THE VALIDITY AND RELIABILITY OF VISUAL PERCEPTUAL STANDARDISED TESTS IN CHILDREN FROM THE GAUTENG PROVINCE SOUTH AFRICA

Researcher: Monique Harris (MSc research project completed in 2017, University of the Witwatersrand, Johannesburg)

Supervisor: Denise Franzsen

Ethical clearance certificate number: M140648
INTRODUCTION

- Standardised tests are routinely used for assessment of visual perception and VMI skills dysfunction in OT.
- All tests - standardised on samples of children from the USA.
- From clinical practice: DTVP-2, Beery VMI-5 and TVPS-R do not clearly discriminate dysfunction, in some of the subtest items children either over or under score.
- New revised editions of the tests most commonly used - DTVP-3, Beery VMI-6 and TVPS-3.
- No research is available on the use of the new editions on children in SA.
- Not known how valid and reliable these tests are for children in this country.
METHODOLOGY

Research design
• Cross-sectional, comparative, quantitative design

Sample
• Learners from the West Rand area of Gauteng
• Foundation phase learners from grade one to four from the ages of six to nine years
• Urban, middle class background
• N = 48; 12 Participants in each age group (mainstream group)
• [N = 44 12 Participants in each age group (LSEN group)]
Objective 1: Determine the validity of the DTVP-3, TVPS-3 and Beery VMI-6 by comparing normative scores in manuals to a sample of learners aged 6-9 years.

- **TVPS-3**: VP skills assessed were comparable to USA based norms.
- Some differences in mean scale scores for spatial relations (13.10), visual discrimination (8.81) and form constancy (8.81).
- **DTVP-3**: Majority of scores fell within normal distribution. Results substantiate utilisation of USA based norms.
- Some differences in mean scale scores for EHC (8.86) and copying (11.12)
- **Beery VMI-6**: VMI skills of SA children were comparable to USA based norms.
**Objective 2:** Determine the **concurrent validity** of the DTVP-3, TVPS-3, Beery VMI-6

<table>
<thead>
<tr>
<th>Subtests</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTVP-3 Copying</td>
<td>Beery VMI-6</td>
</tr>
<tr>
<td>DTVP-3 Eye-hand coordination</td>
<td>Beery VMI-6</td>
</tr>
<tr>
<td>DTVP-3 Composite VMI</td>
<td>Beery VMI-6</td>
</tr>
<tr>
<td>DTVP-3 Visual closure</td>
<td>TVPS-3 Visual closure</td>
</tr>
<tr>
<td>DTVP-3 Figure-ground</td>
<td>TVPS-3 Figure-ground</td>
</tr>
<tr>
<td>DTVP-3 Form constancy</td>
<td>TVPS-3 Form constancy</td>
</tr>
<tr>
<td>TVPS-3 Composite</td>
<td>DTVP-3 Motor-Reduced Composite</td>
</tr>
<tr>
<td></td>
<td>rho</td>
</tr>
</tbody>
</table>
• The Bland Altman plot for visual closure indicated that the scores are very similar and these tests can be used interchangeably.

• The same was not true for the form constancy scores on the TVPS-3 and DTVP-3 as there was a difference of 20% which indicates one test rates participants 1.4 higher on the scale scores.
Objective 3: Determine the **reliability** of tests in terms of the internal consistency of consistent items of the DTVP-3, TVPS-3 and Beery VMI-6

The TVPS-3, DTVP-3 and Beery VMI-6 all had ranges of Cronbach’s alpha coefficients of $\geq 0.70$ therefore exhibiting adequate levels of internal consistency for this sample of children. Only the TVPS-3 visual perceptual composite had a Cronbach’s alpha of $\leq 0.70$. 
All tests are suitable for use with South African children from middle socio-economic backgrounds and can be used to identify visual perceptual and VMI dysfunction.

Further research on a more representative sample of South African learners is recommended as socio-economic status and environmental conditions have been shown to affect the performance on these tests.