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### **AUTOBIOGRAPHICAL MEMORY FUNCTIONING FOLLOWING SPONTANEOUS PARTIAL REMISSION OF POSTTRAUMATIC STRESS DISORDER: AN EXPLORATORY STUDY**

**Fonctionnement de la mémoire autobiographique après remission partielle spontanée d'un Trouble de Stress Posttraumatique: une étude exploratoire**

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**RÉSUMÉ :** Une altération de la mémoire autobiographique (MA) a été largement observée dans le Trouble de Stress Posttraumatique (TSPT). Cependant, tout cela reste vague ce déficit de la MA pourrait être dû à un dysfonctionnement prémorbide, à l'exposition traumatique elle-même ou au développement ultérieur des symptômes de TSPT. De plus, peu d'études ont évalué la MA chez des participants qui ont récupéré d'un TSPT. Notre objectif était de comparer les performances en MA chez des participants avec remission partielle spontanée d'un TSPT, chez des participants exposés à un événement traumatique mais sans antécédent de TSPT et chez des contrôles n'ayant jamais été exposés. La MA a été évaluée chez tous les participants avec une tâche de mots-indices. Le groupe avec antécédent de TSPT a complété l'échelle de l'état de stress posttraumatique (PCL-S) pour confirmer la remission. Il n'y avait pas de différence significative entre les scores de MA des trois groupes et aucune corrélation significative n'a été observée entre les performances en MA et les symptômes traumatiques pour le groupe avec antécédent de TSPT. Ces résultats suggèrent qu'en remission d'un TSPT la MA n'est pas altérée.

**MOTS-CLÉS :** Mémoire Autobiographique, Spécificité, trauma, TSPT, Rémission, valence émotionnelle

**ABSTRACT :** *Autobiographical memory (AM) impairment is widely observed in posttraumatic stress disorder (PTSD). However, it remains unclear whether this deficit is due to premorbid AM dysfunction, to the trauma exposure itself or to subsequent development of PTSD symptomatology. Moreover, few studies have assessed AM in participants who have recovered from PTSD. Our aim was to compare AM performance in participants with spontaneous partial remission of PTSD, participants exposed to a traumatic event but with no history of PTSD, and controls with no trauma exposure. All participants underwent AM assessment with a cue-word task. The group with a history of PTSD completed the PTSD Checklist Specific questionnaire to confirm remission. There was no significant difference between the three groups for AM scores and no significant correlation was observed between AM performance and traumatic symptoms in the group with history of PTSD. These findings suggest that when PTSD is in remission, AM is not impaired.*

**KEYWORDS :** *Autobiographical Memory, Specificity, Trauma, PTSD, Remission, Cue-word valence*

## I - INTRODUCTION

Patients with posttraumatic stress disorder (PTSD) describe autobiographical memory (AM) impairment (see Moore & Zoellner, 2007; Williams et al., 2007; Ono, Deville, & Shum, 2015 for reviews) and especially a decrease of AM specificity (Abdollahi, Moradi, Hasani, & Jobson, 2012; Brown et al., 2014; Dalgleish, Rolfe, Golden, Dunn, & Barnard, 2008; Moradi, Abdi, Fathi-Ashtiani, Dalgleish, & Jobson, 2012). Rather than retrieving a specific memory for an event that occurred once at a particular time and place, and lasted less than a day, these patients often produce what is referred to as “overgeneralized memories”, i.e. memories of repeated or extended events. This AM impairment has clinical implications and consequences in everyday life (Bluck, 2003).

Although numerous studies have shown AM impairment in PTSD, the source of impairment remains unclear. Some studies demonstrated that AM impairment may be a risk factor for developing PTSD, suggesting premorbid AM dysfunction (e.g. Williams, 1996; Bryant, Sutherland, & Guthrie, 2007). Conversely, other works demonstrated that trauma exposure itself impairs retrieval of specific autobiographical memories (e.g. Raes, Hermans, Williams, & Eelen, 2005). However, there was no consistent association between trauma exposure and overgeneral AM across studies (Moore & Zoellner, 2007). Other researchers considered that AM impairment is a consequence of PTSD development (e.g. Lagarde, Doyon, and Brunet, 2010). Along these lines, some studies have described AM improvement together with symptoms reduction after treatment in participants with PTSD (Akbarian et al., 2015; Moradi et al., 2014; Sutherland & Bryant, 2007).

To the best of our knowledge, no research focused on AM after spontaneous remission of PTSD, i.e. without specific treatment. Morina, Wicherts, Lobbrecht & Priebe, (2014) conducted a systematic review and meta-analysis on spontaneous remission rates of PTSD. They found that nearly half of participants diagnosed with PTSD remit from this disorder after a mean of more than three years. The aim of our preliminary study was to examine AM specificity after PTSD has spontaneously partially resolved.

We assessed AM in participants who had a history of PTSD but were not currently diagnosed with the disorder. We also included a group of participants exposed to a traumatic event but without a history of PTSD because findings are inconsistent regarding the impact of exposure alone on AM functioning (Ono et al., 2015; Williams et al., 2007) and a group of participants who had never been exposed to a traumatic event.

## II- METHODS

### Participants

All volunteers were recruited by internet advertisement and announcement at the University of Toulouse, France. Exclusion criteria were current mental disorders or a history of mental disorders (PTSD excepted) as assessed on the MINI (Sheehan et al., 1998), use of psychotropic medication, neurological pathology, brain damage, or head injury with loss of consciousness.

Twelve participants were included in the group with a history of PTSD after a single unexpected incident exposure, but without a current PTSD diagnosis, as assessed on the Mini-International Neuropsychiatric Interview (MINI, Sheehan et al., 1998). Incidentally, they were all women. We matched this group by sex, age and education level to 13 participants exposed to a traumatic event but without a history of PTSD and 19 participants who had never been exposed to a traumatic event. Exposure to a traumatic situation was assessed using the Trauma History Questionnaire (THQ, Green, 1996). The participants included in this study presented different types of trauma exposure (sexual assault, brutal death of a close family member or friend, vehicle accident, natural disaster, brutal illness, physical assault). The mean number of exposures of the group with a history of PTSD was 1.75 (SD = 1.06), which did not differ significantly from the mean of the exposed group without PTSD, 1.58 (SD = 0.90). All participants were aged over 18, were native French speakers and provided written informed consent for participation in this study.

## Measurements

Autobiographic memory was assessed in all participants. The group with a PTSD history also completed the PTSD Checklist to confirm remission.

*Trauma Assessment* : The PTSD Checklist Specific (PCL-S; Ventureyra, Yao, Cottraux, Note, & De Mey-Guillard, 2002; Weathers, Litz, Herman, Huska, & Keane, 1993) is a 17-item self-report measure of the DSM-IV symptoms of PTSD. Participants rate how much they were “bothered by a symptom” on a 5-point scale. The PCL thus yields a continuous measure of PTSD symptom severity with scores ranging from 17 to 85. The cut-off score for a diagnosis of PTSD is 44 (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996). This version refers to a “specific stressful experience”.

*Autobiographical Memory Assessment* : A shortened, revised version of the Crovitz & Schiffman (1974) cue-word task was used (Graham & Hodges, 1997) to assess recall of autobiographical memories. Two cue-words with negative valence, two cue-words with positive valence and two cue-words with neutral valence were proposed. Each cue-word was given to the participant with the instruction to retrieve past personal memories for different periods of life (0-10 years, 11-19 years, 20-(n-1) years, the last 12 months). The order of presentation of the cue words was randomized, and no time limit was set. A second cue was given for each possible response before considering that a participant had no memory. Participants were encouraged to recall as many details as possible (spatial, temporal and emotional), and incomplete responses were probed with further questions (e.g., “Tell me more”, “Do you remember where it took place?”). Scores were obtained using a 0-to 5-point scale (0 = absence of response, 1 = semantic facts related to the target word, 2 = poorly detailed generic or repeated events, 3 = detailed generic or repeated events, 4 = poorly detailed specific events, 5 = richly detailed specific events with spatiotemporal context and phenomenological details). Thus we scored a total of 24 memories between 0 and 5 points. Two examiners independently scored all the memories. The first was the psychologist (SB) who assessed the participants, the second (VV) was blind to group status. Interrater agreement (Cohen’s kappa) was 0.88 (almost perfect agreement; Cohen, 1960).

## III - RESULTS

The sociodemographic characteristics of the participants are shown in Table 1.

Participant characteristics and specificity scores	Never exposed (n=19)	Exposed without history of PTSD (n=13)	Exposed with history of PTSD (n=12)	Test Statistic (p)
<b>Sociodemographic data (mean, SD)</b>				
Age	23.16 (6.60)	24.54 (8.50)	26.67 (11.40)	H(2) = 2.45, p = 0.29
Education level (in years)	14.00 (1.05)	13.46 (1.27)	14.58 (2.35)	H(2) = 2.64, p = 0.27
<b>Mean AM scores in % (SD)</b>				
Total score	86.77 (5.30)	84.87 (6.01)	88.73 (7.45)	H(2) = 2.52, p = 0.28
Positive cue-word	88.68 (6.22)	86.67 (6.38)	88.89 (6.70)	H(2) = 0.89, p = 0.64
Negative cue-word	86.58 (8.65)	85.96 (9.17)	90.71 (8.04)	H(2) = 3.12, p = 0.21
Neutral cue-word	85.04 (7.41)	81.99 (8.74)	86.58 (10.44)	H(2) = 1.81, p = 0.40

SD = standard deviation, AM = Autobiographical Memory

**Table 1.** Sociodemographic Data and Specificity Scores

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### Clinical Characteristics of the Group with a History of PTSD

In the group of participants with a history of PTSD, none had a current PTSD diagnosis (scores > 44). The mean PCL-S score was 30.67 (SD = 6.24). We considered that the group with a history of PTSD was not in full remission because there were residual symptoms. The mean of number of years post-trauma was 8.75 (SD = 4.79).

### Intergroup Analysis

Since preliminary analyses revealed that normality and homoscedasticity assumptions were not met (Shapiro-Wilk test and Levene test, respectively), intergroup differences on AM scores were examined using non-parametric statistics (Kruskal-Wallis tests).

Considering total AM scores, no significant difference was observed between participants with a history of PTSD that spontaneously remitted, participants exposed to a traumatic event but with no history of PTSD and controls who had never experienced a traumatic situation. Mean AM scores obtained by the three groups are presented in Table 1. Moreover, AM scores obtained for memories cued by neutral, negative and positive cue-words did not significantly differ between the three groups, suggesting no impact of cue-word valence on AM retrieval.

### Correlation Analysis

Correlation tests (Spearman's rank correlation coefficient) were performed between traumatic symptoms and AM assessment for the group with a history of PTSD. The results showed no significant correlation between traumatic symptoms (PCL-S) and AM scores.

## IV - DISCUSSION

This exploratory study examines AM in participants exposed to a traumatic event with a history of PTSD with spontaneous partial remission and compares their performance to those of participants exposed to a traumatic event without a history of PTSD and participants never exposed to a traumatic event. Our findings revealed that participants exposed with a history of PTSD showed no AM impairment compared with the other groups.

The current results are not consistent with the hypothesis of Bryant et al. (2007) and Williams (1996). These authors considered AM impairment as a risk factor for the development of PTSD and as a coping style that would remain stable over time. Thus, AM impairment would be present before the disease and would be found following PTSD remission.

We presumed that our participants with history of PTSD might have had AM difficulties at the time that they presented a high level of traumatic symptoms and that this impairment might have disappeared with the remission of PTSD. Our hypothesis was in accordance with the studies considering that AM alteration is a consequence of PTSD symptomatology (e.g. Lagarde et al., 2010) and with those that showed that reduced AM specificity is not a fixed feature of an individual's mnemonic style, but can be modified (Akbarian et al., 2015; Moradi et al., 2014; Sutherland & Bryant, 2007). Thus, Sutherland and Bryant (2007) highlighted that resolution of PTSD symptoms through cognitive behavior therapy would be associated with improved retrieval of specific memories. Similar results were obtained by Akbarian and coworkers (2015). Moreover, Moradi and colleagues (2014) demonstrated that Memory Specificity Training (an intervention aimed at ameliorating specificity problems) improve AM specificity and the symptoms of PTSD. However, the exact relationship between PTSD symptoms and AM specificity is unclear: we do not know whether the AM improvement is the consequence or the cause of the decrease of traumatic symptoms. Furthermore, as the three studies that reported AM improvement following therapy included no participants that have never been exposed to a traumatic event, we could not conclude to a normalization of AM performance.

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Correlation analysis did not reveal a significant relationship between residual trauma symptoms and specificity scores, unlike the study of Kuyken, Howell, & Dalgleish (2006). The discrepancy between our findings and their results could be explained by our sample, which had a history of PTSD, whereas their participants had current PTSD.

Some limitations to this study should be acknowledged. First of all, a longitudinal follow-up would be more appropriate. Thus, to verify our hypothesis, we should have assessed AM in a group of participants with current PTSD and compare with a group of participants in total remission of PTSD. Moreover, the sample size is relatively small and all participants were women, limiting the generalizability. The lack of statistical power does not allow to assure a lack of effect, this study is really exploratory and must be supplemented with more participants. It is important to note that the participants within the history of PTSD group varied in terms of types of traumas and the age at time of experience. We know these factors could interfere with PTSD symptoms and AM; future studies should consider them. Finally, we did not assess potential resilience factors that may be protective in face of a traumatic event or associated with resistance to trauma effect.

In summary, to the best of our knowledge, this preliminary study is the first that indicates that victims who have partially recovered from PTSD without specific treatment have no AM impairment.

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