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Construct operationalization, L1 effects, and context in second language processing

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Cunnings (2016) provides welcome insights into differences between native speaker (NS) sentence processing, adult non-native speaker processing (NNS), and working memory capacity (WMC) limitations. This commentary briefly raises three issues: construct operationalization; the role of first language (L1); and context.

Cunnings has been part of the team that has advanced the Shallow Structure Hypothesis (SSH) (Clahsen & Felser (2006)), but he now casts doubt on its strongest claims. (See also Juffs & Rodríguez, 2014). Instead, Cunnings proposes that NS-NNS differences arise more from "an increased susceptibility to interference during memory retrieval operations" during processing than from an inability to deploy formal abstract and hierarchical structure. For example, a Garden Path (GP) sentence may be miscomprehended because the memory trace of the initial parse inhibits the subsequent correct interpretation. According to Cunnings, NS speakers might suppress incorrect interpretations better than NNS, who rely more than NS on discourse-based memory cues. Cunnings proposes that an individual's ability to use cues is crucially not the same as WMC and perhaps not quite the same as lexical access challenges, as proposed by Miller (2014) and Hopp (2015).

Cunnings reviews work on several structures (e.g., number agreement, GPs, filler-gap constructions, and binding) pointing out that the SSH and WMC cannot account for all the results. In order to test Cunnings' alternative proposals, a clearer operationalization of the construct 'cue' would be useful. The paper does not specify how many parallel competing cues constitute a load that is challenging for memory retrieval and how many competing cues the structures reviewed have in common based on a linguistic analysis. In addition, future work should make clear how 'competing cues' are fundamentally and falsifiably different from frameworks that do specify exactly what competition or memory load consists of (e.g., MacWhinney, 2008; Gibson's (2000, p.˙105) Dependency Locality Theory). Just and Carpenter's capacity model, which also adopts a parallel processing approach, predicts precise differential effects depending on the cues in the structures investigated (Just, Carpenter & Keller, 1996). Does memory retrieval cue processing make similarly nuanced predictions?

In addition, an operationalization of the construct of 'individual differences in cue/memory retrieval ability' that co-varies with the memory load imposed by the structures would be welcome. Van Dyke, Johns and Kukona (2014, pp. 397–398) explored various normed measures but concluded that only 'robustness of lexical representations' is likely to be related to interference effects because poor readers cannot inhibit competing word meanings. In L2 reading, I observed a student struggle to select 'depended' vs. 'deepened', so this proposal rings true in a classroom context.

Second, it is accepted that direct statistical comparison of monolingual NS and NNS is problematic. Moreover, assuming that the construct of NNS retrieval ability can be operationalized and measured, its effects among and within L1 groups must be determined. Cunnings mentions possible L1 influence several times, but it is not entirely clear if his model predicts L1 effects. Researchers face the problem that many experimental tasks involve reading (Hopp, 2015*)*, which is (at least) one step removed from the (abstract) linguistic systems themselves and less automatized in NNS than NS. L1 differences in lexical access depending on cognate status (Miller, 2014), L1 orthographic differences (Martin, 2016), and the cues used to process syntactic argument structure in verb-final languages (Choi & Trueswell, 2010) may all conspire to overwhelm general effects of retrieval memory in NNS. Thus, models of L2 processing must include clear L1 influence components. The challenge is to show cognitive capacity differences independently of L1 effects. One possibility might be to show that very advanced late learners might vary in memory retrieval alone, but not show L1 effects between groups in comparison to early bilinguals.

Third, Cunnings emphasizes the importance of context in his model. It may be that all research on sentence

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processing with only single sentences lacks external validity (e.g., Fedorenko, Piantadosi & Gibson, 2012). Hence, it might be necessary to provide discourse contexts for processing even in so-called control 'null contexts' (Wu & Juffs, 2016). These considerations have implications for creating experiments in which Cunnings' suggestions can be directly tested. Based on Cunnings' discussion, one prediction is that NNS speakers, when provided with clear context, would show increased accuracy in comprehension measures and reading profiles.

In sum, Cunnings provides signposts to new routes in NNS processing research provided that constructs can be effectively operationalized, L1 effects recognised, and appropriate discourse contexts provided.

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