

Checklist Investigated

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BACKGROUND

The Dyslexia Association of Singapore (DAS) conducts psycho-educational assessments for dyslexia. It also provides literacy interventions for students with dyslexia to help them acquire literacy and linguistic competencies.

Psycho-educational assessments for dyslexia requires monetary and time commitments from parents and children. Hence, the DAS conducts public screening sessions to provide a preliminary indication of an individual's risk for dyslexia. Parents can therefore make more informed decisions whether to proceed with the diagnostic assessment (Singleton, 2010).

Purpose The present study investigates the predictive validity of 2 screening devices currently employed by the Dyslexia Association of Singapore (DAS):

- Lucid Rapid Dyslexia Screening (Lucid Rapid)
- Learning Difficulties Checklist (LDC)

PARTICIPANTS

Sample Size	n = 222
Gender	Male: 145 Female: 77
Mean Age at Screening	9.12 years (SD = 1.92)
Mean Age at Formal Assessment	9.65 years (SD = 1.89)

Archival data (LDC, Lucid Rapid, & standardized assessment scores) of students screened from 2013 to 2014 were retrieved from DAS.

LUCID RAPID DYSLEXIA SCREENING

- Brief computer-based screening tool designed to identify children (ages 4 to 15) at risk for dyslexia
- Normed in United Kingdom
- Contains 3 subtests measuring
 - Phonological processing
 - Auditory sequential memory
 - Phonic decoding skills (≥ 8 years)/
 - Visual-verbal memory (< 8 years)
- Assigns child 1 of 4 dyslexia risk classifications (Low, Moderate, High, & Very High)

Children with Moderate, High, & Very High risk classifications on Lucid Rapid → At Risk of Dyslexia. Child with Low risk classification → Not at Risk

LEARNING DIFFICULTIES CHECKLIST (LDC)

- Part of the DAS Referral Form (Parent)
- Designed as a general screening tool that identifies symptoms of dyslexia and other learning difficulties
- 6 categories of items rated on 6 point scale - writing/spelling, reading, motor skills, speech, behaviour, & other related symptoms

Each participant has a severity score for each category & a cut-off score was established. Scores above cut-off → At Risk for dyslexia. Scores below cut-off → Not at Risk

Standardized Assessment Tools

- Differential Ability Scales - 2nd Ed.
- Wechsler Individual Achievement Test - 3rd Ed.
- Singapore Writing Fluency Test

RESULTS

LUCID RAPID

Lucid Rapid	Sensitivity	Specificity
Dyslexia vs. No Disorders	93.6	13.2
Dyslexia vs. Others	93.6	1.8
No Disorders vs. Dyslexia + Others	95.2	13.2

LEARNING DIFFICULTIES CHECKLIST

Writing & Spelling	Sensitivity	Specificity
Dyslexia vs. No Disorders	44.2	62.5
Dyslexia vs. Others	44.2	46.9
No Disorders vs. Dyslexia + Others	47.6	62.5

Reading	Sensitivity	Specificity
Dyslexia vs. No Disorders	58.4	46.9
Dyslexia vs. Others	51.9	53.1
No Disorders vs. Dyslexia + Others	50	62.5

Speech	Sensitivity	Specificity
Dyslexia vs. No Disorders	40.3	65.6
Dyslexia vs. Others	40.3	40.8
No Disorders vs. Dyslexia + Others	47.6	65.6

Behaviour	Sensitivity	Specificity
Dyslexia vs. No Disorders	48.1	53.1
Dyslexia vs. Others	48.1	51.0
No Disorders vs. Dyslexia + Others	48.4	53.1

Others	Sensitivity	Specificity
Dyslexia vs. No Disorders	46.8	62.5
Dyslexia vs. Others	46.8	49.0
No Disorders vs. Dyslexia + Others	48.4	62.5

Sensitivity: Ability to identify children truly at risk of dyslexia (true positives)

Specificity: Ability to identify children truly not at risk of dyslexia (true negatives)

DISCUSSION & FUTURE DIRECTIONS

LUCID RAPID

- Effective in identifying dyslexia (sensitivity: $> 90\%$)
- Liberal in highlighting individuals without dyslexia as being at risk for dyslexia (specificity $< 15\%$; high number of false positives)

Lucid Rapid serves well in identifying students truly at risk of dyslexia but results should be interpreted while considering other learning factors & cultural differences -> **Adapt the Lucid Rapid to the local population & reduce the effects of culture/accent/external factors**

LEARNING DIFFICULTIES CHECKLIST (LDC)

- Effective in discriminating between children with any learning disorders from those without any learning disorders
- Less effective in discriminating between children with dyslexia and those without any learning disorders

As intended, the **LDC** functions better in screening for general learning disabilities than as a dyslexia-specific screening tool -> **Revise LDC & exclude items with low predictive value**

LIMITATIONS

- Very small sample size for participants in the Low risk category on Lucid Rapid (n = 12) & few cases of low risk students assessed at the DAS -> specificity might be underestimated
- Diagnoses other than dyslexia might not be reported in archival data

REFERENCES

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