Which measures of toddlers’ lexical development predict later lexical and grammatical competence? A longitudinal study

Tamara Patrucco-Nanchen1, Laura Alaria1, Margaret Friend2, Diane Poulin-Dubois3 and Pascal Zesiger1

1Université de Genève; 2SanDiego State University; 3Concordia University

This work was supported by the National Institute of Child Health & Human Development grant R01 HD068438-01

BACKGROUND

We report here the first, second and third waves of an ongoing longitudinal study which aims at understanding the developmental path to early literacy from the age of 16 months through preschool. This study is part of a larger, multilingual project, and places a particular emphasis on early lexical comprehension, which has the greatest potential to predict later language ability [7].

Main goal: Test the predictive power of indirect, direct, and dynamic measures of lexical acquisition at ages 16 and 22 months on 5 language outcome measures assessed at age 29 months.

PARTICIPANTS

65 monolingual French-speaking infants (33 ♀ & 32 ♂):
- Wave 1 Mean age=16.01 months (♂=.30)
- Wave 2 Mean age=21.96 months (♂=.25)
- Wave 3 Mean age=28.66 months (♂=.41)

Children with missing data points or with scores +/- 2σ from the mean were excluded.

METHOD

Wave 1 & Wave 2

- MacArthur communicative development inventory (MCDI), French adaptation [5]: WG version at W1 & WS version at W2 => Indirect measure
- Word learning task (WLT) [8] => Dynamic measure
  - Novel word – novel object pair learning task (training, familiarization and test phases)
  - «Can you put the koba in the bucket?»
- Computerized comprehension task (CCT) [3-5] => Direct measure
  - Forced-choice task with 41 paired pictures presented on a touch-screen
  - «Which one is red? Touch red!»

Wave 3

- MCDI: Number of words produced
- Assessment of Oral Language: Two pointing to pictures sub-tests of a standardized French test battery (ELO)[6]
  - Lexical comprehension (LEXCOMP): 20 boards of 4 pictures (Ex. «Show me the where there is… a rabbit»)
  - Grammatical comprehension (GRAMCOMP): 20 boards of 4 pictures (Ex. «Show me the picture where… the boy is sleeping»)
- Spontaneous language sample recorded in a free play situation
  - Mean Length of Utterances (MLU)

RESULTS

Preliminary correlational analyses showed that there is no correlation between any of the languages measures and mother’s education. Child’s gender was moderately correlated with MLU only (r=.308, p=.045).

Regression analyses were computed with the four Wave 3 outcome language measures as dependent variables, and the following predictors:
- Step 1: Child’s gender
- Step 2: Wave 1 variables
- Step 3: Wave 2 variables

Overall, the results indicate that the strongest predictor of Wave 3 outcome measures is the CCT assessed at Wave 2, which systematically contributes to explain the various measures of language development at age 2 and a half years.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Wave 3 measures</th>
<th>MCDI</th>
<th>LEXCOMP</th>
<th>GRAMCOMP</th>
<th>GENDER</th>
<th>MLU</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCDI_W2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCT_W2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WLT_W1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCT_W2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GENDER</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCT_W2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MLU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

In our sample of 65 monolingual French-speaking infants:
- Direct, indirect and dynamic measures of lexical development at age 16 months show a very limited predictive power of language outcome at 29 months.
- The CCT measured at age 22 months is the most effective variable in predicting language outcome at 29 months, suggesting that by the end of the second year of life, assessing language development through the use of a direct measure of lexical comprehension is more effective and accurate than relying on parental reports to predict later lexical and grammatical skills.

REFERENCES

Contact: pascal.zesiger@unige.ch