

Evaluation of the relationship between long-term memory complaints and metacognition following mild traumatic brain injury (mTBI): a study protocol and preliminary results



Lisa Dussard¹, Christina Léonard¹, Fabienne Collette^{1,2,3}, & Sylvie Willems¹
⁽¹⁾ University of Liège, Psychology and Cognitive Neuroscience Research Unit (PsyNCog)
⁽²⁾ University of Liège, Human Imaging Unit (GIGA-CRC)
⁽³⁾ Fund For Scientific Research (F.R.S-FNRS)



Introduction

Memory difficulties after mTBI

- ▶ Frequent subjective complaints
- ▶ Can persist and have an impact on quality of life (25-60%)⁽¹⁻²⁾



The origin of this persistence is still debated

Neurobiological factors
 (Leading to a real memory deficit) (e.g. microlesions)⁽³⁾

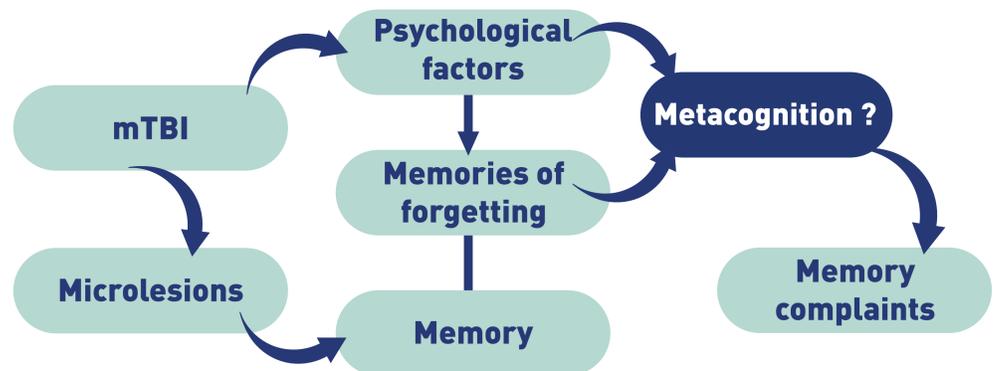
Psychological factors
 (Pre-existing and/or resulting from mTBI: mood disorders, PTSD,...)⁽⁴⁾

Multifactorial origin⁽³⁾

Role of metacognition?⁽⁵⁾

Main goal

Investigating different factors contributing to persistent memory complaints, with a specific focus on the role of metacognition as a mediator.



Participants

Three matched groups (n = 60 per group), controlled for age, sex, hand laterality and education level

Experimental group

mTBI

Control groups

Orthopedic injury

Healthy controls

Key measures

Memory abilities & Metacognition

- Liege Recall of Events via Continuous Assessment of Personal experiences (L-RECAP): a new ecological test
- Prospective and retrospective confidence judgments

Microlesions

- IRM 7T on a subsample (n = 60) of mTBI and control participants in T2

Memories of forgetting

- Autobiographical memory fluency task: generation of memories of forgetting
- Centrality of Event Scale (CES)

Psychological factors

- Post-traumatic Stress Disorder Checklist
- Beck Anxiety Inventory
- Symptom Checklist-90 (SCL-90)
- Beck Depression Inventory

Memory complaints

- Multifactorial Memory Questionnaire (MMQ)
- Autobiographical Recollection Test

Post-concussion Syndrome

- Rivermead Post-Concussion Symptoms Questionnaire
- Pain Catastrophizing Scale
- Fear Avoidance Behaviour after TBI Questionnaire
- All-Or-Nothing Behavior Scale of the Behavioral Response to Illness Questionnaire

Design and sessions



At each timepoint : 2 sessions

Session 1

- Memory self-assessment questionnaires
- Autobiographical memory fluency task
- L-RECAP instructions

7 days

- L-RECAP notifications (5x/day)
- Psychological questionnaires

Session 2

- L-RECAP free recall task

Zoom on the L-RECAP



Curious? Ask me more about it!

Creation of a tailored memory test: Sampling of 5 life events via an app

Free recall task: evaluation of specificity, richness, vividness and metacognition

+ Exploration of variables surrounding memories (e.g. mood, frequency, personal significance, ...)

← Assessing episodic memory in CONTEXT

"How confident are you in the accuracy of the memories you just described?"

Preliminary results (mTBI at T1)

Memory complaints (MMQ)

$\rho = -.67$ (n = 8) ↓

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$\rho = .49$ (n = 6) ↓

Memories of forgetting (CES)

Psychological distress (SCL-90)

Memory richness (L-RECAP)

Correlation analyses showed that individuals with more memory complaints tend to perceive their forgetfulness as a core part of their identity and experience greater psychological distress. They also tend to recall less detailed memories.

Implication

If metacognition significantly contributes to persistent memory complaints, targeted interventions could be designed to support individuals with mTBI at risk of developing long-term difficulties. These interventions could focus on addressing maladaptive beliefs about memory deficits and providing self-regulation techniques to enhance memory awareness.

References

- (1) Machamer et al. J Trauma, 2022
- (2) Zurnstein et al. J Trauma, 2011
- (3) Hayes et al. J Int Neuropsych Soc, 2016
- (4) Sorg et al. J Int Neuropsych Soc, 2021
- (5) Kit et al. Rehabil. Psychol, 2007

See the full protocol here!



Lisa Dussard
 PhD student
 lisa.dussard@uliege.be

