Subject vs. Object Agreement

- Agreement processing is widely studied, but little research has compared subject agreement \((S.AGR)\) and object agreement \((O.AGR)\).
- A few ERP studies on Basque suggest the two are processed qualitatively differently \([1–3]\).
- Can such an asymmetry be observed in other languages?
- Georgian is an especially good place to look.
- Verbs show rich agreement with subjects and objects.
- Agreement morphemes ‘invert’ their roles in certain contexts.
- Thus, we can tease apart two effects on agreement processing: syntactic (what argument?) and morphological (what affix?).
- A speeded acceptability experiment reveals that \(O.AGR\) is generally easier to compute than \(S.AGR\).
- But why? Hypothesis: the effect may reflect the fact that there is less incremental uncertainty in \(O.AGR\) conditions.

Key properties of Georgian

- Verbal Agreement: Two types of agreement affixes (Set A & Set B). How they’re mapped to arguments depends on tense. \([4,5]\)
- Split Ergativity: Tense also changes case morphology on nouns. However, 1st/2nd person pronouns are syncretic for case. \([4,5]\)

Experimental Design & Results

- \(2 \times 2 \times 2\) Design: \((\text{Mapping Dir., Inv.}) \times (\text{Agr. S.AGR, O.AGR}) \times (\text{Gram. ✔, ✘})\)
  - RSVP stimulus, acceptability judgment (correct/incorrect), confidence rating (1–3)
  - AOR \(\Rightarrow\) Direct
  - \(\text{AOR} \Rightarrow\) Inverse

<table>
<thead>
<tr>
<th>Mapping</th>
<th>Agr.</th>
<th>Gram.</th>
<th>Acc.</th>
<th>RT</th>
<th>(d_p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>S.AGR(1a)</td>
<td>✔</td>
<td>66%</td>
<td>1072 (37)</td>
<td>1.23 (1.1,1.4)</td>
</tr>
<tr>
<td></td>
<td>O.AGR(1b)</td>
<td>✗</td>
<td>82%</td>
<td>1054 (35)</td>
<td>1.34 (1.1,1.5)</td>
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<tr>
<td>Inverse</td>
<td>S.AGR(1c)</td>
<td>✔</td>
<td>65%</td>
<td>1024 (35)</td>
<td>1.22 (0.7,1.1)</td>
</tr>
<tr>
<td></td>
<td>O.AGR(1d)</td>
<td>✗</td>
<td>86%</td>
<td>910 (32)</td>
<td>1.18 (1,1,4)</td>
</tr>
</tbody>
</table>

- Accuracy: Main effects of Mapping \((p<0.05)\), Agr. \((p<0.05)\), and Gram. \((p<0.001)\)
- RTs: Main effect of Gram. \((p<0.01)\); Agr.–Gram. interaction \((p<0.01)\)

- Signal detection analysis: zROC curves

Discussion

- Object agreement is easier? Perhaps uninformative. \([6–8]\)
- But an independent influence of locality is detected when the data are broken down by word order (SOV–OSV counterbalanced across items).

Stimulus Shape |
---|---|
Direct | 1.47 |
Inverse | 1.26 |

<table>
<thead>
<tr>
<th>Condition</th>
<th>(d_p)</th>
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<tbody>
<tr>
<td>Direct AGR</td>
<td>1.44</td>
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<tr>
<td>Inverse AGR</td>
<td>1.16</td>
</tr>
</tbody>
</table>

Takeaways

(i) Overall, object agreement seems easier than subject agreement in Georgian. (ii) But a deeper dive shows that linear distance between a 1st/2nd person pronoun and the agreeing verb matters. (iii) And, more evidence for Georgian-specific parsing biases \((\ast\text{DAT,SUB} \rightarrow \text{Nom,} \text{SUB})\) that have been observed previously \([9,10]\).

References