Eye-tracking evidence for the role of linear distance and structural distance in processing resumptives in Mandarin relative clauses

**Background.** Resumptive pronouns have been taken as a grammatical device that saves the ungrammaticality (e.g., Empty Category Principle in McDaniel & Cowart (1999); unextractability in McKee & McDaniel (2001)). Other than the grammaticality saving function, resumptives in general are disallowed in relativization or wh-questions. However, resumptives in English are preferred over gaps when the fillers are linearly far apart (working memory limitations and distance effect) or structurally high above (embedding effect) (Dickey, 1996, Alexopoulou & Keller, 2002, 2003, 2007). While adults accept resumptives only in unextractable sites (e.g., *the lion that Grover doesn’t know what (it) ate*), children accept resumptives even in extractable positions when the resumptive pronoun is distant from the head noun (e.g., *pick up the cat that Goofy is petting (it)*) (McKee & McDaniel, 2001). In other words, resumptives can assist comprehension of longer filler-gap relations. In this study, we investigate whether a resumptive pronoun may become more acceptable and comprehensible in Mandarin when its position is farther away from the head noun and when the relative clause structure becomes more complex.

**Method.** We tracked eye movements while reading Chinese sentences to investigate whether these preferences for resumptives would also occur in Mandarin relative clauses, which involve a head-final structure ("gap-filler" instead of "filler-gap" relation) with gaps more common than resumptives. We examined subject relative clauses (SRCs) and object relative clauses (ORCs) in Mandarin and lengthened the distance between gap/resumption and head noun by adding adverbials right after gap/resumption. This led to two (SRC, ORC) sets of 2 (short, long) x 2 (gap, resumption) stimuli (1-2). We also examined indirect object relative clauses (IORCs in (3)) to see if gaps and resumptives are compatible in terms of processing these more complex structures.

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(1) [[Gap/RP (ADV1) (ADV2)] V1 N1]
   DE Head ] V2 N2
he purposely in campaign in push anti-corruption
de na-wei juzhang que changchu shouhuide chouwen
REL that-C L minister but came.out bribery scandal
‘The minister who __/?he pushed the anti-corruption act has involved in a bribery scandal.’
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(2) [[N1 V1 Gap/RP (ADV)] DE Head ]
xuexiao yaoqing __/ta duoci de na-wei zuojia
school invite him many.times REL that-CL writer
V2 N2
ceng huode zhimingde dajiang.
ever get well-known award
‘The writer whom the school invited __/him many times has got well-known awards.’
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‘The girl whom her boyfriend gave __/her a watch wore a happy smile.’

Results and discussion. The eye-tracking results from 16 native speakers of Mandarin, analyzed with linear-mixed effects models, showed resumption did not impose a burden on processing when structure is complex (with no difference between gap IORCs and resumptive IORCs in terms of the gaze duration, total dwell time, go-past time, and regression-out rate of the interest areas (Head/V2)). Given that gaps are expected to be more acceptable than resumption, this suggests that structural complexity makes resumption more acceptable. We also found resumption facilitated processing when the gap-filler relation is lengthened in ORCs but not in SRCs, as resumptive ORCs lengthened by adding an adverbial had lower regression-out rates from V2 than their lengthened, gapped ORC counterparts, and than all the short ORCs (p < .05). This suggests that resumptives aid the comprehension of longer gap-filler relations in Mandarin ORCs. In sum, resumptive pronouns in Mandarin not only serve as a grammatical device to save ungrammaticality, but also become as easy to process as gaps when the structure gets complicated or when gap-filler distance increases.

References