Distributional learning of visual object categories in children with and without DLD

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Does Condition (1/2) influence stimulus choice category organization = 0.007.
Participants in tokens conditions +/Chládkova token D2 more than whether
Is there an interaction between Condition x Group (DLD/TD)?
et al. (2018) pps formation one learning
Distributional learning D2 trial.
Chládkova No evidence for or against a relationship between visual distributional learning on 8 minutes) 25 TD with developmental
test in children with and without DLD. Unpublished manuscript.
Chládkova et al., 2002
Children in Condition 1 were significantly more likely to choose stimulus D2 than children in Condition 2: z = 2.758, p = 0.006. However, there was no significant effect of Group: z = 0.007, p = 0.994.
Familiarization condition significantly influences whether viewers prefer the combination S + D1 or S + D2. No evidence for a difference between children with and without DLD.

METHOD: FAMILIARIZATION PHASE
Based on Junge et al. (2018) and Chládkova et al. (2020).

- An 11-step novel object continuum was constructed
- Participants were familiarized with tokens from the continuum (288 tokens in total, duration +/- 8 minutes)
  - Two learning conditions: distributional peaks at different positions in the continuum
    > Between-participant design: PPs did one of two familiarization conditions

Hypotheses
PPs in Condition 1 learn that tokens S and D2 belong to one category
PPs in Condition 2 learn that tokens S and D1 belong to one category

METHOD: TEST PHASE

- Eight 2A-FC test questions
  - Does token D1 or D2 look more like token S?

Predictions
- PPs in Condition 1 will choose token D1 more often than pps in Condition 2
- Children with DLD will show a weaker effect of Condition than TD children

RESULTS
A generalized logistic linear mixed effect model in R was constructed to test:
- Is there an interaction between Condition x Group (DLD/TD)?

Children in Condition 1 were significantly more likely to choose stimulus D2 than children in Condition 2: z = 2.758, p = 0.006. However, there was no significant effect of Group: z = 0.007, p = 0.994.
Familiarization condition significantly influences whether viewers prefer the combination S + D1 or S + D2. No evidence for a difference between children with and without DLD.
Linear regression analyses showed no significant relationships between visual distributional learning lexical knowledge in children with DLD.

DISCUSSION
- Familiarization condition significantly influenced our participants’ preference for the combination S and token D1 or D2, indicating that distributional properties of the input influence the categorization of visual stimuli
- No evidence for or against a visual distributional learning deficit in children with DLD (see also Lammertink et al., 2020)
- No evidence for or against a relationship between visual distributional learning and lexical knowledge in children with DLD
- There seems to be an inherent preference for the combination S + D1. Perhaps the visual continuum should be changed in future studies

REFERENCES

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