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Development of Systematic Behavioural Observation to Quantify
Ongoing Cognitive Activity Limitations after Brain Injury

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Abstract

One of the goals of cognitive rehabilitation following traumatic brain injury is to help people perform everyday tasks. However, options for the rigorous assessment of everyday cognitive effectiveness after rehabilitation are limited. Performance on neuropsychological tests is only moderately correlated with everyday functioning, while previous measures of everyday functioning include only fairly general estimates of overall cognitive functioning. The aim of the current study was to develop an ecologically valid measure that captured a number of subdomains of executive functioning, using systematic behavioural observation of an everyday task. The initial phase of the research involved identifying an everyday task that was sufficiently complex to ensure that executive functioning was utilised in the completion of the task. Participants with traumatic brain injury were then asked to prepare chocolate brownies, using a recipe provided, and a hot drink. Participants were allowed to use any compensatory strategy to help complete the task. Participant performance was directly observed by an examiner and videotaped for subsequent inter-rater reliability. Two independent raters assessed nine components of executive functioning. During this phase, the examiner manuals were modified improving inter-rater reliability. The final version of the measure was then trialled with participants with and without traumatic brain injury. Final inter-rater reliability indicated the approach had merit. Significant and moderate correlations were found between traditional measures of executive functioning and the everyday task. This study employed systematic behavioural observation to obtain fine-grained information regarding a person's cognitive functioning. With further development, this approach may prove useful for targeting and monitoring specific functional difficulties during cognitive rehabilitation.

Preface

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List of Abbreviations

TBI	—	Traumatic brain injury
LOC	—	Loss of consciousness
PTA	—	Post-traumatic amnesia
DAI	—	Diffuse axonal injury
EF	—	Executive functioning
WCST	—	Wisconsin Card Sorting Test
ACC	—	Anterior cingulate cortex
PFC	—	Prefrontal cortex
ADL	—	Activities of daily life
ICF	—	International Classification of Functioning, Disability, and Health
BADS	—	Behavioural Assessment of Dysexecutive Syndrome
FIM	—	Functional Independence Measure
FAM	—	Functional Assessment Measure
MET-HV	—	Multiple Errands Test, Hospital Version
TOFEA	—	Test of Functional Executive Abilities
AMPS	—	Assessment of Motor and Process Skills
EBIQ	—	European Brain Injury Questionnaire
D-KEFS	—	Delis-Kaplin Executive Function System
ICC	—	Intraclass correlation coefficient