Linking abstract form and grammatical function: a construction-grammar experiment.

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Introduction
Casenhiser and Goldberg (2005) demonstrated that English-speaking children aged 5-6 were able to learn to associate a new grammatical construction (NOUN NOUN VERB) with an abstract meaning (apparition). In a previous study (Maillet, Parissé & Gay-Perrin, 2009), we showed that four-year-old French-speaking children were not able to learn this association between a new syntactic form (word order construction) and a new function (apparition). The present study aims at investigating whether older children would be able to learn this association.

Participants
108 French-speaking participants distributed into three subgroups depending on their chronological age: 4-year-old (45 children); 5-6-year-old (45 children); 8-year-old (20 children) performed the task. They had normal language development as indicated by a standardized test battery. (Évaluation du langage oral – ELO: Khomsi, 2001).

Experiments and material
In a training phase, all the participants saw 2 x 6 films with a new construction (NOUN NOUN VERB). All verbs used in the construction are nonce verbs, so children cannot rely on lexical information to memorize the meaning of the construction.

In the Testing phase, the participants were presented to new films which included two films side by side. They heard a sentence that describes one of the two films and had to choose between the two films. Two conditions were presented 1) normal word order (NOUN NOUN VERB); 2) new word order (NOUN VERB NOUN). It was hypothesized that a correct learning conducted to accept the match normal word order (NOUN NOUN VERB) with films without an apparition and new word order (NOUN NOUN VERB) with films with an apparition.

Results
No significant differences were found on testing orders (four versions) nor on side designation (left vs. right).

<table>
<thead>
<tr>
<th></th>
<th>Correct responses (6 max)</th>
<th>All responses (12 max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparition</td>
<td>4 years: 2.73</td>
<td>4 years Non apparition</td>
</tr>
<tr>
<td></td>
<td>5-6 years: 3.29</td>
<td>5-6 years</td>
</tr>
<tr>
<td></td>
<td>8 years: 4.35***</td>
<td>8 years Non apparition</td>
</tr>
</tbody>
</table>

Film pointed at (correct and incorrect responses: 12 max)

<table>
<thead>
<tr>
<th></th>
<th>Apportion films</th>
<th>Non apparition films</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.91</td>
<td>6.09</td>
</tr>
<tr>
<td></td>
<td>6.51</td>
<td>5.49</td>
</tr>
<tr>
<td></td>
<td>7.30***</td>
<td>7.40**</td>
</tr>
<tr>
<td></td>
<td>4.60*</td>
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*p = 0.0002 --- ** p = 0.001 --- + p = 0.06

Discussion
French-speaking children age 8 were able to learn an association between a new syntactic form (NOUN NOUN VERB word order) and a new function (apparition).

However, young children (4- to 6-year-olds) were not able to obtain the same results.

Children that learned the new word order were able to associate the new word order and a specific semantic feature (the apparition of the object designated by the first noun). Performances for normal word order utterances were balanced: apparition films were not preferred to non-apparition films in this case. It was only in the case of the new word order that the apparition films were preferred.

We note that children were able to learn this association only when the were also paying more attention to apparition films. This could mean that younger children may not be able to do this because they may be unable to identify the requested semantic feature. It is possible that younger children could also learn this association, but with heavier training (in this experiment, training was very short).

Nonce verbs
Real verbs were extracted from lexical databases (Maillet, Lété et al., 2004) and analyzed. The verbs are frequent (with a mean frequency of 1.3 per sentence) and consist of two segments: (a) a non-lexical verb, and (b) a direct-object noun. The nonce verbs were controlled using a questionnaire to ensure that they had no phonological neighbours. The nonce verbs were created by changing two phonemes of each verb, one consonant and one vowel, with changes reduced to a single phonological feature. The nonce syllabic structure. Nonce verbs were created by changing two phonemes of each verb, one consonant and one vowel, with changes reduced to a single phonological feature. The nonce structure. Nonce verbs were created by changing two phonemes of each verb, one consonant and one vowel, with changes reduced to a single phonological feature. The nonce verbs were controlled using a questionnaire to ensure that they had no phonological neighbours.

References