Verbal reasoning, cognitive-communication skills and return to work outcomes in adults with severe Traumatic Brain Injury at two years post-injury

Presented by
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Traumatic Brain Injury (TBI)

Results in **diffuse damage** to the brain \(^1\)

May lead to **cognitive-communication skills** causing difficulties with verbal reasoning \(^2\)
   - E.g. Inflexibility in generating solutions

Causes long-term **poor psychosocial outcomes** \(^3\)
   - 32% to 46% of adults with TBI return to work at 2 years post-injury \(^4\)

**Vocational rehabilitation** is a central goal
   - Participation Impacted by functional communication difficulties \(^5, 6, 7\)
Research questions

1. In adults with severe TBI at two years post-injury, do cognitive-communication and verbal reasoning skills differ between employment groups?

2. In adults with severe TBI at two years post-injury, are there significant differences in demographic and injury-related characteristics between employment groups?
Design & Methodological approach

Observational cross-sectional multi-site study
# Functional Assessment of Verbal Reasoning and Executive Strategies (FAVRES)

<table>
<thead>
<tr>
<th>FAVRES Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Planning an event</td>
<td>Analyse newspaper listings to choose an appropriate event for a child’s birthday</td>
</tr>
<tr>
<td>2. Scheduling</td>
<td>Organise daily activities according to priorities and time constraints</td>
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<tr>
<td>3. Making a Decision</td>
<td>Choose an appropriate gift based on information from a conversation</td>
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<tr>
<td>4. Building a case</td>
<td>Write a complaint with solutions based on issue raised in a monologue</td>
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## Scores

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<tr>
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</thead>
<tbody>
<tr>
<td>Correct choice of response</td>
<td>Reasons provided for choice of answer</td>
<td>Length of time to complete task (minutes)</td>
<td>Assesses reasoning and problem solving process</td>
</tr>
</tbody>
</table>
**Return to Work (RTW) outcome**

**Employed:** at preinjury level based on occupation title and workload

**Employed with modification:** reduced responsibilities and/or time fraction.

**Unemployed:** not working or on leave
Procedure

Participants recruited from 3 brain injury units

- Aged 16 to 65 years old
- Sustained a severe TBI defined as
  - Global Coma Scale (GCS) \( \leq 8 \) and/or
  - Post Traumatic Amnesia (PTA) > 7 days
- Employed preinjury

Assessments at 2 year post-injury

- Self-reported employment variables
- Functional Assessment of Verbal Reasoning and Executive Strategies (FAVRES)
Analysis

Descriptive statistics

Between-group analyses using non-parametric tests

\( \alpha \) An alpha level of 0.05 was applied
Occupation characteristics

5. Findings

Participants’ jobs require higher degree of training and communication demands.
Descriptive statistics

Return to work (RTW) outcomes

- Unemployed: 29.0%
- Employed with modification: 34.2%
- Employed: 36.8%

FAVRES Cut-off Score

- Below cut off: 16%
- Above cut off: 84%

Cognitive-communication impairments and poor RTW outcomes continue to persist in adults with severe TBI at two years post-injury.
5. Findings

FAVRES Total Scores

<table>
<thead>
<tr>
<th>FAVRES Total Scores</th>
<th>E, EM and UE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong></td>
<td></td>
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<tr>
<td><strong>Rationale</strong></td>
<td></td>
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<tr>
<td><strong>Time</strong></td>
<td></td>
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<tr>
<td><strong>Reasoning</strong></td>
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FAVRES Total **Accuracy** and Total **Reasoning** scores significantly discriminated between groups.
Stronger verbal reasoning and cognitive-communication skills seem to contribute to better RTW outcomes.
Those employed with modification (EM) continue to have cognitive-communication deficits similar to those unemployed (UE).
Demographic and injury characteristics

Employed (E) → Employed with modification (EM) → Unemployed (UE)

Less severe injury ↓ Post Traumatic Amnesia

Employed

Higher educational level ↑ Years of education

A complexity of pre- and post-injury characteristics contributing to success in the workplace.
Clinical Implications

Functional communication skills is associated with positive employment outcomes

Some adults with TBI who are working with modification continue to have poor cognitive-communication skills

Speech pathologists should have continued involvement in the rehabilitation process in the post-acute stages of recovery

The FAVRES may help clinicians to identify rehabilitation goals to support one’s vocational reintegration.
References