

## Introduction

- Children with **Developmental Language Disorder (DLD)** cope with :
  - difficulty in **word learning** (Kan & Windsor, 2010);
  - limited processing resources (Im-Bolter, Johnson & Pascual-Leone, 2006).
- Categorisation and generalisation processes are involved in word learning.
  - The **rules (bias)** a learner has acquired could accelerate word learning and **help generalisation** (Perry et al., 2010);
    - Data emerge regarding how children with DLD organize their categories (Collisson et al., 2015; Krzemien et al., 2021) but need to go further
  - Generalisation can be defined as a multi-level process (Perry et al., 2010);
    - In line with this idea, **Bayesian learning** (Xu & Tenenbaum, 2007) allow abstract and hierarchical learning.

?

Can children with DLD learn and generalise categorisation rules by inductive inference at two levels of abstraction?

## Methods

- Participants

	DLD	TD children
n	26	20
age	7;0 to 12;11	7;5 to 12;4
NVIQ	93,30 (10,11)	98,63 (8,59)
Language profile	Severe DLD in special schools	OK

- Four-steps design

- 2 conditions:
  - Perceptually-defined features – e.g. number of legs
  - Relationally-defined features – e.g. spatial disposition of the small and big body parts

Learning task

1 feature

2 categories

Generalization

3 categories

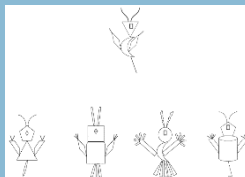
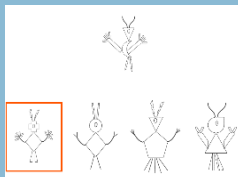
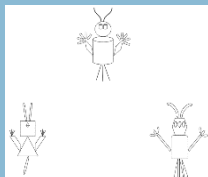
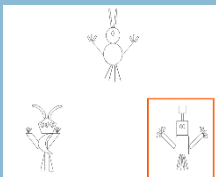
Learning task

2 features

2 categories \*  
2 subcategories

Generalization

2 categories \*  
2 subcategories



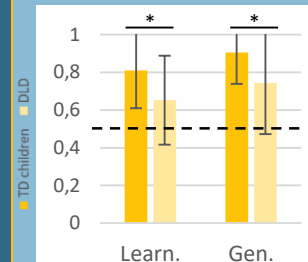
- Learning task: rule/bias acquisition (+feedback)
- Generalisation: category extension

## Results

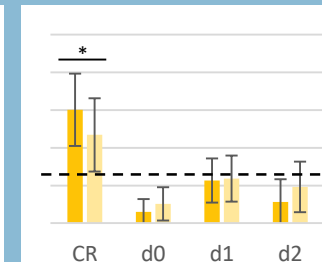
- Both groups perform above the level of chance for each step in each condition
- Group differences are noted for each step in each condition

### Perceptive condition

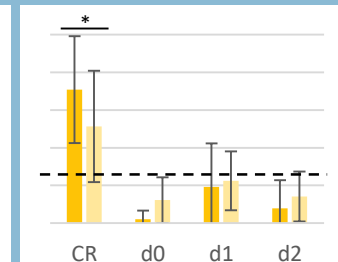
Correct responses (%) for 1 feature – Learning and Generalisation



Distribution of responses (%) for 2 features – Learning

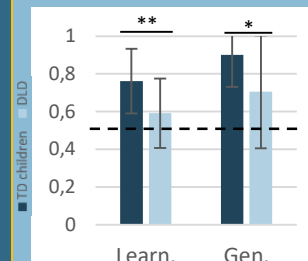


Distribution of responses (%) for 2 features – Generalisation

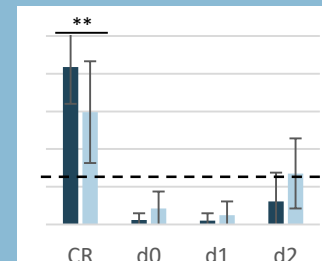


### Relational condition

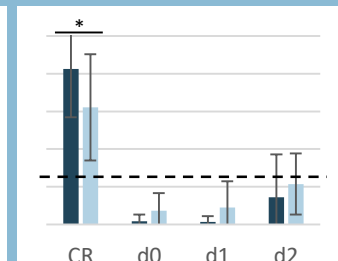
Correct responses (%) for 1 feature – Learning and Generalisation



Distribution of responses (%) for 2 features – Learning



Distribution of responses (%) for 2 features – Generalisation



CR = Correct Response; d0 = distractor; d1 = distractor feat.1; d2 = distractor feat.2

## Discussion

- Children with DLD **can learn**, but **to a lesser extent** than TD children
  - They might apply the rule less systematically, or TD children might continue to benefit from more exposure to the words
- All children increase their scores in the generalisation steps
  - Support from increasing the variability of the feature (Aguilar et al., 2018)
- Errors: still to be analysed
  - Relational: d2 is a more salient feature than d1
  - Linking results to executive functioning?

**References:** Aguilar, J. M., Plante, E., & Sandoval, M. (2018). Exemplar Variability Facilitates Retention of Word Learning by Children With Specific Language Impairment. *Language, Speech, and Hearing Services in Schools*, 49(1), 72-84. - Collisson, B. A., Grela, B., Spaulding, T., Rueckl, J. G., & Magnuson, J. S. (2015). Individual differences in the shape bias in preschool children with specific language impairment and typical language development : Theoretical and clinical implications. *Developmental Science*, 18(3), 373-388. - Im-Bolter, N., Johnson, J., & Pascual-Leone, J. (2006). Processing Limitations in Children With Specific Language Impairment : The Role of Executive Function. *Child Development*, 77(6), 1822-1841. - Kan, P. F., & Windsor, J. (2010). Word Learning in Children With Primary Language Impairment : A Meta-Analysis. *Journal of Speech Language and Hearing Research*, 53(3), 739. - Perry, L. K., Samuelson, L. K., Malloy, L. M., & Schiffer, R. N. (2010). Learn Locally, Think Globally : Exemplar Variability Supports Higher-Order Generalization and Word Learning. *Psychological Science*, 21(12), 1894-1902. - Xu, F., & Tenenbaum, J. B. (2007). Word learning as Bayesian inference. *Psychological Review*, 114(2), 245-272.