Bilingualism: Language and Cognition 20 (4), 2017, 696–697 © Cambridge University Press 2016 doi:10.1017/S1366728916000894

Susceptibility to interference: underlying mechanisms, and implications for prediction

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(Received: August 7, 2016; final revision received: August 19, 2016; accepted: August 19, 2016; first published online 21 September 2016)

Over the years, models proposed for second-language (L2) processing have been remarkably parallel to those proposed for Broca's aphasia. Differences between agrammatic and unaffected language processing have been explained, e.g., in terms of lack of detailed syntactic structure building (Grodzinsky, 1995), resource deficits (Haarman, Just & Carpenter, 1997), slow syntactic processing (Burkhardt, Avrutin, Piñango & Ruigendijk, 2008), or slowed lexical access (Love, Swinney, Walenski & Zurif, 2008). Each of these approaches have their homolog in L2 processing (e.g., Clahsen & Felser, 2006; McDonald, 2006; Dekydtspotter, Schwartz & Sprouse, 2006; Hopp, 2013, respectively). It is therefore not surprising that Cunnings's proposal (Cunnings, 2016) parallels another idea in aphasia and aging research, namely that deviations from healthy young adult monolingual sentence processing can be attributed to an increased susceptibility to interference (e.g., Sheppard, Walenski, Love & Shapiro, 2015).

What is often lacking in approaches such as the ones mentioned above is an underlying, detailed explanation of WHY aphasics or L2 learners do not build detailed syntactic structures, have resources deficits, are slower, or suffer more from interference. To his credit, Cunnings mentions various sources of increased susceptibility to interference in L2 processing. His main proposal is that L2 learners assign more weight to discourse information, and, hence, need to deal with more competing elements when retrieving antecedents or other information than monolinguals. This, however, does not actually imply that L2 learners have an increased sensitivity to interference relative to native speakers; the only difference is a different ranking of informational cues. On the other hand, an increased reliance on discourse information cannot readily account for other observations that Cunnings cites to argue for an increased susceptibility to interference: that initial interpretations of garden paths linger longer for L2 speakers, and that L2 learners experience interference from intervening elements that are not discourse prominent (data Cunnings cites from Keating, 2010). In order to explain these findings, Cunnings briefly alludes to potential differences in executive functions, quality of the representation, and other yet to be determined differences in memory encoding, storage, and retrieval processes. The term "increased susceptibility to interference" therefore covers a vast and largely unexplored collection of potential differences between individuals and groups.

Regardless of the underlying explanation, Cunnings's proposal has interesting implications. In particular, it may entail a re-conceptualization of predictive processing. As has been recently argued (Chow, Momma, Smith, Lau & Phillips, 2016), predictive processing may involve cue-based memory retrieval. Based on nouns and other cues encountered, candidates for upcoming input are retrieved from long-term memory. If these processes work similar to cue-based retrieval from short-term memory, an increased susceptibility to interference is likely to affect predictive processing. More interference can mean that more candidates are activated, with more competition among the candidates. This may lead to slower predictions (it takes more time to settle on a candidate), or a net-effect of no prediction (when alternate candidates are picked equally often). This may account for the observation that L2 learners have problems predicting a noun on the basis of gender information if their L1 and L2 have conflicting gender cues (Dussias, Valdés Kroff, Guzzardo Tamargo & Gerfen, 2013). L2 learners may also have problems suppressing irrelevant candidates during predictive processing, leading to non-native predictive patterns. This view is supported by the finding that low-proficient L2 learners made more anticipatory looks to irrelevant action-related distractors than did monolingual English speakers in a visual world paradigm (Peters, Grüter & Borovsky, 2015).

In sum, although differences in susceptibility to interference is not a new way to explain processing differences between individuals and populations, and is likely to have many different underlying causes, Cunnings's application of this idea to L2 processing has

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https://doi.org/10.1017/S1366728916000894 Published online by Cambridge University Press

some interesting implications, for L2 psycholinguistics, as well as other research extending beyond 'invariant' healthy monolingual young adult language processing.

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https://doi.org/10.1017/S1366728916000894 Published online by Cambridge University Press