

Event Segmentation and Memories of Daily Life in Patients with Acquired Brain Injury: Preliminary Data

Introduction

- **Segmentation** = parsing the continuous flow of our daily activities into discrete meaningful events (for a review, see Zacks, 2020).
 - There is a **link between normative segmentation** (i.e., identifying the same event boundaries as others) and **memory performance** (Richmond et al., 2017).
 - After an **Acquired Brain Injury (ABI)**, this ability to segment in a normative way can be impaired (Zacks et al., 2016).
- Such segmentation difficulties could, at least in part, explain the memory impairments observed in brain-injured populations.

However, these findings were obtained using laboratory tasks (e.g., segmenting and memorizing third-person videos).

→ **It remains to be determined whether segmentation difficulties in brain-injured patients can be observed for real-life activities and how they impact personal memories of daily life.**

Objectives

- To confirm the **presence of segmentation and everyday memory difficulties in individuals with ABI** using more ecological tasks.
- To determine whether **segmentation difficulties predict memory performance in daily life.**

Participants

7 patients with an ABI (2 traumatic brain injury, 3 stroke, 1 tumor, 1 encephalitis) vs. 14 matched healthy controls

	ABI group M (SD)	Control group M (SD)
Age	45.29 (12.14)	46 (13.04)
	$t = -.12$ ($p = .91$)	
Years of education	15.43 (3.69)	15.93 (2.76)
	$t = -.35$ ($p = .73$)	
Time elapsed since brain injury	3,17 years (2,64)	

Method

Segmentation evaluation

Session 1: A standardized walk involving various activities (e.g., putting a cup in a cupboard, exploring an activity booklet, pinning up a poster, etc.) on a university building with a wearable camera (methodology inspired by Jeunehomme & D'Argembeau, 2020).



Session 2 (one week later): Segmentation task on the video of the walk.

"Press the space bar when you consider that a meaningful unit of activity ends and another begins."

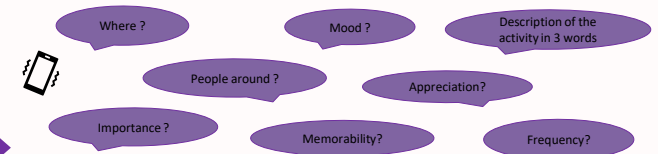


Agreement score = degree of concordance between the participant's segmentation and that of a healthy normative sample.

Evaluation of the accuracy of everyday memories (L-RECAP)

1) Sampling of everyday experienced events

Stimes/day for 7 days : participants were asked about what they were doing at the present time via the m-Path mobile application



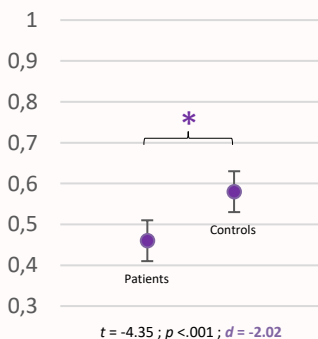
2) Recalling phase

At the end of the week, selection of 5 events (based on their memorability, frequency, and importance).

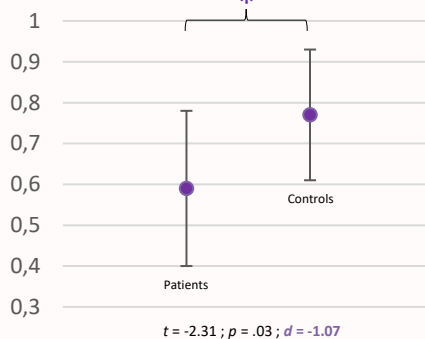
→ **Accuracy of memories:** comparison between the information reported by the participants and those encoded in the application (day, time of the day, mood, number of people present, and place).

Results

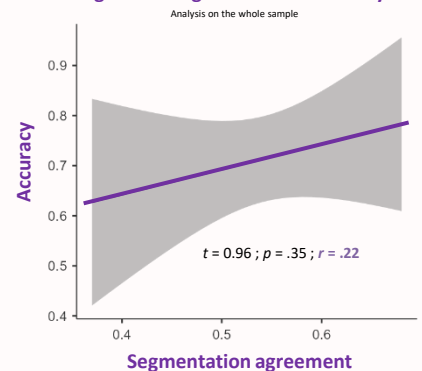
Segmentation agreement



Accuracy of everyday memories



Regression segmentation - memory



Discussion

- These results confirm the presence of segmentation difficulties following an ABI when using ecological material and highlight memory difficulties in the accuracy of everyday life events.
- Additional data are still needed to confirm this link between segmentation and memory performance, though these preliminary results are promising.
- If a larger sample confirms this link, it could open new avenues for rehabilitation programs aimed at reducing memory difficulties by training brain-injured patients to segment in a more normative way.