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Shallow Processing of Universal Quantification: A Comparison of Monolingual and Bilingual Adults

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Summary

Recent studies in sentence processing suggest that listeners often engage in shallow syntactic processing, and construct interpretations that do not capture the true content of a sentence (e.g., Ferreira et al., 2002; Sanford & Sturt, 2002). Clahsen & Felser (2006) have suggested that L2 learners are especially prone to shallow processing and often rely on lexical-semantic as opposed to syntactic information across a range of different constructions. Our study examines shallow processing in interpreting universal quantifiers. Brooks & Braine (1996) observed numerous errors in children in contexts where sets of objects are in partial one-to-one correspondence (see Figure 1). Brooks & Sekerina (in press) were surprised to find that even college students made similar errors as children in a picture-choice task, with many performing at chance. Here we use a sentence-picture verification task to examine whether undergraduates still exhibit chance performance in processing universal quantifiers. We compare monolingual (N=98) and bilingual speakers of English as an L2 (N=82) to explore Clahsen & Felser’s hypothesis with fluent bilinguals.

Results

Performance was near ceiling for filler sentences (95% correct across types). For target sentences with universal quantifiers, accuracy was significantly worse, with more than 1 in 5 college students performing at chance on these trials, consistent with shallow processing. Accuracy was correlated with Culture-Fair IQ (r = .30, p < .05) and Need for Cognition (r = .25, p < .05) in monolinguals, and with Culture-Fair IQ (r = .26, p < .05) in bilinguals. Culture-Fair IQ and Need for Cognition were uncorrelated in both groups. RTs were uncorrelated with accuracy, indicating that there was no speed-accuracy trade-off. Counter to Clahsen & Felser (2006), performance on quantifier sentences did not vary as a function of language background. We now are using eye movements to examine how attention allocation during sentence processing differs for students with poor versus good comprehension.

Table 1: Scores for Need for Cognition, Culture-Fair IQ, and Sentence-Picture Verification (Quantifier Trials).

<table>
<thead>
<tr>
<th>Group</th>
<th>NFC</th>
<th>CF IQ</th>
<th>Accuracy Mean, Range</th>
<th>% at Chance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monolingual</td>
<td>6.0</td>
<td>21.7</td>
<td>87.9 (50-100%)</td>
<td>20.4%</td>
</tr>
<tr>
<td>Bilingual</td>
<td>5.9</td>
<td>21.1</td>
<td>86.0 (50-100%)</td>
<td>24.4%</td>
</tr>
</tbody>
</table>

References