Resumptive pronouns and structural complexity in Cantonese relative clause production

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Background

Resumptive pronouns (RPs) are sometimes used to fill the gap in a relative clause (RC):

*This is the topic that we talked about whether to include **it** in the syllabus.*

The use of these pronouns is associated with **structural complexity:**

- **In grammar**: RP distributions across languages follow the NP Accessibility Hierarchy (Keenan & Comrie 1977): if the grammar allows RPs in one position, it allows them in more deeply embedded positions.

  Subject > Direct Object > Indirect Object > Oblique > Possessor
- **In usage**: When the grammar allows either RP or gap, RPs should be preferred more as structural complexity increases, to facilitate processing (Hawkins 2004).

Research Questions

1. **What are the grammatical constraints on resumptive pronoun use in Cantonese?**
   - Hypothesis: RPs are banned in subject position and required in coverb object position to avoid an island violation (Francis & Matthews 2006)
2. **How are RPs distributed in grammatically optional contexts?**
   - Hypothesis: the acceptability and use of optional RPs should increase with increased structural complexity (Hawkins 2004)
3. **Does RP use differ in subject versus object relatives?**
   - Hypothesis: yes, RP use should be optional in direct object RCs and ungrammatical in subject RCs (Matthews & Yip 2011)

Methods

Participants

- A total of 22 native speakers of Cantonese were recruited on Purdue Campus to participate in this study.
- There are 11 females and 11 males, with ages ranging from 19 to 29 years old.
- All participants self-reported speaking at least one language other than Cantonese, and no diagnosis of speech, language or hearing disorders.

Design and Materials

- Three independent variables are controlled: Resumption (resumptive pronoun, gap); Possession (non-possessive, possessive); and Grammatical role (subject, direct object, coverb object). Eight sample conditions shown below (subject conditions not shown).

		Possessive	Non-possessive
GAP	Obj.	*ngo5 bong1 __ aa3go1 go2 go3 neoi5jan4 hou2 hou2jan4*	*ngo5 bong1 __ go2 go3 neoi5jan4 hou2 hou2jan4*
		I help __ brother Det Cl woman very nice	I help __ Det Cl woman very nice
		"The woman whose brother I helped is very nice."	"The woman who I helped is very nice."
	Coverb	*ngo5 bong1 __ aa3go1 maai5ce1 go2go3neoi5jan4 hou2hou2jan4*	*ngo5 bong1 __ maai5ce1 go2go3neoi5jan4 hou2hou2jan4*
	Obj.	I help __ brother buy car Det Cl woman very nice	I help __ buy car Det Cl woman very nice
		"The woman whose brother I bought a car from is very nice."	"The woman who I bought a car from is very nice."
RP	Obj.	*ngo5 bong1 **keoi5** aa3go1 go2 go3 neoi5jan4 hou2 hou2jan4*	*ngo5 bong1 **keoi5** go2go3 neoi5jan4 hou2 hou2jan4*
		I help **her** brother Det Cl woman very nice	I help **her** Det Cl woman very nice
		"The woman who I helped her brother is very nice."	"The woman who I helped her is very nice."
	Coverb	*ngo5 bong1 **keoi5** aa3go1 maai5ce1 go2go3neoi5jan4 hou2hou2jan4*	*ngo5 bong1 **keoi5** maai5ce1 go2 go3 neoi5jan4 hou2hou2jan4*
	Obj.	I help **her** brother buy car Det Cl woman very nice	I help **her** buy car Det Cl woman very nice
		"The woman who I bought a car from her brother is very nice"	"The woman who I bought a car from her is very nice."

- Five lexicalizations of each of the twelve conditions, along with equal numbers (n=60) of filler sentences of varying degrees of acceptability, were included.

Elicited Production Task

- The resumption factor is a dependent variable in this task.
- Participants listened to two short sentences and combined them into one longer spoken sentence.
- Deviations from the intended clause type were coded as non-target and further analyzed for structural features.

Stimuli:

I bought a car from that woman

She is very kind

我幫咽個女人買車
佢好好人

Target: The woman who I bought a car from (her) is very kind (我幫佢買車咽個女人好好人)

Acceptability Judgment Task

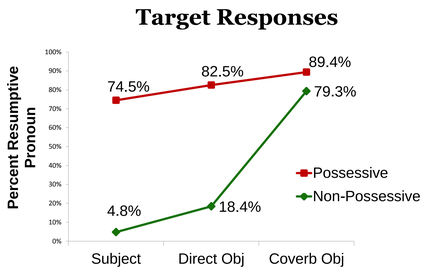
- Participants listened to sentences twice and rated them on a seven-point scale. Ratings were selected by clicking buttons on a computer screen.

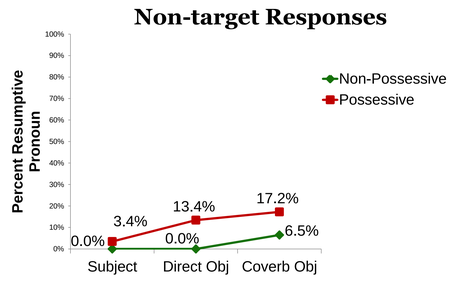
Statistical Analysis

- All data are processed with mixed-model regression analysis with alpha-level set at p<0.05.

Results: Elicited Production

Percent Resumptive Pronoun





Main effect of Possession: more RPs were produced in possessive RCs ($F(1, 338) = 62.01$, $p < 0.01$)
Main effect of Grammatical Role: coverb object > direct object > subject ($F(2, 338) = 20.79$, $p < 0.01$)
Possession x Grammatical Role interaction: smaller difference between possessive and non-possessive in coverb condition ($F(2, 338) = 6.62$, $p < 0.01$).

Similar pattern to target responses, but many fewer RP productions.
Too few RP tokens for statistical analysis.

Percent Target (All responses)

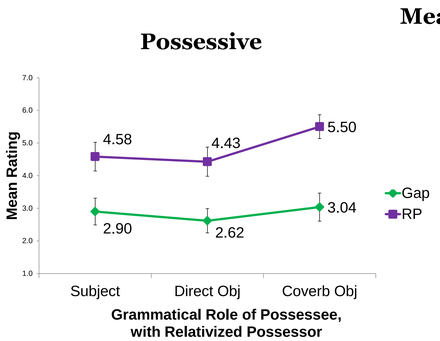
Percent Simplified (Non-target Only)

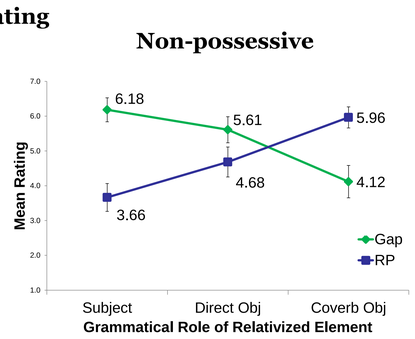
Main effect of Possession: more target responses were produced in non-possessive conditions ($F(1, 613) = 64.95$, $p < 0.01$)
Main effect of Grammatical Role: fewer target responses in coverb condition ($F(2, 613) = 4.6$, $p = 0.01$)
Possession x Grammatical Role interaction: smaller difference between possessive and non-possessive in coverb condition ($F(2, 613) = 8.05$, $p < 0.01$)

Main effect of Grammatical Role: higher rate of simplification in coverb condition ($F(2, 245) = 3.45$, $p = 0.03$)
Possession x Grammatical Role interaction: smaller difference between possessive and non-possessive in coverb condition, but not quite significant ($F(2, 245) = 2.82$, $p = 0.06$)

Results: Acceptability Judgment Task

Mean Rating





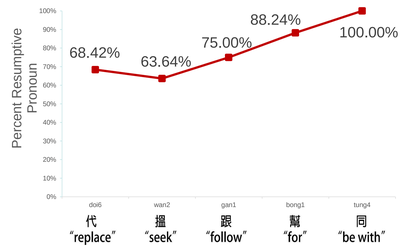
Main effect of Resumption: RPs were rated higher than gaps in possessive conditions ($F(1, 629) = 254.59$, $p < 0.01$)
Main effect of Grammatical Role: coverb conditions received higher ratings than subject and object conditions ($F(2, 629) = 12.66$, $p < 0.01$)
Resumption x Grammatical Role interaction: greater difference between gap and RP in the coverb condition ($F(2,629) = 3.79$, $p = 0.02$)

Main effect of Resumption: gaps were rated higher than RPs in non-possessive conditions ($F(1, 629) = 19.27$, $p < 0.01$)
Resumption x Grammatical Role interaction: as complexity increased, gaps became less acceptable and RPs became more acceptable ($F(2, 629) = 110.13$, $p < 0.01$)

Results: Non-Possessive Coverb Condition

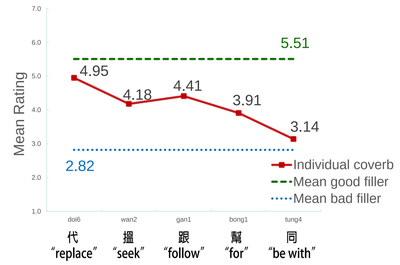
Different coverbs appear to tolerate extraction of their objects to different degrees.

Percent RP in Production



Participants always produced an RP as the object of *tung4*, but produced a gap in 36% of responses as the object of *wan2*.

Mean Acceptability Rating



Participants rated gapped coverb clauses lowest when the object of *tung4* was extracted, and highest when the object of *doi6* was extracted.

A consistent pattern was shown across both tasks: the more "preposition-like" coverbs, *bong1* and *tung4* showed the lowest acceptability in a gapped clause and the highest rate of RP use in production. No such verb-specific pattern was found in other conditions such as direct object condition or possessive conditions.

Discussion

1. What are the grammatical constraints on resumptive pronoun use in Cantonese?

- **Hypothesis 1 partially confirmed**: although trends were in the expected direction, RPs were optional to some extent in all contexts tested.
- The preference for gaps over RPs in subject relatives may not be a strict grammatical requirement, although it is quite a strong preference, with 5% RP responses and 95% gap responses in the production task.
- The proposed adjunct island constraint of Francis & Matthews (2006) appears not to be a strict grammatical constraint: gaps were produced in 21% of coverb responses, and rate of RP production differed by individual coverb.

2. How are RPs distributed in grammatically optional contexts?

- **Hypothesis 2 confirmed**: a clear complexity effect was shown across both acceptability judgments and RP production in target responses.
- A similar complexity effect was found in non-target productions: speakers avoided producing more complex clauses, instead producing simpler clauses that did not need any RP.

3. Does RP use differ in subject versus object relatives?

- **Hypothesis 3 confirmed**: RP use was more frequent in production and higher in acceptability for direct object relatives than for subject relatives.
- In non-target productions, speakers produced subject relatives in response to object relative stimuli more often than they produced object relatives in response to subject relative stimuli, suggesting that subject relatives may be easier to produce.
- These results are consistent with the NPAH and Matthews & Yip (2011), but differ from previous results for Mandarin, which showed an equal preference for gaps in both subject and object RCs (Hitz 2012, Ning 2008, Su 2004, Yuan & Zhao 2005).
- Interestingly, Su's (2004) elicited production study found that five-year-old Mandarin-speaking children pattern just like our Cantonese-speaking adults, suggesting a possible processing basis for the asymmetry.

Overall our results suggest that optional RP use increases with structural embeddedness and may be related to processing difficulty in production.

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