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VISUAL WORD RECOGNITION IN LATVIAN CHILDREN WITH AND WITHOUT READING DIFFICULTIES

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Introduction

Introduction - In Latvia approx. 15-20% of school-aged children are with reading difficulties. [1] There are many neural processes which participate in text decoding during reading such as processing rate, verbal short term memory, phonological processing and visual processing, word identification, word memory and text comprehension. [2] The aim of the study was to determine differences in visual word recognition for different length words showed in short interval of time for children with and without reading difficulties.
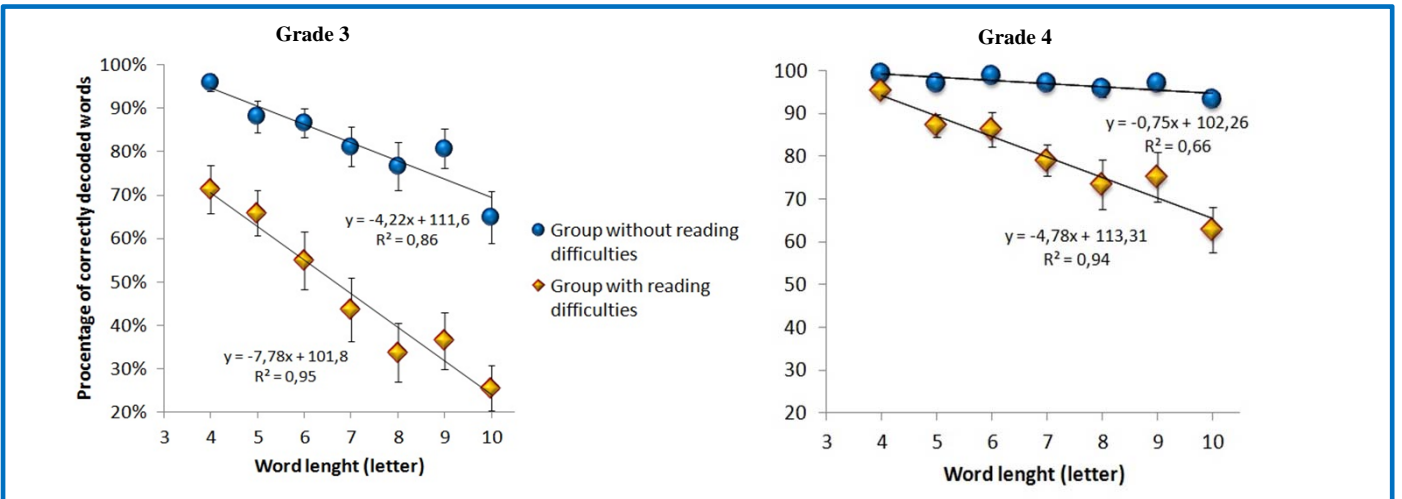
Picture author – Kaiva Lūse

Fig.1 Schematic slide show with variable word length and mask between them
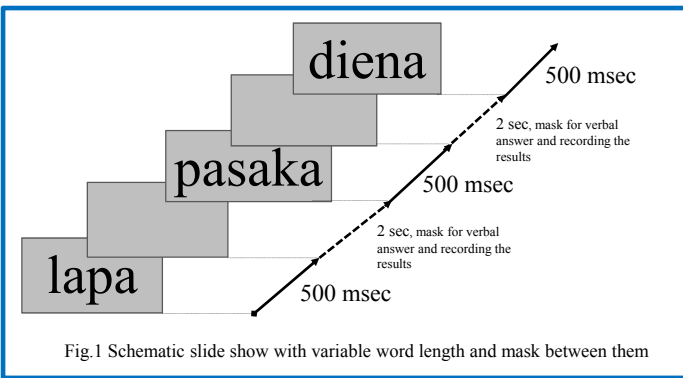
Method

Method - Fifty-two children took part in the study. Thirteen children in Grade 4 (9-10 years old) and fourteen children in Grade 3 (8-9 years old) had a reading speed less than average in class, in Grade 4 91 ± 6 (wpm), in Grade 3 62 ± 3 (wpm). These groups will be called children with reading difficulties, others - normal reading children. The stimulus set consisted of 150 words. The length of the items varied from four to ten letters. Each word was shown on a computer for 500 ms. The answers were expected verbally and correctly and incorrectly named words were recorded (2 s). Each word length was shown 15 times. Letter size corresponded to 6cycles/degree. Word samples for this research was selected with helps of a speech therapist.

Results

Results – Average data of correctly named words for children with and without reading difficulties were significantly different ($p<0.05$) in both groups for all word lengths. If compar the relationship between word length and the procentage of correctly decoded words, the linear regression slopes coefficients are substantially different between the different readers groups and the age groups ($p <0.05$), except for group without reading difficulties in Grade 3 and group with reading difficulties in Grade 4 the difference is not significant ($p = 0.64$).

Grade 3

$y = -4,22x + 111,6$
$R^2 = 0,86$

$y = -7,78x + 101,8$
$R^2 = 0,95$

- Group without reading difficulties
- Group with reading difficulties

Grade 4

$y = -0,75x + 102,26$
$R^2 = 0,66$

$y = -4,78x + 113,31$
$R^2 = 0,94$

Conclusions

Conclusions - The study confirms that children with reduced reading speed can decode words shorter than normal reading children. Magnocellular functions continue improve until 11-12 years of age [2]. These children have different reading pattern – nonlexcal route, the graphemes of a word are decoded into phonemes one- by-one, in serial way, and - lexcal rout, letters are activated in parallel, and these letters activate a words entry in the orthographic lexicon[3]. If the reading speed is less than 91 ± 6 (wpm), Latvian children in Grade 3 and Grade 4 still use nonlexcal rout in decoding the words. Word length affect its recognition within the time and spatial frequency. Threshold setting is a further purpose of the study.

References – [1] Sarmīte Tūbele, Anna Kopeloviča, "Jaunāko klašu skolēnu runas un valodas traucējumu noteikšana un korekcijas iespējas" *Promocijas darbs speciālajā pedagoģijā,* lpp.146.(2006) . [2] R. Laycock, S.Crewther, P. Kiely, D. Crewther, Parietal function in good and poor readers. *Behavioral and brain functions* 2 (26),p.1.-14., (2006) [3] Vanessa E.G. Martens, Peter F. De Jong, "The effect of word length on lexical decision in dyslexic and normal reading children"; *Brain and Language*, 98, p.140.-149., (2006).