No evidence for verbal learning impairments in women with a history of childhood abuse

Citation for published version (APA):

Document status and date:
Published: 01/01/2008

DOI:
10.1016/j.psychres.2007.06.027

Document Version:
Publisher's PDF, also known as Version of record

Please check the document version of this publication:
• A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
• The final author version and the galley proof are versions of the publication after peer review.
• The final published version features the final layout of the paper including the volume, issue and page numbers.

Link to publication

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

• Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
• You may not further distribute the material or use it for any profit-making activity or commercial gain
• You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the “Taverne” license above, please follow below link for the End User Agreement:
www.umlib.nl/taverne-license

Take down policy
If you believe that this document breaches copyright please contact us at: repository@maastrichtuniversity.nl providing details and we will investigate your claim.
Brief report

No evidence for verbal learning impairments in women with a history of childhood abuse

Marko Jelicic⁎, Elke Geraerts, Harald Merckelbach

Department of Clinical Psychological Science, Maastricht University, The Netherlands

Received 15 August 2006; received in revised form 27 June 2007; accepted 30 June 2007

Abstract

We examined verbal learning in 54 women with a history of childhood abuse and 40 women without trauma history. Although women with a history of abuse reported higher levels of psychological distress than controls, the two groups did not differ in their verbal learning performance.

© 2007 Elsevier Ireland Ltd. All rights reserved.

Keywords: Traumatic stress; Childhood abuse; Verbal learning; Memory

1. Introduction

Some authors (e.g. Bremner, 1999) have argued that exposure to traumatic stress may lead to memory impairments. According to these authors, excessive levels of cortisol, released during severe stress, would result in damage to the hippocampus, thereby undermining the vital role this brain structure plays in storing new information in memory. Meanwhile, the evidence for memory impairments following traumatic stress is somewhat mixed. Although several studies found that traumatized patients who developed posttraumatic stress disorder (PTSD) show worse performance on standard memory tests than control participants, other investigations were unable to document memory impairments in PTSD patients (for reviews, see: Horner and Hamner, 2002; Jelicic and Merckelbach, 2004; Isaac et al., 2006). Some studies failed to exclude patients with neurological injury or did not control for alcohol and/or drug abuse (see Horner and Hamner, 2002, for a list of studies with methodological problems). Therefore, one could argue that memory impairments in traumatized people who developed PTSD may, at least in some cases, be the result of neurological injury and/or substance abuse rather than exposure to traumatic events per se. In order to circumvent the problem of neurological injury and/or substance abuse, Twamley et al. (2004) studied neuropsychological function in undergraduate students with or without a history of trauma. Using a non-clinical sample, the authors failed to find evidence for neuropsychological impairments in undergraduates who had been exposed to traumatic events. Thus, their study seems to suggest that exposure to traumatic events does not invariably lead to memory problems.

⁎ Corresponding author. Department of Clinical Psychological Science, Maastricht University, P.O. Box 616, 6200 MD Maastricht, The Netherlands.

E-mail address: m.jelicic@psychology.unimaas.nl (M. Jelicic).

0165-1781/S - see front matter © 2007 Elsevier Ireland Ltd. All rights reserved.
doi:10.1016/j.psychres.2007.06.027
Inspired by the study by Twamley et al. (2004), we decided to examine learning of new information in participants from the general population with and without a history of childhood abuse. In contrast to Twamley and colleagues, we opted for participants from the general population because the use of undergraduate students is sometimes associated with problems such as expectancy effects and demand characteristics (Schulz, 1969). Verbal learning was chosen because most studies on memory in PTSD used verbal learning tests (cf. Isaac et al., 2006). Although we focused on one aspect of memory, i.e., learning of new semantic information, it should be noted here that verbal learning tests play a prominent role in the evaluation of memory disorders (Lezak et al., 2004). For instance, such tests can be used to distinguish between normal cognitive aging and neurodegenerative disorders. Our expectation was that there would be no differences in verbal learning between people with trauma exposure and those without a background of abuse.

2. Methods

2.1. Participants

We recruited participants through advertisements in local newspapers. Women with and without a history of childhood sexual abuse were invited to volunteer in a study on memory and personality. The study was approved by the local ethical committee. All participants were studied after informed consent. The trauma group consisted of 54 women (mean age = 43.0 years, S.D. = 14.5) with clear and continuous memories of childhood sexual abuse (CSA). That is, these women had never forgotten that they were victims of CSA, and in many cases they could provide us with sources of corroborative evidence for the abuse (e.g., siblings who could confirm the abuse). CSA was defined as physical sexual contact ranging from fondling to penetrative acts. The control group comprised 40 women (39.1 years, S.D. = 11.1) who said that they had, neither during childhood nor during adulthood, ever been sexually abused. Participants with traumatic experiences other than CSA were excluded from the study.

2.2. Measures

2.2.1. Self-report scales

All participants were asked to fill out four questionnaires. The Childhood Trauma Questionnaire (CTQ; Bernstein and Fink, 1998) is a widely used self-report scale of traumatic childhood events. The short form consists of 25 items that address five areas of childhood maltreatment, namely emotional, physical, and sexual abuse, and of emotional and physical neglect. Higher scores on the CTQ reflect higher levels of childhood trauma. The Impact of Event Scale (IES; Horowitz et al., 1979) is a 15-item self-report scale measuring the present level of trauma-related distress. It comprises two subscales tapping symptoms of intrusion and avoidance. Higher scores on the IES indicate higher levels of traumatic distress. The Beck Depression Inventory (BDI; Beck and Steer, 1987) consists of 21 items focusing on the behavioral manifestations of depression. Higher scores on the BDI reflect more depressive symptoms. The Dissociative Experiences Scale (DES; Bernstein and Putnam, 1986) is a 28 self-item self report scale pertaining to dissociative experiences. Participants have to indicate on visual analogue scales the degree to which they experience these feelings. Higher scores on this instrument indicate stronger dissociative experiences.

2.2.2. Memory measures

Participants were given a modified version of the 30-word Verbal Learning Task (30WVT; Smeeets et al., 2006). Instead of 30 neutral words, 10 positive emotional, 10 negative emotional, and 10 neutral words were used. The different types of words were completely intermixed. Participants were read the words at a rate of one per 2 s and asked to recall as many words from the list as possible. This procedure was repeated twice (with the same words). Thirty min after the third trial, participants again were asked to recall the study words. We used the total number of recalled words at trial 3 as an index of immediate recall (IR) and the number of words recalled after 30 min as an index of delayed recall (DR).

3. Results

The scores of the two groups on the self-report scales and the memory measures can be found in Table 1. As

<table>
<thead>
<tr>
<th>Measure</th>
<th>Women with abuse</th>
<th>Women without abuse</th>
<th>t (92)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTQ</td>
<td>37.3 (11.4)</td>
<td>24.2 (4.7)</td>
<td>6.87</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>IES</td>
<td>23.0 (8.4)</td>
<td>7.9 (5.3)</td>
<td>10.00</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>BDI</td>
<td>13.5 (9.1)</td>
<td>7.0 (4.4)</td>
<td>4.19</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>DES</td>
<td>22.3 (12.7)</td>
<td>13.9 (7.1)</td>
<td>3.76</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>IR</td>
<td>16.4 (5.3)</td>
<td>16.1 (4.6)</td>
<td>0.38</td>
<td>0.71</td>
</tr>
<tr>
<td>DR</td>
<td>11.8 (6.4)</td>
<td>11.3 (5.4)</td>
<td>0.38</td>
<td>0.69</td>
</tr>
</tbody>
</table>

Note: CTQ = Childhood Trauma Questionnaire; IES = Impact of Event Scale; BDI = Beck Depression Inventory; DES = Dissociative Experiences Scale; IR = immediate recall; DR = delayed recall.
expected, participants with a history of CSA had significantly higher scores on the CTQ, IES, BDI, and DES than those without a history of abuse. All these differences yielded large effect sizes (all Cohen’s $d$’s $>0.84$). There were no differences between the two groups with respect to memory performance. For the whole sample, age correlated negatively with the two memory measures (both $r$’s $<-0.24$; both $P$’s $<0.05$), while dissociation was not significantly related to the memory parameters (both $r$’s $<-0.12$). In the group with a history of CSA, 35 (65%) had an IES score that exceeded the clinical cut-off for trauma-related distress ($>19$; see Joseph, 2000). None of the controls had an IES score above the cut-off. Note that IES scores were not significantly related to the memory parameters (both $r$’s $<-0.10$).

4. Discussion

Our findings as well as those reported by Twamley et al. (2004) suggest that trauma exposure does not invariably lead to problems in learning new information. Thus, it may well be the case that memory problems in patients with PTSD are a side effect of neurological injury and/or substance abuse. According to the glucocorticoid toxicity hypothesis, traumatic stress may lead to hippocampal damage through elevated levels of cortisol. This hypothesis has been criticized on a number of grounds (McNally, 2003; Jelicic and Merckelbach, 2004). For example, although many magnetic resonance imaging studies show smaller hippocampi in PTSD patients, most of these investigations suffer from methodological weaknesses such as the failure to include an adequate control group. Also, a small hippocampus may be a risk factor for PTSD rather than a consequence of exposure to trauma. Moreover, cortisol levels are often lowered, rather than elevated, in PTSD patients (Yehuda, 2002). The present findings along with those of Twamley et al. (2004) pose additional problems for the glucocorticoid toxicity hypothesis. Note that there is little reason to doubt that the CSA survivors in our study had been confronted with serious abusive events in childhood. Their relatively high CTQ and IES scores underline this point. The finding that age was inversely related to memory performance shows that our memory parameters had reasonable sensitivity. Given the relatively large sample size, our failure to detect suboptimal memory performance in those with a history of CSA cannot be easily dismissed as a power problem. Rather, it casts doubt on the idea that traumatic exposure in itself undermines storing of new information in memory. Much the same is true for our failure to find a correlation between dissociation and verbal learning. Apparently, the idea that dissociation is accompanied by memory deficits does not possess the empirical credibility some authors assume it has (e.g., Prohl et al., 2001).

The present study has some limitations. Because all our participants were female, our findings are silent about memory performance in men with a trauma history. However, there is no a priori reason to assume that trauma affects memory functioning in women and men differently (cf. Twamley et al., 2004). Furthermore, our participants were recruited via advertisements in local newspapers. As a result, only resilient people with a trauma history might have volunteered in our study. It is possible that people with memory impairments brought about by traumatic events did not respond to our advertisement. While our study may suffer from a selection bias, it should be noted here that the participants with a trauma history had elevated scores on the IES and BDI, suggesting that, at present, they still suffer from the traumatic events that took place in their childhood. Finally, our study focused on learning of new semantic information. There are many indicators showing that when it comes to retrieval of autobiographical memory, trauma survivors exhibit abnormalities (e.g., Wessel et al., 2002).

Acknowledgements

This study was supported by a grant from the Dutch Organization for Scientific Research N.W.O. (grant # 452-02-006-A).

References


