

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



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# 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)]

# OBJECTIVES AND RESULTS

**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

# OBJECTIVES AND RESULTS continued

**Objective 2:** Determine the **concurrent validity** of the DTVP-3, TVPS-3, Beery VMI-6

Subtests		Correlation
		rho
<b>DTVP-3 Copying</b>	Beery VMI-6	0.31
<b>DTVP-3 Eye-hand coordination</b>	Beery VMI-6	0.04
<b>DTVP-3 Composite VMI</b>	Beery VMI-6	0.20
<b>DTVP-3 Visual closure</b>	TVPS-3 Visual closure	0.52
<b>DTVP-3 Figure-ground</b>	TVPS-3 Figure-ground	0.35
<b>DTVP-3 Form constancy</b>	TVPS-3 Form constancy	0.40
<b>TVPS-3 Composite</b>	DTVP-3 Motor-Reduced Composite	0.64

# OBJECTIVES AND RESULTS continued



- 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

## OBJECTIVES AND RESULTS continued

**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  $\leq 0.70$ .

# CONCLUSION



- 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.