I. Introduction: Structural Integration Cost and DLT

Gibson (1998; 2000) in his Dependency Locality Theory suggests that it is harder to integrate two dependents (such as an argument and a head, or a gap and a head) if the distance between them is increased by interposing a phrase that introduces a discourse referent such as a noun or a tensed verb. Much empirical evidence has emerged for this view. (Hsiao & Gibson, 2003; Warren & Gibson, 2005; Grochler & Gibson, 2005)

**QUESTION** How to determine the structural integration cost?

- The number of Discourse Referent introduced; or
- The number of Words

We report results from a Chinese Relative Clauses experiment and show that

- **Consistent** with DLT Intervening discourse referents may be crucial
- **Inconsistent** with DLT No Object Relative Clause Preference

II. Our Method

To answer the question above, we investigate prenominal object relative clauses in Chinese. A self-paced reading study was conducted in Nanjing, China with 72 participants and 32 items presented in a counter-balanced manner; reading times were recorded at each segment (demarcated by | ). Although subject relative clauses conditions cannot be used to compare the change of the structure integration cost, they are also shown to participants in order to obtain an overall comparison between OR versus SR preferences at the head noun.

8 conditions we use are shown below where DE indicates a RC in Chinese and de denotes an adjective or a PP as attributives.

- Condition B. OR, Adjective intervener (with no discourse referent intervener)
- Condition D. OR, Prepositional Phrase intervener (with a discourse referent intervener)
- Condition A and C. OR, Control conditions (keeps constant the position of the head noun)
- Condition E-H, SR, all with intervener; used to compare SR/OR preference

### Conditions on Chinese Relative Clauses

<table>
<thead>
<tr>
<th></th>
<th>Adj</th>
<th>Verb</th>
<th>PP</th>
<th>Adj</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. OR, no intervener</td>
<td>adj [cheese de]</td>
<td>verb [professor knows]</td>
<td>GAP [car] [object]</td>
<td>subj [cheese de]</td>
</tr>
<tr>
<td>B. OR, adjective intervener</td>
<td>adj [cheese de]</td>
<td>verb [professor knows]</td>
<td>GAP [car] [object]</td>
<td>subj [cheese de]</td>
</tr>
<tr>
<td>C. OR, no intervener</td>
<td>adj [cheese de]</td>
<td>verb [professor knows]</td>
<td>GAP [car] [object]</td>
<td>subj [cheese de]</td>
</tr>
<tr>
<td>D. OR, PP intervener</td>
<td>adj [cheese de]</td>
<td>verb [professor knows]</td>
<td>GAP [car] [object]</td>
<td>subj [cheese de]</td>
</tr>
<tr>
<td>E. SR, adjective not modifying head-noun</td>
<td>adj [cheese de]</td>
<td>verb [professor knows]</td>
<td>GAP [car] [object]</td>
<td>subj [cheese de]</td>
</tr>
<tr>
<td>F. SR, adjective modifying head-noun</td>
<td>adj [cheese de]</td>
<td>verb [professor knows]</td>
<td>GAP [car] [object]</td>
<td>subj [cheese de]</td>
</tr>
<tr>
<td>G. SR, PP not modifying head-noun</td>
<td>adj [cheese de]</td>
<td>verb [professor knows]</td>
<td>GAP [car] [object]</td>
<td>subj [cheese de]</td>
</tr>
<tr>
<td>H. SR, PP modifying head-noun</td>
<td>adj [cheese de]</td>
<td>verb [professor knows]</td>
<td>GAP [car] [object]</td>
<td>subj [cheese de]</td>
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</tbody>
</table>

III. Results

A linear mixed model (Bates & Sarkar, 2007) was fitted with items and participants as crossed random effects; PP insertion and adjective insertion were treated as fixed effects, coded as orthogonal centered contrasts (the baseline conditions A and C were coded -1, and the intervener conditions B and D as 1). The analysis was carried out on log reading times after removing all RTs greater than 2800 ms from the data (6% of the data was excluded as a result) these data points were removed because an initial model with the full data yielded highly skewed residuals. Moreover, the centered log reading time at the region preceding the critical one was also taken as a predictor of the RT at the critical region, this was done in order to control for the possibility of differential spillover effects from the preceding regions (Mitchell, 1984; Vasishth & Lewis, 2006).

The results of the analysis as well as the mean RT (ms) of the head noun for all 8 conditions are summarized below. Standard errors are illustrated as error bars.

### Analysis Results

<table>
<thead>
<tr>
<th>Contrast</th>
<th>Estimate</th>
<th>Std Error</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR Adjective Insetion (A vs B)</td>
<td>-0.0128</td>
<td>0.0066</td>
<td>-1.94</td>
</tr>
<tr>
<td>OR PP Insertion (C vs D)</td>
<td>0.037694</td>
<td>0.017225</td>
<td>2.19</td>
</tr>
<tr>
<td>Preceding Region RT</td>
<td>0.200078</td>
<td>0.018966</td>
<td>13.71</td>
</tr>
<tr>
<td>OR vs SR (ABCD vs EFHG)</td>
<td>0.0077</td>
<td>0.0086</td>
<td>0.90</td>
</tr>
</tbody>
</table>

**Consistent with DLT**: The cost of introducing a discourse referent may be a critical component that determines the difficulty of completing a head-dependency relationship.

**Inconsistent with DLT**: No OR preference is found after we take spillover effects of the preceding region of the head into consideration.

IV. Conclusions

### References


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**Locality Cost in Sentence Comprehension: Evidence from Chinese Relative Clauses**

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