For infants, mastering the syntactic relations of a language’s grammatical rule-system is particularly challenging, when these are realized among elements of speech that do not directly follow each other. These relations are known as non-adjacent dependencies (NADs). Recent studies showed that infants as young as 4 months old can learn NADs by listening passively, while adults learned only when given an explicit task and feedback.\(^1,2,3\) It could also be demonstrated that adults’ ERP responses can be modulated when learning grammatical relations, such as NADs.\(^4\) Inhibitory stimulation over the left prefrontal cortex showed responses similar to prelinguistic infants, indicating associative learning. There seems to be a shift from effortless associative learning to more controlled learning of NADs, presumably because of the maturation of the prefrontal cortex. In the planned study, the ability and preconditions for NAD learning under active conditions will be approached. Thus we expect to gain more information about the developmental trajectory of the proposed shift.

Under which active task conditions are 5-6-year-olds able to learn NADs implicitly and in a controlled way?

**Design**
Serial reaction time task\(^5,6\) | “Whack-the-mole” computer game setting with active and implicit task | 4 blocks / 25 sentence-items each | Learned version of NADs & left / right association of NADs counterbalanced between subjects

**Stimuli**
N = 100 Italian sentences \(^1\) | N = 32 verb stems

<table>
<thead>
<tr>
<th>NAD 1 (Progressive form)</th>
<th>NAD 2 (Infinite form)</th>
</tr>
</thead>
<tbody>
<tr>
<td>sta x-ando is x-ing (\uparrow \uparrow)</td>
<td>può x-are can x-Ø (\uparrow \uparrow)</td>
</tr>
</tbody>
</table>

**Participants**
N = 40 children | Age = 5 - 6 years

**Procedure**
**Instruction:**
"The woman speaks in a secret language. With the secret language she tells you where the mole appears. Listen carefully! Maybe you can guess the secret. Then you press as fast as you can."

**Method**
Start auditory stimulus 1 (300ms) | Mole appears at onset of auxiliary | Pre trial screen
Start auditory stimulus 2 (300ms) | Mole appears at onset of auxiliary | Pre trial screen

**Open questions**
How to draft the instruction precisely and unambiguously?
What to do when children are getting unfocused or frustrated?
How to improve the adaptive RT paradigm?

**Fall-back options**
Different method(s):
- Control task (5th unpredictable block / NAD violations)
- Eye tracking or acting out task

**Pending Issues**

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