

## Comparing Processing of Chinese Prenominal and Postnominal Relative Clauses: Evidence for the Distance-based Account

One of the most extensively studied and well-debated contrasts in the past two decades of relative clauses (RC) processing research is between subject-extracted relatives (SRs) and object-extracted relatives (ORs). The general finding across languages is that SRs are relatively easier to process than ORs (Ford, 1983; King & Just, 1991; Traxler et al., 2002; Gibson et al., 2005). However, this finding remains unresolved in Chinese, with researchers presenting varying findings: an SR advantage, an OR advantage, or both under different conditions (Chen et al., 2008; Qiao et al., 2012; Vasishth et al., 2013; Xu et al., 2019). Particularly, all prior research has been focused on canonical prenominal RCs (1), overlooking the existence of postnominal RCs (2) in Chinese. Research on Chinese postnominal RCs is scarce, both empirically (e.g., corpus studies: Wang & Wu, 2020) and theoretically, which only cover formal approaches (e.g., Gao, 2020) as well as typological and functional perspectives (e.g., Li & Thompson, 1981; Dong, 2003; Fang, 2004; Tang, 2005).

This study expands upon the ongoing debates on Chinese RC processing by including postnominal RCs. It examines two prominent hypotheses:

- **Dependency Locality Theory (DLT; Gibson, 1998, 2000):**  
This theory predicts processing difficulty based on the linear distance between the head noun and its dependent. Considering the reversed head structure of postnominal and prenominal RCs in Chinese, the predictions would be:
  - For prenominal RCs, an OR advantage is expected due to shorter head-dependent distances.
  - For postnominal RCs, an SR advantage is anticipated for the same reason.
  - An interaction between RC position (subject- or object-extracted) and RC type (prenominal or postnominal).
- **Frequency-Based Account (Mitchell et al., 1995; MacDonald & Christiansen, 2002):**
  - Based on corpus data from the Chinese Treebank (Hsiao & Gibson, 2003) and Wang & Wu (2020), SRs occur more frequently than ORs across both RC types. Thus, this account predicts a consistent SR advantage, regardless of RC position.

This study examines these two hypotheses in Mandarin Chinese RC processing using a self-paced reading experiment with 20 sets of RCs and 63 native speakers on PCIBex (Figure 1). Different critical regions are selected due to their unique syntactic structures, specific research interests, and the importance of analyzing regions where filler-gap dependencies in RCs are resolved to test the interaction between RC position and RC type. Using mixed-effects regression models, the findings reveal that in prenominal conditions, ORs were processed faster than SRs, although no significant OR advantage was found ( $p = 0.094$ ). In postnominal conditions, SRs were significantly easier to process than ORs ( $p < 0.001$ ), aligning with DLT's predictions. The frequency-based account received mixed support, showing an SR advantage only in postnominal RCs. Significant interactions between RC type (Pre vs. Post) and position (SR vs. OR) were found ( $p < 0.001$ ), indicating that processing differences were influenced by RC type, favoring the distance-based account. In post-critical regions, significance was only found in the main effect of Prenominals vs Postnominals ( $p < 0.001$ ). These results provide new insights into the conflicting theories of sentence processing in Chinese by highlighting the differential processing patterns between prenominal and postnominal RCs and expanding the scope of RC processing studies by incorporating postnominal RCs into the analysis.

## Experiment Design examples

(the vertical bars show how sentences are segmented, with **critical regions** and **post-critical regions** highlighted)

### (1) a. *Prenominal SR*

[ [ **t<sub>i</sub>** yaoqing fuhao de] | **na wei guanyuan**, | **xinhuaibugui**, | danshi | shanyu | yincang |  
invite tycoon de that-CL official have bad intentions but good at hiding  
'The official who invited the tycoon has bad intentions but is good at hiding.'

### b. *Prenominal OR*

[ fuhao yaoqing de **t<sub>i</sub>** | **na wei guanyuan**, | **xinhuaibugui**, | danshi | shanyu | yincang |  
tycoon invite de that-CL official have bad intentions but good at hiding  
'The official who the tycoon invited has bad intentions but is good at hiding.'

### (2) a. *Postnominal SR*

| na wei guanyuan<sub>i</sub>, | [ **t<sub>i</sub>** yaoqing fuhao de], | **xinhuaibugui**, | danshi | shanyu | yincang. |  
that-CL official invite tycoon de have bad intentions but good at hiding  
'The official who invited the tycoon has bad intentions but is good at hiding.'

### b. *Postnominal OR*

| na wei guanyuan<sub>i</sub>, | [ fuhao yaoqing de **t<sub>i</sub>** ], | **xinhuaibugui**, | danshi | shanyu | yincang. |  
that-CL official tycoon invite de have bad intentions but good at hiding  
'The official who the tycoon invited has bad intentions but is good at hiding.'

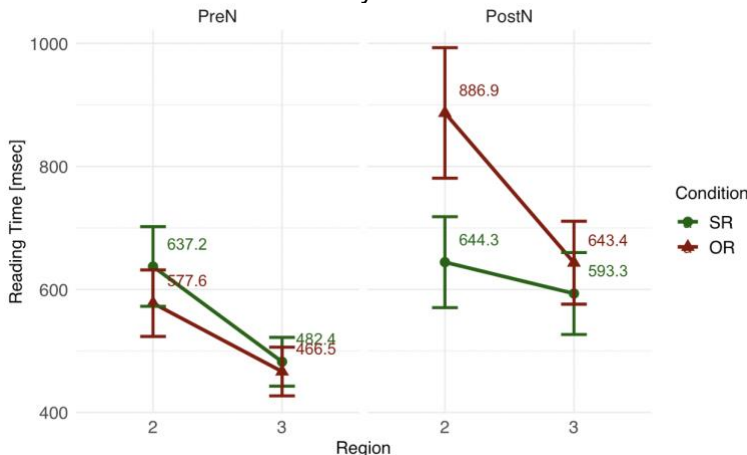


Figure 1. The raw reading times at the two regions of interest in the two relative clause types and positions, with 95% confidence intervals.

## Selected References

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