Lexical acquisition, generalization and Bayesian inference in children with Developmental Language Disorders

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Introduction

- Children with **Developmental Language Disorders** (DLD) have difficulties in word learning (Kan & Windsor, 2010).
- Processes of **categorization** and **generalization** are required to make lexical acquisition efficient.
- **Bayesian theories of cognition** offer an interesting approach to study this phenomenon (Xu & Tenenbaum, 2007). These theories:
  - suppose that learning is the result of a strong mechanism of inductive inference, combining prior knowledge with environmental data ;
  - can account for fast and abstract acquisitions (Tenenbaum, Griffiths, & Kemp, 2006), which are hierarchically organized.

Aim

Our aim is twofold:

- Determining if children with DLD can *use prior knowledge* as efficiently as their typically developing peers when they learn new categories;
- Determining if children with DLD can make *inferences* (generalize) *at two levels of abstraction*.

Methods

- **Participants** :

DLD Children

- n = 23
- Functional impact: Special schools
- Severe language disorders
- Non Verbal IQ in the normal range

Control groups

- Age-matched children
- (Language-matched children)

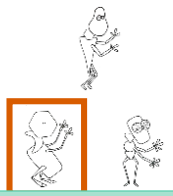
Descriptive Statistics

	QI	ELDP	RepMot	EVIP S	LexProd	ECOSSE	ProdE
Mean	93,27	-2,80	-7,90	82,05	-1,07	-2,08	-3,27
Std. Dev.	8,34	1,26	8,59	18,45	1,34	1,43	1,59

- **Procedure** :

Word/Category Learning Task

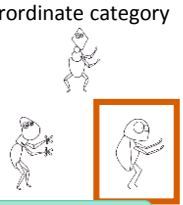
- 1st order inference
- Bias acquisition
- 20 items from 2 categories
- Stop after 5 RC



This is a « *mopi* ». Which one is another « *mopi* »?

Generalization Task

- 2nd order inference
- Generalization of the bias: extension to other members of the superordinate category

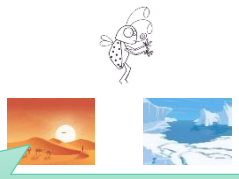


This is a « *duzon* ». Which one is another « *duzon* »?

"A large tongue is used to drink and stock water. It is stocked because it's really hot and dry outside."

Learning association Task

- How do children use their prior knowledge ?
- Physical characteristics associated with environment



This is a « *mopi* ». Where does « *mopi* » live?

Predictions

- In line with the hypothesis of a deficit of Bayesian inference, we expect that children with DLD:
  - would need **more presentations** before acquiring the two categories of the first task;
  - would **not be able to extend the bias** to other members of the category, or would perform worst than their peers;
  - would **less efficiently refer to their prior knowledge**, thus would have poorer results at the 3rd task.

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