Relative Clause Processing: Evidence from Russian

Iya Khelm Price & Jeffrey Witzel

University of Texas at Arlington, USA

Introduction
Studies on relative clauses (RCs) in a number of languages have shown that object-extracted RCs (ORCs) are more difficult to process than subject-extracted RCs (SRCs).

SRC-ORC processing asymmetry has been attributed to:
• Structural expectations (Levy, 2008)
• Memory-based integration effects (Gibson, 2000)
• RC subject vs. object extraction difficulty differences (Lin & Bever, 2006)

In many languages, word order differences between SRCs and ORCs make it difficult to test among these accounts. Russian allows SRCs and ORCs to have the same linear word order (with case-marking distinguishing between the RC types).

Previous Research on Russian RCs
Levy et al. (2013):
• comparable processing for Russian SRCs and ORCs when word order was held constant
• RC processing difficulty is not due to extraction from an object position

RC processing difficulty attributed to:
(i) expectation-based "surprisal" effects; (ii) memory-based effects related to integrating arguments with verbs across intervening material.

The Current Study
(i) verbal complement clauses (CCs) are used as controls for both SRCs and ORCs
(ii) intervening material is added between each region of interest
(iii) comprehension questions related to the embedded clause material are used after each item

Methodology
• Materials: 48 sets of sentences, 4 counterbalanced lists; 48 fillers that were comparable in length to the experimental items
• Task: Self-paced reading paradigm (using webDMDX)
• Y/N comprehension question after each item
• Participants: 32 native speakers of Russian

Sample Items

(1a) SRC [embedded-clause word order: OV (scrambled, dispreferred)]

(1b) Control (CC) for SRC [embedded-clause word order: OVS (scrambled, dispreferred)]

(2a) ORC [embedded-clause word order: SV (default, preferred)]

(2b) Control (CC) for ORC [embedded-clause word order: SVO (default, preferred)]

Results

Russian RC Corpus Frequencies*

<table>
<thead>
<tr>
<th>RC word order</th>
<th>Full NPs only</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRC, VO</td>
<td>49</td>
</tr>
<tr>
<td>SRC, OV</td>
<td>1</td>
</tr>
<tr>
<td>ORC, VS</td>
<td>19</td>
</tr>
<tr>
<td>ORC, SV</td>
<td>5</td>
</tr>
</tbody>
</table>

Comprehension Question Accuracy

• SRC RC 16%  
• SRC cont 19%  
• ORC RC 28%  
• ORC cont 14%  

Discussion
At the RC Noun: consistent with the expectation-based accounts
At the RC Verb: consistent with the memory-based accounts
• no difference between SRCs and ORCs at the RC verb; does not support the subject-object extraction asymmetry theories

Significantly lower comprehension accuracy for ORC sentences than for any other sentence type suggests that while comparable sources of difficulty influence the online processing of both SRCs and ORCs, only ORCs cause persistent comprehension problems.

References