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Letter to the Editor

Living in the moment: Patients with MTL amnesia can richly describe the present despite deficits in past and future thought

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1. Introduction

Accumulating evidence suggests that amnesic patients have difficulty imagining the future in addition to having deficits remembering the past (see Verfaellie et al., 2012). In a recent article in this journal, Zeman et al. (in press) reported that amnesics are also impaired at describing the present: A group of amnesics with mixed etiologies and variable neurocognitive profiles produced fewer narrative elements compared to controls when describing pictures and real-life settings. These results were taken as evidence that amnesics' impoverished descriptions of the past and future reflect a more basic impairment in narrative construction, the experience of the present, or cognitive functions outside the memory domain.

By contrast, a study by Race et al. (2011) suggested that impaired description of pictures in the present is not a general characteristic of amnesia. Patients with amnesia due to medial temporal lobe (MTL) damage and cognitive impairments limited to the memory domain produced picture-based stories as well as controls despite deficits in describing the past and future. Zeman et al. argue that important differences in task demands (e.g., the requirement to *describe* versus *tell a story* about picture elements) "hampers direct comparison of the results" across studies, suggesting that picture narrative deficits in amnesia may depend on specific task demands. We investigated this hypothesis by retesting the same MTL amnesics and controls from the Race et al. (2011) study on a picture description task, using instructions similar to Zeman et al. (in press).

2. Methods

Eight MTL amnesics and 12 healthy controls participated. For details about participants and scoring, see Race et al. (2011). Participants were shown five pictures of scenes, one at a time, and were instructed to describe what they saw in as much detail as possible without creating stories. Participants were allotted 3 min for each response and continued without interference until a natural ending point or 3 min maximum (pictures remained present for the duration of their response). The majority of subjects (10 controls and four amnesics) completed their responses before the time limit.

Participants' narratives were segmented into distinct details categorised as episodic, semantic, external, repetition, or metacomments. Details not present in the picture were scored as external. Episodic details were further subcategorized as event, place, time, perceptual, thought/emotion, and object-location details. For each subject, the number of details in each category was counted and averaged across pictures. Interrater reliability of scoring was established on the basis of five narratives scored by two raters (one blind to subject status; Cronbach's $\alpha = .99$).

3. Results

Picture details were entered into analysis of variance (ANOVA) with factors of group and detail category (episodic, semantic, external, repetition, metacomment). One control

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subject was excluded from analysis due to outlier performance (>2 standard deviations from control mean), although inclusion or exclusion of this subject did not affect results. Patients and controls described a similar number of total details [group $F_{(1,17)} = 1.64$, $p = .22$; Fig. 1] as well as a similar number of details in each category [group × category $F_{(4,17)} = 1.08$, $p = .32$]. Both groups produced few external details (mean < 1) and repetitions (mean < 2). The majority of details were episodic [detail category $F_{(3,51)} = 96.58$, $p < .001$]. Within the episodic detail subcategories, there was no main effect of group or significant interactions with group ($ps > .1$).

To examine whether participants treated the picture description task differently than Race et al. (2011)'s picture story task, data from these two tasks were compared in an ANOVA with factors of task (description, story), detail category (episodic, semantic, external, repetition, metacomment), and group. Task instructions significantly affected performance: Participants produced more details in the description than the story task [task $F_{(1,17)} = 4.42$, $p = .05$] and the nature of details differed across tasks [task × detail $F_{(4,68)} = 5.04$, $p < .04$; more semantic details in the story task and more episodic details in the description task, $ps < .03$]. The nature of the episodic details also differed across tasks [task × episodic detail subcategory $F_{(5,85)} = 14.81$, $p < .001$], with more perceptual but fewer thought/emotion details in the description task ($ps < .05$). However, the absence of a group difference held, regardless of task instructions, for all details and for episodic details [group $Fs_{(1,17)} < .72$, $ps > .41$; group × task $Fs_{(1,17)} < 2.08$, $ps > .16$].

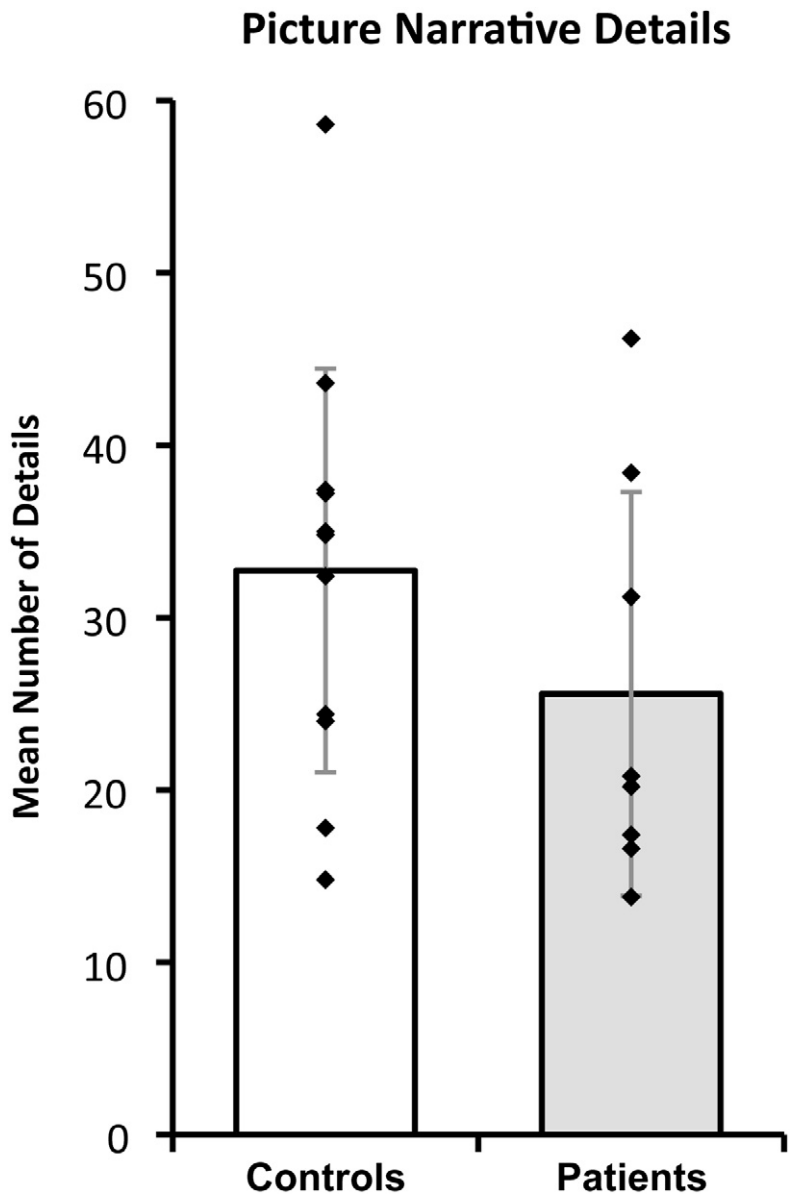

Fig. 1 – Mean number of total narrative details (all detail types) described by controls (left) and patients (right) when instructed to describe the elements in visually-presented pictures. The one control subject excluded from analysis due to outlier performance is not included in the graph. Error bars indicate standard deviation and scatter points indicate individual subject performance.

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4. Discussion

Narrative descriptions were intact in MTL amnesia when subjects were instructed to describe visually presented pictures. Acknowledging the limitations of cross-study comparisons, we note that these findings stand in contrast to those of Zeman et al. (in press) in a picture description task with similar instructions. Moreover, they are consistent with the results of Race et al. (2011) in a story generation task and Mullally et al. (2012) in a similar scene probe task. These results suggest that picture description is intact in patients with MTL amnesia regardless of the specific task instructions used.

An important outstanding question is why picture description is sometimes impaired in amnesia (Zeman et al., in press). One possibility is that such impairments occur in the presence of extra-MTL damage that disrupts non-mnemonic processes such as attention and executive function. Amnesics in the current study had restricted MTL damage and cognitive impairment only in the memory domain, while patients in the Zeman et al. study had a constellation of extra-MTL lesions and variable profiles of cognitive impairment. While no systematic relationship between these patients' narrative performance and the locus of their damage or non-mnemonic impairments was apparent, poor performance may have resulted from different deficits across patients. Alternatively (or additionally), the use of densely arrayed scenes with similar picture elements in Zeman et al. (in press) may have disadvantaged amnesic patients, insofar as more erratic scanning strategies in amnesia (Ryan and Cohen, 2004) may have increased the working memory load needed to track which elements had already been mentioned. Future research can address these hypotheses by directly comparing the performance of amnesic populations with and without extra-MTL damage on picture description tasks with varying perceptual demands.

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