Dynamics in the early lexicon: Individual differences in word learning

Lena Ackermann[1,2], Robert Hepach[3], & Nivedita Mani[1,2]

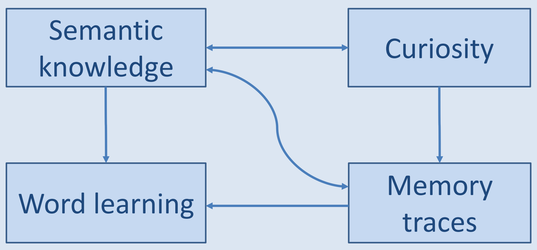
[1] Göttingen University (Germany), [2]Leibniz ScienceCampus Primate Cognition (Göttingen, Germany), [3]Leipzig University (Germany)

Introduction

- We find considerable individual differences in early vocabularies – why?
- Input clearly shapes what a child will learn, but it alone cannot account for the variance we observe
- Recent approaches to word learning place the child in a more active role, highlighting the role of her curiosity towards objects in her environment [1]
- Dynamic theories of word learning emphasize the role of memory traces
- If children solicit information based on their interests [2, 3], memory traces could accumulate faster for items and categories the child is curious about

Research Questions

- How do curiosity and previous semantic knowledge interact in early word learning?
- We hypothesize that curiosity leads to a faster build-up of memory traces, which facilitates the acquisition of new word-object-associations (WOAs)
- Previous research [4] has shown that children more readily learn new WOAs from densely structured semantic domains, i.e. broad categories



Eyetracking Study

Participants

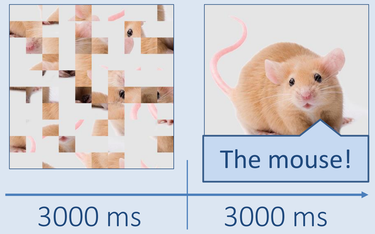
30-months-old German-learning infants (n = 40, M_{age} = 29 m 18 d; 22 f)

Stimuli

- 16 photos of familiar objects from two and two broad categories
- 4 novel objects, one from each category

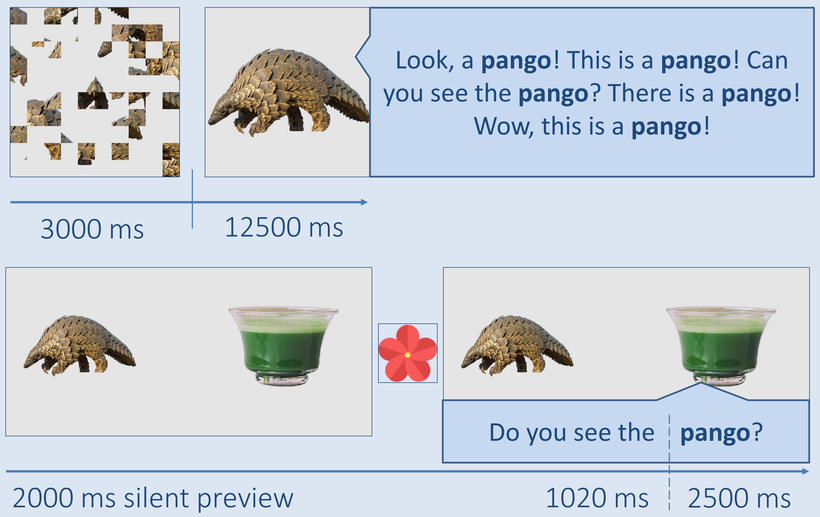
Object presentation phase

- Blockwise presentation of 16 familiar objects and their labels
- Change in pupil dilation from scrambled to unscrambled image is measured as an index of curiosity [5]

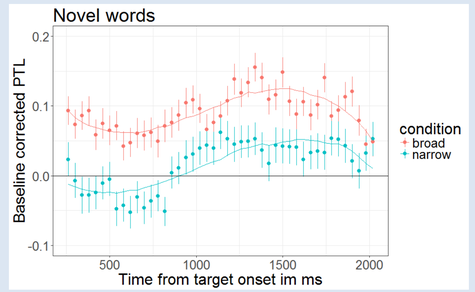


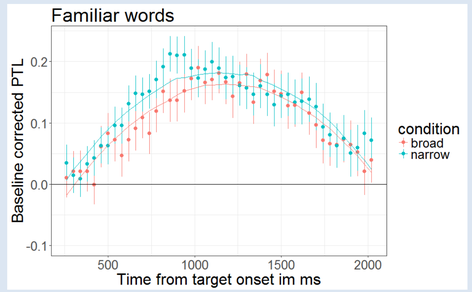
Interleaved learning and test phase

- Presentation of 2x2 novel objects (10 naming events per object)
- Followed by 8 word recognition trials (4 familiar, 4 novel)



Results



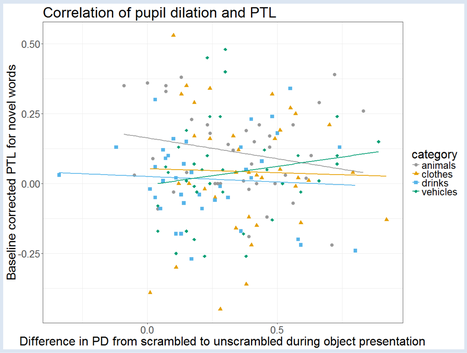


Broad vs. narrow categories

- Growth curve analysis [6] was used to analyze proportion of target looking (PTL) as a function of time
- Familiar words from narrow categories were recognised faster
- Newly learnt words from broad categories were recognised faster

Pupil dilation

- No significant correlation between difference in pupil dilation during object presentation and PTL during test phase (Pearson's r = 0.049, p = 0.88)



Discussion

- Word recognition is boosted in narrow categories relative to broad categories
- This might be due to greater interference effects in densely structured categories
- Word learning is more robust in broad categories, which is consistent with previous findings [4]
- Developmental dynamics might help us better understand how curiosity and knowledge interact in word learning

References

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Contact & Materials

lackerm2@gwdg.de
Materials on OSF