

Validation of the French-Canadian adaptation of the *Mayo-Portland Adaptability Inventory* (MPAI-4) in an adult traumatic brain injury (TBI) rehabilitation setting

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Introduction

The **MPAI-4 questionnaire** (Malec, 2005) assesses functional abilities, global outcome, community integration and progress in rehabilitation of individuals during the post-acute period following TBI (Malec et al., 2015)

- Covers a wide range of physical, cognitive, emotional and social problems that may arise after the TBI
- MPAI-4 has undergone rigorous psychometric testing (Kean et al., 2011; Malec et al., 2003)
- Given its clinical usefulness, the MPAI-4 has been translated to other languages

Objective: Establish psychometric properties and validate the factor structure of the French-Canadian MPAI-4 (McKerral et al., 2014), using a Canadian sample of TBI adults receiving post-acute rehabilitation services

Method

MPAI-4 questionnaire measures physical, cognitive, emotional and social aspects following TBI

- 29-item questionnaire, rating scales from 0 to 4
- 3 subscales (Abilities, Adjustment, Participation) and a total score (general level of adjustment and social participation)

French-Canadian version of the MPAI-4 implemented in four rehabilitation centres in the greater Montreal region

- MPAI-4 data systematically obtained for all individuals participating in interdisciplinary rehabilitation at the start and end of the programs

Participants ($N = 513$) were TBI adults who received rehabilitation at one of the four rehabilitation centres and for whom a first MPAI-4 measure was completed between 2013 and 2018

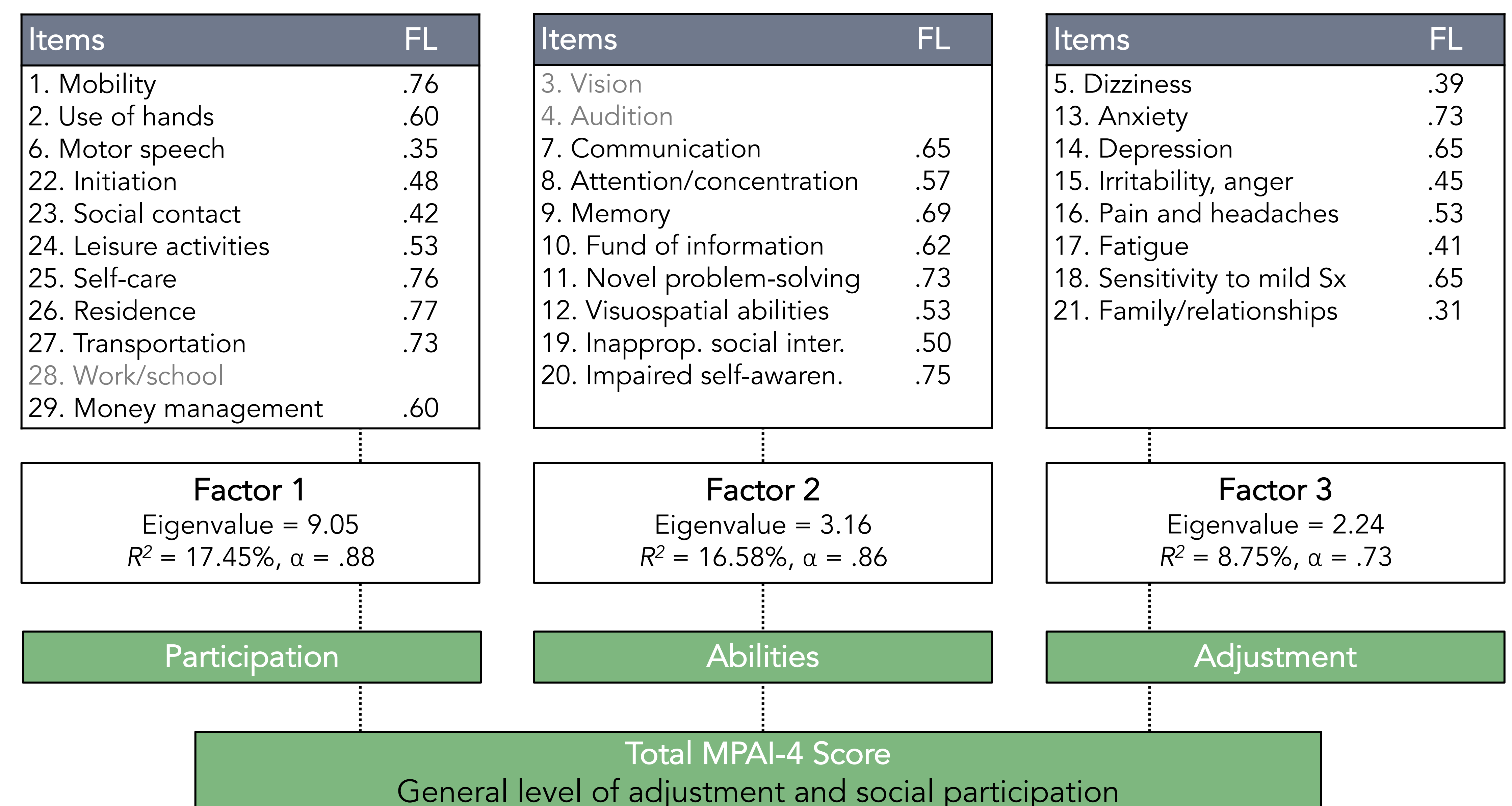
Demographic Variables	All Users ($N = 513$)
Mean age (in years) at TBI ($n = 417$)	51.0 ± 20.1
Gender ($n = 505$)	
Male	314 (61%)
Female	191 (37%)
TBI Severity ($n = 507$)	
Mild	108 (21%)
Mild Complex	121 (24%)
Moderate	174 (34%)
Severe	104 (20%)
Months between TBI & MPAI-4 measure ($n = 416$)	4.75 ± 8.35

Results

Construct validity: Exploratory factor analysis (EFA) using varimax rotation method on the 29 items

- Final and best solution was a three-factor solution ($R^2 = 42.77\%$)
- Three items failed to load ($\geq .30$) on any factor → Theoretically assigned to a factor

Internal consistency: Cronbach's alpha (all $\alpha \geq .73$)



Discussion

Three factors extracted using data from the French-Canadian MPAI-4 and a Canadian TBI sample are similar to the three subscales found in the original version of the MPAI-4

- Differences in items distribution across factors explained by cultural and clinical differences between the studied samples
- Factor labels suggested by Malec (2005) also suited the extracted factors and were thus retained for the French-Canadian MPAI-4 (Abilities, Adjustment, Participation)

Conclusion: The French-Canadian MPAI-4 factor structure is validated and the questionnaire shows good psychometric properties

- The French-Canadian MPAI-4 is a suitable tool to measure functional evolution, outcome and social integration of individuals with TBI receiving rehabilitation services in a French-Canadian context

References: Kean et al. (2011). Rasch measurement analysis of the Mayo-Portland Adaptability Inventory (MPAI-4) in a community-based rehabilitation sample. *Journal of Neurotrauma*, 28, 745–753. ; Malec (2005). The Mayo-Portland Adaptability Inventory (MPAI-4). [Questionnaire]. Available at the *Center for outcome measurement in brain injury*, <http://www.tbims.org/combi/mpai/>. ; Malec et al. (2003). Further psychometric evaluation and revision of the Mayo-Portland Adaptability Inventory in a national sample. *Journal of Head Trauma Rehabilitation*, 18, 479–492. ; Malec et al. (2015). Outcome prediction in home- and community-based brain injury rehabilitation using the Mayo-Portland Adaptability Inventory. *Neuropsychological Rehabilitation*, 25, 663–676. ; McKerral et al. (2014). MPAI-4, Version canadienne-française, Centre de réadaptation Lucie-Bruneau (CRLB) – Centre de recherche interdisciplinaire en réadaptation (CRIR). Available at the *Center for outcome measurement in brain injury*, <http://www.tbims.org/combi/mpai/>.