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Representing words in a second language: Can the L2 dance on its own?

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An enduring question in the history of research on the bilingual lexicon concerns the representation and processing of words in the second language (L2). Early models of the lexicon focused on the issue of whether lexical representations in the L2 were functionally separate from those in the first language (L1) or integrated into a single lexical network (see Kroll & Tokowicz, 2005, for a review). The question is important theoretically and practically for adult learners whose trajectory of L2 learning may be marked by apparent limitations in achieving a high level of proficiency. In this keynote article, Bordag, Gor, and Opitz (2021) present the Ontogenesis Model of L2 representation (OM) in which they make a case for the idea that L2 lexical representations are fundamentally fuzzy, following a trajectory of development that fails to reach an optimum level. Their proposal is comprehensive in synthesizing many aspects of previous research that fail to provide an adequate account of L2 lexical performance, in relating issues around L2 lexical development to claims about lexical quality, and in considering how the different features of lexical representations change as L2 proficiency is achieved. The focus on development is welcome as few previous accounts have considered these lexical changes on their own, without reference to the L1.

In this brief commentary, we raise a set of questions that we consider to be key in understanding lexical processing in L2 speakers and in evaluating the consequences of the proposed fuzziness for bilingual experience more generally. First, we ask whether we can treat the L2 lexicon independently of the L1 and the context of language use. The OM appears to apply primarily to contexts of instructed adult language learning. Although late learners in classroom environments are a legitimate group of L2 users, they are not necessarily the most representative group of L2 users. We ask here how the model might handle those heritage speakers whose trajectory of L2 learning differs as early learners and who often become dominant speakers of the L2 as the societal language once they enter school in early childhood. Are lexical representations in the L2 fuzzy regardless of the timing of language learning?

A second question concerns the interactions between the two languages. The OM is an attempt to account for the L2 lexicon on its own but recent work suggests that there is a dynamic interchange between the two languages. The L1 influences the L2 in ways that reflect patterns of transfer that have been documented in traditional accounts of the bilingual lexicon (e.g., Dijkstra & Van Heuven, 2002; Kroll & Stewart, 1994) but the L2 also influences the L1 at early stages of L2 development, as soon as learning begins (e.g., Bice & Kroll, 2015) and at all levels of L2 proficiency. If there is dynamic exchange between the two languages that comes to change the L1, how would fuzzy representations in the L2 modify the processing of the idealized lexical representation in the L1? If L2 lexical representations are fundamentally different than those for the L1, it would seem unlikely that we would observe the influences that have been reported from L2 to L1. L2 to L1 dynamics can be seen under the conditions of immersion, e.g., when the L2 becomes more dominant than the L1, and in the laboratory when bilinguals are asked to speak the L2 for an extended period of time and then switch to the L1 (e.g., Misra, Guo, Bobb & Kroll, 2012) or when bilinguals recognize spoken words in the L1 (e.g., Lagrou, Hartsuiker & Duyck, 2011). These interactions are not surprising when considering the evidence on the neural representation of the two languages, which largely rely on the same tissue (e.g., Perani & Abutalebi, 2005). The assumptions about the graininess of L2 representations at the center of the OM would seem to require additional modeling that does not seem warranted by the existing neuroscience data.

Recent studies also suggest that the cross-language dynamics render the L1 of bilinguals different than that of monolingual native speakers. This is especially the case for heritage speakers whose L1 grammars can undergo restructuring patterns due to their bilingual environment (e.g., Montrul, 2016). Given that the OM can also account for the L1, then, how far from the optimum curve are heritage speakers' L1 lexical representations across the dimensions of linguistic domains, mappings, and networks? However, another question is whose L1 is the model for this optimum curve? Therefore, variation between lexical representations need to be considered in the L1 as well. These issues are critical to understand heritage speakers' L1 lexical performance and development in instructed settings (e.g., Torres & Vargas Fuentes, 2021).

Finally, the types of predictions that the OM makes do not account for all findings regarding bilingual word processing. For example, several studies examining L2 emotional processing

have shown a lesser degree of emotionality compared to the L1 (e.g., Colbeck & Bowers, 2012). Reduced emotional processing in the L2 might well reflect the fuzziness of L2 lexical representations as suggested by the OM. However, another body of literature (e.g., Ayçiçeği & Harris, 2004; Sutton, Altarriba, Gianico & Basnight-Brown, 2007) has shown that bilinguals can show similar or even greater degrees of emotionality in the L2. Thus, even perpetually fuzzy L2 representations seem to carry significant emotional valence. The extent to which the L2 conveys strong emotions may depend on the context of language acquisition and language use; aspects that as previously stated, are not currently showcased in the OM framework. The example of emotional processing in L2 leads to a broader question about what the L2 can carry both on its own and as an agent of language change. Our assumption is that fuzzy representations may be limited in their ability to function in this way. What is needed is a principle that identifies the conditions under which the L2 is enabled and those in which it is not. Whether that principle is best characterized relative to an optimum state, is perhaps the central question in evaluating the OM.

Although L2 proficiency may affect the quality of lexical representations as the OM suggests, especially for late learners, it also appears to be fluid in that the trajectory of L2 learning and use may result not only in changes to the L2 but also to the L1. Even for classroom learners of an L2, there are rapid changes observed in both L2 (e.g., McLaughlin, Osterhout & Kim, 2004) and L1 (Bice & Kroll, 2015). There are also marked effects of the L2 on the L1 for learners who are immersed in the L2 (e.g., Baus, Costa & Carreiras, 2013). There is much that is unknown, particularly with respect to how the dynamics of cross-language exchange track across different aspects of language processing, in different learning contexts, and for different types of learners. We speculate that the ontogenetic curve that Bordag et al. (2021) describe may play an important role in predicting points of critical cross-language intersection rather than navigating the path to an idealized norm. From that perspective, we suggest that L2 may never be dancing on its own but in an impressively choreographed sequence, the properties of which will be revealed in the next stages of research.

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