Argument Identity Impacts Predictions Faster Than Argument Roles
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CONTEXT FOR PREDICTION
Comprehenders use different sources of contextual constraint to anticipate upcoming input.\[1\-6\]
By separating these constraints, we show that some have a more immediately impact than others.

Evidence: the same-sized cloze difference elicits a large N400, or none at all, depending on the source of the constraint.

DELAYED IMPACT OF STRUCUTURAL ROLE
The N400 is sensitive to a word’s predictability.
• More expected words \(\rightarrow\) smaller N400s \[4\]

BUT it is insensitive to thematic role-reversals that appear to violate predictions.
• Its sensitivity reemerged when the verb appears further away from the arguments.

\[\text{This suggests that structural role has a delayed impact on predictions.}\](10)

A NEW LOOK AT A CLASSIC FINDING

Joe knew which \{customer/article\} the secretary \{called\} …

Classic interpretation:
• Immediate detection of an implausible filler-gap dependency

New interpretation:
• Different fillers \(\rightarrow\) Differential verb-predictions
• Such immediate sensitivity to argument identity contrasts with the delayed sensitivity to structural role information in previous studies using SOV sentences \[9,10, cf.11-12\]

PROPOSAL
The lexical identity and structural roles of the arguments impact predictive computations for the verb on different time scales.

Toy example (try it yourself):
1. The gardener talked as the barber trimmed the ______ …
2. The barber talked as the gardener trimmed the ______ …

\(\rightarrow\) Online predictions might not incorporate all relevant sources of information at the same time.

RESULTS

<table>
<thead>
<tr>
<th>ARGUMENT ROLE</th>
<th>ARGUMENT IDENTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>The restaurant owner forgot…</td>
<td>The secretary confirmed…</td>
</tr>
<tr>
<td>which customer the waitress had served…</td>
<td>which illustrator the author had hired…</td>
</tr>
<tr>
<td>which waitress the customer had served…</td>
<td>which readers the author had hired…</td>
</tr>
<tr>
<td>Target cloze % 25.4 (9.3)</td>
<td>Target cloze % 27.7 (13.9)</td>
</tr>
</tbody>
</table>

Summary and Implications

Same cloze difference leads to very different N400 outcomes
• Cloze manipulated via lexical identity \(\rightarrow\) Big N400 effect
• Cloze manipulated via argument roles \(\rightarrow\) No N400 effect

Lexical identity of the arguments impacts comprehenders’ predictions for the verb more quickly than structural role information.

The N400 provides an extremely useful tool for studying how different sources of information impact predictions across time.

METHODS
n = 24, 30 trials / condition + 140 fillers
RSVP (530ms SOA), Binary plausibility judgment

ARGUMENT ROLE manipulation
• Lexically matched NPs, reversed to vary the target verb’s predictability

ARGUMENT IDENTITY manipulation
• First argument (wh-phrase) changed to vary the target verb’s predictability

Unlike Garnsey et al. (1989), all arguments are matched in animacy to avoid low level differences.

ACKNOWLEDGEMENTS
Special thanks to Erin Mahoney for invaluable help in preparing the experimental materials. Many thanks to Ellen Lau and other members of the Cognitive Neuroscience Language laboratory at UMD for discussions and feedback. This work was supported in part by NSF BCS-0848554 to Colin Phillips. Correspondence: wycho@umd.edu (Wing Yee Chow)

REFERENCES