

# Perceptual and Phonological Difficulties in Multilingual Children with Dyslexia: Evidence from Telugu Native Speakers

Suvarna Rekha Chinta; Bapi Raju Surampudi; Bipin Indurkha

1. International Institute of Information Technology-Hyderabad, Telangana, India.

2. Cognitive Science Program, Institute of Philosophy, Jagiellonian University, Cracow, Poland

## INTRODUCTION

Developmental Dyslexia (DD) is considered biological origin, irrespective of intelligence, dyslexia leads to difficulties in reading and writing. But its nature and prevalence rate differ across languages. However, phoneme awareness and RAN deficits regarded as the causal factors for reading difficulties and these theories got universal acceptance. Research also showed that the severity of reading difficulties becomes less prevalent in transparent orthographies. Similarly, research demonstrated a significant difference in metacognitive abilities between monolinguals and bi-/multilingual. Despite these, less research available on dyslexia with transparent orthography and with multilingual backgrounds.

## PROBLEM STATEMENT

Telugu is an alpha-syllabic/ Akshara based South Indian language with orthographic consistency. The phoneme is not the basic unit of Telugu orthography nor the reading instructions based on phoneme. In that case, how a phoneme deficit can underlie reading difficulties in this population? Thus we predict that the phoneme deficits need not be the cause for reading difficulties, it could be perceptual or RAN deficits among Telugu native speakers.

## PROCEDURE

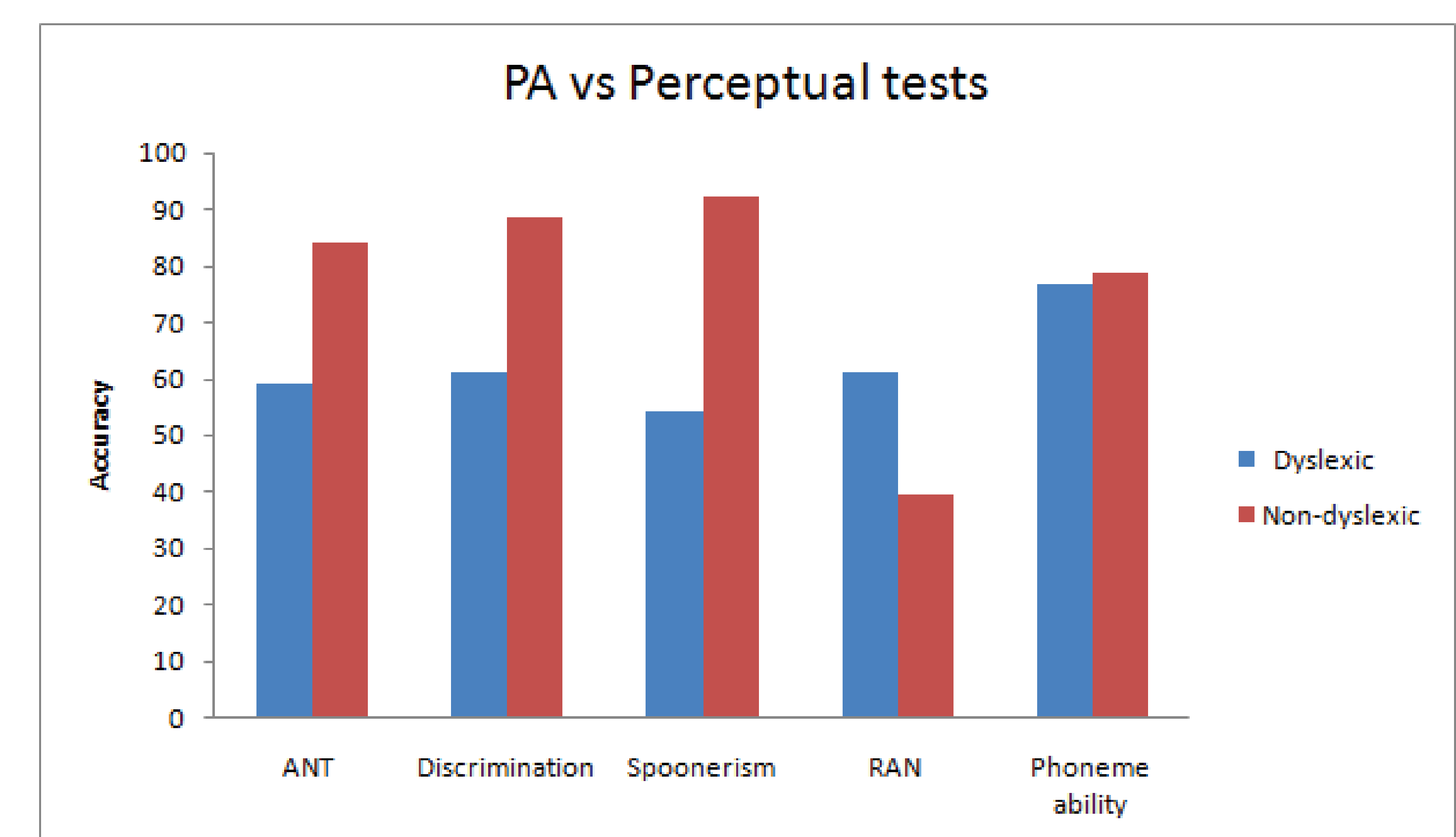
We conducted a set of perceptual, RAN and phonological ability tests on a group of dyslexic ( $n = 23$ ) and their peer age-matched non-dyslexics ( $n = 23$ ). These groups were enrolled from two integrated schools in Hyderabad, India. Both schools follow state syllabus and the instructions provided in three languages. We ensured that both groups are multilingual and Telugu native speakers.

Table illustrates the descriptive statistics of group on psychometrics. Results reported for Mean, SD and Cohen's  $d$ .

Measures	Dyslexic M (SD)	Non-Dyslexic M (SD)	Cohen's $d$
Chronological age	12 (1.3)	11.68 (1.24)	0.25
Reading age	9.57 (1.02)	11.68 (1.24)*	1.85
Spelling age	9.42 (.96)	11.68 (1.24)*	2.03
IQ	103 (1.5)	104.7 (2.24)	0.52
ADHD	17 (1.5)	16.4 (1.9)	0.35
Language proficiency	68 (2.3)	70 (1.9)	0.94

## Results

Results demonstrated significant group differences in perceptual and RAN tasks. Additionally observed that the dyslexic children performed equally to the non-dyslexic children on phonological tasks with attenuated speed.



Better performance of dyslexic children on phonological tasks could be explained as an advantage of being multilingual and transparent orthographies. This study concludes that RAN and perceptual deficits could be the causal factors for reading problems in children who are learning in transparent languages and with a multilingual background.

Correspondence to:

Suvarna Rekha Chinta, Cognitive Science Lab, 4th Floor, KCIS Building, IIIT-Hyderabad, C.R. Rao Road, Gachibowli, Hyderabad, Telangana, India -500032.

Email: [suvarna.rekha@research.iiit.ac.in](mailto:suvarna.rekha@research.iiit.ac.in); [suvarna.rekha.11@gmail.com](mailto:suvarna.rekha.11@gmail.com).