

# READING SKILLS AND VISUAL ATTENTION IN SCHOOL-AGE CHILDREN

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## INTRODUCTION SCHOOL-AGE CHILDREN



Picture adapted from: [www.jumpybumpykids.com/which-books-should-your-child-read-for-beginners/](http://www.jumpybumpykids.com/which-books-should-your-child-read-for-beginners/)

## AIM AND OBJECTIVES

➤ to assess development of visual attention in connection with reading skills development in school-age children

- ✓ to carry out reading skills and visual attention assessment in school-age children
- ✓ to develop normative data of visual attention (TMT – *Trail Making Test*) test by age
- ✓ to evaluate link between reading skills and visual attention
- ✓ to compare both tests results between children in standard schools with children in schools for learning difficulties

## PARTICIPANTS

- ✓ 2437 children (1177 boys/1260 girls)
- ✓ 15 schools (13 standard and 2 specialized)
- ✓ grades 1 through 12
- ✓ age from 7-18 years
- ✓ binocular visual acuity 0.8-1.0
- ✓ project “Exploring vision and visual perception disturbances of school-age children and developing diagnostics methods” (supported by ERAF No.2011/0004/2DP/2.1.1.1.0/10/APIA/VIAA/027)



Adapted from: [www.123d.com/photo\\_9773494\\_children-at-school-during-the-lesson.html](http://www.123d.com/photo_9773494_children-at-school-during-the-lesson.html)

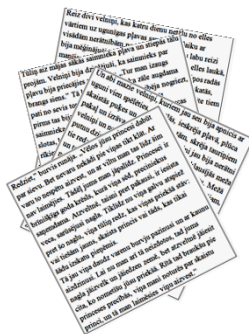
## METHOD READING SKILLS

### Oral reading speed

- ✓ words read per minute
- ✓ analogical texts – 7
- ✓ word count – 130
- ✓ average word length – 5

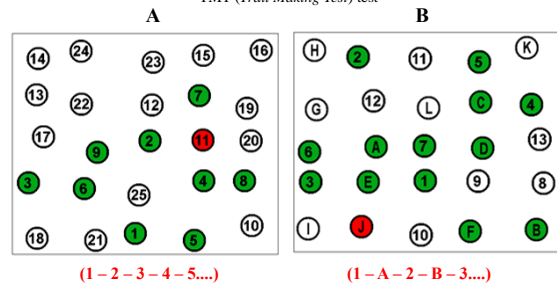
### Reading comprehension

- ✓ questions – 2



## METHOD VISUAL ATTENTION

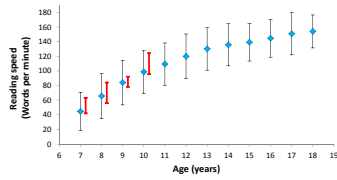
TMT (*Trail Making Test*) test



(1 – 2 – 3 – 4 – 5...)

(1 – A – 2 – B – 3...)

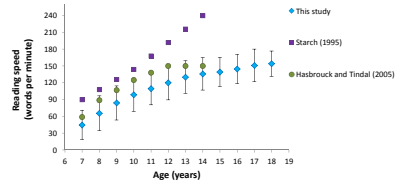
### RESULTS ORAL READING SPEED IN SCHOOL-AGE CHILDREN



Reading speed norms in Latvia (words per minute):

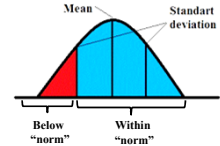
- 1<sup>st</sup> grade 46-60
- 2<sup>nd</sup> grade 60-80
- 3<sup>rd</sup> grade 80-90
- 4<sup>th</sup> grade 100-120

### RESULTS ORAL READING SPEED IN SCHOOL-AGE CHILDREN



Criteria for 1st grade (Good et al., 2000):

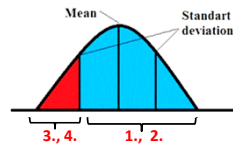
- 40 or more WPM – low risk
- 20 or below WPM – high risk



### RESULTS READING SKILLS ORAL READING SPEED AND COMPREHENSION

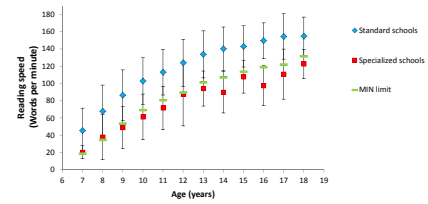
GROUPS:

1. **Good readers** – read fast, with comprehension (73%)
2. **Fast readers** – read fast, without comprehension (12%)
3. **Sense readers** – read slow, with comprehension (11%)
4. **Slow readers** – read slow, without comprehension (4%)



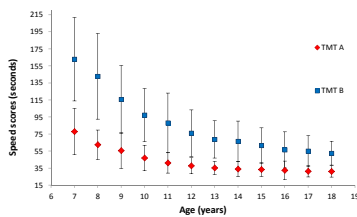
### RESULTS ORAL READING SPEED IN STANDARD AND SPECIALIZED SCHOOLS BY AGE

- ✓ 2244 children – standard schools
- ✓ 192 children – specialized schools children



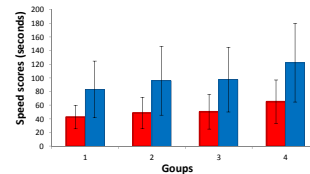
### RESULTS SPEED SCORES OF TMT TEST IN SCHOOL-AGE CHILDREN

- ✓ 2353 children – TMT A
- ✓ 1968 children – TMT B



- ✓ Normative data of TMT test by age for school-age children in Latvia

### RESULTS TMT TEST RESULTS AMONG READERS GROUPS

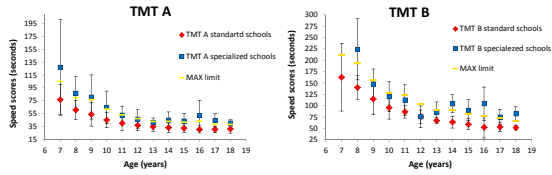


- ✓ children with good/poor reading skills
- ✓ correlation (0.7) between reading speed and TMT test (A and B) speed scores
- ✓ poor reading skills and visual attention – 2-5% of children

## RESULTS

### TMT TEST RESULTS IN STANDARD AND SPECIALIZED SCHOOLS

- ✓ 2162/190 children – TMT A
- ✓ 1866/102 children – TMT B



## CONCLUSIONS

1. Results shows that reading skills and visual attention in school-age children develops by age 14-16 years ( $p < 0.05$ )
2. 4% of children with slow reading speed shows poor comprehension
3. Slow readers perform TMT (A and B) test longer then good readers ( $p < 0.05$ ) – poor reading skills correlates with decreased visual attention
4. This research provides normative data of digital version of TMT test by age for school-age children in Latvia
5. 2-5% of tested population may have learning difficulties affected by slow reading and visual attention deficit
6. Comparing to standard schools, children in specialized schools shows poorer performance in both - reading and visual attention tests.

Thanks for attention!