

Age and linguistic complexity in child second language acquisition

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The goal of this study was to determine the impact of internal (age/memory) and external (length of exposure, LoE henceforth) factors in predicting comprehension of sentence structures, ranging in complexity, in child second language acquisition (cL2).

CL2 allows the measurement of age effects at different stages of maturation while accounting for factors known to strongly impact language acquisition, such as LoE. In early childhood, developmental phases are linked with constraints on cognitive properties such as attention, memory and analytical reasoning, which affect processing and interpretation of complex sentence structures, such as those containing embedded clauses and/or non-canonical forms [1].

Recent research [2] [3] investigating age effects on acquisition of complex structures have found an advantage for older L2 children. However, the studies' task designs include: a picture selection format which may have increased burden on processing [2]; and elicitation, which may favour more naturally extroverted children [3]. Both studies focused on one type of complex structure—passives, and 2-clause structures, respectively.

The present study measured comprehension of 4 sentence structures ranging in complexity: active voice and subject relative clauses (canonical order); and passive voice and object relative clauses (non-canonical order).

The experimental design comprised a simple and interactive colouring task to reduce processing costs and age bias [4]. Children saw a picture on a touchscreen PC (Fig1), followed by a test sentence (1-4) and then coloured in the picture based on the sentence.

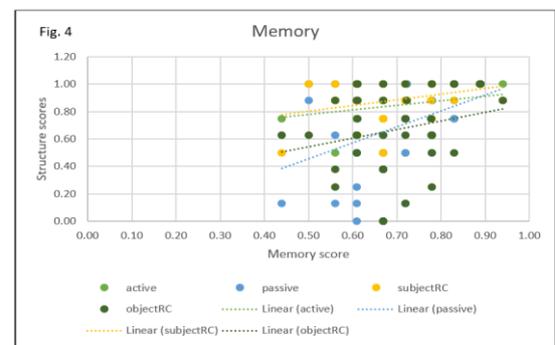
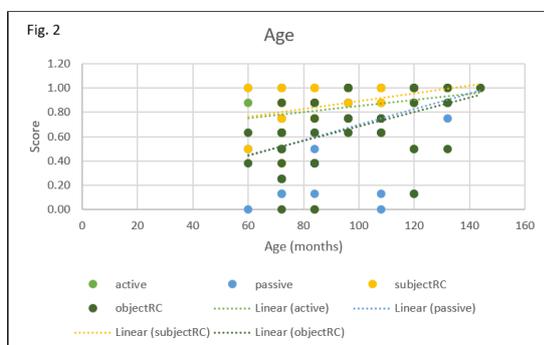
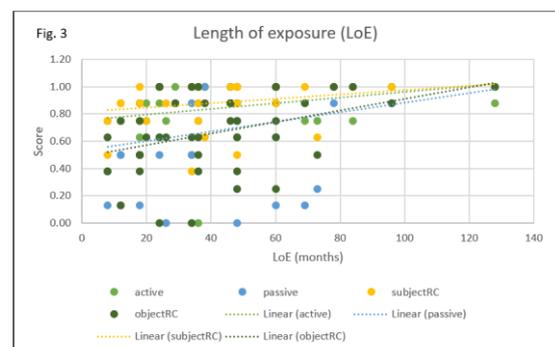
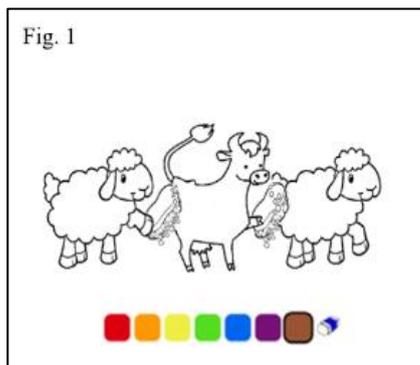
A randomised 8 x 8 sentence design for each set of structures (active/passive; subject/object relative clauses) was used, alternated by fillers (5). Factors were age, LoE, and memory (between subjects), and structures (passive voice and relative clause, within subjects) and complexity (non-complex and complex, within subjects).

41 cL2 Arabic-speakers acquiring L2 English and ranging in age from 5 to 12 years old, participated in the study alongside 38 age-matched monolingual controls.

A regression analysis using participant averages for each variable revealed a positive association for all factors (age, LoE and memory) on the comprehension of the non-canonical forms (passive voice and object relative clauses) (Figs. 2-4), with age (Fig. 2) and memory (Fig. 4) more robust predictors than LoE (Fig. 3). Comprehension of canonical forms (active voice and subject relative clauses) did not show a positive correlation for any factors.

Results suggest that processing and interpretation of complex linguistic structures involving non-canonical forms, require the more advanced cognitive ability and higher memory capacity associated with older children.

- (1) Ok, so in this picture there's a sheep, a cow, and another sheep. Let's choose a colour now. The cow washed the <colour> sheep.
- (2) Ok, so in this picture there's a sheep, a cow, and another sheep. Let's choose a colour now. The cow was washed by the <colour> sheep.
- (3) Ok, so in this picture there's a sheep, a cow, and another sheep. Let's choose a colour now. Something here is <colour>. Oh look, it's the sheep that washed the cow.
- (4) Ok, so in this picture there's a sheep, a cow, and another sheep. Let's choose a colour now. Something here is <colour>. Oh look, it's the sheep that the cow washed.
- (5) Ok, so in this picture there's a donkey, a dolphin, and a kangaroo. Let's choose a colour now. Something here is <colour>. Oh look, it drove a bus.



References

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