AGING AND SIMILARITY-BASED INTERFERENCE IN SYNTACTIC PROCESSING: AN EYE-MOVEMENT STUDY
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INTRODUCTION

Older adults often show difficulty in understanding complex syntax (Kemper et al., 2006; Stine-Morrow et al., 2000), as object-relative (OR) constructions (e.g., “The banker that the barber praised climbed the mountain”) vs. subject-relative (SR) constructions (g, “The banker that the barber climbed the mountain”) vs. subject-relative (SR) constructions (g. Gordon et al. (2006) suggested that semantic similarity between concepts that need to be integrated in these structures creates interference in working memory (WM) for the older adults relative to the young, F(1,70)=6.19, p<.05, but the syntax by similarity interaction did not vary with age (see Figure 4).

RESULTS

or 2) Readers, regardless of age, initially formed a shallow representation of the syntactic structure (“good enough” representation, Christianson, et al., 2006): when the two NPs were similar, they did not necessarily allocate more time to parse SR clauses than OR clauses; when the two NPs were dissimilar, they actually allocated less time to the more difficult syntactic structures (i.e., OR clauses), F(1,70)=2.83, p>.01 (see Gordon et al., 2006 for similar findings). The “good enough” representation may result in split-over effects at the post-critical region.

Table 1. Participant Characteristics (numbers in parentheses are S.D.)

<table>
<thead>
<tr>
<th>Age</th>
<th>Education</th>
<th>WM</th>
<th>Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>15.4 (0.4)</td>
<td>56.5 (2.2)</td>
<td>48.6 (1.9)</td>
</tr>
<tr>
<td>Old</td>
<td>16.4 (0.6)</td>
<td>41.2 (0.2)</td>
<td>45.0 (1.4)</td>
</tr>
</tbody>
</table>

RESULTS (cont.)

RPD on the relative clause region were longer for conceptually similar clauses than for conceptually dissimilar clauses, F(1,70)=78.84, p<.001. OR clauses took more time to integrate compared to SR clauses, F(1,70)=9.74, p<.01, but only when NPs were conceptually similar, F(1,70)=34.86, p<.001, for the syntax by similarity interaction. RPDs were longer for the younger adults relative to the young, F(1,70)=6.19, p<.05, but the syntax by similarity interaction did not vary with age (see Figure 4).

Comprehension accuracy was higher for the younger adults, F(1,70)=25.98, p<.001, for sentences containing dissimilar concepts, F(1,70)=5.03, p<.05; and for sentences embedded in simpler syntactic structure (i.e., SR clause), F(1,70)=9.92, p<.01. When the two NPs in the sentence belonged to the same semantic category, older adults’ understanding of sentence meaning was disproportionally compromised by the more difficult syntactic structure (i.e., OR clause) compared to that of the young, F(1,70)=4.21, p<.05, for the age by syntax interaction. However this interaction was not reliable when the two concepts contained in the sentence were dissimilar, F(1<.05 (see Figure 5). Paired t-tests indicated comprehension for OR clauses was significantly worse than that for SR clauses only when older adults read relative clauses containing two similar NPs, t(35)=2.97, p<.01.

CONCLUSIONS

There was little age-difference in online eye-movement measures of syntactic processing. Consistent with the similarity-based interference hypothesis, both younger and older adults spent more time integrating the OR structure when the NPs embedded in the sentence sharing semantic features, attempting to build up a coherent text representation.

When the two NPs were dissimilar, readers initially formed a shallow or good-enough representation of the more difficult syntactic structure (i.e., OR clause), causing the split-over effect at the post-critical region.

Older readers’ comprehension was especially depressed by the combination of syntactic complexity (OR) and semantic similarity, suggesting that age differences in understanding complex syntax may result in part from a difficulty in controlling interference in WM.

REFERENCES