

THE EFFECT OF OVERGENERAL AUTOBIOGRAPHICAL MEMORY RETRIEVAL ON RUMINATION

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From distinct research traditions rumination and overgeneral autobiographical memory retrieval (OGM) have emerged as two vulnerability markers for depression and depressive relapse (Nolen-Hoeksema, 2004; Williams, 2004). Recent research further suggests a causal relation between rumination and OGM (e.g., Watkins & Teasdale, 2001). The present study investigated the inverse relationship, that is, OGM causally influencing ruminative thinking. A scrambled sentences procedure was used to assess the extent to which 112 student participants were engaged in a mental mode consistent with ruminative thinking following either a specific or overgeneral memory retrieval style manipulation. Trait rumination was also assessed prior to the experimental retrieval manipulation, using a self-report scale. It was found that high ruminators, following an overgeneral (as compared to a specific) retrieval style, unscrambled sentences relatively more into sentences with a ruminative meaning. In non or low ruminators this retrieval style manipulation had no such effect. Alongside the findings of Watkins and colleagues (e.g., Watkins & Teasdale, 2001), the present results are consistent with the view of rumination and OGM as two mutually reinforcing vulnerability factors for depression (Williams, 1996, 2004).

Depression, with a lifetime prevalence of around 17% (Angst, 1997; Blazer, Kessler, McGonagle, & Swartz, 1994), represents a common, but seriously disabling psychiatric disorder. It is predicted that by 2020, depression will be the second most important cause of disability (Murray & Lopez, 1996). Also, depression is a highly recurrent and often chronic disorder (e.g.,

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Segal, Pearson, & Thase, 2003). Around 50-75% of people who have experienced a major depressive episode once, will develop at least one new episode after they have recovered (NIMH, 1985).

Given depression's highly recurrent nature, scientists and practitioners in the field of depression are increasingly acknowledging the importance of early detection and prevention of depression and its relapse. Unsurprisingly then, the study of *vulnerability factors or markers* for depression nowadays represents an important area of research, and its relative importance is even expected to increase considerably in the future (e.g., Ingram & Price, 2001). Such vulnerability markers may help to identify depression-prone individuals or depressed individuals who are at risk for a chronic course of depression. Also, research that focuses on such vulnerability processes may serve as input for clinical prevention as it provides insight in the mechanisms that render people vulnerable for depression and depressive relapse. Research of the past two decades has revealed two important variables that may qualify as vulnerability markers for depression: *rumination* and *overgeneral autobiographical memory retrieval* (Nolen-Hoeksema, 2004; Williams, 2004). Both variables appear to be relatively specific to depression and are not mood-dependent, in that they remain present or 'detectable' even when formerly depressed people are no longer depressed (i.e., remission or recovery).

The first variable, *rumination*, refers to repetitively thinking about one's (depressed) feelings, its possible causes and consequences (Nolen-Hoeksema, 1991), e.g., 'Where did it all go wrong?', 'Why do I feel the way I feel?'. It refers to a highly abstract verbal-analytical thinking style that is difficult to interrupt. Unsurprisingly such a ruminative style of thinking, with a central focus on trying to understand one's depressed feelings, is particularly characteristic of depressed patients. Moreover, a large body of studies - including clinical, naturalistic and experimental work - clearly indicates that rumination is predictive for depression onset and for a more protracted clinical course (Nolen-Hoeksema, 2004, for a recent review): people who tend to ruminate have a greater risk for developing depression (with often a chronic course). Importantly, rumination is regarded as a stable individual characteristic or trait; the tendency to ruminate does not significantly decrease once the depressed or dysphoric mood 'state' has cleared up (e.g., Nolen-Hoeksema & Davis, 1999).

The second variable, *overgeneral memory* (OGM), refers to depressed people's tendency to retrieve autobiographical episodes in an overgeneral rather than in a specific way from their autobiographical memory (AM). A large amount of research has shown that depressed people have more difficulty retrieving specific memories than non depressed people (Williams, 2004, for a recent review). By tradition, in this research domain the *Autobiographical Memory Task* (AMT; Williams & Broadbent, 1986) is

used. In the AMT, respondents are asked to retrieve a *specific* memory to each of a set of cues (e.g., *happy, alone*). A specific memory is one that refers to a particular personal event that happened on a particular occasion and did not last longer than one day (e.g., ‘the funeral of my grandmother last year’). As compared to normal controls, depressed people respond relatively more with *overgeneral* memories (e.g., ‘the times I have to say goodbye or let go of something’). These overgeneral, so-called *categoric* memories refer to categories of similar events, rather than one specific single day event. Similar to rumination, it has been shown that OGM remains stable in spite of recovery from depression and that it is predictive of an unfavourable course (e.g., Brittlebank, Scott, Williams, & Ferrier, 1993; Peeters, Wessel, Merckelbach, & Boon-Vermeeren, 2002): people who are more overgeneral in their retrieval of autobiographical memories have a prolonged time to recovery.

Although both vulnerability factors have for long been studied in separate lines of research, more recent studies indicate that rumination and OGM may be associated. For example, correlational studies show that people scoring high on a rumination self-report questionnaire tend to retrieve relatively more overgeneral memories on the AMT (Raes, Hermans, Williams, Demyttenaere, Sabbe, Pieters, & Eelen, 2005; Ramponi, Barnard, & Nimmo-Smith, 2004). However, correlational evidence is not informative as to the direction of this relationship in terms of cause and effect. In this context, Watkins and colleagues were the first to show that by experimentally reducing rumination, subsequent AM retrieval becomes less overgeneral, suggesting a causal relationship between rumination and OGM (Watkins & Teasdale, 2001, 2004; Watkins, Teasdale, & Williams, 2000; also see Park, Goodyer, & Teasdale, 2004). However, although researchers assume this relation to be bi-directional (e.g., Williams, 1996), the possibility that specificity of AM retrieval also causally affects the extent of ruminative thinking has not yet been studied.

In this study, we examined whether the specificity with which people retrieve memories from their AM has a causal impact on ruminative thinking. In particular, we tested whether the experimental induction of an overgeneral categoric (vs. specific) retrieval style would increase the extent to which people’s mental mode is consistent with ruminative thinking in those who tend to highly ruminate by trait as compared to low ruminators. Trait rumination was assessed using a rumination self-report scale pre and post retrieval style induction. Memory retrieval style was manipulated using experimental instructions to retrieve either specific or overgeneral categoric memories in response to emotionally positive and negative cue-words. The subsequent degree to which people’s mental mode reflects a (biased) focus on words or phrases consistent with ruminative thinking was measured using a scrambled sentences procedure, developed in our laboratory (see below).

Based on Williams' (1996) idea that rumination and OGM mutually reinforce one another, we predicted that when people are brought into an overgeneral access mode to AM, they would unscramble sentences relatively more into sentences with a ruminative meaning as compared to when they are brought into a specific access mode to AM.

Secondly, we predicted that this effect would be more pronounced or only present in high trait ruminating participants, as compared to low trait ruminating participants. We expected this for two reasons. First, previous studies in which experimental manipulations were used to either induce or reduce ruminative thinking found that such manipulations had no or a less pronounced effect in low trait ruminating, non dysphoric, or never depressed participants (e.g., Watkins & Moulds, in press). Second, following the idea that OGM and rumination reflect two intimately associated cognitive processes which reciprocally interact (especially or only) in depression-prone individuals (e.g., ruminators), we can expect that this interaction will only (or more easily) be triggered in this particular group of ruminators in whom OGM and rumination habitually interact.

We predicted that the effect of retrieval style on rumination would only show for the scrambled sentences procedure, and not for the self-report trait rumination questionnaire. The scrambled sentences rumination measure was designed as an indirect measure of the degree to which people's mental mode is consistent with ruminative thinking, and that would be sensitive enough to pick up short-term, that is 'state' changes in this respect. Given that the self-report measure of rumination assesses rumination as a 'trait', we did not expect that such short-term manipulations would result in changes in this index of trait rumination.

Method

Participants

One hundred and twelve students (57 women) participated voluntarily in this study.¹ They were all students from the last two years in secondary school. The mean age was 16.52 years ($SD = 0.88$; range: 15-18).

Materials

Shortened version of the Leuven Adaptation of the Rumination on Sadness Scale (LARSS-S)

¹ Gender information was missing for 6 participants.

Two parallel versions of the LARSS-S were used to measure rumination on sadness, each consisting of 8 items. Sample items are ‘When I feel sad, down or blue, I repeatedly try to figure out, by doing a lot of thinking, what might be the causes of my sadness’ and ‘When I feel sad, down or blue, I keep thinking about how I feel, to understand myself and my sad feelings better’. Items are rated on a 5-point scale (*not at all* to *very much*) for the extent to which they reflect the participant’s responses to sadness. The LARSS-S is a shortened version of the LARSS (Raes, Hermans, Williams, Bijttebier, & Eelen, 2004) which consists of 17 items and is a revised and extended version of the Rumination on Sadness Scale (RSS; Conway, Csank, Holm, & Blake, 2000).

Retrieval Style Induction

We used an adaptation of Williams et al. (1996) retrieval style induction procedure. This procedure proved successful in earlier studies in manipulating the level of specificity with which participants recall autobiographical material (Raes, Hermans, Williams, & Eelen, in press; Williams et al., 1996). We used a list of 18 cues (9 positive and 9 negative words).² In the specific induction group, participants were instructed to write down a specific memory in response to each of the 18 cue-words (“Describe one specific occasion or moment in your past when you felt X”). It was clearly emphasised that it should be a single event that happened to them on a particular place and at a particular time in the past, and did not last longer than one day. Participants were given two examples of a specific memory (e.g., “I felt unhappy, that first day at campus in the student’s restaurant, drinking coffee all by myself” to the cue *unhappy*). In the overgeneral induction group, participants were instructed to write down a ‘type of event’ that each of the 18 cues brought to mind (“Describe a type or sort of event that makes you feel X”). Participants were given two examples of what was meant with a ‘type or sort of event’ (e.g., “I feel unhappy, every time my brother and I have a quarrel” in response to the cue *unhappy*). It was explained to them that by type of event we meant the sort of thing that happens to them or has happened to them in the past (‘categoric memory’).

Rumination Scrambled Sentences Task (RSST)

This task consists of 30 scrambled sentences, each consisting of five words. For each of these, participants are asked to produce a sentence with four of the five given words. Half of the sentences are foils, the other half are targets. These target scrambled sentences can be unscrambled in two ways, leading to a sentence with either a ruminative or non ruminative meaning. For example,

² The cues were *lonely, successful, inferior, calm, scared, courageous, sad, honest, foolish [stupid], happy, jealous, relaxed, hurt, quiet [calm], guilty, proud, angry, and relieved*. In Dutch these words were *eenzaam, succesvol, minderwaardig, kalm, bang, moedig, verdrietig, eerlijk, dom, blij, jaloeers, ontspannen, gekwetst, rustig, schuldig, trots, kwaad, and opgelucht*.

the scrambled sentence 'do, something, understand, to, trying' can be unscrambled as either 'trying to understand something' (ruminative focus) as well as 'trying to do something' (non-ruminative focus). Similarly, the scrambled sentence 'thoughts, to, enigmas, some, analyse', can be unscrambled as either 'to analyse some thoughts' (ruminative focus) as well as 'to analyse some enigmas' (non-ruminative focus). All rumination sentences pertained to sentences that deal with 'causes', 'meaning', 'understanding', 'thinking', and/or 'feelings' in line with the view of rumination as an analytical thinking style with a central focus on the causes, meaning, and consequences of one's feelings (Nolen-Hoeksema, 1991). Ruminative sentences are scored '1', non ruminative sentences are scored '0'. Total rumination scores are calculated by summing scores for the 15 target items (range: 0-15).

Procedure

Participants were tested in group in their classroom (6 classes/groups in total, with n varying from 8 to 28). The experimenter led participants through the whole experiment. All participants received a booklet. First, they filled out one of two parallel versions of the Shortened version of the LARSS-S.³ Next, half of the classes received the specific retrieval style induction (classes 1, 3, and 5); the other half of the classes received the overgeneral retrieval style induction (classes 2, 4, and 6). Following the memory retrieval style induction, participants filled out the Rumination Scrambled Sentences Task (RSST). Upon completion of a second LARSS-S, participants were thanked and debriefed.

Two parallel versions of the LARSS-S were used. In each class or group, version A was administered to half of the participants - randomly selected - prior to the retrieval style manipulation, and version B at the end of the experiment. For the other participants in each class, the opposite pattern was followed; that is, version B and A, respectively pre and post manipulation. All four parts of the study were presented as separate investigations: a validation test of two versions of a questionnaire on 'thinking and feeling' (LARSS-S parallel versions), a memory test (retrieval style induction), and a language ability test (RSST).

Results

Of both induction groups, we selected those participants who obtained the 14 highest and 14 lowest trait rumination scores as measured with the

³ As predicted, total scores on both parallel versions of the LARSS-S did not differ significantly, ($M_{\text{version A}} = 19.79$, $SD = 5.87$; $M_{\text{version B}} = 19.93$, $SD = 7.09$), $t(110) = -.11$, $p = .91$. Rumination data were missing for two participants.

LARSS-S.⁴ This resulted in four groups of 14 participants each: specific induction – low rumination, specific induction – high rumination, overgeneral induction – low rumination, and overgeneral induction – high rumination.

A 2 (retrieval style induction: specific vs. overgeneral) \times 2 (trait rumination: high vs. low) ANOVA on the Rumination Scrambled Sentences Task (RSST) yielded a main effect of trait rumination. High ruminators scored significantly higher than low ruminators on the RSST, $F(1, 52) = 13.52, p < .001$ ($M_{\text{high rum}} = 9.36, SD = 2.00$; $M_{\text{low rum}} = 7.25, SD = 2.43$). The main effect of retrieval style induction was not significant, $F < 1$. Most important, the ANOVA yielded the predicted significant interaction, $F(1, 52) = 5.91, p < .05$ (see Figure 1). One-degree-of-freedom contrasts further showed that in the overgeneral induction condition, high ruminators scored significantly higher on the RSST than in the specific induction group, $F(1, 52) = 4.47, p < .05$ ($M_{\text{overgeneral}} = 10.21, SD = 1.42$; $M_{\text{specific}} = 8.50, SD = 2.18$), whereas for the low ruminators this difference was not significant, $F(1, 52) = 1.75, p = .19$ ($M_{\text{overgeneral}} = 6.71, SD = 2.43$; $M_{\text{specific}} = 7.79, SD = 2.39$).

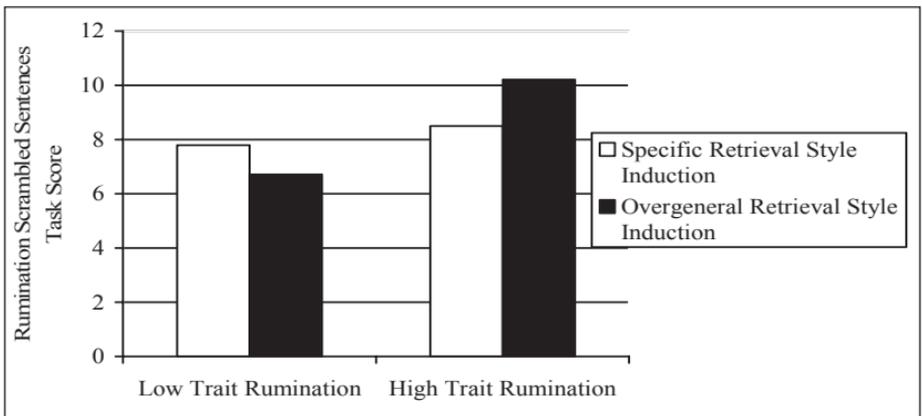


Figure 1.

Mean scores on the Rumination Scrambled Sentences Task (RSST) for the high and low rumination participants, as a function of retrieval style induction condition.

⁴ We first conducted a quartile split, based on participants' rumination trait scores. The two most extreme groups (both $n = 28$) were then compared with respect to the effect of retrieval style induction on ruminative processing (RSST). In so doing, we hoped to get a balanced design with about 14 participants in each of the following four groups: low rumination – specific induction, high rumination – specific induction, low rumination – overgeneral induction, high rumination – overgeneral induction. Unfortunately, due to the fact that the classes that were scheduled for the overgeneral induction consisted of a lower number of participants, the four groups were not equally sized, respective n s being 20, 18, 8, and 10. In order to obtain a more balanced design, we then chose to select for each induction group those participants who obtained the 14 highest and 14 lowest trait rumination scores, resulting in four equally sized groups.

As expected, both retrieval styles did not, overall, differentially affect trait rumination when measured with a self-report scale (LARSS-S), $F < 1$, neither was there an interaction of a possible retrieval style effect with baseline trait rumination status (high vs. low), $F < 1$.

Discussion

The present study investigated to what extent manipulation of specificity of memory retrieval has a causal effect on the extent to which people's mental mode is consistent with ruminative thinking, as might be expected according to Williams' claim that the retrieval of overgeneral categoric memories most likely is "encouraged by and *itself encouraging ruminative self-focus*" (Williams, 1996, p. 261, our accentuation). Although previous studies have investigated whether there is a causal path from rumination to OGM (e.g., Watkins & Teasdale, 2001, 2004), to our knowledge the present study is the first that has looked into the possibility that overgeneral retrieval might also causally affect ruminative thinking.

The results showed that the induction of an overgeneral retrieval style subsequently makes ruminators to unscramble sentences relatively more into sentences with a ruminative meaning as compared to the experimental induction of a specific retrieval style. In non or low ruminators, this manipulation has no such effect. The confirmation of our hypothesis supports the idea that the specificity with which ruminators retrieve self-related or autobiographical material has an impact on the degree to which their mental mode is consistent with ruminative thinking, such that less specific retrieval of memories leads to a biased focus on words or phrases with a rumination-congruent meaning. Alongside the findings of Watkins and colleagues (e.g., Watkins & Teasdale, 2001, 2004), the present results are consistent with the view of rumination and OGM as two mutually reinforcing vulnerability factors for depression.

The importance of the present findings is twofold. At the theoretical level, these results suggest that rumination might be one way through which OGM is related to depression. The overall picture that seems to emerge from this and previous work by others is that lack of AM specificity (or OGM) may render people vulnerable for depression or impede recovery from it through a spiraling, reciprocal relationship with depressive rumination (also see Williams, 1996, 2004).

Second, the present findings can serve an important input to clinical interventions. It was found that the experimental induction of a specific retrieval style of memories leads to less ruminative thinking in ruminators as compared to an overgeneral categoric retrieval style. This suggests that further

research to enhance specificity of memory retrieval aimed at alleviating depressive rumination may be a valuable and potentially important addition to treatment effectiveness in (recurrent) depression (see also Serrano, Latorre, Gatz, & Montanes, 2004).

An important limitation of the present study was that we only used student participants, thereby limiting the generalisability of the findings to depressed samples. Future studies should investigate to what extent an experimental manipulation of retrieval specificity also has an influence on ruminative thinking in depressed patients. Another limitation was that neither depression nor the history of past depression were assessed. Also, mood state was not assessed post and prior to the retrieval manipulation to exclude the possibility that mood changes may partly or indirectly explain the present findings. A final limitation was that ruminative thinking - or at least the extent to which people's mind set is consistent with ruminative thinking - was only assessed after the crucial manipulation, using the scrambled sentences procedure. Future studies might use a parallel set of scrambled sentences both post and prior to the retrieval style manipulation to obtain a methodologically more balanced design.

References

- Angst, J. (1997). Fortnightly review. A regular review of the long-term follow-up of depression. *British Medical Journal*, *315*, 1143-1146.
- Blazer, D.G., Kessler, R.C., McGonagle, K.A., & Swartz, M.S. (1994). The prevalence and distribution of major depression in a national community sample: The National Comorbidity Survey. *American Journal of Psychiatry*, *151*, 979-986.
- Brittlebank, A.D., Scott, J., Williams, J.M.G., & Ferrier, I.N. (1993). Autobiographical memory in depression: State or trait marker? *British Journal of Psychiatry*, *162*, 118-121.
- Conway, M., Csank, P.A.R., Holm, S.L., & Blake, C.K. (2000). On assessing individual differences in rumination on sadness. *Journal of Personality Assessment*, *75*, 404-425.
- Ingram, R.E., & Price, J.M. (2001). Preface. In R.E. Ingram & J.M. Price (Eds), *Vulnerability to psychopathology. Risk across the lifespan* (pp. ix-xii). New York/London: The Guilford Press.
- Murray, J.L., & Lopez, A.D. (1996). *Global burden of disease: A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020*. Cambridge, MA: Harvard University Press.
- NIMH Consensus Development Conference Statement. (1985). Mood disorders: Pharmacologic prevention of recurrences. *American Journal of Psychiatry*, *142*, 469-476.
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*, *100*, 569-582.

- Nolen-Hoeksema, S. (2004). The response styles theory. In C. Papageorgiou & A. Wells (Eds), *Depressive rumination: Nature, theory, and treatment* (pp. 107-124). Chichester, UK: John Wiley & Sons.
- Nolen-Hoeksema, S., & Davis, C.G. (1999). "Thanks for sharing that": Ruminators and their social support network. *Journal of Personality and Social Psychology*, 77, 801-814.
- Park, R.J., Goodyer, I.M., & Teasdale, J.D. (2004). Effects of induced rumination and distraction on mood and overgeneral autobiographical memory in adolescent major depressive disorder and controls. *Journal of Child Psychology and Psychiatry*, 45, 996-1006.
- Peeters, F., Wessel, I., Merckelbach, H., & Boon-Vermeeren, M. (2002). Autobiographical memory specificity and the course of major depressive disorder. *Comprehensive Psychiatry*, 43, 344-350.
- Raes, F., Hermans, D., Williams, J.M.G., Bijttebier, P., & Eelen, P. (2004). A "Triple W"-model of rumination on sadness: Why am I feeling sad, what's the meaning of my sadness, and wish I could stop thinking about my sadness (but I can't!). Manuscript submitted for publication.
- Raes, F., Hermans, D., Williams, J.M.G., Demyttenaere, K., Sabbe, B., Pieters, G., & Eelen, P. (2005). Reduced specificity of autobiographical memories: A mediator between rumination and ineffective problem-solving in major depression? *Journal of Affective Disorders*, 87, 331-335.
- Raes, F., Hermans, D., Williams, J.M.G., & Eelen, P. (in press). Reduced autobiographical memory specificity and affect regulation. *Cognition & Emotion*.
- Ramponi, C., Barnard, P.J., & Nimmo-Smith, I. (2004). Recollection deficits in dysphoric mood: An effect of schematic models and executive mode? *Memory*, 12, 655-670.
- Segal, Z.V., Pearson, J.L., & Thase, M.E. (2003). Challenges in preventing relapse in major depression. Report of a National Institute of Mental Health Workshop on state of the science of relapse prevention in major depression. *Journal of Affective Disorders*, 77, 97-108.
- Serrano, J.P., Latorre, J.M., Gatz, M., & Montanes, J. (2004). Life review therapy using autobiographical retrieval practice for older adults with depressive symptomatology. *Psychology and Aging*, 19, 272-277.
- Watkins, E.R., & Moulds, M. (in press). Distinct modes of ruminative self-focus: Impact of abstract versus concrete rumination on problem solving in depression. *Emotion*.
- Watkins, E., & Teasdale, J.D. (2001). Rumination and overgeneral memory in depression: Effects of self-focus and analytic thinking. *Journal of Abnormal Psychology*, 110, 353-357.
- Watkins, E., & Teasdale, J.D. (2004). Adaptive and maladaptive self-focus in depression. *Journal of Affective Disorders*, 82, 1-8.
- Watkins, E., Teasdale, J.D., & Williams, R.M. (2000). Decentering and distraction reduce overgeneral autobiographical memory in depression. *Psychological Medicine*, 30, 911-920.
- Williams, J.M.G. (1996). Depression and the specificity of autobiographical memory. In D.C. Rubin (Ed.), *Remembering our past: Studies in autobiographical memory* (pp. 244-267). Cambridge, UK: Cambridge University Press.

- Williams, J.M.G. (2004). Experimental cognitive psychology and clinical practice: Autobiographical memory as a paradigm case. In J. Yiend (Ed.), *Cognition, Emotion and Psychopathology* (pp. 251-269). Cambridge, UK: Cambridge University Press.
- Williams, J.M.G., & Broadbent, K. (1986). Autobiographical memory in suicide attempters. *Journal of Abnormal Psychology, 95*, 144-149.
- Williams, J.M.G., Ellis, N.C., Tyers, C., Healy, H., Rose, G., & MacLeod, A.K. (1996). The specificity of autobiographical memory and imageability of the future. *Memory and Cognition, 24*, 116-125.

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