

# Early Recognition and Preventive Intervention for First-Graders at Risk for Reading Failure

Peltomaa, K.<sup>1</sup>, Auer, A-M.<sup>1</sup>, Suominen, H.<sup>1</sup> & Lyytinen, H.<sup>2</sup>

<sup>1</sup>Neuropsychological Rehabilitation Center Nekku, Järvenpää, Finland

<sup>2</sup>Department of Psychology, University of Jyväskylä, Finland

## The goal

was to define a method for identification of children who are in need of support to be able to overcome the risk of reading failure. Two methods were compared: traditional predictive measures and a response to intervention –method.

## Methods

- 396 (95%) first graders of the year 2008 age cohort (n=415) in the city of Järvenpää agreed to participate in the study.

- Traditional screening assessments took place in the beginning, in the middle, and at the end of the school year by using ARMI – The screening material of literacy skills for the first grade.

- The children with low scores in the group-screenings were assessed individually by selected tasks from WISC-III, ARMI, RAN and NEPSY-II.

- The response to the intervention was assessed by children at risk using the "Literate" – computer game (Lyytinen et al., 2007). The children played 2-3 short sessions/week, the total playing time being at least two hours. The game is designed to strengthen the knowledge of letter-sound connections (Figure 1).

- The children whose literacy skills were far behind their classmates' in the mid-year screening were provided with individually tailored instructions.

- Their results in the fall assessments were compared to the results of the other first graders by forming z-scores using the means and standard deviations of the control group.

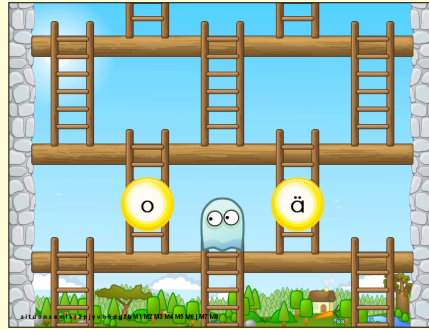


Figure 1. One of the tasks in the Literate Game. The child hears a sound through the headphones and chooses the corresponding letter.

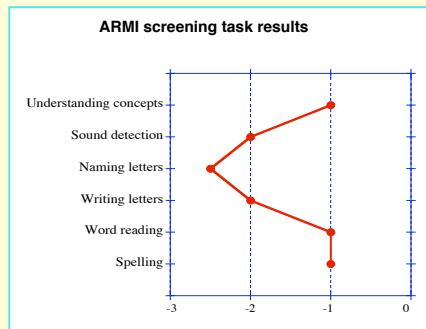


Figure 2. ARMI screening task results. The poor readers (n=10) in the beginning of the school-year were > -1 sd below their classmates.

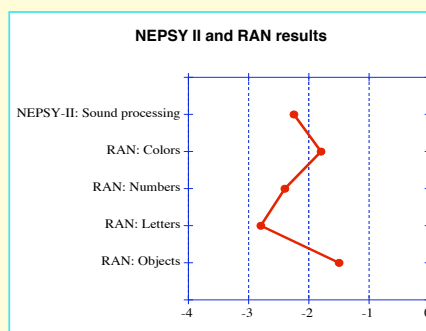


Figure 3. Comparably their sound processing and naming fluency were clearly below the mean at the beginning of the school-year.

## Results

- The children with poor pre-reading skills (n=83; at least 4/6 tasks  $\geq -1$  sd or 3/6 tasks  $\geq -2$  sd below the mean) were assessed individually.

- 78 (19,7 % of the age cohort) of these children took part in further assessment, and 57 of them agreed to play the "Literate"-game.

- Playing the "Literate" game helped most of them to reach the scores of their classmates, but 2,5% (10/396) of them were still very poor ( $\geq -3$  sd) in the word reading assessment in the mid-year screening in January.

- These ten children had the lowest scores in letter knowledge, rapid naming and sound detection –tasks (Figures 2. & 3.) in the traditional screening at the beginning of the school-year.

## Conclusions

- Children with exceptionally low scores in letter naming accuracy and fluency were the most resistant to phonics-based "Literate" reading intervention.

- Even a short (< 3 hours) intervention, which benefited the children with milder risk factors for reading problems, was helpful in recognizing the children in need of more intensive training.

- Our next goal is to find out which of these children would benefit from the individually tailored remediation. The follow-up of the age cohort will continue to ascertain the number of the remediated children, who reached the mainstream children's level by playing the "Literate" game, that will sustain at the age-level at least until the end of second grade.

## Literature cited

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## For further information

Please contact [kaisa.peltomaa@neuroneku.net](mailto:kaisa.peltomaa@neuroneku.net). More information on our center can be obtained at [www.neuroneku.net](http://www.neuroneku.net), and on the issues related to the Literate game at [www.lukimat.fi](http://www.lukimat.fi).

PDF-version of the poster can be found at [www.neuroneku.net](http://www.neuroneku.net) - INS.