A predictive battery of literacy acquisition for children in third year kindergarten

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INTRODUCTION
Phonological abilities like phonological awareness, verbal short-term memory and rapid automatized naming have been shown to be reliable predictors of early literacy acquisition abilities (Landerl & al., 2013). Letter knowledge (Foulin, 2005) and short-term memory for order information (Martinez Perez & al., 2012) have also been associated with reading acquisition. In order to identify children at risk for reading acquisition difficulties at a very early stage, we designed a battery of tests ("Batterie d’évaluation collective des Prérequis spécifiques à l’apprentissage du Langage Ecrit en 3ème maternelle", BPLE) which permits a collective assessment of the different predictors identified to support literacy acquisition.

THIS STUDY
The aim of the present longitudinal study was to validate this battery by assessing, for children in 3rd year kindergarten, its ability to predict reading and writing abilities one year later (first year of elementary school).

METHODS
Participants
88 typically developing children tested at the age of 5 (third kindergarten) and one year later at the age of 6 (first grade).

Tasks of the BPLE (3rd year kindergarten)

Collective assessment
- Phonological awareness
  - Rhyme Identification (5 items, score/25)
  - Syllable Identification (5 series, score/25)
  - Phoneme Identification (5 series, score/25)

- Letter knowledge (8 letters, score/9)
- Serial order STM (3 to 6 items, score/8)

- Item STM (2 to 5 items to recall), score/14

Individual assessment
- Rapid automatized naming (sec)

Procedure
- Group testing: between 7 and 10 participants
- Material: response booklet for each child, pencil
- Duration: approximately one hour

Literacy tasks (1st grade)
- Non-word dictation
  - 16 monosyllabic NW (CV, VC, CCV, CVC)
  - 20 disyllabic NW (V-CV, VC-CV, CCV-CV, CVC-CV)
- Non-word reading (same non-words as for the dictation, score /36)

RESULTS
Correlation analysis
All the predictors are significantly associated with the literacy abilities assessed one year later (after controlling age and sociocultural level, see table 1)

<table>
<thead>
<tr>
<th></th>
<th>NW dictation r</th>
<th>NW reading r</th>
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<tbody>
<tr>
<td>1.Age (en mois)</td>
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<td>ns</td>
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<tr>
<td>2.Sociocultural level</td>
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<tr>
<td>Phonological awareness</td>
<td></td>
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<tr>
<td>3. Rime</td>
<td>.56***</td>
<td>.59***</td>
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<tr>
<td>4. Syllable</td>
<td>.55***</td>
<td>.45***</td>
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<td>5. Phoneme</td>
<td>.49***</td>
<td>.48***</td>
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<tr>
<td>4. Letter knowledge</td>
<td>.43***</td>
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<tr>
<td>5. Serial order STM (score)</td>
<td>.36***</td>
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<td>6. Item STM (score)</td>
<td>.44***</td>
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<td>7. RAN (sec)</td>
<td>-.56***</td>
<td>-.57***</td>
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Hierarchical regression analysis
- **phonological awareness** ($\Delta R^2 .15***$)
- **item STM** ($\Delta R^2 .03*$)
- **rapid automatized naming** ($\Delta R^2 .06***$

**Independent predictors of the score on the NW dictation**

- **phonological awareness** ($\Delta R^2 .13***$)
- **rapid automatized naming** ($\Delta R^2 .10***$

**Independent predictors of the score on the NW reading**

*p<.05, **p<.01, ***p<.001

DISCUSSION
These results show that this collective battery is a valid tool for predicting, in 3rd year kindergarten children, literacy abilities one year later.

The BPLE appears to be a promising tool for detecting, at an early stage, children at risk for later literacy acquisition difficulties.