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Individual differences in L2 parsing and lexical representations

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In an impressive review of recent research on the L2 processing of syntactic and anaphoric dependencies and ambiguities, Cunnings (Cunnings) convincingly demonstrates that the evidence from studies conducted within the last decade is not compatible with the Shallow Structures Hypothesis (SSH) which posits that L2 readers engage in structurally less detailed parses than native speakers. He also concludes that invoking capacity limitations in working memory in L2 learners cannot account for the full range of findings. Instead, he puts forth a novel approach to non-native processing in the context of cue-based models of memory retrieval. Cunnings assumes (i) L2 learners are more susceptible to interference, and (ii) L2 learners weight retrieval cues differently from native speakers.

Unlike the SSH, that points to maturational effects in morphosyntax or capacity models which appeal to shortages of resources as causes of why L2 learners fail to execute full parses, Cunning's model stays at the level of description. Yet, postulating THAT non-native speakers are more susceptible to interference than natives begs the question of WHY they are.

Cunning's approach constitutes a continuity model, assuming fundamental identity in the grammatical representations and processing of non-natives and natives. Hence, individual differences among natives and non-natives – rather than qualitative group differences between them – will be key to uncovering the mechanisms underlying differential susceptibility to interference.

Recent work on individual differences in grammatical processing points towards a role of lexical representations and processing as an underlying cause for why speakers – non-native or native – differ in susceptibility from similarity-based retrieval interference in particular, and demonstrate less target-like grammatical processing more generally. Native speakers with lower scores on a receptive vocabulary task show greater susceptibility to interference in lower comprehension accuracy of long-distance dependencies (van Dyke, Johns & Kukona, 2014). Vocabulary size also interacts with the strength of garden-path effects in verb complement ambiguities (Traxler & Tooley, 2007). More generally, reading research emphasizes the quality of lexical representations as a major determinant of successful comprehension (e.g. Perfetti, 2007). Low-quality lexical knowledge is weaker, noisier and representationally less distinct, so that lexical activation of one item may spread to irrelevant lexical items or features which then interfere in retrieval and comprehension. These effects particularly impinge on the computation of syntactic dependencies for which it is essential a specific filler is selected from memory.

Some recent work in L2 grammatical processing is compatible with the notion that the quality of lexical representations arbitrates the degree of interference in processing syntactic dependencies. In a study looking at the processing of subject versus object clefts in L2 English (*It was Amanda who [t scared Sulena/Sulena scared t] with a frightening look*), Hopp (published online 25 November 2015) investigated effects of lexical frequency of the main verb (e.g. *scare* vs. *horrify*) on the timing of syntactic dependency resolution.

According to cue-based interference models, the difficulty in processing object clefts results from the interference of the subject NP when the filler is retrieved from memory at the object gap position. A robust object-extraction delay surfaced in reading times in the cleft region for native and non-native speakers, yet it significantly interacted with lexical frequency of the main verb for the L2 group. Unlike the L1 readers, L2 readers showed delayed effects of syntactic reanalysis with lower-frequency verbs. This study offers direct evidence that the susceptibility to cue-based interference interacts with lexical factors.

Other work reports that the processing of garden path sentences and filler-gap dependencies is affected by the cognate status of lexical items implicated in the parse (Hopp, published online 4 February 2016; Miller, 2014). For cognates, which share lexical representations across languages, advanced L2 speakers display target-like computation of L2 grammatical structure. In contrast, L2 speakers did not show sensitivity to grammatical structure

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in non-local dependencies (Miller, 2014) or they resorted to L1 routines (Hopp, published online 4 February 2016) with non-cognates that have weaker lexical representations or links (e.g., Gollan, Montoya, Cera & Sandoval, 2008). In visual world eye tracking experiments on grammatical gender processing, L2 speakers with more robust lexical gender representations construct predictive agreement relations, while L2 speakers with less robust lexical gender knowledge suffer increased interference of competitors (Hopp, 2013, 2016).

Although none of these latter experiments was specifically designed to test for effects of lexical representations on memory retrieval, their findings are suggestive that more diffuse lexical representations may lead to greater susceptibility to interference. Future research needs to directly test effects of lexical knowledge and processing on interference in grammatical processing versus other individual differences.

In any case, studying individual differences will offer deeper insights into the mechanisms underlying interference in grammatical processing and will provide both a testbed and a potential grounding for Cunnings' observation that natives and non-natives primarily differ in their susceptibility to interference in memory retrieval.

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