A Comparative Review of Visual Perception Assessment Tools for Adults with Brain Injury

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A Comparative Review of Visual Perception Assessment Tools for Adults with Brain Injury

Krista Wohlert and Jennifer Bosworth

1 Ask: Research Question

What is the most valid and reliable tool for assessing visual perception among adults with a brain injury?

2a Acquire: Search Terms

Databases: PubMed, Clinical Key, Scopus, CINAHL, OT Seeker, Cochrane Library

Search Terms: visual assessment, brain injury, perception and vision, MVPT, OT-APST, LOTCA, DTVP, visual perception, vision, perception, vision tool

2b Acquire: Selected Articles

Brown et al. (2012): A cross-sectional, prospective study that compares the validity and reliability of the Developmental Test of Visual Perception-Adolescent and Adult (DTVP-A), the Motor-Free Visual Perception Test-third edition (MVPT-3) and the Test of Visual Perceptual Skills (non-motor)-third edition (TVPS-3) when administered to participants with a variety of neurological impairments.


3a Appraise: Study Quality

Brown et al. (2012): Level 1. A psychometric study of convergent validity for three common visual perception assessments. Limitations include all participants being from a similar geographical region and only using assessments similar in administration methods. Generalizability to American population is unknown due to study being conducted in Australia.

Razemba, Jacobs, & Franzsen. (2017): Level 1. A psychometric study of correlation between three common visual perception assessments in South Africa. Limitations include only addressing one type of brain injury and small sample size. Generalizability to American population is unknown due to study being conducted in South Africa.

3b Appraise: Study Results

Table 1. Psychometric properties of the six assessments reviewed

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Neurological Population Assessed</th>
<th>Correlation</th>
<th>Ages</th>
<th>Administration Method</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTVP-A</td>
<td>Stroke, Brain tumor, Multiple sclerosis, Closed head injury</td>
<td>MVPT-3 and TVPS-3 (p&lt;.01)</td>
<td>11-0 through 16-11</td>
<td>Flipbook, black and white graphics</td>
<td>20-25 minutes Internal consistency, stability, and inter-rater reliability are high</td>
</tr>
<tr>
<td>MVPT-3</td>
<td>Stroke, Brain tumor, Multiple sclerosis, Closed head injury</td>
<td>DTVP-A and MVPT-3 (p&lt;.01)</td>
<td>3-0 through 40-0</td>
<td>Flipbook (test plate), black and white graphics</td>
<td>20-30 minutes Internal consistency and test-retest reliability are high</td>
</tr>
<tr>
<td>TVPS-3</td>
<td>Stroke, Brain tumor, Multiple sclerosis, Closed head injury</td>
<td>DTVP-A and MVPT-3 (p&lt;.01)</td>
<td>4-0 through 18-0</td>
<td>Flipbook, black and white graphics</td>
<td>30 minutes Internal consistency, overall satisfactory test-retest reliability, insufficient test-retest reliability for subcategories, good concurrent validity</td>
</tr>
<tr>
<td>OT-APST</td>
<td>Stroke</td>
<td>DLOTCA and RPAB (p&lt;.01)</td>
<td>10-0 through 107-0</td>
<td>Flipbook, reading card, timer, blocks, stapler, and puzzle pieces</td>
<td>20-25 minutes Internal consistency, inter-rater, and test-retest reliability as well as face, content, construct, criterion, and ecological validity are high.</td>
</tr>
<tr>
<td>DLOTCA</td>
<td>Stroke</td>
<td>OT-APST and RPAB (p&lt;.01)</td>
<td>16-0 through 89-0</td>
<td>Paper and pencil format with red set, photo book, blocks, scissors, peg board, shape set, puzzle, etc.</td>
<td>45-50 minutes Internal consistency, inter-rater reliability, and construct validation are high</td>
</tr>
<tr>
<td>RPAB</td>
<td>Stroke</td>
<td>OT-APST and DLOTCA (p&lt;.01)</td>
<td>16-0 through 89-0</td>
<td>Paper and pencil format with toothbrushes, blocks, caps, foam shapes, etc.</td>
<td>45-60 minutes Inter-rater reliability high, good test-retest reliability on 11 subsets, good validity</td>
</tr>
</tbody>
</table>

The two studies found the DTVP-A, MVPT-3 and the TVPS-3 to have high levels of convergent validity with one another and the OT-APST to have construct validity when compared to the DLOTCA and RPAB.

4 Apply: Conclusions for Practice

This suggests the assessments in each study were found to be significantly correlated to each other signifying that the three assessments in each study are interchangeable in practice. The DTVP-A, MVPT-3, and TVPS-3 are all similar in administration, cost, and time but do not use functional components when assessing visual perception and instead use abstract flipbooks. The DLOTCA is a long assessment with 26 subtests that focuses heavily on cognition. The RPAB is not cost effective and takes up to 60 minutes to administer. The OT-APST was created from a combination of assessments to cut back on administration time while screening for necessary visual assessment components.

References:


The OP-APST is recommended based on the short administration time and functional components.