Modeling gradient acceptability of left-peripheral movement

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Main claim

My claim

It is useful to model obligatory/optional/illicit (left-peripheral) movement in terms of **numerical costs** associated with violations of grammatical principles.

→ This allows to derive **precise predictions** that can be tested against gradient judgment data.
Example: object-initial sentences in German

(Toy) example: object-initial sentences in German

Observation:
Object-initial sentences often show degraded acceptability in German.

Hypothesis:
The movement operation is fully optional, but interface problems can emerge.

Example for illustration:
One particular realization: sentence stress on fronted object, broad focus.

\[
[S \ O \ V]_{\text{focus}}: \text{unproblematic canonical order}
\]

\[
[O \ V \ S]_{\text{focus}}: \text{violates preference to stress a new phrase (S)}
\]

+ violates preference for rightward sentence stress

single underlining = prominence at the level of the phonological phrase
double underlining = prominence at the level of the intonation phrase
The predictions of the hypothesis can be made more precise by associating each violation of a grammatical principle (be it interface- or syntax-related) with a cost (following the basic idea of Linear Optimality Theory, Keller 2000).

<table>
<thead>
<tr>
<th>principle</th>
<th>violation cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. a discourse-new phrase is stressed</td>
<td>?</td>
</tr>
<tr>
<td>2. sentence stress falls to the right</td>
<td>?</td>
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Towards precise acceptability predictions: numerical costs

The predictions of the hypothesis can be made more precise by associating each violation of a grammatical principle (be it interface- or syntax-related) with a cost (following the basic idea of Linear Optimality Theory, Keller 2000).

Example

<table>
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<th>principle</th>
<th>violation cost</th>
</tr>
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<tbody>
<tr>
<td>1. a discourse-new phrase is stressed</td>
<td>0.2 (in terms of z-scores)</td>
</tr>
<tr>
<td>2. sentence stress falls to the right</td>
<td>0.5 (in terms of z-scores)</td>
</tr>
</tbody>
</table>

The costs can be estimated based on a data set of acceptability judgments.

(hypothetical values for the ease of illustration)
Can the independently estimated violation costs for the interface-related problems fully explain the acceptability differences in the crucial conditions?

![Graph showing independent estimates for violation costs](#)
Testing the hypothesis against gradient data

Can the independently estimated violation costs for the interface-related problems fully explain the acceptability differences in the crucial conditions?

\[
\begin{array}{c}
\text{SOV} \\
\text{QVS}
\end{array}
\]

↑ independent estimate for violation cost of principle 1

↑ independent estimate for violation cost of principle 2
Testing the hypothesis against gradient data

Can the independently estimated violation costs for the interface-related problems fully explain the acceptability differences in the crucial conditions?

\[ \begin{align*}
\text{SOV} & \quad \text{QVS} \\
\uparrow & \quad \downarrow \\
\text{independent estimate for violation cost of principle 1} & \quad \text{independent estimate for violation cost of principle 2} \\
\text{unexplained part of acceptability difference} & \quad \text{(could correspond to the cost of a non-minimal fronting operation)}
\end{align*} \]
The proposed model is related to the idea that costly operations need to be motivated by a benefit at the interfaces (Reinhart 2006). It allows to express costs and benefits in precise terms.

**Modeling obligatory / optional / illicit movement**

**Obligatory movement:**
costs of structure with movement < costs of structure without movement

**Optional movement:**
costs of structure with movement = costs of structure without movement

**Illicit movement:**
costs of structure with movement > costs of structure without movement
Benefits of a model with gradient costs:

- It allows **precise testing** of theoretical models, and to make use of the information offered by gradient data efficiently.
- It helps to see **through complex data patterns** in which many factors influence acceptability.

See Wierzba (forthcoming) for a modeling study on a data set with object-initial structures in German, and Šimík & Wierzba (2017) for a study on West-Slavic.

Thank you for your attention!

References: