Singular vs. Plural *themselves*: Evidence from the Ambiguity Advantage

Nicholas Van Handel, Lalitha Balachandran, Stephanie Rich, Amanda Rysling
As singular *they* becomes more common, recent work has documented changes in the distribution and usage of *they* (Bjorkman, 2017; Conrod, 2019)

One line of work has examined the processing of *they* and *themselves* with both singular and plural antecedents (Sanford & Filik, 2007; Ackerman, 2018; Prasad et al., 2018; Camilliere et al., 2019)
Sanford & Filik (2007)

• *they* incurs a processing cost when its antecedent is singular (*someone*) rather than plural (*some people*)

• Proposal: *they* first looks for a plural antecedent; accommodates singulars only when no plural is found

But, not all singular antecedents are created equal

• Prasad et al. (2018): *themselves* elicits a P600 with gendered singulars (*John*) but not with ambiguous gender (*the participant*)

• Processing cost of singular *themselves* may be due to a gender mismatch rather than a number mismatch
An issue: studies have not examined the processing of *themselves* with both singular and plural antecedents in the same sentence.

This configuration is needed to evaluate Sanford & Filik’s claim that *they/themselves* only accommodates singular antecedents when no plural is available.

**Today’s talk:** we test whether *themselves* first triggers a search for plural antecedents by extending work on the ambiguity advantage (Traxler et al., 1998; Van Gompel et al., 2005; i.a.)
Ambiguity advantage: globally ambiguous sentences processed more quickly

In **AMBIGUOUS**, the reflexive is compatible with both potential attachment sites (\textit{aunt}, \textit{actress})

In **HIGH**, **LOW**, the reflexive is compatible with only one noun

Slowdown at reflexive in **HIGH** and **LOW** relative to **AMBIGUOUS**

<table>
<thead>
<tr>
<th>ATTACHMENT</th>
<th>[...] received a lot of media attention.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AMBIGUOUS</strong></td>
<td>The \textit{aunt}$<em>{N1}$ of the \textit{actress}$</em>{N2}$ who paid \textit{herself}</td>
</tr>
<tr>
<td><strong>LOW</strong></td>
<td>The uncle$<em>{N1}$ of the \textit{actress}$</em>{N2}$ who paid \textit{herself}</td>
</tr>
<tr>
<td><strong>HIGH</strong></td>
<td>The \textit{uncle}$<em>{N1}$ of the \textit{actress}$</em>{N2}$ who paid \textit{himself}</td>
</tr>
</tbody>
</table>

Agnostic as to the source of this effect.
If *themselves* prioritizes plurals, the RC must attach to N2 in Low and to N1 in HIGH.

- We should find the ambiguity advantage, because number controls attachment height when possible.

If *themselves* treats singular and plural antecedents equally, the RC can freely attach high or low.

- No differences between conditions: they are all ambiguous.

<table>
<thead>
<tr>
<th>ATTACHMENT</th>
<th>[...] received a lot of media attention.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMBIGUOUS</td>
<td>The <em>partners</em>$<em>{N1}$ of the <em>attorneys</em>$</em>{N2}$ who paid <em>themselves</em></td>
</tr>
<tr>
<td>LOW</td>
<td>The partner$<em>{N1}$ of the <em>attorneys</em>$</em>{N2}$ who paid <em>themselves</em></td>
</tr>
<tr>
<td>HIGH</td>
<td>The <em>partners</em>$<em>{N1}$ of the attorney$</em>{N2}$ who paid <em>themselves</em></td>
</tr>
</tbody>
</table>
Current Study

n = 60

12 observations/participant/condition

Maze task: participants are presented with two words at a time and advance through the sentence by picking the word that forms a grammatical continuation (Forster et al., 2009)

Foils generated using the A-Maze (Boyce et al., 2020).
Results

Main effect of High Attachment

- Reflexive: 65.87ms, [40.25, 92.73]
- Spillover: 23.36ms, [2.10, 43.67]

Difficulty when only N1 is plural indicates disambiguation to the High Attachment parse: *themselves* preferentially refers to plurals.
No effect of LOW ATTACHMENT

- Reflexive: -4.48 ms, [-31.32, 21.61]
- Spillover: 4.29 ms, [-17.04, 24.88]

Lack of a cost may be due to English’s well-documented low attachment preference (Frazier & Fodor, 1978; Fodor, 2002; i.a.).
Evidence of an ambiguity advantage: longer reading times in HIGH compared to AMBIG

Expected if *themselves* is biased to refer to plural antecedents, forcing high attachment in HIGH

**Novel evidence** for Sanford & Filik’s (2007) claim that pronouns like *they*\(^1\) accommodate singular antecedents when no plural is available

---

\(^1\)Based on binding literature, we might have expected *they* and *themselves* to differ
Many nouns in our experiment were gendered

Recall: Prasad et al. (2018) found that singular *themselves* is costly only when the singular antecedent is also gendered

Singular *themselves* might not prioritize plurals over singulars with ambiguous gender
Currently: testing different types of antecedents in a retrieval interference context

- Previous work has investigated antecedents that are generic vs. specific, (un)ambiguous gender (Ackerman, 2018; Conrod, 2019; Prasad et al., 2018; i.a.)
- Extend to contexts with multiple potential antecedents

Individual differences: how do gender identity and experience with gender neutral pronouns affect processing of they/themselves?

Long-term: changes in the processing profile of singular they/themselves over time
Many thanks to Matt Wagers, Shayne Sloggett, and Kelsey Sasaki for helpful discussion of and feedback on this work!
1. The **mother(s)** said that the **schoolboy(s) / student(s)** misrepresented **themselves**...

- Lure: Plural (mothers) vs. Singular (mother)
- Target Gender: Gendered (schoolboy) vs. Ambiguous (student)
- Target Number: Singular vs. Plural

Sloggett (2017): with reflexives, effect of lure only shows up in target-mismatch conditions

- Clear match: plural targets (schoolboys, students)
- Clear mismatch: singular gendered (schoolboy)
- Will singular, ambiguous gender (student) pattern with a target match (= no lure effect) or a target mismatch (= lure effect)?