

## THE CANONICAL WORD ORDER MYTH: INVESTIGATING A PROCESSING-TYPOLOGICAL PUZZLE IN THE CANTONESE DOUBLE OBJECT CONSTRUCTION

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The frequency of canonicity (frequent, structurally basic and/or pragmatically neutral) word orders is often associated with easier processing, while syntactic alternatives usually incur complexity and processing difficulty (Hawkins, 2004; Ellis, 2002; Cook et al., 2009). In this paper we show that the canonical double-object construction (DOC, a) in Cantonese (VO with head-final NPs) is difficult to process in that incremental increases in the complexity of the direct object (DO) increase reading time (RT) and reduce recall accuracy relative to syntactic alternatives, and induce greater avoidance of the DOC in elicited production. We hypothesize that this is because the canonical word order involves processing-demanding center-embedding (Hawkins, 2004).

While the psycholinguistic literature has looked at various structures (RCs: Reali & Christiansen, 2006; passive: Gennari & MacDonald, 2009; Heavy NP Shift: Staub et al., 2006) in different languages (cf. Bornkessel et al., 2002; Yamashita & Chang, 2001), often canonical word orders are the most efficient. Cantonese allows us to test whether canonical (frequent and neutral) word orders are processing-efficient, since the DOC is highly frequent, basic and neutral but has center-embedding while alternatives are efficient but infrequent. We hypothesize that despite DOC's high frequency, center-embedding will cause avoidance of DOC (Expt. 1), comprehension difficulty (slower average word RT, Expt. 2) and recall difficulty in production (lower accuracy, Expt. 2).

In Expt. 1 (untimed elicited production), participants heard full DOC (a) sentences and reported the agent's actions when prompted. As the syntactic weight of the DO increases (3 levels: bare N, Adjective-N, RC-N), the use of syntactic alternatives increased ((b) double-give-construction, (c) serial-verb construction, (d) BA-construction, (e) object topicalization) while the use of the DOC decreases,  $F(1,2,40)=55.97$ ,  $p<.001$ ,  $F(2,33)=17.01$ ,  $p<.001$ .

Expt. 2 used a dual-task paradigm to investigate the effects of weight (3 levels) and construction type (DOC (a) and BA-construction (d)) in both language comprehension and production. Immediately after reading a sentence word-by-word (one-word window), participants tried to recall the sentence faithfully upon seeing "REPEAT". Both DO complexity and construction type were significant, and participants' performance is consistently better for the BA-construction than for the DOC in both comprehension (average word RT,  $F(1,17)=4.933$ ,  $p=.040$ ,  $F(2,33)=1.235$ ,  $p=.301$ ) and production (accuracy of construction used,  $F(1,17)=11.86$ ,  $p=.003$ ,  $F(2,23)=0.419$ ,  $p=.524$ ).

The results suggest that the frequent and structurally basic word order are not necessarily easier to process. We also find that the non-canonical BA-construction is processed faster than the DOC (cf. faster RTs for topicalization in Matthews & Yeung, 2001), contradicting the assumption that non-canonical structures incur a processing penalty. We propose that participants performed better on the BA-construction because BA immediately precedes the DO, making possible early prediction and assignment of correct syntactic relations (Maximize On-line Processing, Hawkins, 2004). Speakers may still frequently use the potentially inefficient canonical word order - when the DO modifier is relatively short, working memory allows Chinese speakers to tolerate center-embedding without apparent difficulty.

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|----|---|------------------------------|
| a) | ngo (1sg) bei (give) di (CL) cin (money) nei (2sg)            | [Double object construction] |
| b) | ngo (1sg) bei (give) di (CL) cin (money) bei (give) nei (2sg) | [Double-give construction]   |
| c) | ngo (1sg) lo (take) di (CL) cin (money) bei (give) nei (2sg)  | [Serial verb construction]   |
| d) | ngo (1sg) zoeng (BA) di (CL) cin (money) bei (give) nei (2sg) | [BA construction]            |
| e) | di (CL) cin (money) ngo (1sg) bei (give) nei (2sg)            | [Object topicalization]      |

All: "I give you some money"

Please find the data summary and the full appendix at <http://www2.hawaii.edu/~antonio1/>

### Selected References

- Hawkins, J. (2004). *Efficiency and Complexity in Grammars*. Oxford: OUP.  
Matthews, S. & Yeung, L. (2001). Processing motivations for topicalization in Cantonese. In Horie & Sato, eds., *Cognitive-Functional Linguistics in an East Asian Context*. Tokyo:Kurosio.