

How does language experience support language development? Short-term priming and long-term learning?



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Background

Syntactic priming occurs where children and adults reuse sentence structures that they have recently heard, instead of a suitable alternative (Bock, 1986).

E.g. the likelihood of using a passive is higher after hearing passive vs active sentences.

Long-term priming effects in adults (Bock & Griffin, 2000) suggest that priming reflects implicit learning based on the same mechanisms as children's language learning (Chang, Dell & Bock, 2006).

Research questions

- 1. Do children show long-term priming effects suggesting that experience of a structure leads to syntactic learning?
- 2. How does this compare to adults are children more susceptible to syntactic experience (Chang, et al., 2006)?

Existing Evidence

Branigan & Messenger (2016) found that children (3;4 -4:10 years) produced more target structures in Session 2, one week after Session 1 but adults produced equivalent target structures in both sessions.

This suggests that children learn from experience while priming in adults does not lead to long-term learning.

Aims

We aim to replicate and extend Branigan & Messenger's (2016) study and examine:

- patterns of learning at specific points in development individual variation within age groups
- Our experiments examine the timecourse of experiencebased effects for noun structures (Expt 1) and verb structures (Expt 2) in children at different stages of acquisition and a comparison adult group.
- We investigate immediate priming and short-term learning (cumulative priming) within a session, and longer-term effects in a session 1 week later.

Design

Both experiments have:

- 2 x 2 x 3 designs (Prime structure, within-participants; Experiment session: 1st vs 2nd, within-participants; Age group, between-participants).
- 48 prime-target trials and 8 filler trials per session

Procedure

Participant and experimenter alternate describing pictures in a turn-taking 'Snap' task in two sessions 1 week apart (6-9 days) (Branigan & Messenger, 2016).



Participant's description = target response



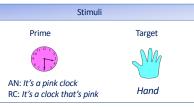
Syntactic priming of noun phrase structure (adjective noun phrases [AN] vs relative clauses [RC])

Target structure = RC

N = 132 half of each age group tested in Edinburgh and half in Warwickshire

So far, we have tested:

- 7/44 children mean age 3.0, range 2;9 3;3 years
- 39/44 children mean age 4.5, range 4;3-4;8 years • 36/44 adults



Experiment 2: Priming of Verb Phrases

Priming of phrase structure (actives vs passives)

Target structure = Passive

N = 132 half of each age group tested in Edinburgh and half in Warwickshire

So far. we have tested:

- 17/44 children mean age 3.5, range 3;3 3;8 years
- 33/44 children mean age 5.5, range 5;3 5;8 years

Stimuli

41/44 adults



Prime Active: The dog is patting the king Passive: The king is being patted by the dog

> Target 'scratching

Planned Analysis

- 2x2x3 mixed effects models to calculate the mean proportion of RC and passive targets following RC vs AN primes and active vs passive primes respectively, in each session.
- Fixed effects = prime structure, session, age
- Random effects = participant, item

References

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 Branigan, H. P., & Messenger, K. (2016). Consistent and cumulative effects of syntactic experience in children's sentence production: Evidence for error-based implicit learning. Cognition, 157, 250-256
- Chang, F., Dell, G. S., & Bock, K. (2006). Becoming syntactic. Psychological review, 113(2), 234.



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Website: www.blogs.ed.ac.uk/leadproject. Email: warksgroup@warwick.ac.uk with "LEaD Project" as subject. Twitter: @LEADProject2



- · Stronger priming in children vs adults may indicate error-based learning as children are less familiar with RC and passive constructions than adults.
- Stronger priming in 4.5-year-olds as compared to 3year-olds may reflect their ability to better produce well-formed RCs. Many 3-year-olds produced structures like it's a cat what's pink.

At present, the means show: immediate priming in all immediate priming in all age groups as participants produced more passives after passive vs active prime

3.5 5.5 Adult

Experiment 1: Preliminary Results

Mean percentage of RC targets produced by participants in each session, prime condition and age group (SE in error bars)

immediate priming in all age groups as participants produced more RC targets after RC vs AN primes.

no difference in priming across sessions for 3-year-olds and adults and decreased priming in session 2 for 4.5-year-olds.

3-year-olds produced 5% more RCs in session 2 but older participants produced equal numbers of RCs across sessions, independently of prime structure.

greater priming in children vs adults with 4.5-year-olds showing the largest

Experiment 2: Preliminary Results

d age group (SE in error

Experiment 2: mean percentage of passive targets produced by participants in each session, prime condition and age group (SI

Figure 1

40

At present, the means show

iming effects

Figure 2

bars)

- slightly larger priming effects in children as compared to adults but relatively equal priming rates between 3.5 and 5.5-year-olds.
- less priming in session 2 than in session 1 for all age groups.
- 3.5-year-olds produced equal numbers of passives across sessions, but older participants produced fewer passives in session 2 (5% for 5.5-year-olds and 7% for adults)

Implications

