

Executive Functioning Ability, Coping Style, and Stress Effects on Clinical Outcomes in Individuals with Moderate to Severe Brain Injury

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Background

It has been established that acquired brain injury (ABI) can cause cognitive, physical, and emotional deficits that are difficult to manage. Frontal lobe is frequently compromised for these individuals, leading to impairments in different areas of executive functioning, including poor problem solving abilities and use of maladaptive coping strategies. On the other hand, using problem-solving strategies that aim to face challenging life situations has been deemed a more adaptive coping strategy that can likely help reduce stress.

Objective: This study aimed to determine whether social participation, adjustment, and executive functioning ability predict the use of task-oriented (problem-solving) coping and perceived stress in a sample of individuals with moderate to severe brain injury.

Design: Multiple regression analyses were used. Data was obtained prospectively through self-report questionnaires to measure stress and coping style and retrospectively through the review of neuropsychological test results and annual evaluations from the treatment team. Means, standard deviations, and ranges of perceived stress (PS), executive functioning (EF) ability, task-oriented (T-O) coping style, and MPAI-4 Adjustment and Participation scores were reported.

Methods

Setting: Two locations from a post-acute, community-based, brain injury rehabilitation program.

Main Outcomes/Measures: Stress was measured with the Perceived Stress Scale (PSS). Coping style was measured with the Coping Inventory for Stressful Situations (CISS). Adjustment and Participation were collected retrospectively with the Mayo-Portland Adaptability Inventory-4 (MPAI-4). Executive functioning ability was collected retrospectively using the Neuropsychological Assessment Battery-Judgment Module (NAB).

Participants

32 participants: 9 females and 23 males, ages 25 to 67, diagnosed with ABI were required to score at least 2/3 on Object Naming and 5/10 on Orientation questions from the Mini-Mental State Examination (MMSE) to rule out aphasic and disorientation symptoms that could interfere with their ability to complete self-report questionnaires.

Results

Overall, 15.6 % of the participants in the final sample were under legal guardianship and, initially, their guardians were contacted to discuss the study. Demographically, the full sample consisted of 71.9 % males (N= 23) and 28.1 % females (N= 9), with a mean age of 47.41 and an age range of 25 to 67. The sample consisted of 96.9 % Caucasian (N= 31) and 3.1 % Asian (N= 1) individuals, and except for a single participant, most individuals were of Non-Hispanic ethnicity (N=31, 96.9 %). On average, the number of years living with a brain injury was 22.03, with a range of 5 to 48 years.

Table 1. Descriptive Statistics

Outcome Measure	Mean	Std. Dev	Min	Max
PSS	12.72	8.27		
PHQ-9	6.44	4.80		
CISS-Task Oriented	42.59	11.33	25	63
NAB-Judgment	47.93	15.29	19	72
MPAI-4 Adjustment	49.18	6.47	38	67
MPAI-4 Participation	49.03	5.94	40	69

Table 2. Overall Results of Multiple Regression Analyses

Model	R	R ²	Adjusted R ²	Std. Error of Est.	R ² Change	F Change	df ₁	df ₂	Sig. F Change	Durbin-Watson
1	0.270 _a	0.073	-0.026	11.475	0.073	736	3	28	0.540	1.843

a. Dependent Variable: PSS

b. Predictors: (Constant), MPAI-4 Participation, MPAI-2 Adjustment, and NAB Judgement

Table 3. Overall Results of Multiple Regression Analyses

Model	R	R ²	Adjusted R ²	Std. Error of Est.	R ² Change	F Change	df ₁	df ₂	Sig. F Change	Durbin-Watson
1	0.555 _a	0.308	0.234	7.234	0.234	4.158	3	28	0.015 _b	1.741

a. Dependent Variable: CISS Task-oriented Coping

b. Predictors: (Constant), MPAI-4 Participation, MPAI-2 Adjustment, and NAB Judgement

Results cont.

No significant effects of MPAI-4 Participation, Adjustment, and NAB-EF ability on Task-Oriented Coping were found ($p>0.05$). However, there was a significant effect of Participation and Adjustment on PS. A positive correlation indicated that individuals with lower scores on the MPAI-4-Adjustment subscale (i.e., showing better overall adjustment) reported less PS ($\beta = .631$, $p<0.05$). Moreover, MPAI-4-Participation was negatively correlated with PS ($\beta = -.452$, $p<0.05$), indicating that those assessed as having more life responsibilities and social/occupational activities also endorsed higher PS. There was no correlation between NAB-EF and PS.

Conclusion

This study supports that Task-Oriented coping is not correlated with higher performance on an Executive-Functioning task or with more intact abilities on MPAI-4-Adjustment and Participation. Similarly, results did not evidence a significant contribution of EF ability on PS. However, significant correlations were found between MPAI-4-Adjustment, Participation, and PS. That is, those individuals who were rated by their treatment team as more emotionally unstable (i.e., irritable, sad, anxious), also endorsed higher stress. Interestingly, those rated as having more social/occupational involvement and receiving less assistance managing home and financial responsibilities also endorsed higher stress. Given that stress can further impact brain functioning, examining these variables may assist in the planning and development of effective interventions that can help prevent further complications in individuals with ABI.

Limitations to this study include the small sample size and heterogeneity within the brain injury population, which influence cognitive and emotional functioning. Future research is needed to evaluate additional factors that influence emotional adjustment and the use of specific coping styles.

See presenter for list of references

