

Outcome and Productivity After Traumatic Brain Injury

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Objective: Social participation (SP) represents a key goal in TBI rehabilitation, as it allows the individual to return to active and purposeful roles in the community. However, studies on predictors of SP specific to post-acute universally accessible specialized rehabilitation pathways following TBI are scarce. Our objectives were thus to 1) characterize a literature-based set of pre-injury, injury-related, and post-injury variables, as well as SP (measured with the MPAI-4 Participation scale) in individuals participating in inpatient-outpatient or outpatient rehabilitation pathways within a universally accessible and organized trauma continuum of care and 2) assess the use of these variables to predict SP outcome after TBI for each rehabilitation pathway.

Participants and Methods: Participants ($N = 372$) were adults admitted between 2016 and 2020 to an inpatient-outpatient rehabilitation pathway or an outpatient rehabilitation pathway after sustaining a mild, moderate or severe TBI. The French-Canadian adaptation of the MPAI-4 questionnaire (Malec, 2005; Guerrette & McKerral, 2021; McKerral et al., 2014) presents three subscales (Abilities, Adjustment, Participation) and a total score, assessing functional and SP outcome after TBI. The MPAI-4 is completed for all individuals at admission and discharge in three major rehabilitation centers in the greater Montreal region. Independent variables consisted of sociodemographic and clinical characteristics collected from medical files and rehabilitation databases. Outcome measures consisted of a general SP level (MPAI-4 Participation subscale score at discharge from outpatient rehabilitation) and productivity status at discharge (productive if employed, child rearing, homemaker, student or volunteering; unproductive if unemployed or retired). Multiple and logistic regressions investigated the predictive value of each variable for SP outcome and productivity, separately for each rehabilitation pathway.

Results: Samples' sociodemographic and clinical characteristics differed between

rehabilitation pathways. The inpatient-outpatient sample presented older age, lower productivity before TBI and poorer SP levels at admission and discharge from rehabilitation. However, both samples showed significant improvement on SP levels during rehabilitation. For the inpatient-outpatient rehabilitation path, general SP outcome was significantly predicted by three variables (education years, MPAI-4 Ability and Adjustment scores at rehabilitation intake; $R^2 = 49\%$), whereas productivity status at discharge was significantly predicted by age at time of injury ($R^2 = 72\%$). For the outpatient rehabilitation path, general SP outcome was significantly predicted by five variables: premorbid hypertension, mental health diagnosis, total indirect rehabilitation hours received, MPAI-4 Abilities and Adjustment scores at rehabilitation intake ($R^2 = 47\%$), while productivity status at discharge was significantly predicted by age at time of injury and education years ($R^2 = 44\%$).

Conclusions: Different TBI rehabilitation care pathways showed distinct sample characteristics, as well as different premorbid and post-injury predictors of SP outcome and productivity. This highlights the importance of being aware of the potential limited generalizability of previously identified predictors when extrapolated to different clinical, rehabilitation and sociocultural contexts. The predictive models obtained could help clinicians identify more accurately patients at risk of showing poorer SP and productivity outcomes at end of rehabilitation, influence intervention approaches put forward with these individuals and set more appropriate goals and expectations.

Categories: Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)

Keyword 1: traumatic brain injury

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20 The Influence of Brain Injury Severity, Anxiety, and Depression on Objective and Subjective Prospective Memory Problems

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Objective: Following a traumatic brain injury (TBI), the majority of patients report difficulties with prospective memory (PM). However, there is not always a significant relationship between subjective and objective PM measures. Several variables may influence the degree of severity of perceived difficulties, including the severity of the injury and psychoemotional status. The aim of this study was to determine whether the severity of the TBI and anxiety and depressive symptoms were related to objective and subjective difficulties of PM.

Participants and Methods: 50 patients (mean age = 31,3 years old) with a TBI (20 mild and 30 moderate/severe) in the post-acute phase of recovery and 15 matched healthy control participants (mean age = 32,3 years old) were recruited. They completed inventories assessing the presence of anxiety (BAI) and depressive (BDI) symptoms and performed the *Ecological test of prospective memory* (TEMP), an objective measure of PM. The *Comprehensive Assessment of PM* (CAPM), a subjective measure of PM, was also filled out by participants and their relatives.

Results: In patients with moderate/severe TBI, significant correlations were found between the CAPM and the BDI ($r = .601, p < .001$) and the BAI ($r = .507, p = .004$). A negative correlation was also observed between the relatives' CAPM scores and the performance of the patients on the TEMP ($r = -.374, p = .042$). In patients with mild TBI, there was only a strong significant correlation between the CAPM and the BAI scores ($r = .574, p = .008$). However, no other correlation was significant between this group of patients and their relatives. Additionally, results on the TEMP were not significantly correlated with the CAMP completed by healthy control participants or their relatives. A linear regression conducted in the group of participants with TBI showed that BAI and BDI scores are the only significant predictors of the results on the CAPM (31% of the variance), while TBI severity is the only significant predictor of the results on the TEMP (37% of the variance).

Conclusions: The perception of PM difficulties in patients with a TBI does not seem to be related to their objective performance. Anxiety and depressive symptoms appear to influence their perception more than their objective performance. As suggested by their relatives, a decrease in self-awareness could explain the lack of relationship between subjective PM difficulties of patients with moderate/severe TBI and their objective performance. On the other hand, TBI severity is more strongly related to objective performance on PM tests. These results highlight the importance of using different measures to accurately assess PM and the various factors influencing this construct.

Categories: Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)

Keyword 1: memory: prospective

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21 Patterns of Neural Activation Associated with Judgments of Learning and Retrospective Confidence Judgments in Individuals with TBI

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Objective: Metacognition is defined as the ability to observe, monitor, and make judgments about one's own cognitive status. Judgments of learning (JOLs) and retrospective confidence judgments (RCJs) are two elements of metacognition related to memory, or meta-memory. JOLs refer to one's assumptions of their memory performance prior to completing a memory task, while RCJs describe one's subjective assessment of their memory performance after they have completed the task. Traumatic brain injury (TBI) is known to negatively impact general metacognitive functioning. However, the nuanced effects of TBI on constituent metacognitive subprocesses like JOLs and RCJs remain unclear. This study