

## INTRODUCTION

Usage-based theories (Bybee, 2010) consider **analogical reasoning** as a cognitive process underlying **construction of more abstract linguistic schemas**. When children hear two utterances such as "John eats an apple" and "She sees a bird", they can infer the abstract schema [S V O] by realizing analogies between the two utterances. According to Gentner and Markman (1997): "Analogy occurs when comparisons exhibit a **high degree of relational similarity** with very **little attribute similarity**". So, we distinguish perceptual similarity (easier but less important) from relational similarity.

If children with specific language impairment (SLI) have **difficulties to detect relational similarity** between forms, we predicted **morphosyntactic disorders**, what would hinder their abstraction of construction schemas. Consequently, children with SLI would be **less productive** with their language and would use more **fixed linguistic forms**. Consequently, their morphosyntactic development would be slow down.

## GOAL AND PREDICTIONS

### Goal

To test performance of children with SLI to:

- a **linguistic (syllables)** analogical reasoning task
- a **non linguistic (pictures)** analogical reasoning task

### Predictions

- Children with SLI would preferentially use **perceptual similarity** rather than relational similarity to solve analogical reasoning tasks
- Children with SLI would have more difficulties to detect relational similarity between sequences when **perceptual cues decrease**

## METHODOLOGY

### PARTICIPANTS

- ◆ **20 children with SLI**
  - Aged from 8 to 11
  - Monolingual French speakers
  - QIP (WISC IV) > 82
  - Language skills below 1.25 SD from the mean in 2 or more of 5 language areas
  - No neurological or auditory disorders
- ◆ **20 children with NL**
  - No history of language disorders
  - Monolingual French speakers
  - Matched with children with SLI based on: (1) Chronological age; (2) IQ performance; (3) Sex; and (4) Socioeconomic background

### TASK

- ◆ Children have to **complete a test sequence** by choosing which picture among three others "**goes best**" in comparison with the **two reference sequences**.
- ◆ The **4 possible solutions** are linked to a touch of the keyboard.
- ◆ Placement of a **typing mask** (to avoid the child pressing an undesired key)



Illustration of the typing mask (non linguistic task)



Illustration of the typing mask (linguistic task)

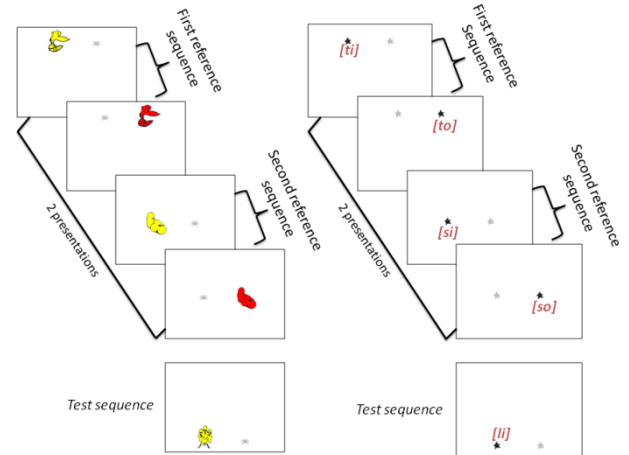


Illustration of the non linguistic task

Illustration of the linguistic task

## RESULTS

### Four variables:

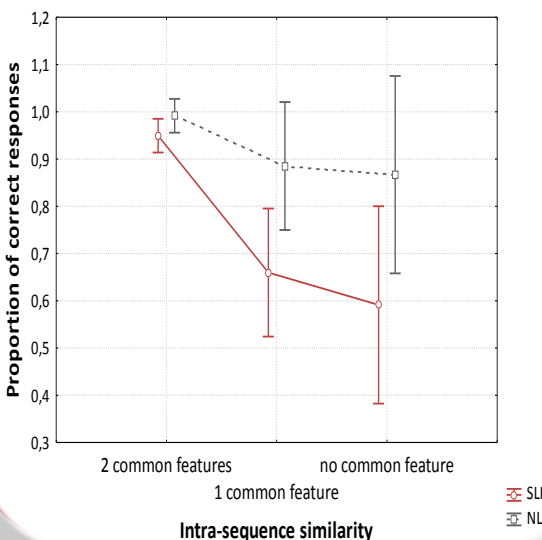
- ◆ **Group:** SLI vs NL
- ◆ **Modality:** linguistic vs non linguistic
- ◆ **Inter-sequences similarity:** with vs without
- ◆ **Intra-sequence similarity:** two vs one vs no common feature

### No significant interaction effect between:

- ◆ Modality - Group  
 $F(1,36) = 3.4, p > .05$
- ◆ Inter-sequences similarity - Group  
 $F(1,36) = 1.4, p > .05$

### Significant interaction effect between:

- ◆ Intra-sequence similarity - Group  
 $F(2,72) = 10.010, p < .001$



## DISCUSSION

- ◆ No significant difference of modality: difficulties **not specific to language**
- ◆ Children with SLI **more dependent on perceptual cues**, as well in non linguistic task as in linguistic task
- **Problem with detection of relational similarities** without perceptual cues
- **Generalization** from exemplars without perceptual similarity could be **difficult**, what could explain a slowed down morphosyntactic development
- ◆ Role plays by **working memory** and **inhibitory control** in analogical reasoning (Thibaut, French & Vezneva, 2010)