

A comparison of relative clause production between Chinese and German children

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Typologically, relative clauses (RC) can be divided into two types, prenominal RCs and postnominal RCs. Previous studies on the acquisition and processing of postnominal RCs, such as in German, have consistently pointed to an advantage of subject RCs (SRC) ^{[1][2]}, whereas studies on prenominal RCs as in Chinese have provided evidence for both an SRC and an object RC (ORC) advantage ^{[3][4]}. Furthermore, RC processing difficulty is modulated by the animacy of the head noun (HN) and the embedded noun (EN), which has been investigated primarily in studies on adult RC comprehension ^{[5][6]}. In the current study, we compared RC production between Chinese and German children with the manipulation of RC type and animacy configuration.

Participants were 52 Chinese children and 55 German children, who formed 4 age groups (age 3, 4, 5, 6). The task was to verbally distinguish between two referents as a response to a question asked by a native speaker experimenter (E). Before each question, E introduced the referents (line drawings) as HN of two SRCs (e.g., “*This is the bear that eats the apple/peach.*”), or two ORCs (e.g., “*This is the apple that the bear/rabbit eats.*”). E then asked “*Which bear/apple is this?*” pointing to the bear/apple (Fig. 1). There were 32 critical items, 50% targeting SRC, 50% targeting ORC. Across conditions, one quarter of the materials used the preferred animacy configuration (SRC: EN=inanimate, HN=animate; ORC: EN=animate, HN=inanimate), the other three quarters used the dispreferred pattern (both N animate in both RC types). 32 fillers were added; items were randomized. Responses were coded for accuracy and error type. A GLMM was used to evaluate response accuracy (yes/no) as a function of language, age group, RC type, animacy configuration, and their interaction.

Across all age groups, Chinese children produced more correct target RCs than German children. Pairwise comparisons revealed that in both Chinese and German, children gave significantly more correct target responses in the SRC than in the ORC condition, and the preferred animacy configuration resulted in significantly more correct target responses than the dispreferred pattern (Fig. 2). Regarding errors, Chinese children relied on an identical replacement strategy of omitting the RC-internal verb resulting in a genitive construction in both the SRC and ORC condition. German children most frequently converted ORC to SRC and produced a much smaller proportion of errors in the SRC than in the ORC condition.

This study evidences a language-general advantage for SRC and the preferred animacy pattern, which can be attributed to a higher frequency of SRC use in the input in both languages^{[7][8]} and lower semantic interference with contrasting referent animacy^[9]. Differences regarding errors and the different developmental trajectory reflect language-specific features of RCs. The earlier acquisition by Chinese children may be due to the DE construction (X DE Y), which is consistently used across all types of noun-modification (adjective, genitive, RC). In comparison, German lacks such a similarity between RC and other noun modification structures. To produce RC, German children must process several cues such as word order, case marking and animacy simultaneously, which places a high demand on children's working memory. As a result, RC acquisition is delayed in German relative to Chinese.

Fig. 1:
Progression
of one trial

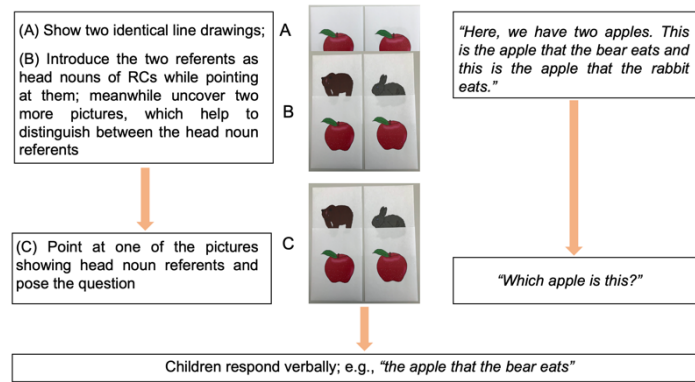
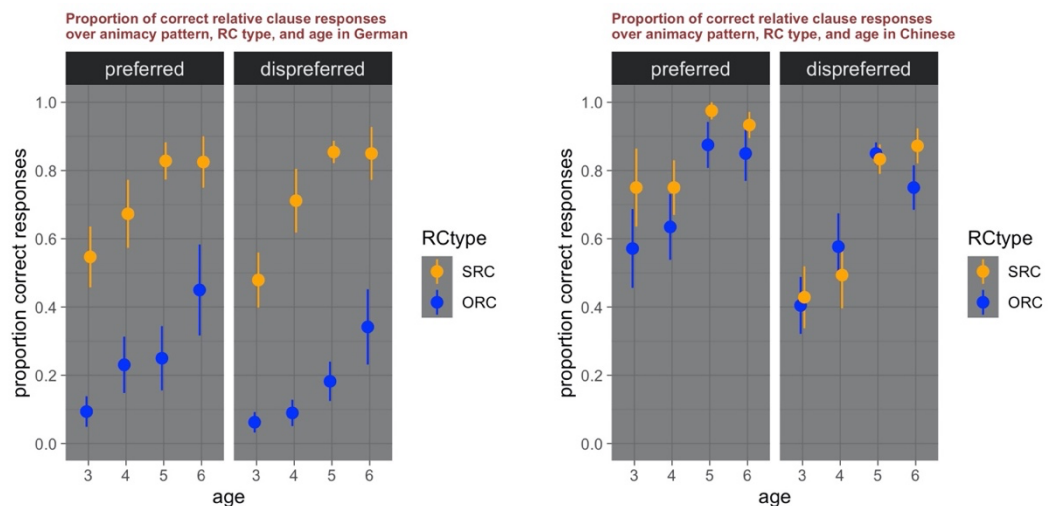


Fig. 2:
Results



References

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**German
Stimuli
example**

<i>Example stimuli used in the German experiment (the case marking on the determiner and the relative pronoun indicates the syntactic function of a noun. Here, two masculines were used, the case marking "der" marks the nominative and "den" marks the accusative.)</i>			
construction	example	word order	preferred animacy configuration
SRC	der Bär (HN), der den Apfel (EN) frisst the bear relative pronoun the apple eat the bear that eats the apple	S-O-V	EN: inanimate HN: animate
ORC	Der Apfel (HN), den der Bär (EN) frisst the apple relative pronoun the bear eat the apple that the bear eats	O-S-V	EN: animate HN: inanimate

**Chinese
Stimuli
example**

<i>Example stimuli used in the Chinese experiment ("de" = RC and genitive marker)</i>			
construction	example	word order	preferred animacy configuration
SRC	chi pingguo (EN) de xiong (HN) eat apple bear the bear that eats the apple	V-O-de-S	EN: inanimate HN: animate
ORC	xiong (EN) chi de pingguo (HN) bear eat apple the apple that the bear eats	S-V-de-O	EN: animate HN: inanimate
<i>For comparison only, examples for Chinese genitive construction</i>			
construction	example	word order	
genitive	xiong de pingguo bear apple the bear's apple	N-de-N	