



HANDWRITING SCREENING ASSESSMENT FOR STUDENTS IN HIGHER EDUCATION

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



Denise Franzsen
Aimee Stewart
Department of Occupational Therapy
University of the Witwatersrand



Introduction

- Handwriting still appears to be the most common form of examination assessment used in universities.
- Students with dysgraphia or handwriting dysfunction are affected in a number of ways by handwritten examinations- loss of focus and use of higher cognitive processes to produce writing.
 - ([Berninger et al., 2008a](#)) ([Tucha et al., 2008](#)). ([Medwell and Wray, 2007](#)).





- Universities are expected to provide support services and concessions for students with handwriting dysfunction or dysgraphia.
- Identifying what concessions should be awarded for these difficulties has proved controversial.
- There is a need for standardised screening assessments to help determine which students require concessions for dysgraphia.





Method

- The Handwriting Screening Assessment was developed and included
 - Observation Checklist
 - Writing Checklist
 - Handwriting Outcomes
- Only near point copying was assessed in a short screening task

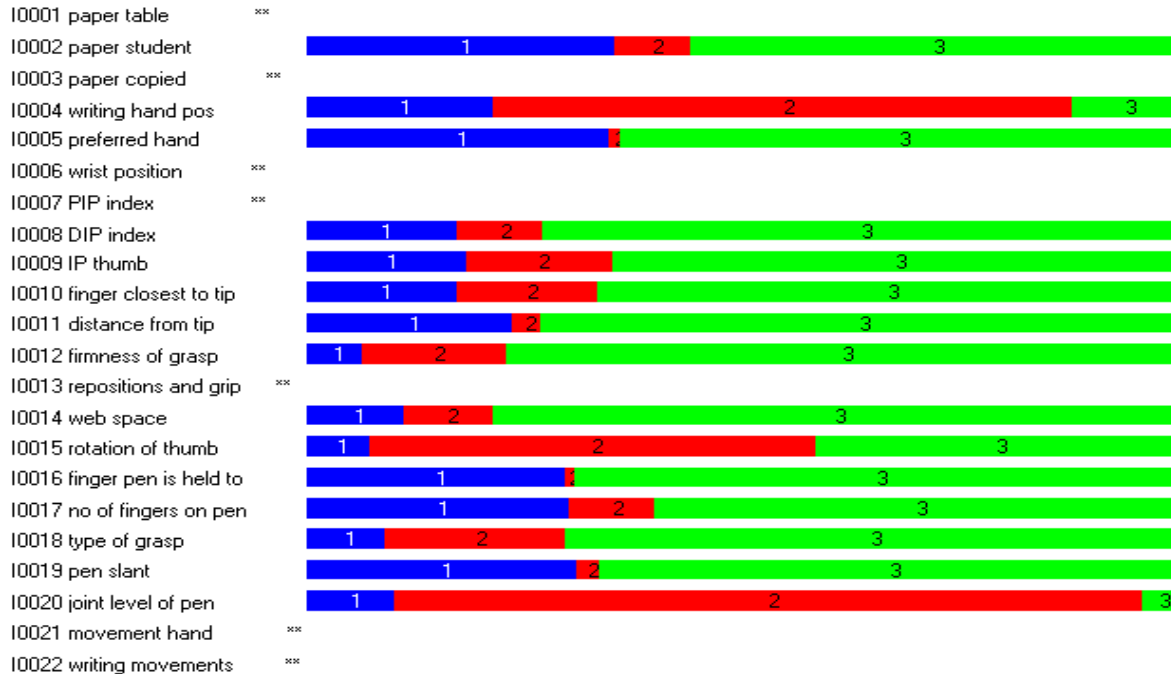




- field tested on 298 typical students and 61 students referred for concessions.
- item analysis using the Rasch model was completed



Rasch Analysis



- Rasch analysis allows for scoring of each item on the test to be evaluated



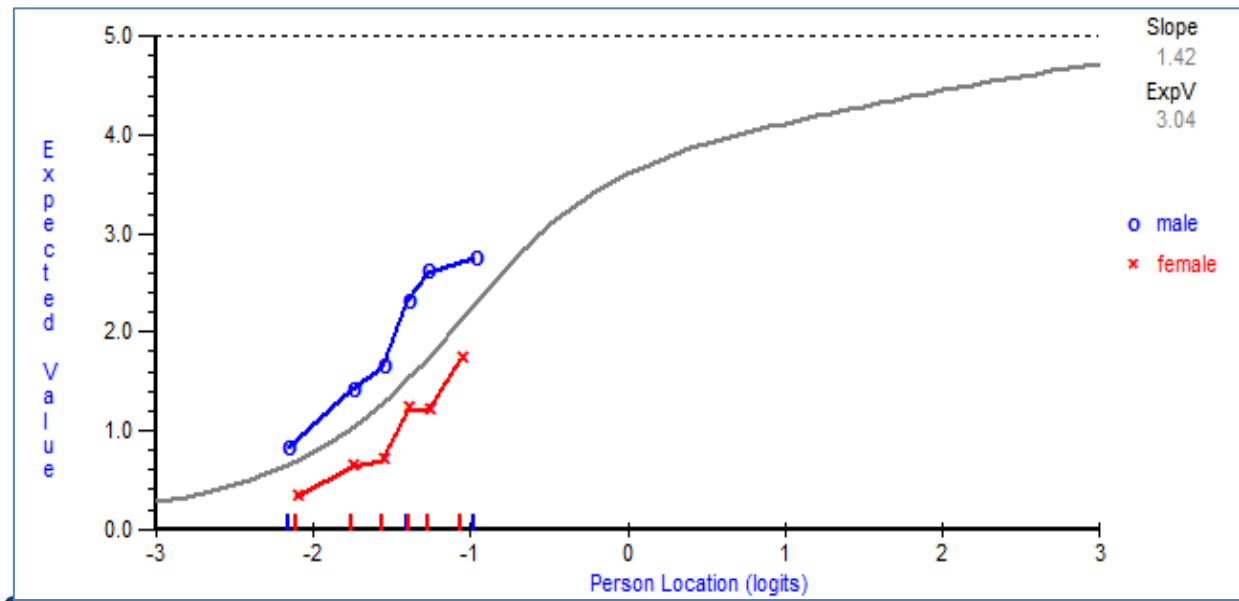


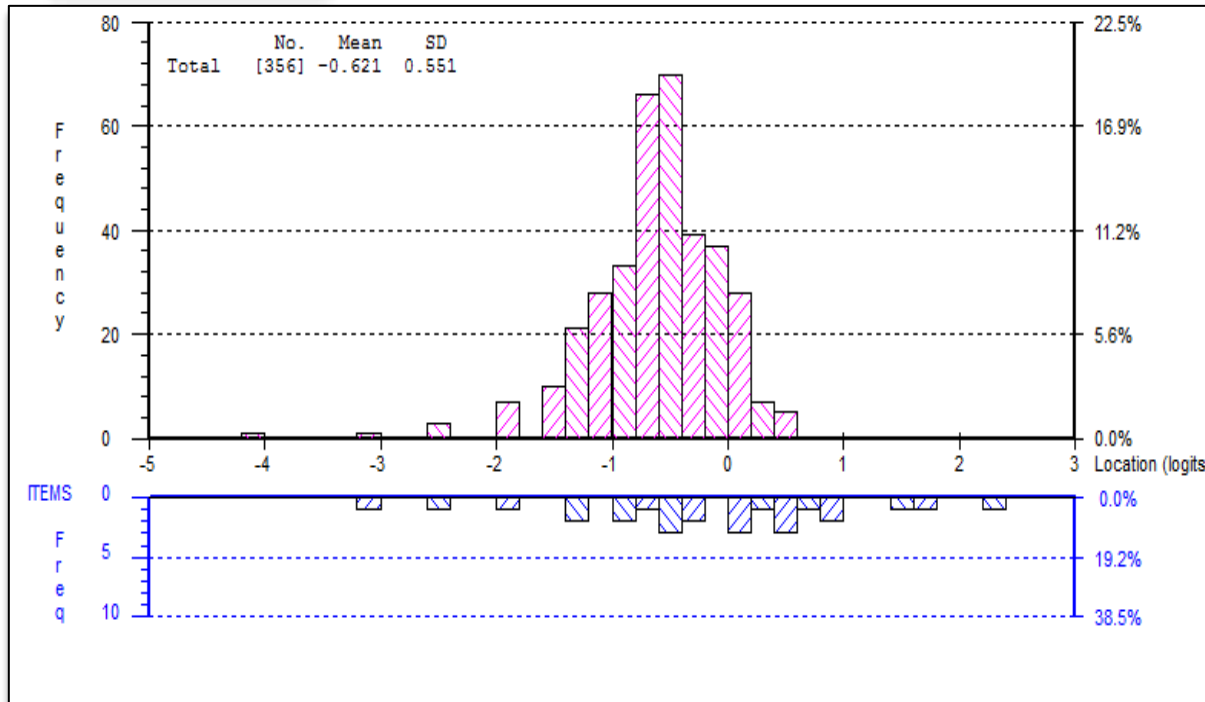
Observation Checklist	Writing Checklist
Subtest 1: Position and fixation of paper	Subtest 1: Writing analysis
Subtest 2: Maintenance of posture	Subtest 2: Endurance and fatigue
Subtest 3: Stability of grasp	Subtest 3: Punctuation
Subtest 4: Pen Grasp	Subtest 4: Corrections and Spelling
Subtest 5: Movement in hand and fingers	Subtest 5: Missing letters and words
Subtest 6: Visual Function	
Subtest 7: Preferred hand and wrist position	





- Differential Item Functioning (DIF)
- Males were advantaged by Subtest 6: visual function





- Items ordered from the most difficult to the easiest
- ability of the students (persons) from those with the most ability to those with the least ability





- Rasch Analysis – poor differentiation between typical students and those referred for assessment on Observation and Writing Checklists
- Analysis of each subtest on the checklists used to differentiate students with handwriting dysfunction





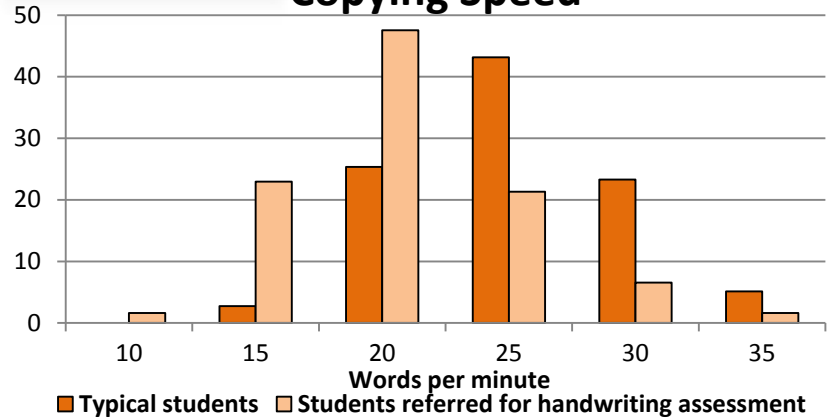
Psychometric Analysis

	Typical Students (n=289)	Students referred for analysis (n=61)	t-tests
	Mean (SD)	Mean (SD)	p value
OBSERVATION CHECKLIST			
Subtest 1; Position and fixation of paper	8.00 (0.82)	7.44 (0.99)	0.001**
Subtest 2; Maintenance of posture	11.28 (1.32)	10.91 (1.16)	0.045*
Subtest 3: Stability of grasp	13.72 (1.57)	13.22 (1.32)	0.023*
Subtest 4: Pen Grasp	15.55 (2.13)	15.98 (2.13)	0.157
Subtest 5: Movement in hand and fingers	7.79 (1.13)	7.31 (1.31)	0.001**
Subtest 6: Visual function	6.97 (1.02)	4.93 (1.24)	0.001**
Subtest 7: Preferred hand and wrist position	4.82 (0.40).	4.75 (0.54)	0.236
WRITING CHECKLIST			
Subtest 1: Writing analysis	10.68 (1.77)	9.91 (1.91)	0.001**
Subtest 2: Endurance and fatigue	7.13 (1.40)	5.81 (1.40)	0.001**
Subtest 3: Punctuation	4.63 (0.56)	4.67 (0.54)	0.603
Subtest 4 Corrections and Spelling	4.34 (0.91)	4.18 (0.97)	0.197
Subtest 5: Missing letters and words	5.78 (1.48)	5.85 (1.52)	0.763

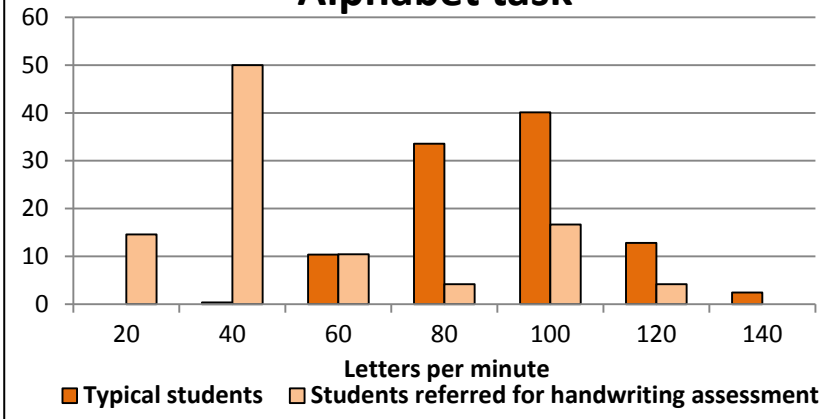




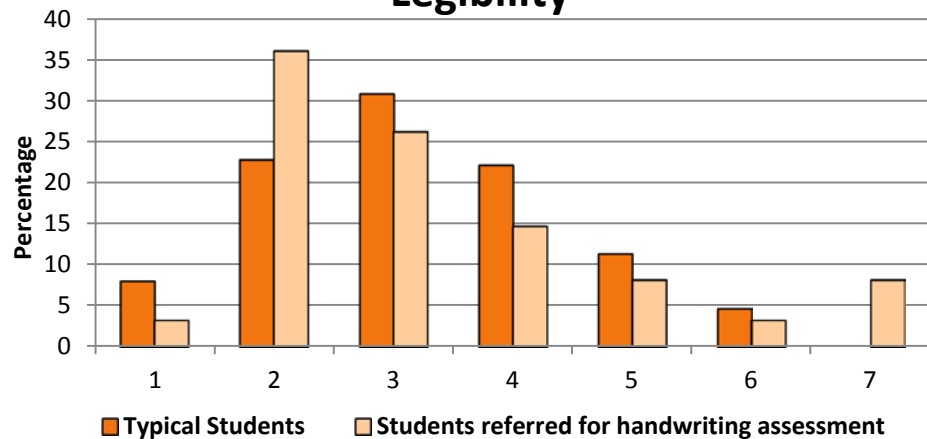
Copying Speed

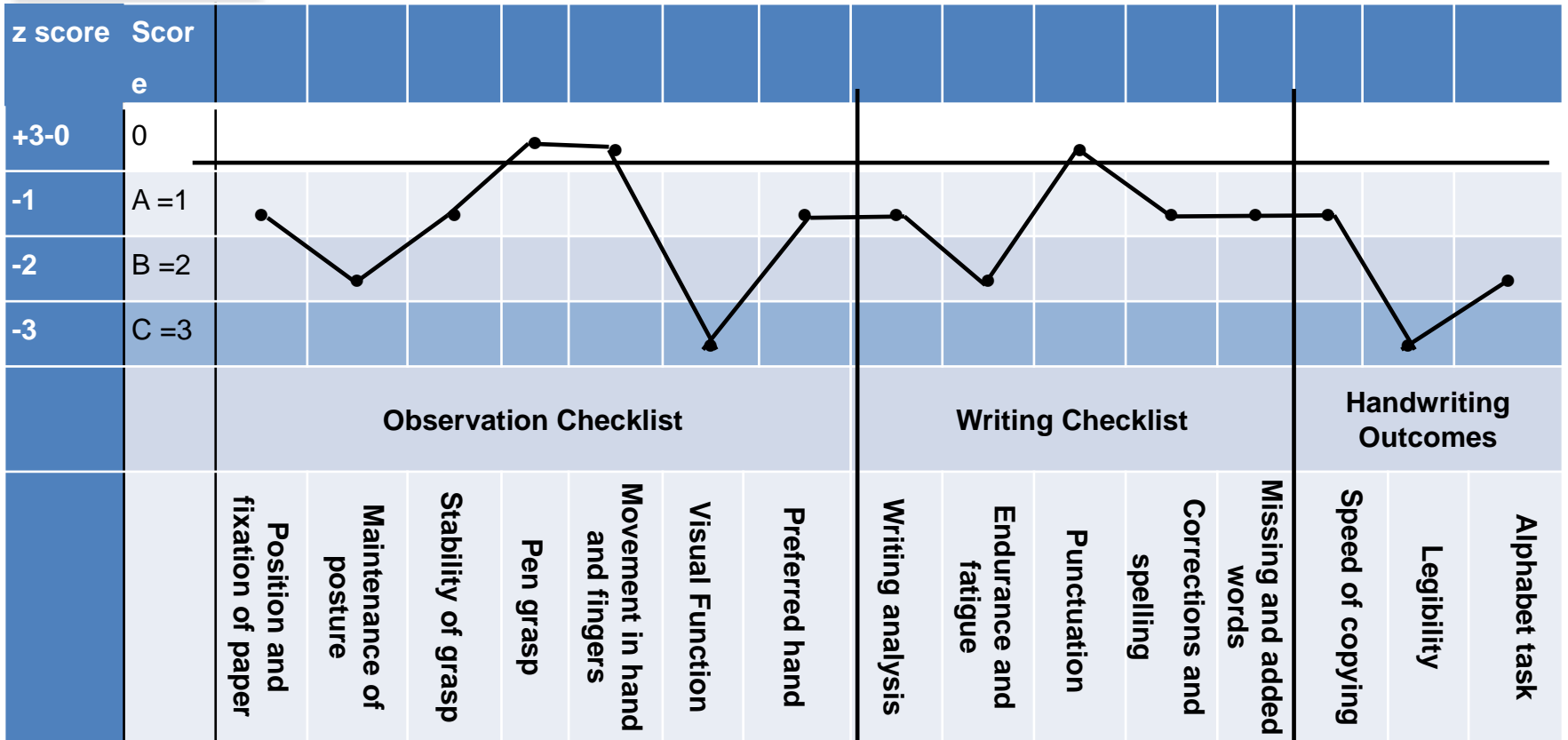


Alphabet task



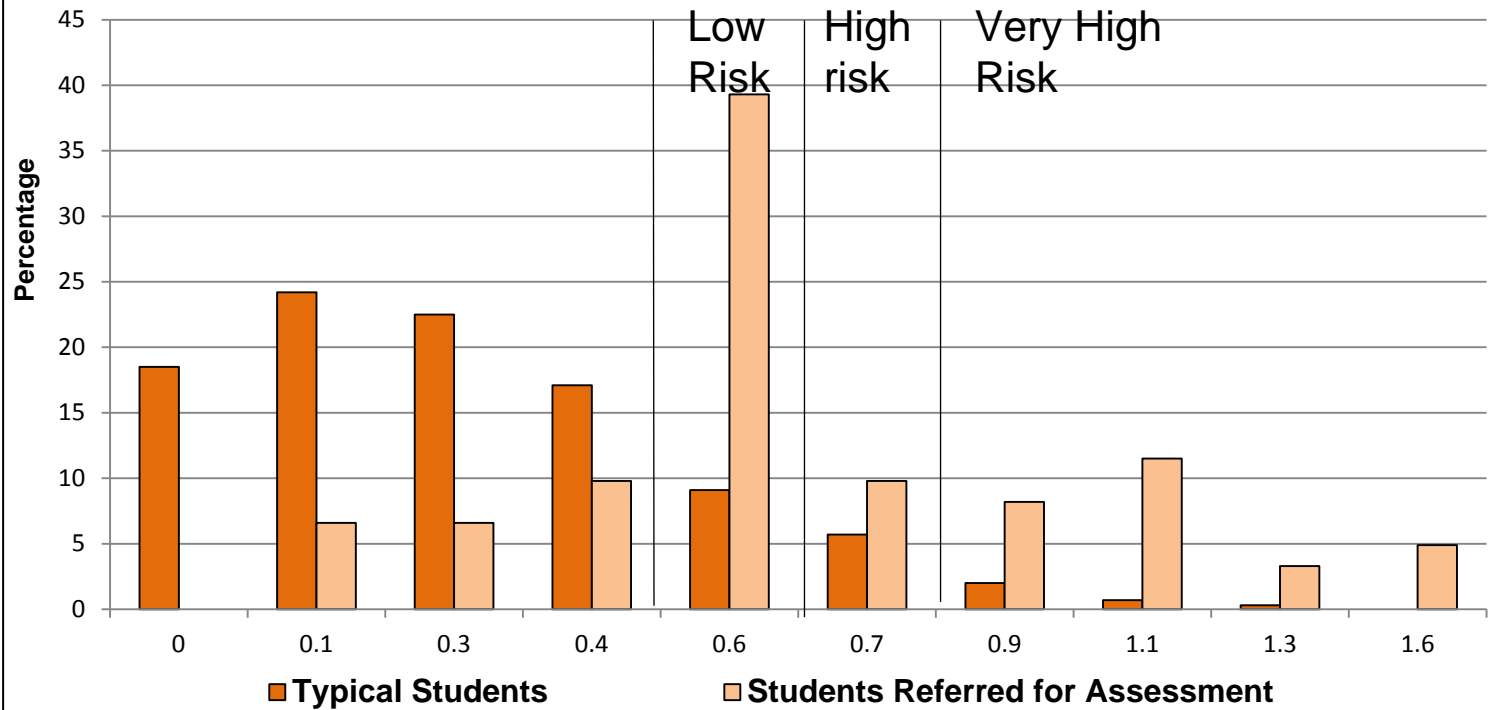
Legibility







At risk Quotients for the Observation Checklist



Limitations



- visual function assessment
- differentiation of students with dysfunction on some subtests
- no items which adequately identify spatial problems
- pain assessment needs to be included





Conclusion

- The **Handwriting Screening Assessment** has been shown to be a useful assessment tool in identifying dysgraphia in university students.
- The assessment also indicates that concessions based on client factors and performance skills screened in the **Observation and Writing Checklist** may require further assessment even when **Handwriting Outcomes** such as speed and legibility are not at risk.





- THANK YOU

