

Cross-sectional evidence of morphological decomposition

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Background and Aims

Morphological knowledge can potentially play an important role in vocabulary acquisition, but to what extent are readers of different ages sensitive to the morphological structure of complex words?

- Morphological problem-solving (Anglin, 1993) can help account for the learning of new vocabulary in the absence of explicit instruction (Bowers & Kirby, 2010).



- In order to capitalise on these consistencies across words, a reader must first recognise the constituent morphemes of a complex word.



- The process of breaking a word down into its morphological components is known as **morphological decomposition**.

- Evidence that this occurs in visual word recognition prior to lexical access comes from the **morpheme interference effect** (Taft & Forster, 1975), whereby nonwords with a morphological structure are more difficult to reject as words than nonwords with a nonmorphological structure.

- This finding has been replicated many times with adults: In lexical decision tasks, participants are less accurate and slower to reject a nonword containing a real suffix compared to a nonword with a nonmorphological ending (e.g., Crepaldi et al., 2010)



- There is some evidence that developing readers also show a morpheme interference effect (Burani et al., 2002; Casalis et al., 2015), but findings are limited.

The aims of the current study were to:

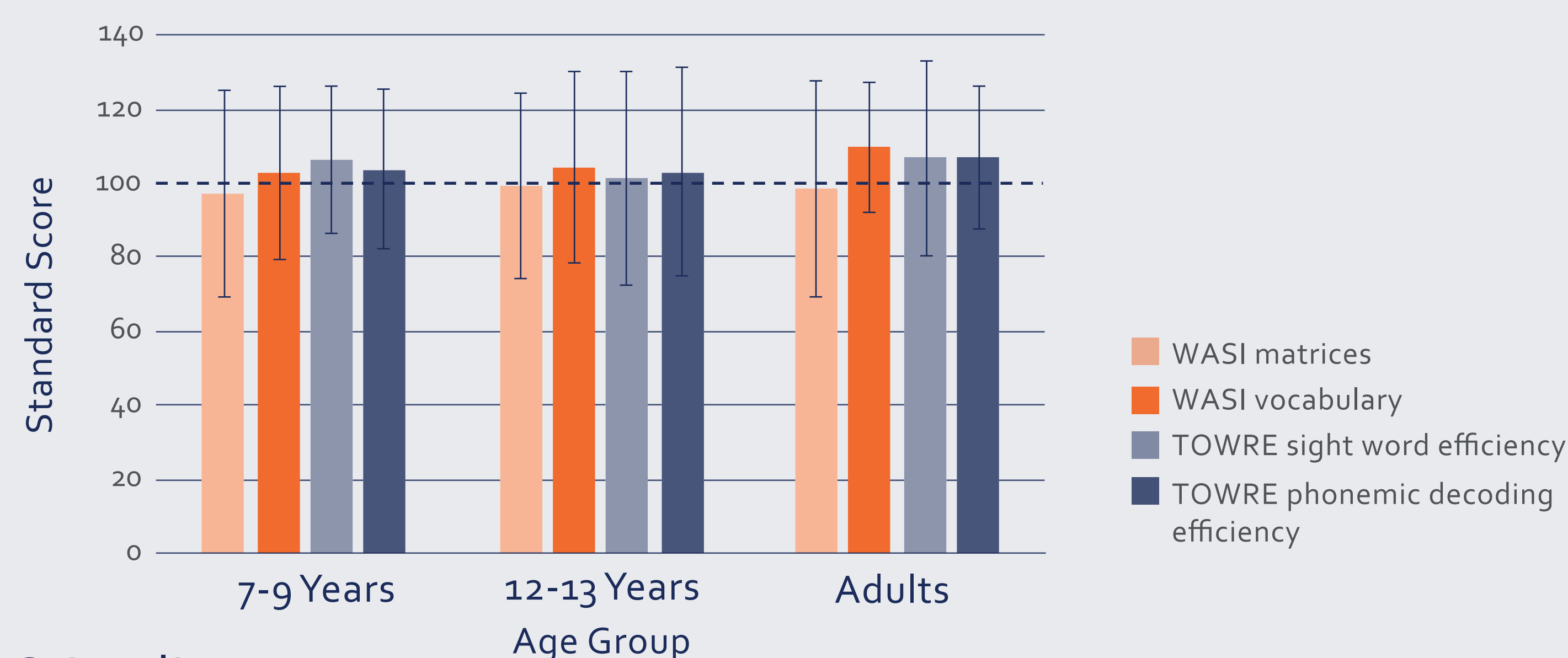
- 1 Replicate findings from previous studies with adults that show lower accuracy and longer reaction times in lexical decision tasks for nonwords containing real suffix endings.
- 2 Investigate whether less developed readers (children and adolescents) show a similar morpheme interference effect, providing evidence of morphological decomposition during visual word recognition.

Methods

Participants

- Fifty 7-9 year olds (M age = 8.39 years; SD = .58)
- Thirty-seven 12-13 year olds (M age = 12.67, SD = .31)
- Forty-three adults (M age = 19.22, SD = 1.97)

Standard scores on background measures by age group ($M \pm SD$)



Stimuli

- 120 items split across 4 conditions:



- Items were matched on number of letters, syllables, summed log bigram frequency and number of orthographic neighbours (Crepaldi et al., 2010)

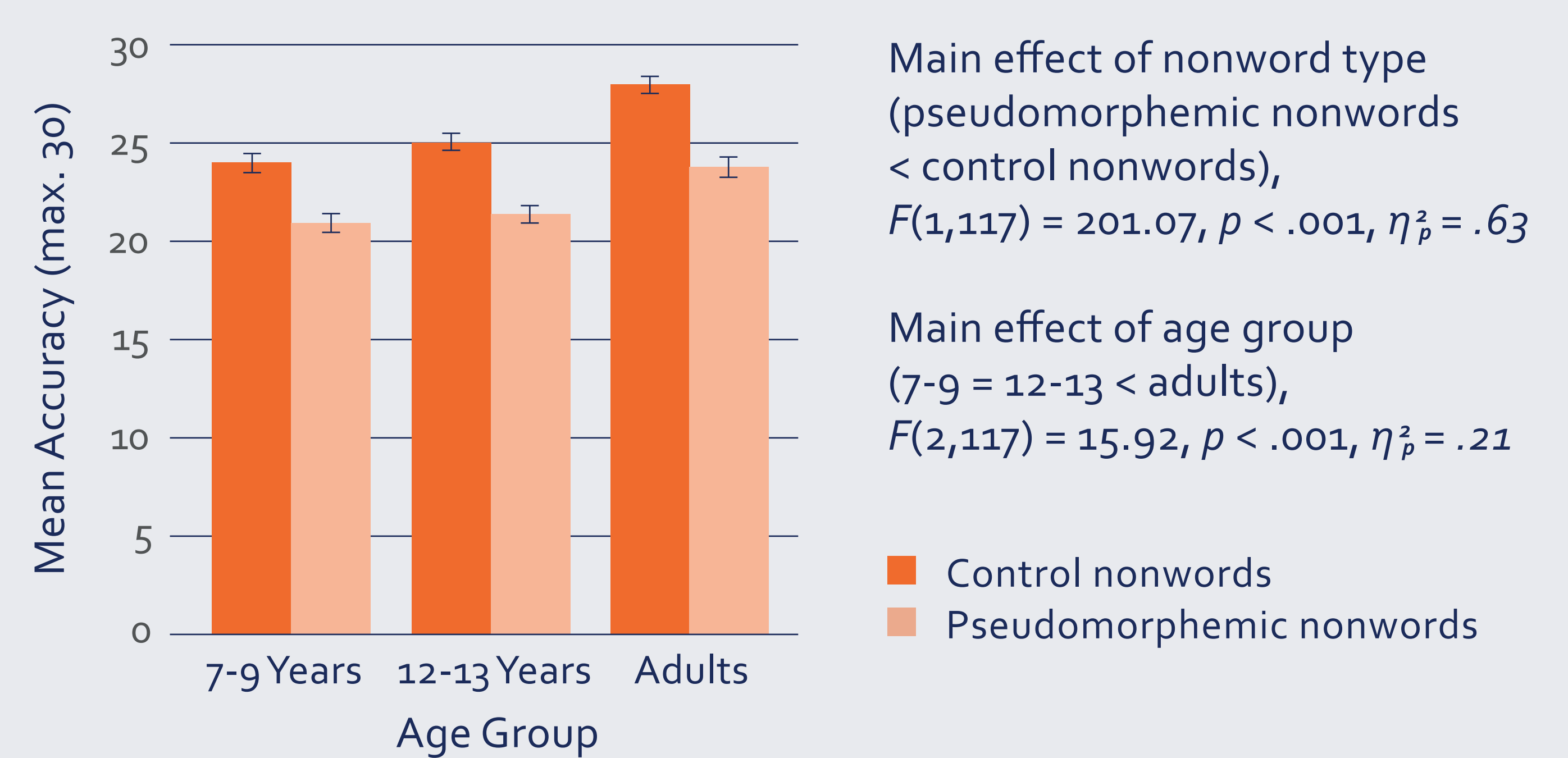
Procedure

- Participants completed a timed lexical decision task.
- For each trial, a fixation cross was presented for 1000 ms followed by the target item. Participants were instructed to respond as quickly as possible.
- Measures of accuracy and reaction time were recorded.

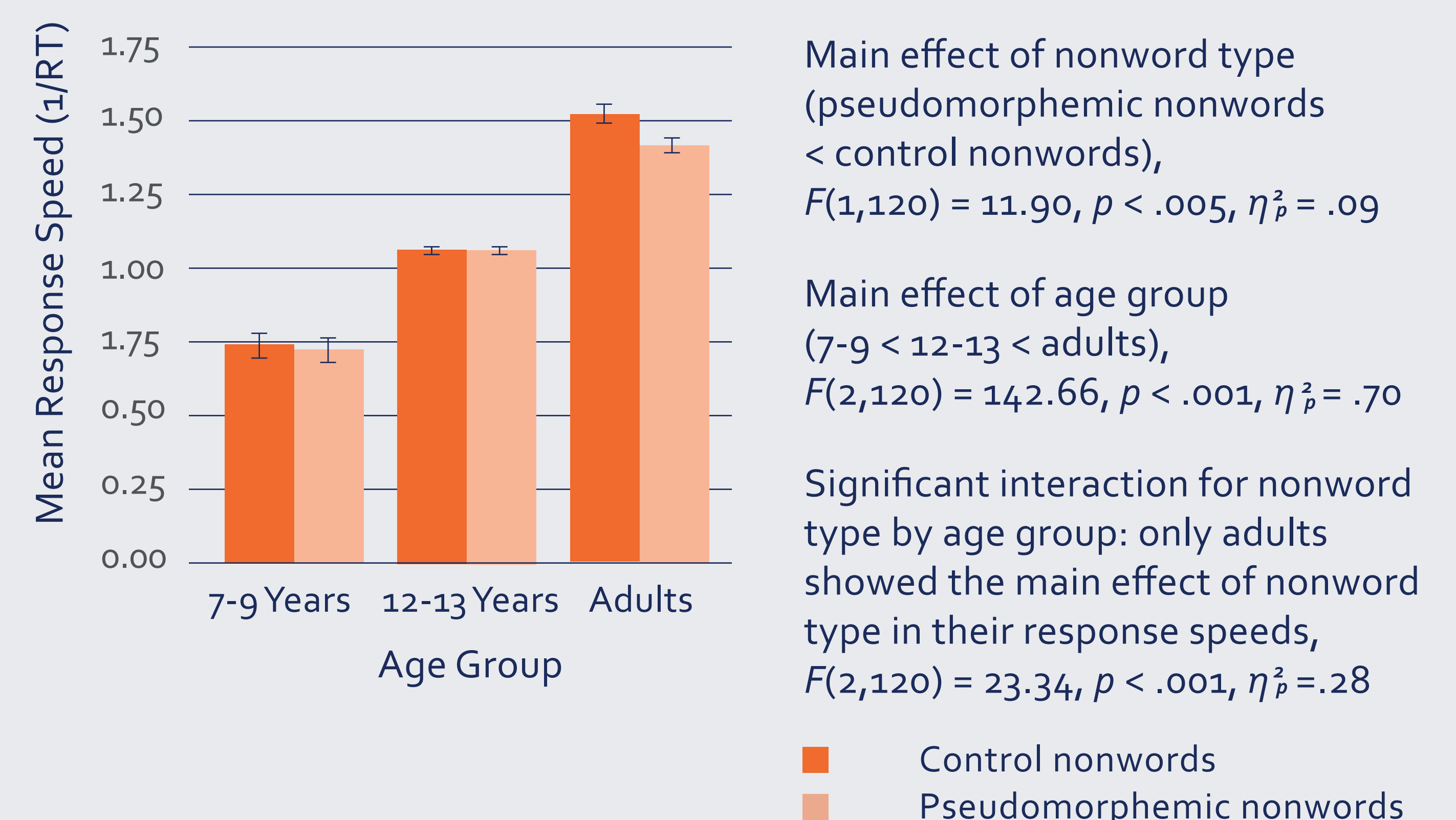
Results

A 3 x 2 ANOVA with age (7-9 years vs. 12-13 years vs. adults) as a between-subjects factor and nonword type (pseudomorphemic vs. control) as a within-subjects factor was carried out. Separate analyses were run with accuracy and speed as the dependent variables.

Average accuracy by nonword type and age group ($M \pm SE$)



Average response speed by nonword type and age group ($M \pm SE$)



Summary

- Participants in each age group were less accurate in rejecting pseudomorphemic nonwords than control nonwords, providing evidence of morphological decomposition in visual word recognition across three different stages of reading development.
- Overall, adults were more accurate in rejecting nonwords than 7-9 and 12-13 year olds.
- As has been found in previous studies (e.g., Crepaldi et al.), adult participants were slower in rejecting pseudomorphemic nonwords than control nonwords. However, this effect did not emerge for the younger age groups.
- Overall, response speeds were faster for adults than for 12-13 year olds, and faster for 12-13 year olds than for 7-9 year olds.

Conclusion

- This study replicates previous findings from adult studies, and provides further evidence that children as young as 7-9 years old are sensitive to morphological structure and decompose morphologically-structured letter strings during online lexical processing.

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