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# Processing discontinuous predicates in Cantonese

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# 1. One verb, two places

- In this talk, we focus on predicates that potentially appear in a discontinuous form.
- Our starting point concerns **suffixation** in (Hong Kong) Cantonese.
- While verb suffixes canonically follow the verbs, they can also intervene between the two morphemes (Chan and Cheung 2020).
- We refer to the strings as **discontinuous predicates** (aka **separable verbs** 離合詞).

Example	Literal meaning	Type	Suffixation	Intervention
a. daam-saam ‘worry’ 擔心	bear + heart	V-O	daam-saam- <span style="border: 1px solid black;">gwo</span>	daam- <span style="border: 1px solid black;">gwo</span> -saam
b. jing-jan ‘photocopy’ 影印	reflect + print	V-V	jing-jan- <span style="border: 1px solid black;">zo</span>	jing- <span style="border: 1px solid black;">zo</span> -jan
c. laai-coeng ‘pull to lengthen’ 拉長	pull + long	V-Rslt.	laai-coeng- <span style="border: 1px solid black;">faan</span>	laai- <span style="border: 1px solid black;">faan</span> -coeng
d. zi-sau ‘confess’ 自首	self + inform	Mdf.-V	zi-sau- <span style="border: 1px solid black;">maai</span>	zi- <span style="border: 1px solid black;">maai</span> -sau
e. jat-sik ‘(solar) eclipse’ 日蝕	sun + erode	S-V	jat-sik- <span style="border: 1px solid black;">jyun</span>	jat- <span style="border: 1px solid black;">jyun</span> -sik

Table 1: Various types of disyllabic verbs

# 1. One verb, two places

- Discontinuous predicates are also observed with monomorphemic verbs.

(1) Monomorphemic verbs and intervening suffixes

- |   |  |
|---|--|
| a. 阿明 <b>肥佬</b> 咗 / <b>肥</b> 咗佬<br>Aaming <b>feilou</b> -zo/ <b>fei</b> <zo> <b>lou</b><br>Aaming fail-PERF/ fail<PERF><br>'Aaming failed.'   | d. 阿明 <b>save</b> 咗 / <b>sa</b> 咗 <b>ve</b><br>Aaming <b>seifu</b> -zo/ <b>sei</b> <zo> <b>fu</b><br>Aaming save-PERF/ ssave<PERF><br>'Aaming saved (the file).'                   |
| b. 阿明都 <b>OK</b> 埋 / <b>O</b> 埋 <b>K</b><br>Aaming dou <b>oukei</b> -maai/ <b>ou</b> <maai> <b>kei</b><br>Aaming also okay-ADD/ okay<ADD><br>'Aaming also (said) okay.'               | e. 阿明 <b>拜拜</b> 咗 / <b>拜</b> 咗 <b>拜</b><br>Aaming <b>baaibaai</b> -zo/ <b>baai</b> <zo> <b>baai</b><br>Aaming bye.bye-PERF/ bye.bye<PERF><br>'Aaming (said) bye-bye/ Aaming died.' |
| c. 阿明 <b>farewell</b> 緊 / <b>fare</b> 緊 <b>well</b><br>Aaming <b>feweu</b> -gan/ <b>fe</b> <gan> <b>weu</b><br>Aaming farewell-PROG/ farewell<PROG><br>'Aaming is having a farewell.' | f. 阿明冇 <b>sorry</b> 過 / <b>sor</b> 過 <b>ry</b><br>Aaming mou <b>sowi</b> -gwo/ <b>so</b> <gwo> <b>wi</b><br>Aaming not sorry-EXP/ sorry<EXP><br>'Aaming didn't (say) sorry.'       |

# 1. One phenomenon, two analyses

- On the surface, discontinuous predicate looks almost identical to **verb+object** phrases (VPs) with suffixes (V-x-O)

肥咗佬 *fei-zo-lou* ‘failed’ vs. 食咗飯 *sik-zo faan* ‘ate rice’

- (i) **Reanalysis: identical structure** to VP (Chao 1968; C.-T. J. Huang 1984; Her 2010; i.a.)
  - 佬 is reanalyzed as an object (i.e. a syllable → NP)
- (ii) **Copy+Delete: distinct structure** from VP (Yip, Lee & Chan 2021)
  - 肥佬咗肥佬 → 肥咗佬: 佬 is part of the verb, not an object
- Based on retrospective data - can we do better?

# 1. Psycholinguistic evidence

- The **psycholinguistic reality** of linguistic analysis
- The two analyses have distinct consequences on **processing efforts of the 2nd syllable**
- **A self-paced reading task**: how Cantonese speakers process Dis. Pred. in real time

肥 咗 佬

食 咗 飯

- Conclusions from pilot results:
  - (i) a genuine object appears to require more processing efforts
  - (ii) Dis. VO compound verbs require similar processing efforts to other types of verbs
- Support **Copy+Delete** over **Reanalysis** in Cantonese

# 1. Now we begin - questions are welcome!

## Road map

- §2 Two competing analyses of discontinuous predicates
  - **Reanalysis**: the “identical structure” approach
  - **Copy+Delete**: the “distinct structure” approach
- §3 Experimental design
- §4 Results on
  - (i) processing time of the second syllable in discontinuous predicates
  - (ii) accuracy rate of associating questions
- §5 Discussion
  - (i) how it challenges the “identical structure” approach
  - (ii) how it provides support to the “distinct structure” approach
- §6 Implications

## 2. Two competing analyses: Reanalysis

- **The VO-reanalysis approach**

- A common analysis in Chinese literature (Chao 1968; C.-T. J. Huang 1984; Her 2010; i.a.)
- Usually focus on Mandarin Chinese
- The two syllables/morphemes are coerced into a phrasal **V+Obj** structure.
  - Often on the basis of a predicate-theme like reading
- Discontinuous predicates have the **identical structure** to VO phrases.
- VO compound *ceot-baan* ‘publish, (lit.) out-plate’ vs. VO phrase *ceot gaai* ‘go out, (lit.) out street’
- 出版 → 出咗版 = 出(咗)街  
[V [V ceot] [N baan]] → [VP [V ceot]-zo [NP baan]] = [VP [V ceot](-zo) [NP gaai]]

## 2. Processing consequences of Reanalysis

- However, no such predicate-theme basis is available for **VV compound verbs** and **monomorphemic (loan) verbs**.
- **Extra categorical change** is needed for the 2nd syllable to be interpreted as an **object**.
- VV compound 出發 *ceot-faat* ‘set off, (lit) out-depart’
- 出發 → 出發 → 出咗發  
[V [V ceot] [V faat]] → [V [V ceot] [N faat]] → [VP [V ceot]-zo [NP faat]]
- Reanalysis is later in the processing stage and requires more efforts (cf. Friederici 1995, 2002).
- VO-reanalysis approach predicts a **three-way** distinction: **VP < VOcomp < VV/loan**.



## 2. Two competing analyses: Copy+Delete

- **The Copy+Delete approach**

- A recent proposal by Yip, Lee & Chan (2021) based on Cantonese linguistic evidence

- Verbs undergo **syntactic head movement** to the suffix position, creating **verb copies**.
- The verb copies are **partially deleted** on the morphophonological level (i.e. PF).

- Monomorphemic (loan) verb 肥佬 *feilou* ‘fail’

- 肥佬 → 肥佬咗肥佬 → 肥咗佬

[V feilou] → [<sub>AspP</sub> [V feilou]-zo ... [V <feilou>]] → [<sub>AspP</sub> [V fei~~lou~~]-zo ... [V <feilou>]]

- The processes apply **equally** to verbs with **different morphological structures**, i.e. VO compound, VV compound and monomorphemic verbs undergo the same processes.

## 2. Processing consequences of Copy+Delete

- **Suffixed VO phrases** curically differ from discontinuous predicates in having an **additional object taking process** → **distinct structure**.
- VO phrase 出街 *ceot gaai* ‘go out, (lit.) out street’
- 出 → 出街 → 出咗出街 → 出咗街  
[V ceot] → [<sub>VP</sub> [V ceot] [NP gaai]] → [<sub>AspP</sub> [V ceot]-zo ... [<sub>VP</sub> [V <ceot>] [NP gaai]]]
- **Object taking** involves thematic composition, which requires **more processing efforts** than **syntactic** and **morphophonological** operations (McElree & Griffith 1995, Shapiro et al. 1987, 1989).
- **Copy+Delete approach** predicts a **two-way** distinction: **VP > VOcomp = VV/loan**.

### 3. Experimental design

- 2 × 3 design

	Verb phrase (VP)	VO compound	VV compound / Loanword
With separation (WS)	今次記得 <u>著咗鞋</u> 先 出門口啦。	間舖尋日已經 <u>休咗息</u> 唔賣野喇。	班綁匪要 <u>投咗降</u> 先行 出嚟。
No Separation (NS)	阿芬話佢下晝會出 街 <u>買嘢</u> 啲。	佢已經 <u>留學</u> 兩年，下年 就會返。	表弟上個月考試 <u>肥佬</u> <u>咗</u> 啲，返屋企肯定俾人 話。

### 3. Experimental design

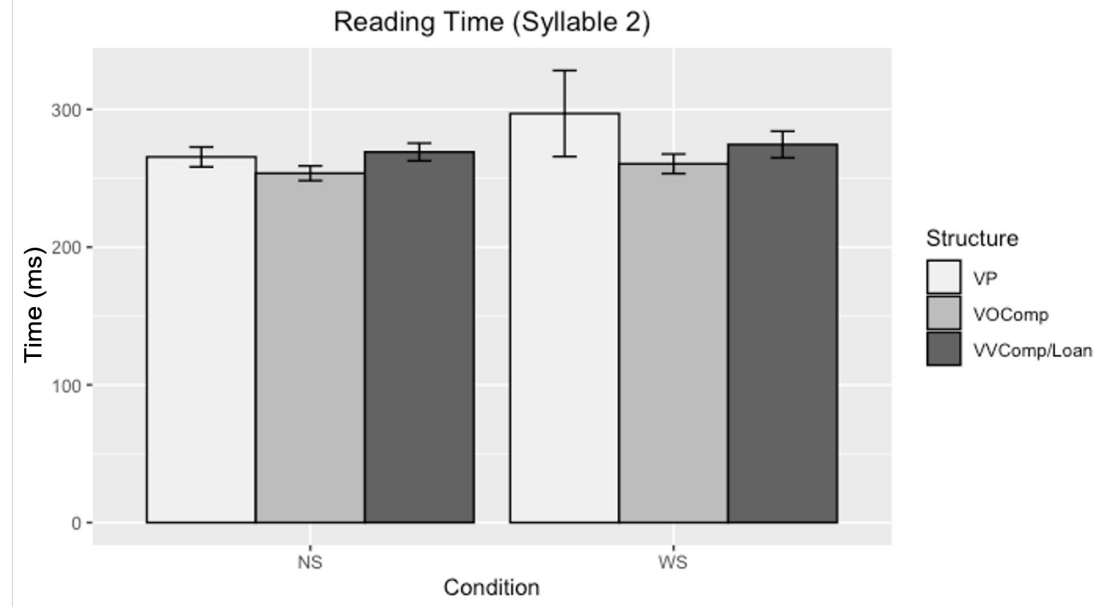
- Self-paced reading on Ibx Farm
- 72 targets & 72 fillers
- Within subject
- **Reading time** measured
- Each sentence is followed by a **comprehension question**.
- $n = 20$
- Demonstration:

今 次 記 得 著 咗 鞋 先 出 門 口 啦。

Q: 有冇人準備出門口？

## 4. Results: Reading time

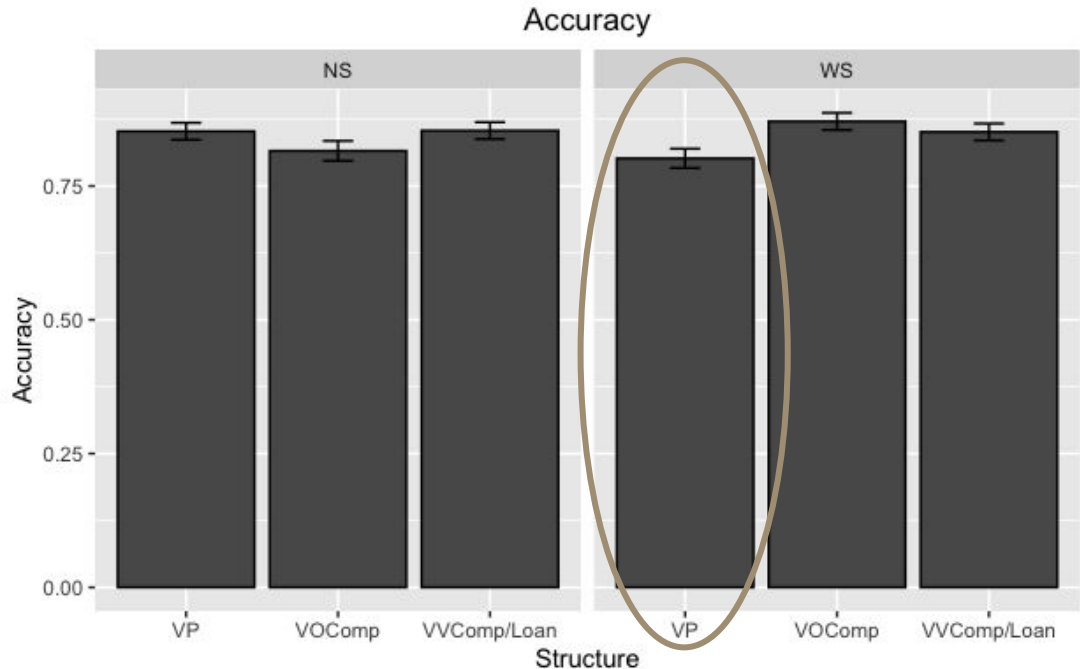
**No significance** was found for the main effects of Separation ( $p = .697$ ) and Structure ( $p = .542$ ), neither did their interaction ( $p = .621$ ).



## 4. Results: Accuracy rate of comprehension Qs

There is **a significant interaction** for Separation  $\times$  Structure ( $F(2, 2855) = 5.772, p = .003$ ).

**Lower** accuracy rate for **VP** compared to **VOComp** in **WS** condition (est =  $-.070$ , SE =  $.022$ ,  $t = -3.231, p = .004$ ).



# 5. Discussion

- **Lack of significance** between VP:WS and other structures was unexpected.
  - Reanalysis: VP < VOComp & VV/Loan
  - Copy+Delete: VP > VOComp & VV/Loan
- **Lower accuracy rate** for **VP:WS**
  - Difficulties in retaining the information, even under similar reading speed
  - Different encoding of object/ $\sigma_2$  in VP and VOComp
- → **Potential support for Copy+Delete approach** (i.e. discontinuous predicates are head structures rather than VO phrases)

# 5. Discussion

- RT of **VOComp** = **VVComp/Loan**
  - Further support for **Copy+Delete** approach
  - **Reanalysis**: VVComp/Loan > VOComp (different steps of categorial reanalysis of  $\sigma_2$ )
  - **Copy+Delete**: VOComp and VVComp/Loan are not differentiated (undergo the same process)
  
- Some more concerns...
  - Experimental setting - Show by syllables vs. show by words?
    - **著鞋** (NS) vs **著 ㄗ 鞋** (WS)
  - Further evidence for partial deletion (by different paradigms)?



## 6. Implication & future research

- Offer **novel psycholinguistic evidence** for the **Copy+Delete** approach
  - Aligns with the **linguistic** evidence reported in Yip, Lee & Chan (2021)
  
- Discontinuous predicates in **Mandarin** are claimed to be derived under the **Reanalysis** mechanism. (Chao 1968; C.-T. J. Huang 1984; Her 2010; i.a.)
  - Mandarin counterpart of this experiment
  - **Parametric variations?**

# Thank you!

Questions & comments?