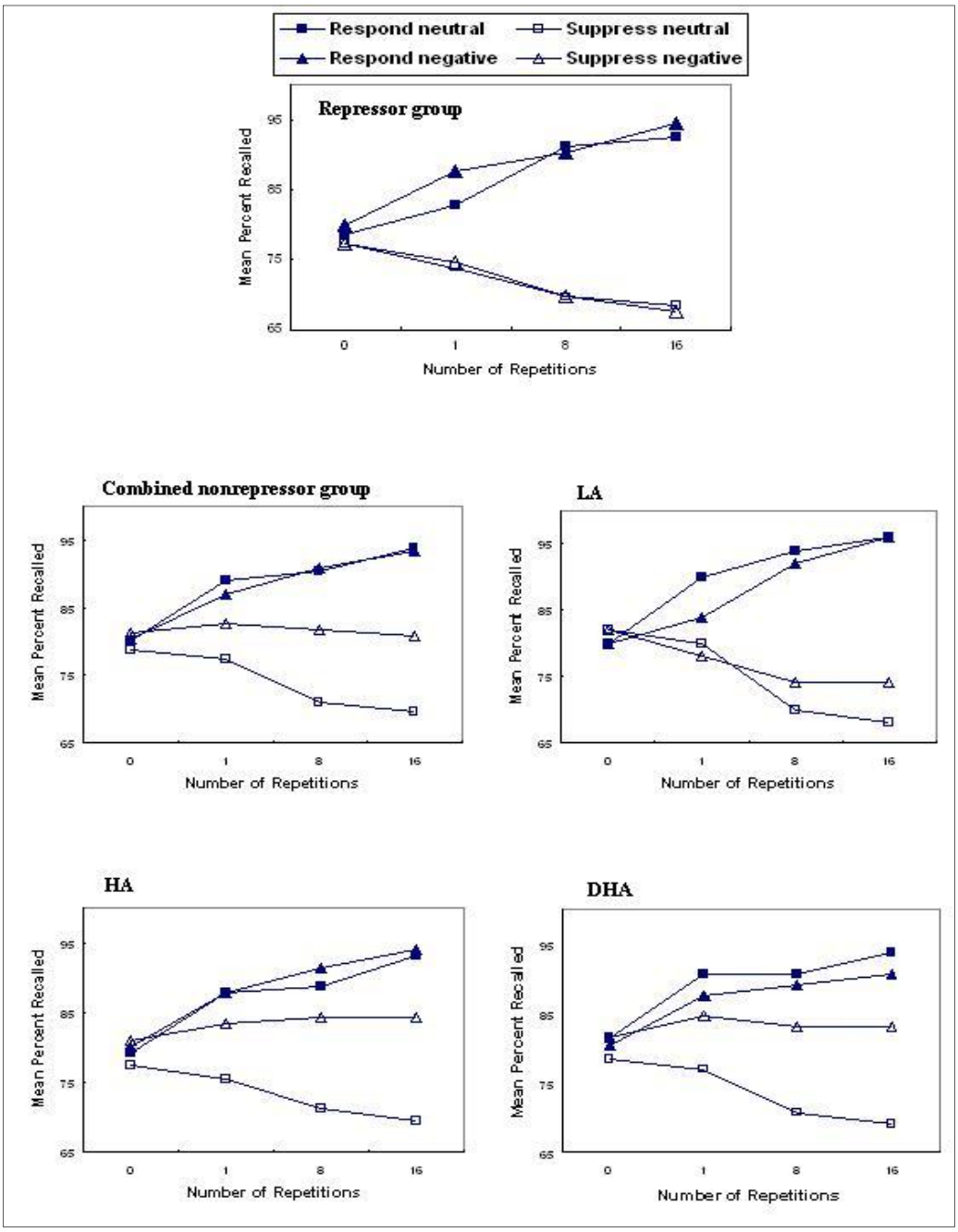

Figure 1. Mean percentages of targets recalled as a function of number of cue presentations for suppressing or responding and the valence of the block in the repressor and nonrepressor groups. The performance of each group of the nonrepressor groups is separately displayed.

Table 3. Mean percentages of suppressed targets recalled (and standard deviations) by each group in the neutral and negative blocks.

	Suppressed Recall	
Trait anxiety and defensiveness	*Neutral*	*Negative*
Low trait anxiety		
Low defensiveness (LA)	72.67 (21.41)	75.33 (17.51)
High defensiveness (REP)	70.57 (21.78)	70.57 (21.81)
High trait anxiety		
Low defensiveness (HA)	72.75 (19.06)	84.35 (15.51)
High defensiveness (REP)	72.31 (23.75)	83.59 (17.76)

that individuals with relatively higher defensiveness reported more frequent use of blanking (DHA: M = 2.92, SD = 1.38 vs. HA: M = 2.57, SD = 1.41).

An examination of the correlations between ratings on substitution and blanking and the overall size of the instruction effect (the number recalled from all cues for responding minus the number recalled from all cues for suppression, omitting baseline) for both blocks revealed that participants who produced larger instruction effects reported more frequently having thought about something else, r = .33, p < .01, and / or having kept their mind completely blank, r = .29, p < .05.

Differences in thought control strategies in general

Table 4 reports Pearson correlation coefficients involving scores on the three self-report measures (MCSDS, MAS, and K-ROII) and two measure of experimental suppression (suppressed recall and instruction effect) in the negative block. Defensiveness was negatively correlated with the reported use of negative avoidance and confrontation strategies, and individuals with relatively higher levels of trait anxiety reported more frequent use of negative avoidance strategy than did less anxious individuals. Interestingly, this strategy itself was positively correlated with more recall of suppressed targets. A 2 (trait anxiety: high vs. low) × 2 (defensiveness: high vs. low) analysis of variance on negative avoidance strategy indeed yielded only the main effect of trait anxiety, F(1, 71) = 28.53, MSE = 13.37, p < .001, indicating that participants with high level of trait anxiety (HA and DHA) rated significantly more on the use of negative avoidance strategy than did those with low trait anxiety (REP and LA).

A follow-up analysis in which participants were divided into high- versus low-scorers on negative avoidance strategy revealed that individuals who scored high on this strategy recalled significantly more suppressed items in the negative block (87%) than did those who scored low on this strategy (70%), F(1, 73) = 19.31, p < .001. When one-way analysis of variance with an independent variable of 4-group assignment was performed to examine group differences, significant main effect on suppressed recall of negative targets, F(3, 71) = 2.96,

Table 4. Pearson correlation coefficients between measures of suppression (suppressed recall and instruction effect) in the negative block and self reported variables.

	MAS	Negative avoidance	Neutral avoidance	Confrontation	Suppressed recall	Instruction effect
MCSDS	−.385**	−.317**	.123	−.230**	−.186	.148
MAS		.549**	−.150	.114	.316**	.226
Negative avoidance			.117	.107	.547**	−.523**
Neutral avoidance				.156	.035	−.079
Confrontation					.094	−.107
Suppressed recall						−.908**

Note. Negative avoidance, neutral avoidance and confrontation are factors of K−ROII.
** $p<.01$

$p<.04$, and on negative avoidance strategy, $F(3, 71) = 12.20$, $p<.001$, was revealed. Post−hoc test (Tukey HSD) results indicated that high−anxious group recalled significantly more suppressed targets in the negative block than repressors, $p<.05$, as depicted in figure 2.

Discussion

The present findings indicate that repressors are better at suppressing negative unwanted memories than combined nonrepressors. Specifically, there was no difference in memory suppression success between repressors and nonrepressors in the neutral TNT

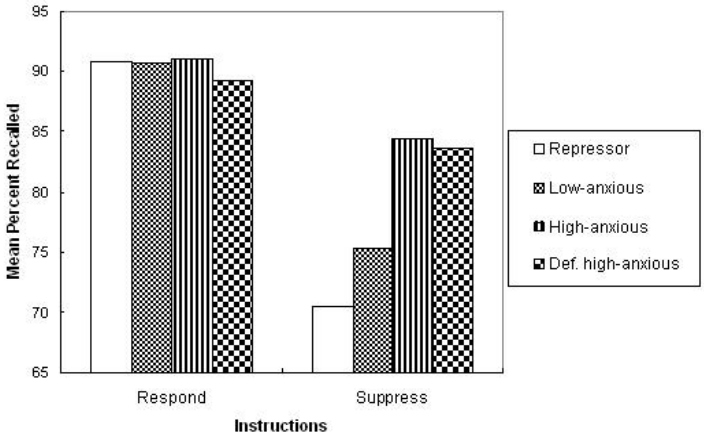

Figure 2. Mean percentages of targets recalled in the negative block by REP, LA, HA, and DHA groups, according to whether the targets belonged to the suppressed or responded sets

block. However, unlike repressors whose suppression success was not dependent on the valence of to-be-suppressed materials, nonrepressors recalled more suppressed items in the negative block than in the neutral block failing to successfully suppress negative memories.

Of importance, although nonrepressors, when combined, were less successful in suppressing negative memories than repressors, a follow-up analysis revealed that only trait anxiety accounted for this difference in memory control. Individuals with low trait anxiety exhibited significantly better suppression of negative memories than did individuals with high trait anxiety. Repressors' good performance on the TNT task in the current study suggests that they are in fact highly effective suppressors; nevertheless, their suppression success seems to be only a consequence of low level of trait anxiety. Although this may be beyond the scope of the present study, the current results support the recently proposed idea that repressive coping and suppression are not related to each other, and thus should be considered as two different constructs (Luciano & Algarabel, 2006; Myers et al., 2004).

Another valuable outcome of the current study was the set of significant correlations between self-reports of thought control strategies and experimental evidence of memory control. The most interesting among them was between the use of negative avoidance strategy and suppressed recall: highly anxious individuals reported more use of negative avoidance strategy than did comparatively less anxious counterparts and were found to be less successful in suppressing negative memories. One possible inference from the relations among trait anxiety, negative avoidance strategy, and suppression failure of negative materials can be that when attempting to suppress negative thoughts, highly anxious individuals are likely to employ negative

avoidance strategy which may not be so much effective. According to several researches (Myers, 1998; Rassin & Diepstraten, 2003), distraction strategy is an effective and recommendable strategy of thought control. For example, Myers (1998) found that subjects with repressive coping style usually employ more distraction (e.g., I call to mind positive images instead; equivalent to neutral avoidance strategy in the current study) and less punishment (e.g., I get angry at myself for having the thought) than nonrepressors, whereas high-anxious subjects reported using more worry (e.g., I think more about the more minor problems I have; equivalent to negative avoidance strategy in the current study) than all other groups. Based on the current findings, it can be further suggested that distracting oneself with neutral or positive thoughts or images (neutral avoidance strategy) would be more effective than distracting oneself with negative thoughts or images (negative avoidance strategy) when trying to control unwanted, intrusive thoughts.

Both the findings and limitations of the current study raise questions for further research on differences between repressive and nonrepressive individuals' memory control. In the current study, since two high-anxious groups failed to show typical TNT effects, it seems possible that repressors are not better but just as good as others at controlling unwanted memories, and only high-anxious individuals are deficient at forgetting negative materials. Sampling of more extreme scorers as well as inclusion of other control individuals who do not fall into any of the four group categorization would provide more profound understanding of repressors' better memory suppression in the present study. Future research should also further elucidate the relation between level of trait anxiety and memory control with more representative sample of highly anxious individuals.

As for the present results, repressors' avoidance of negative materials was flexible rather than extreme in that they showed sufficient facilitation effect in the think condition even in the negative block. Given that some avoidance of negative or even trauma-related thoughts may be adaptive when such avoidance is flexible rather than extreme (Erdelyi, 1990), the present sample of repressors can be regarded as adaptive and well-functioning individuals. In fact, prior studies reported that repressors tend to perceive themselves as competent, self-controlled, and having adequate coping skills (Weinberger, 1990). Furthermore, Ginzburg, Solomon, and Bleich (2002) suggested that repressive coping might promote adjustment to traumatic stress, both in the short and long term. Indeed, as suggested by Weinberger (1990), the view of repressive coping style as adaptive accords with cognitive and behavioral conceptions which define well-being and adjustment as effective problem solving in stressful situations (Bandura, 1997). Yet, it has long been voiced in numerous researches that repressors tend to ignore symptoms of physical pathology (e.g., Byrne, Steinberg, & Schwartz, 1968) and believe that they have a lower probability of developing pathology (Myers & Reynolds, 2000), which, in turn, postulates repressors' increased vulnerability to health-related problems. Therefore, it would be very interesting to see whether repressors recall less number of responded items when more self-relevant materials

are used. Accordingly, an adequate modification of the TNT paradigm regarding self-relevant aspects of negative materials would serve to further explore the memory control pattern of repressors. Future studies may wish to determine whether seemingly very effective inhibitory process of the present repressor group is also true when experimental materials are more explicitly self-referent. Another possible avenue for future research will be to examine both the short-term and long-term consequences of memory control to see whether repressors' successful memory suppression in short-term would lead to more or less rebound effects compared to controls in longer-term.

The present study compared repressive and nonrepressive copers' memory control within the TNT paradigm. Unlike earlier experiments which measured intrusions during suppression attempts or free recall of negative materials, the current study demonstrated consequences of later forgetting of associated memories in the presence of remainders: the ultimate goal in some respects in everyday-like situations where the reminders to unwanted memories seem to be omnipresent. The main contribution of the current study to the literature on repressive coping and memory control is the finding that repressors are skilled suppressors of unwanted memories and more importantly, that trait anxiety rather than repressive coping per se contributes to their successful memory suppression.

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1 차원고접수 : 2007. 8. 31.
수정원고접수 : 2007. 11. 28.
최종게재결정 : 2007. 12. 3.

한국심리학회지: 일반
Korean Journal of Psychology
2007, Vol. 26, No. 2, 261-277

억압적 대처 유형과 기억 억제: 특질불안의 영향

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본 연구는 think / no－think 패러다임을 사용하여 억압적 대처 집단과 비억압 집단이 각기 상이한 기억 억제 패턴을 보이는가, 나아가 집단간 기억 억제 수행 차이에 영향을 미치는 특성이 무언인지에 에 대해 알아보고자 하였다. 연구 결과, 억압적 대처 집단이 비억압 집단에 비해 억제해야 했던 항목들 중 부정적 속성을 지닌 항목들에 대해 보다 낮은 회상률을 보임으로써 더 성공적으로 기억을 억제한 것으로 나타났다. 기억 억제 수행의 집단간 차이가 특질불안, 방어성, 억압적 대처 (불안과 방어성의 상호작용) 중 어느 것에 기인하는 가를 추후 분석한 결과, 특질불안이 낮은 집단 (억압적 대처 집단과 고불안 집단)이 특질불안이 높은 집단 (고불안 집단과 방어적 고불안 집단)에 비해 더 월등한 기억 억제 효과를 보임으로써, 억압적 대처 집단의 기억 억제 패턴이 억압적 대처 유형 그 자체에 기인했다기보다는 보고된 낮은 특질불안에 기인했을 가능성이 시사되었다. 이러한 결과를 바탕으로, 억압적 대처 유형의 적응적 / 비적응적 특성과 불안수준이 높은 집단의 기억 억제 패턴에 대한 추후 연구 시사점 및 본 연구가 갖는 함의가 논의되었다.

주요어: 억압적 대처 유형, 기억 억제, 사고 통제, 생각하기 / 생각하지않기(Think / no－think) 패러다임

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