

# ANALOGICAL REASONING IN CHILDREN WITH SPECIFIC LANGUAGE IMPAIRMENT: EVIDENCE FROM A SCENE ANALOGY TASK

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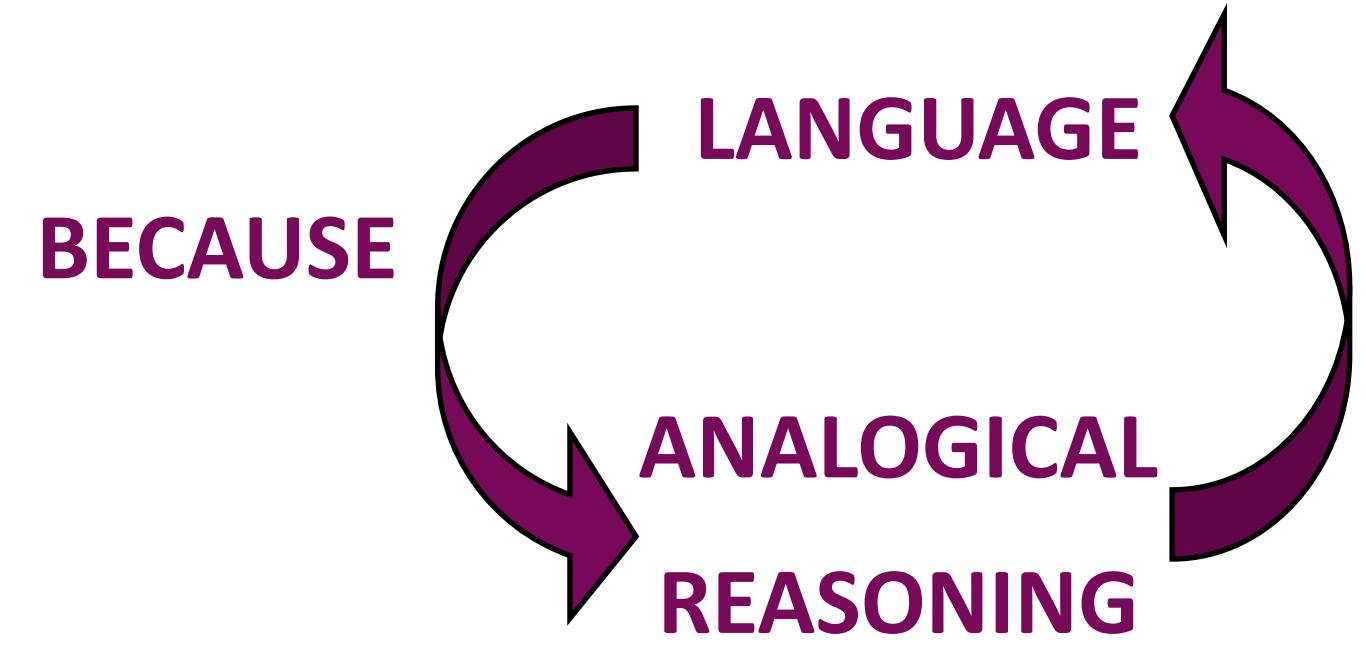
## INTRODUCTION

## BACKGROUND

- Analological reasoning develops through childhood along with the development of relational knowledge, working memory and inhibition (Richland, Morrison, & Holyoak, 2006).
- Analogical reasoning development also maintains a mutual influence with language acquisition: the use of relational labels helps to resolve analogical reasoning tasks (Christie & Gentner, 2014) while analogical reasoning enables the acquisition of new linguistic concepts or structures (Gentner & Namy, 2006).
- The link between analogical reasoning and language has driven some authors to examine the analogical reasoning ability of **children with specific language impairment (SLI)**: they seem to have poorer analogical reasoning performance than their age-matched peers without language disorders, what reinforces the idea of a link between language acquisition and analogical reasoning development (Leroy, Maillart, & Parisse, 2014).

## HYPOTHESES

Children with SLI < age-matched peers AND Children with SLI = or < language-matched peers



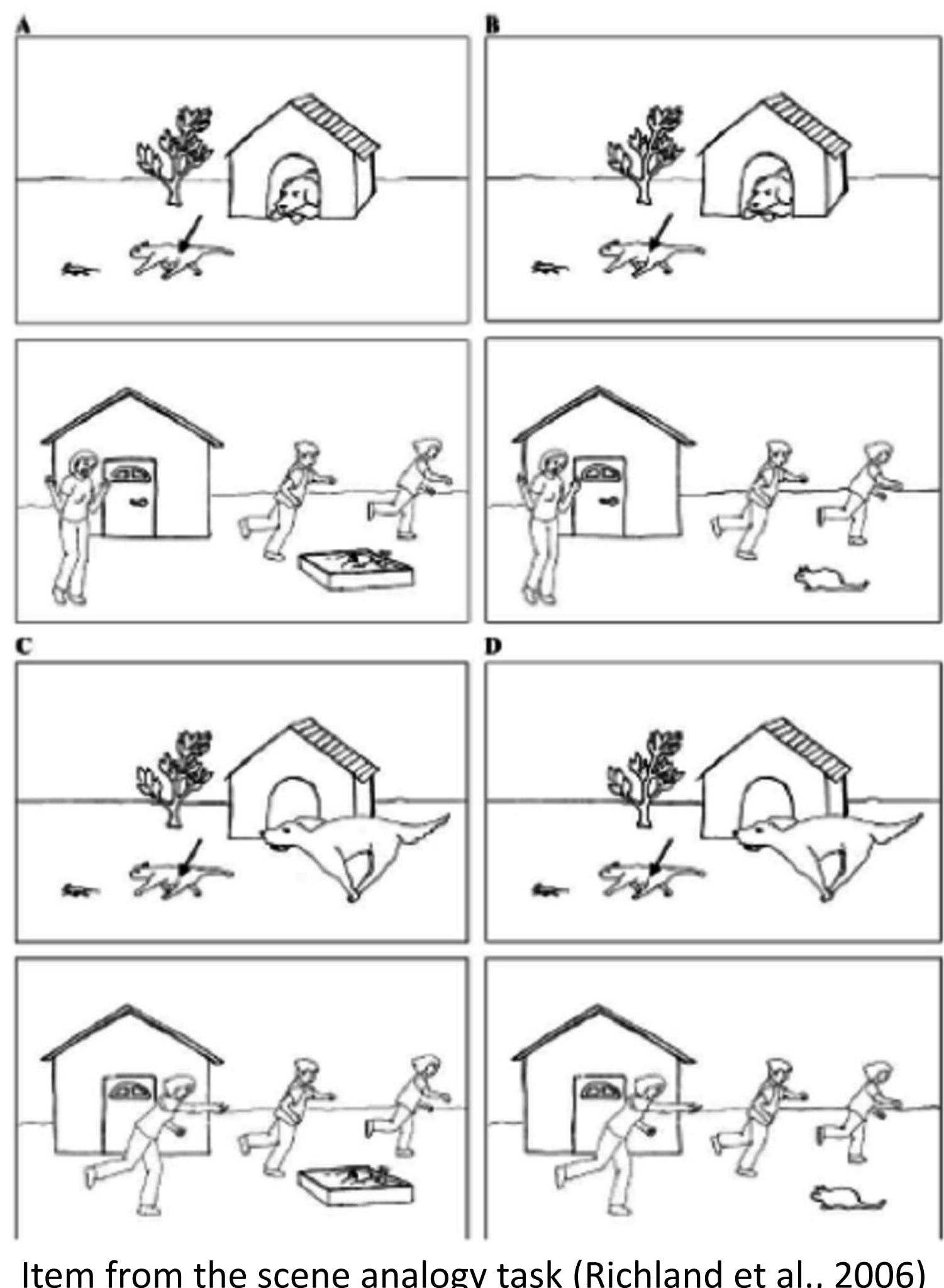
## METHOD

## PARTICIPANTS

- 20 French-speaking children with SLI (mean age=9;9 years old): non verbal IQ>82 (mean=95), at least 2 language components <-1.25σ, no neurological or auditory disorder.
- 18 French-speaking children matched in chronological age (mean age=9;7 years old) and non verbal IQ (mean=97) + 19 French-speaking children matched in linguistic age (mean age=7;2 years old) according to a sentence comprehension task (ECOSSE, Lecocq, 1996): no oral language disorder other than articulation disorder.

## MATERIAL

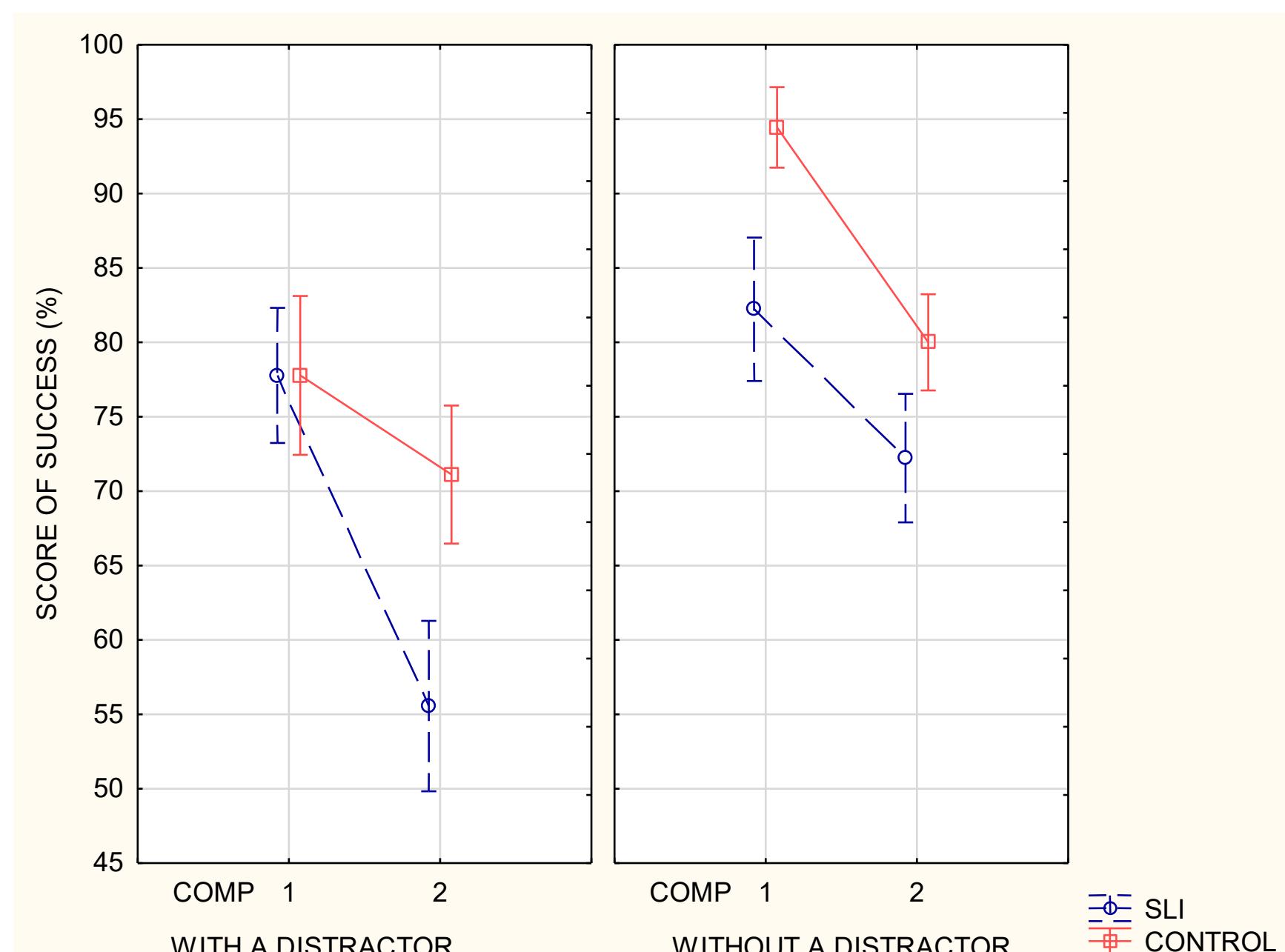
- A scene analogy task varying in the degree of relational complexity (2 or 3 elements in the relation) and in the presence or absence of a perceptual distractor (Richland et al., 2006).



Item from the scene analogy task (Richland et al., 2006)

## RESULTS

### CHRONOLOGICAL AGE MATCH

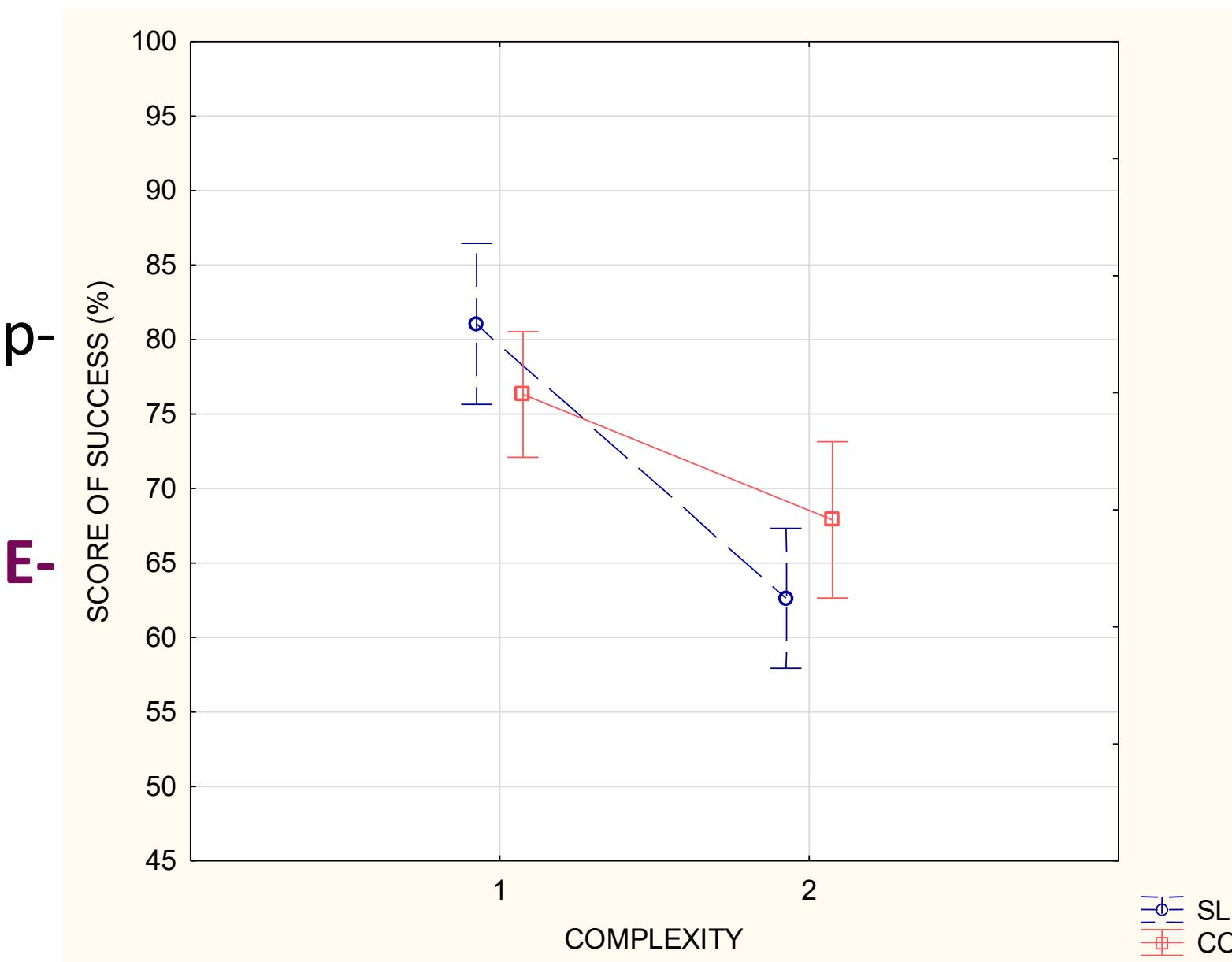


- Significant effects of relational complexity ( $F= 19.43, p< 0.001$ ) and perceptual distraction ( $F= 15.14, p< 0.01$ ).
- Significant effect of the group ( $F= 9.38, p< 0.01$ ): **SLI < AGE-MATCHED PEERS**.
- Trend toward a relational complexity\*perceptual distraction\*group interaction ( $F= 4.37, p= 0.05$ ).

Results of the analogical task according to the group, the presence or absence of a perceptual distractor and the degree of relational complexity for the chronological age match

### LINGUISTIC AGE MATCH

- Significant effects of relational complexity ( $F= 24.13, p< 0.01$ ) and perceptual distraction ( $F= 6.96, p< 0.05$ ).
- No significant effect of the group ( $F= 0.01, p> 0.1$ ): **SLI = LANGUAGE-MATCHED PEERS**.
- Trend toward a relational complexity\*group interaction ( $F= 3.89, p= 0.06$ ).



Results of the analogical task according to the group and the degree of relational complexity for the linguistic age match

## DISCUSSION

- Children with SLI have poorer results than their age-matched peers and have similar results to their language-matched peers in a scene analogy task. Their deficits in analogical reasoning could therefore be explained by their language disorders.
- However, according to the hypotheses of the usage-based model and the constructivist approach about language development (Tomasello, 2003), it is also possible that an analogical reasoning weakness causes the development of language disorders in SLI, and is responsible for the poor language productivity observed in those children (Jones & Conti-Ramsden, 1997).

This study confirms the difficulty that children with SLI have resolving an analogical task. It also confirms the existence of a link between analogical reasoning development and language acquisition, but the nature of this link should still be clarified.

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