



Autobiographical memory in severely traumatized refugees:  
association of PTSD and depression  
with overgeneral memory

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## **Abstract**

Due to common comorbidities such as depression and posttraumatic stress disorder (PTSD), refugees have an increased risk for developing cognitive strategies in the retrieval process that can lead to overgenerality in memories. The present study examined the role of PTSD and depression in overgeneral autobiographical memory in refugees. Twenty-two severely traumatized patients completed a trauma questionnaire (PTSD Checklist for DSM-5), a depression measurement (Brief Symptom Inventory), and an autobiographical memory test (Autobiographical Memory Test). Results showed that neither PTSD nor depression had an association with overgeneral memory. On the contrary, there was a trend that showed PTSD was positively associated with specific answers. An association between the negative cognition and mood subscale of the PTSD Checklist and overgenerality was found. There was no difference in overgenerality in the range of cue words. Possible accounts of these findings are suggested. Overall, patients in the present study showed more overgeneral memory and high psychological complaints compared to previous study samples. These results suggest that training for memory specificity is needed. A control group was missing which limits the possibility to draw firm conclusions and a possible malingering of symptoms is taken into account. Furthermore, findings show that there must be more research on the new subscale of negative cognition and mood and why it is associated with memory specificity.

## Introduction

There is convergent evidence that the autobiographical memory (AM) of depressed individuals and individuals with posttraumatic stress disorder (PTSD) lacks specific detail. When these people are required to tell a specific memory, they tend to retrieve generic summaries of past experiences (e.g. “holidays”) rather than memories of specific events (e.g. “climbing the Mount Bleu and having a picnic on the top of the mountain”) (Moore & Zoellner, 2007). Research indicates that the inability to provide specific AM has important implications for the functionality of every day cognition (Van Minnen, Wessel, Verhaak, & Smeenk, 2005). However, to date, this research has not focused on refugees, who are highly prone to develop processes that can lead to less specificity in AM.

### Autobiographical Memory

AM contains information about the personal past of an individual and includes episodic and semantic memories (Rybak-Korneluk, Wichowicz, Zuk, & Dziurkowski, 2016). AM is constructed in a self-memory system (SMS), which consists of two systems: an autobiographical knowledge base and a working self. The autobiographical knowledge base includes knowledge about memories that are represented at three levels of specificity. The highest level represents *lifetime periods*, which are seen as prolonged periods of time (e.g., “When I was six years old...” or “During my high school time”). *General events* are represented at an intermediate level and include repeated events (e.g., “Going to school with my brother in the morning”) or single events (e.g., “My first holiday with my family”). The lowest level of representation is called *event-specific knowledge* (ESK) (e.g., “One day, I went to school and a dog attacked me”). This consists of sensory-perceptual aspects of specific events and includes visual imagery. The three levels are constructed in a hierarchical organization, in which ESK is embedded in general event knowledge, and general event knowledge is incorporated in lifetime period knowledge. The second part of the SMS is the working self. It contains the goal structure of the self. The goals modify the cognition and behavior process that an individual needs in order to live effectively in the world.

Memories can be recalled via a generative retrieval process. Generative retrieval refers to a top-down search process. Lifetime period or general event level knowledge is activated through a key word, and then activation spreads through the knowledge base from general event representations to ESK. Executive processes evaluate the degree to which the active

representation matches the search criteria and are required to inhibit activation of irrelevant representations (Williams et al., 2007).

Williams and colleagues proposed that less specificity in AM, called overgeneral memory (OM) appears due to disrupted autobiographical memory retrieval (Healy & Williams, 1999). The following three processes may contribute solely or in combination to reduce the specificity of memory, called the Car-Fa-X model (Williams, 2006).

***Capture and Rumination (CaR)***. People with depressive and trauma-related symptoms are often “captured” in their state of highly activated emotion-related conceptual self-representations (Williams et al., 1996), e.g. repetitive questioning regarding themselves and life (“Why is everything so sad for me?”). If truncation of the search process at the intermediate level like conceptual self-representations (general events) is followed by more abortive attempts of retrieval, the conceptual network of intermediate descriptions will become increasingly elaborated rather than activating ESK.

***Functional avoidance (FA)***. Functional avoidance is demonstrated when the retrieval process has been stopped at an intermediate level (general events) because the activation of ESK would activate distressing memories that cause negative emotions. It is also stopped when it would challenge current priorities or goals of the working self. ESK is not activated because the negative emotional arousal was associated with recalling specific negative personal experiences (Raes, Hermans, de Decker, Eelen, & Williams, 2003). For example, not activating the specific memory of being beaten as a child, especially in a time when a person is pregnant, to avoid fearful emotions.

***Executive control dysfunction (X)***. A successful generative retrieval process of memories requires working memory capacity, the ability to maintain working memory, and inhibition of irrelevant information, such as categorical memories on an intermediate level. For these tasks, executive control is necessary. Interfering with these processes might result in retrieval on an intermediate level (Williams, 2006).

## **Memory distortion**

Memory distortions like OM were first observed by Williams and Broadbent (1986) who discovered that depressed mood states and clinical depression are associated with a relative difficulty in accessing specific autobiographical information in response to emotion-related cue words on an Autobiographical Memory Test (AMT). Since 1986, several studies

using the AMT have replicated the findings of Williams and Broadbent and have found overgenerality in other clinical groups as well. Overall, OM bias has been found in people with a history of trauma (Kuyken & Brewin, 1995; Henderson, Hargreaves, Gregory, & Williams, 2002; Dalgleish et al., 2003; De Decker, Hermans, Raes, & Eelen 2003; Hermans et al., 2004), in trauma survivors with PTSD (McNally, Litz, Prassas, Shin, & Weathers, 1994; McNally, Lasko, Macklin, & Pitman, 1995; Harvey, Bryant, & Dang, 1998; Schönfeld & Ehlers, 2006; Schönfeld, Ehlers, Böllinghaus, & Rief, 2007), and in people with depression (Brewin, Reynolds, & Tata, 1999; Wessel, Meeren, Peeters, Arntz, & Merckelbach, 2001; van Vreeswijk & de Wilde, 2004; Sumner, Griffith, & Mineka, 2009). Moore and Zoellner (2007) reviewed 24 studies that assessed trauma exposure and overgenerality, examining samples with PTSD, acute stress disorder, depression, traumatic event exposure, and other clinical disorders. There was no consistent association found between OM and trauma exposure per se, suggesting that trauma exposure is unlikely to be the primary mechanism leading to overgenerality. However, depression and PTSD were found to be consistently associated with overgenerality.

The findings on the effects of the cue valence, a difference in OM in response to positive and negative cue words, do not show the same consistency across studies. Williams and Scott (1988) and McNally et al. (1994) for example found patients with depression and PTSD to be less specific in response to positive cues. Others, however, did not find any significant difference for valence effects in depressed individuals (Kuyken & Dalgleish, 1995).

To date there has been little research on exactly which aspects of PTSD are most likely linked to AM. Moradi and colleagues (2008) were the first to examine the relationship between individual PTSD symptoms and AM in a group of PTSD patients. They found that flashbacks were associated with OM, but that avoidance symptoms were negatively associated with overgeneral answers.

### **OM in refugees**

OM has been demonstrated across a range of populations, however a specific group that is at high risk for developing PTSD and depression, like refugees, has been left out of research (Van Vreeswijk & De Wilde, 2004). According to the United Nations High Commissioner for Refugees (UNHCR), 68.5 million people had been driven from their homes across the world by the end of 2017. Exposure to war, conflict, or mass violence, especially in

low-income countries, are high risk factors for developing posttraumatic stress disorder (PTSD) (De Jong et al., 2001). Almost one in ten refugees resettled in Western countries experience symptoms consistent with PTSD while another one in twenty experience symptoms of depression (Fazel, Wheeler, & Danesh, 2005).

To the author's knowledge only two studies exist about overgenerality in refugees and asylum seekers despite the prevalence of trauma and psychopathology in this population. A study from Graham, Herlihy and Brewin (2014) who found an association of OM and PTSD and depression among refugees from Africa, South America, Middle East, and Eastern Europe. And a study from Moradi et al. (2008), in which specificity in Kosovar, Albanian and Bosnian refugees was not associated with overall symptoms severity. It should be noted that all participants of the second sample met diagnostic criteria for PTSD.

Furthermore, refugees could be at risk of developing the processes of the CaR-Fa-X model. Many of them have experienced traumatic events that they try to avoid, have highly accessible self-related conceptual knowledge, are prone to rumination, and show cognitive deficits. These characteristics are followed by truncated searches due to avoidance of unpleasant ESK, which are impaired by capture and rooted in reduced processing resources that lead to OM (Williams et al., 2007).

### **Relevance of study**

The finding of overgenerality in AM is crucial since it has been found to contribute to the onset and maintenance of emotional disorders (Raes et al., 2003). People who show overgenerality are more vulnerable toward developing depression (Van Minnen et al., 2005) and have poorer prognoses in depression (Brittlebank, Scott, Williams, & Ferrier, 1993). McNally et al. (1994) explain this phenomenon by stating that if dysphoric people cannot retrieve specific positive memories about themselves, they may experience difficulty altering their negative self-concepts during cognitive therapy and may have reduced positive affect because the emotional richness of a retrieved memory is related to its specificity. Furthermore, OM is found to be related to poor social problem-solving skills (Goddard, Dritschel, & Burton, 1996) and difficulties in imagining the future (Williams et al., 1996). Understanding the relationship between OM and depression and PTSD has the potential to elucidate processes that maintain psychopathology and may contribute to the generation of effective assessment, prevention, and treatment of these disorders.

Investigating OM specifically in refugees is important because less specificity in AM could lead to problems in the asylum seeking process. The asylum seeking process relies on the individual's retrieval of autobiographical memories. The decisions regarding whether an asylum seeker can stay in the new country are based on the individual's ability to recount specific experiences that made him flee from his home country. If refugees develop OM, there is then the possibility that the person is not able to recount specific experiences, which might lead to refusal of asylum (Herlihy & Turner, 2007).

### **Aim of the study**

The present study builds on the results of previous studies and the Car-Fa-X model. To gain more evidence-based information about changes in memory relating to consequences like difficulty imagining the future, poor problem-solving skills, and potential problems in the asylum seeking process, memory functions of refugees are investigated in this study. The current study examined whether refugees show OM when answering to cues of the AMT. The AMT measures memory specificity by providing 10 emotional cue words (e.g. "surprised"), to which the participants are required to describe memories as specific as possible (memory that is restricted to one day, e.g. "The day I found out I was pregnant with triplets.").

The first hypothesis is that patients with more severe PTSD symptoms show more OM when answering to cues of the AMT. It is also hypothesized that patients with more depressive symptoms show more reduced specificity in their answers.

Furthermore, two other questions will be addressed. It will be explored which cluster of PTSD symptoms is most associated with OM and it will be investigated whether patients elicit more overgeneral answers when positive cue words are provided, in comparison to when negative cue words are shown.

## Methods

### Participants

The study includes 22 individuals who entered treatment at the psycho-trauma treatment center “Centrum’45” in Diemen, the Netherlands. The center specializes in treatment for traumatized refugees who suffer from complaints, such as PTSD or depressive disorders. Participants of this study received a trauma-oriented day treatment program. This program consists of three phases, each with a duration of four months. It includes group psychotherapy and Memory Specificity Training (MEST) during the first phase, Narrative Exposure Therapy (NET) during the second phase, and a focus on participation in society and involvement of family and close friends in the third phase of treatment.

### Procedure

After intake, participants were enrolled in the day treatment program. Assessments were scheduled in the first phase of the program, before starting treatment.

At the first assessment, the patients filled out several tests, including the BSI and PCL-5. Furthermore, the AMT was administered. The questionnaires and interviews were administered by trained therapists and interns employed by the clinic. Whenever necessary, a translation of the questionnaire was used.

### Measures

**Demographics.** Information about age, gender, and country of origin were abstracted from the intake.

**BSI.** The Brief Symptom Inventory (BSI; Derogatis & Spencer, 1993) is a short form of the Symptom Checklist 90 and a widely used measure that evaluates psychological distress and psychiatric disorders. The test is a 53-item self-report measure that uses a 5-point Likert scale to range each item (0 = “not at all” to 4 = “extremely”) (e.g., “your feelings being easily hurt”). The BSI measures the psychological symptomatology across nine symptom dimensions: somatization, obsession-compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. The indices measure current or past level of symptomatology, intensity of symptoms, and number of reported symptoms. The authors report good internal consistency reliability for the nine dimensions, ranging from .71 on psychoticism to .85 on depression and this is supported by several other



independent studies (Croog et al., 1986; Aroian & Patsdaughter, 1989). Test-retest reliability ranges from .68 (Somatization) to .91 (Phobic Anxiety). The subscale of interest in this study was the subscale assessing symptoms of depression. De Beurs and Zitman (2005) found that Cronbach's alpha for this subscale was .85, indicating a good internal consistency.

**PCL-5.** The PTSD Checklist (PCL; Blevins, Weathers, Davis, Witte, & Domino, 2015) is a 20-item self-report measure assessing symptoms of PTSD (e.g., "In the past month, how much were you bothered by: Repeated, disturbing, and unwanted memories of the stressful experience?"). Items correspond to the DSM-5 diagnostic criteria for the disorder, including re-experiencing symptoms, avoidance symptoms, negative cognition and mood, and hyperarousal symptoms. Participants rated the extent to which they had been bothered by each symptom in the past month using a 5-point Likert scale (0 = "not at all", to 4 = "extremely"). PCL scores are summed to a measure of PTSD symptom severity for clusters of symptoms and for the disorder as a whole. PCL-5 exhibited high internal consistency ( $\alpha = .94$ ) and a good test-retest reliability (.82). Strong validity correlations were found between the PCL-5 and other PTSD measures (.85) (Blewins et al., 2015).

**AMT.** The Autobiographical Memory Test by Williams and Broadbent (1986) consists of ten cue words, including five pleasant words (i.e., happy, safe, interested, successful, and surprised) and five unpleasant words (i.e., sorry, angry, clumsy, hurt, and lonely). The cues were presented one by one, with positive and negative words alternating in sequence. Translations of the cue words were available in English, Arabic, Persian, Farsi, and Bosnian, and were provided if needed. Answers of the AMT in the exact words of the patient, as well as the therapist's questions, were directly typed by the therapist on the computer during the retrieval of memories.

First, the difference between specific and general memories was explained to the patients and an example of a specific event was provided. An explanation of the characteristics of a specific memory was repeated. Secondly, patients were asked to give a specific memory for an example word and the test did not start before each participant had given a specific memory for at least one example word. During the task, the therapist could repeat the definition of a specific memory before giving the patient a new word. If the participant had told a memory that was not specific, the therapist asked the patient once if he could be more specific. In the case that the therapist did not know whether the told memory was specific or general, he asked if the event lasted longer than one day or if the event

occurred more often. If the patient could not verbalise a memory, he was asked for the reason and the therapist wrote down the given reason. Participants were also given the possibility to write their memory down in their native language before talking about it in Dutch, as described by Schrauf and Rubin (1998). All memories were either coded as specific or non-specific. Specific memories were defined as events that lasted one day or less. Nonspecific memories included extended memories (events that lasted for longer periods of time), categoric memories (events that occurred repeatedly over a period of time), and omissions, if they failed to recall a memory or told about something that happened at the same day. The overall OM score of a person was computed by summing up all non-specific answers. OM in regard to positive cue words included all non-specific answers that were given to positive cue words. The same was applied for OM for negative cue words. All memories were coded by two different persons. Interrater agreement for the coding of memories was 87%.

### **Data analysis**

To detect the sample size, a power analysis using the Gpower computer program was conducted (Erdfelder, Faul, & Buchner, 1996). Effect size  $d$  was set on 0.3 with 90% power using a t-test between means with alpha at .05. Gpower suggested a sample size of 88 people.

Descriptive analyses were used to summarize the demographic and background information of the patients. Secondly, the hypotheses of associations of PTSD and depression and OM were tested by using Pearson's correlations. A multiple regression analysis was used to control for gender and age.

The explorative question about the subscales of the PCL-5 was tested with a Pearson's correlation. Furthermore, to assess cue valence, multiple regression analyses were calculated for both positive and negative cue words. Additionally, a difference variable of overgeneral answers of these cue words was calculated and a one sample t-test was used to investigate if the difference was significant. IBM SPSS Statistics 23.0 was used to conduct the statistical analyses.

## Results

### Demographic characteristics and test results

The sample comprised 6 females and 16 males and most of the participants came from Eastern Europe and the Middle East. Table 1 shows the number of participants, the mean age, the country of origin, and the results of the depression subscale of the BSI, the PCL-5, and the AMT.

Table 1  
*Demographic characteristics and test results of the total sample*

Sample characteristics	Total sample <i>N</i> = 22
Gender (N(%))	
Female	6(27.3)
Male	16(72.7)
Age (years) (M(SD))	51(8.2)
Country of origin (N (%))	
Bosnia	6(27)
Afghanistan	4(18)
Iraq	3(13.5)
Iran	2(9)
Turkey	2(9)
Former Yugoslavia	2(9)
Eritrea	1(4.5)
Croatia	1(4.5)
Georgia	1(4.5)
Test results (M(SD))	
Depression score	2.66(0.69)
PTSD symptom severity	58.1(7.4)
Reexperiencing	15.7(2.1)
Avoidance	5.6(1.4)
Negative Cognition and Mood	19.8(3.6)
Arousal	17(2.7)
Overgeneral answers	6(2.3)
Overgeneral answers for positive cues	3.2(1.4)
Overgeneral answers for negative cues	2.8(1.2)
Specific answers	4(2.3)

### **Hypothesis 1: Association of PTSD and OM**

Using a Pearson's correlation analysis, PTSD symptom severity score was negatively correlated with OM,  $r = -.33$ , although this result was not statistically significant,  $p = .14$ .

### **Hypothesis 2: Association of depression and OM**

A Pearson's correlation analysis showed that depression scores were not related to OM,  $r = .03$ ,  $p = .91$ .

A multiple regression analysis was calculated controlling for gender and age. Assumptions of regression were met. Men were found to be a significant predictor of OM,  $\beta = -.46$ ,  $p = .049$ , with an  $R^2$  of .21. The regression coefficients for age, PTSD, and depression were non-significant (see Table 2).

Table 2  
*Multiple regression for gender, age, PTSD, and depression with OM as dependent variable*

Models	B	SE	Standardised $\beta$	$p$
Gender	-2.34	1.1	-.46	.05
Age	-.02	.06	-.09	.7
PTSD symptom severity	-.1	.07	-.31	.21
Depression	.09	.78	.03	.91

### **Explorative questions**

To investigate which PTSD subscales are most associated with OM, a Pearson's correlation was calculated. Only the subscale of negative cognitions and mood correlated significantly negatively,  $r = -.45$ ,  $p = .02$ , showing that the higher a person's scores on that subscale were, the more specific their answers were on the AMT. There was no correlation found between PTSD symptom severity score and depression,  $r = 0.39$ ,  $p = 0.07$  (see Table 3).

Table 3

Correlation matrix with OM, OM negative, OM positive, PTSD symptom severity score, the four subscales of the PCL-5, and depression

Variable	1	2	3	4	5	6	7	8
1 Overgeneral memory								
2 Overgeneral negative cue words	.91**							
3 Overgeneral positive cue words	.87**	.6**						
4 PTSD symptom severity	-.33	-.27	-.32					
5 Re-experiencing	-.12	-.11	-.1	.65**				
6 Avoidance	-.25	-.23	-.22	.79**	.53**			
7 Negative cognition and mood	-.45*	-.35	-.47*	.82**	.33	.06**		
8 Arousal	-.08	-.09	-.06	.7**	.27	.4	.35	
9 Depression	.03	-.06	.12	.4	.12	.22	.15	.68**

\* $p > 0.05$ , \*\* $p > 0.01$ , two-tailed,  $N = 22$

Two multiple regression analyses were conducted to investigate if there is a difference in the prediction of OM when positive cue words were provided compared to when negative cue words were provided. None of the regression coefficients were significant (see Tables 4 and 5).

There was also no significant difference in the amount of overgeneral answers when positive cue words ( $M = 3.2$ ,  $SD = 1.4$ ) were provided compared to when negative cue words ( $M = 2.8$ ,  $SD = 1.2$ ) were provided ( $t(21) = 1.45$ ,  $p = 1.6$ ).

Table 4  
*Multiple regression for OM with negative cue words*

Models	B	SE	Standardised $\beta$	<i>p</i>
Gender	-1.25	.72	-.41	.1
Age	-.01	.04	-.01	.95
PTSD symptom severity	-.04	.05	-.23	.36
Depression	-.17	.5	-.09	.73

Table 5  
*Multiple regression for OM with positive cue words*

Models	B	SE	Standardised $\beta$	<i>p</i>
Gender	-1.1	.56	-.42	.07
Age	-.02	.03	-.15	.49
PTSD symptom severity	-.05	.04	-.32	.18
Depression	.27	.4	.16	.51

## Discussion

### Main findings and explanations

This study was conducted to examine associations of autobiographical memory with PTSD and depression symptoms in severely traumatized refugees. PTSD symptom severity and depression scores were expected to be associated with more overgeneral answers on the AMT. One reason for this is that refugees are prone to develop processes of the Car-Fa-X model that lead to less specificity in their memory. In agreement, trauma-related distress was associated with more overgenerality in other studies (Moore & Zoellner, 2007). Contrary to the expectations, in the present study PTSD symptom severity was not related with OM. However, there was a trend that the higher the PTSD symptoms of participants were, the more specific their answers were on the AMT. The subscale of negative cognition and mood was strongly associated with specific answers. Furthermore, depression scores were not found to be predictive for OM. While gender was found to be associated with OM, it would be difficult to make any conclusions based on this finding due to the fact that there were 16 male and only 6 female participants in the study.

Conway and Pleydell-Pearce (2000) give a possible explanation for the trend of a negative association between PTSD and OM. According to the authors, the attempt of stopping the generative retrieval process at an intermediate level can be successful or unsuccessful. Success is dependent, for instance, on how rapidly ESK enters into the retrieval process. For example, if it is directly associated with goals of the working self, then participants with high arousal will rapidly activate ESK to cue words like “angry” or “irritated”. Also participants with high intrusions could have highly accessible ESK of their traumatic experiences that are recalled quickly. If ESK is recalled, extra cognitive resources will be needed to inhibit it. These are resources people with high depression symptoms, like the refugees in the present study, do not have (Watkins & Brown, 2002).

A possible explanation for the lack of an association between PTSD and depression and OM can be found by comparing the current sample with other study samples. Comparing the present sample to other studies, they are overall less specific and present higher values on the PCL-5 and BSI. The present sample had high scores on all four subscales not only compared to a study of undergraduate students (Ashbaugh, Houle-Johnson, Herbert, El-Hage, & Brunet, 2016), but also compared to a study of military service members seeking treatment for PTSD (Wortmann et al., 2016). The same was shown on the depression subscale of the

BSI, in which a British community sample showed the least depressive symptoms (Francis, Rajan, & Turner, 1990). But even compared to a sample of psychiatric outpatients (Derogatis & Melisaratos, 1983), the present refugee sample showed high depressive scores. Participants of this sample additionally showed the most overgeneral answers on the AMT compared to samples with PTSD (Wessel et al., 2001) and depressed individuals with a history of trauma (Kuyken, Howell, & Dalgleish, 2006). In summary, refugees in the current sample showed poor abilities on the AMT in comparison to other studies. Moreover, they had more severe complaints. If the standard deviations in the current sample would have been high, that could have been a hint of a possible “ceiling effect” (Garin, 2014). A relation between complaints and AMT scores may then be difficult to detect because of the lack of differentiation in complaints. However, the standard deviation was smaller compared to the other study samples. These results may hint towards malingering, meaning a conscious simulation of symptoms (Rogers, 1990). PCL-5 and BSI measures may have had no false validity and participants of the current sample could have answered on purpose with high scores in order to get treatment, having someone to talk and listen to, or receiving governmental benefits of the treatment program (Hall & Hall, 2007). It may also be culturally dependent, for instance, they may experience real symptoms but cultural factors may lead to an exaggeration in the presentation of their symptoms and suffering (Weiss & Rosenfeld, 2010). A possible simulation or exaggeration of symptoms may explain that there is no deterioration in the participants’ ability of answering specific on the AMT, leading to no association of PTSD, depression and AMT scores.

Looking into the results of the subscales of the PCL-5, only negative cognition and mood was associated with OM. However, the directions of association were in line with the results of the study by Moradi et al. (2008), namely re-experiencing leading to more OM and avoidance to less OM. Moradi et al. explained that the positive prediction of re-experiencing is confirming the functional avoidance account; people with high intrusions and flashbacks are stopping the generative retrieval process on an intermediate level to avoid painful emotional memories. The authors also referred to the executive account. If patients have difficulty inhibiting unwanted, automatically-generated distracting information, like categorical and extended memories, that are activated during a hierarchical retrieval, it is more likely that these distracters are generated on the AMT. Moradi et al. (2008) stated that the executive account may also explain the negative association with avoidance symptoms. Individuals who are good at avoiding, especially thoughts and reminders of the trauma, may



be effective at exercising cognitive control in general. Because of that, they may have greater success controlling distressing information and categorical or overgeneral memories, and hence it could be related to higher specificity on the AMT. Outstanding is the significant negative correlation of OM with the symptom cluster of negative cognition and mood in the present study. To the best of the author's knowledge, there is no research about the association of the different subscales of the PCL-5 yet, including the new DSM-5 cluster of negative cognition and mood, with OM. Persistent negative emotional state (such as fear, horror, etc.) is a symptom of the cluster. A person could experience with such negative thoughts, for instance fear, that rumination does not stay on an intermediate level as usual - explained by the capture and rumination account - but goes into specific retrieval process. There could be an explanation for specific answers regarding the working self in the SMS. If a person is in a negative mood, the goal of the working self could be to find suitable thoughts for the mood. This may cause the person to recall specific negative memories. These accounts are speculative and further research into this phenomenon is needed.

No difference was found in OM between positive and negative cue words. Taking the functional avoidance hypothesis into account (avoiding negative emotions through overgeneral recollections), one can expect that OM is more likely to be shown in response to negative cues. But positive words might just as easily trigger negative memories that also need to be inhibited. When a person does not want to remember a specific trauma (e.g. being torn from their parents because of war), not only negative cue words of the trauma, but also positive or neutral words (e.g. "summer" or "forest") might lead to these specific painful memories. Furthermore, the accounts of capture and rumination can explain the phenomenon of overgenerality in both positive and negative cues. Depressed people are as likely to have their attention captured by positive as by negative stimuli as long as the cue maps onto a "self-guide" (Crane, Barnhofer, & Williams, 2007). Rumination is often triggered by a discrepancy between actuality and a desired state or goal of the working self in the SMS (Martin & Tesser, 1996). If a depressed person for example sees the words "curious", it signals the absence of a personally meaningful state and it is as likely to elicit self-ruminative thinking, such as "Why am I not as curious anymore as I used to be?" as when a negative cue word is provided (Treyner, Gonzalez, & Nolen-Hoeksema, 2003). Lastly, the executive account can explain OM in both positive and negative cue words. In terms that reduced executive control makes it more difficult for depressed individuals to maintain focused on the goal of retrieving a specific event (Williams et al., 2007).

## **Strengths and limitations**

To the author's knowledge, this is one of the first studies that investigated OM in a sample that included refugees and looked in more detail into the subscales of PTSD. Moreover, these subjects reflected highly traumatized refugees and not refugees dealing well and easily with the forced migration, which was shown by high complaints on both PCL-5 and BSI. On the other hand, there are some limitations to this study. To begin with, this study had a small sample size. Using the Gpower computer program, power analysis indicated that a total sample of 88 people would be needed to detect medium effects. Secondly, a control group was missing. This research design does not allow for concluding whether the performance of depressed and traumatized patients is comparable to that of a nonclinical or healthier control group. Thirdly, possible confounders that were not included in the study could have been responsible for the results, e.g. age of first trauma experience, duration and type of trauma, suicide attempts, etc. Wessel et al. (2001) found that educational level predicts memory performance. Not controlling for individual differences in education or intelligence, may affect findings. Fourthly, no information was found about how culturally sensitive the tests (BSI, PCL-5, and AMT) were for refugees. Factors such as duration of stay in the Netherlands, language skills, and interaction with other people of the refugee sample could play a role. Lastly, there was a statistical difference to some other studies. In this study OM was summed up with answers coded as "categoric", "extended", "omission of answer", or "memory of today". This study defines omissions as OM while in some other studies they are purely seen as an omission, neither belonging to overgeneral, nor to specific answers (Van Vreeswijk & De Wilde, 2004).

## **Conclusion**

Although PTSD and depression were not predictors of OM, it does not mean that the negative consequences of overgenerality in refugees are resolved. As presented, the answers of the AMT were overall more overgeneral compared to other study samples. Further research in a larger sample, one including a control group, is needed to understand the present findings. Furthermore, more exploration on the negative cognition and mood subscale is needed to understand its positive association with specific answers.

In relation to negative consequences of OM, for instance in the asylum seeking process, further research is needed. Clinical knowledge like this is especially relevant to

support affected individuals with training in memory, not only to improve their retrieval style, but also to reduce rumination, cognitive avoidance, and enhance problem-solving skills.

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