

Leone Buckle<sup>a\*</sup>, Katherine Messenger<sup>a</sup>, Holly Branigan<sup>b</sup>, Laura Lindsay<sup>b</sup> and Gemma Catchpole<sup>b</sup>

<sup>a</sup> University of Warwick    <sup>b</sup> University of Edinburgh

\*Leone.Buckle@warwick.ac.uk

### 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 experience-based 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).

Experimenter's description = prime  
Participant's description = target response

### Experiment 1: Priming of Noun Phrases

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

### Stimuli

Prime	Target
AN: It's a pink clock	RC: It's a clock that's pink
	Hand

### 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
- 41/44 adults

### Stimuli

Prime	Target
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

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### Experiment 1: Preliminary Results

**Figure 1**  
Mean percentage of RC targets produced by participants in each session, prime condition and age group (SE in error bars)

At present, the means show:

- immediate priming in all age groups as participants produced more RC targets after RC vs AN primes.
- greater priming in children vs adults with 4.5-year-olds showing the largest priming effects.
- 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.

### Experiment 2: Preliminary Results

**Figure 2**  
Experiment 2: mean percentage of passive targets produced by participants in each session, prime condition and age group (SE in error bars)

At present, the means show:

- immediate priming in all age groups as participants produced more passives after passive vs active primes.
- 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 1 than in session 2 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

- 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 3-year-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*.

