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On the semantic optimum and contexts

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In their keynote article, Bordag, Gor and Opitz (2021) describe a functional model of L2 lexical representations by combining different linguistic dimensions of language acquisition into a comprehensive ontogenetic account. In their view, one of the key concepts of language consolidation is the optimum, which they define as the level at which representations are fully encoded and specified. Crucially, in their view, the optimum is conceived of as a range whose values are dependent on the type of linguistic domain under consideration (e.g., phonology or semantics).

When the linguistic distance between L1 and L2 is close, it seems that the acquisition optimum is reached quickly, and is stable over time in the case of both phonology and semantics. However, when the two languages diverge in terms of linguistic properties, the authors' model predicts that the consolidation of the representations is qualitatively different for each of these two linguistic domains. Under these circumstances, the phonological encoding remains fuzzy and less robust, whereas semantic representations are less stable over time, but they end up achieving the optimum. Consequently, the dynamics of the semantic representations during the process of acquisition are justified by the advantage that second learners have in mapping new words in preexisting semantic representations – essentially from their L1. Thus, consolidation is faster in those cases in which the words are learnt via translation equivalents. In the simplest scenario, this mapping is beneficial, since the first exposure to the new word; whereas, in the most complex one, the mapping requires multiple exposures to the new words in different contexts. Nevertheless, all the scenarios predict that learners will arrive at an optimum for L2 semantic representations.

The question that this raises is whether the semantic optimum, once it is reached after the process of consolidation, is always stable or fuzzy. If the term 'semantics' refers to the representation of concepts such as the functional and perceptual features of the members of a semantic category (e.g., animals), it is predicted that the optimum turns to be stable at some point. Nevertheless, semantic processing needs a further system to be in place to work efficiently, such as a control process that guides the retrieval of semantic representations. So, going back to the optimum, this means that the predicted scenario for semantics may be as fuzzy as that for phonology, also in the simplest.

Ralph, Jefferies, Patterson and Rogers (2017) define the control part of semantic cognition as the system that allows individuals to generate representations and inferences according to contexts, modalities and task demands. Semantic control guides the retrieval of information that is required by the context in a flexible way. For example, the retrieval of visual properties of a hammer is inhibited if we would need to activate its functional properties when we process what a hammer is for. Similarly, the semantic demand might modulate the involvement of the control system during lexical retrieval. It is known that retrieving words that are semantically-related is more demanding for the linguistic system than retrieving words from different semantic categories. This suggests that the semantic optimum may change constantly, and this would be the case for L2 as well, during language acquisition.

An example of how the context or task might modulate the fuzziness of semantic representations comes from a recent study involving a trilingual patient who had semantic dementia (Calabria, Jefferies, Sala, Morenas-Rodríguez, Illán-Gala, Montal, Fortea, Lleó & Costa, 2021). The study of this patient offered the opportunity to investigate the question of how semantic/conceptual representation may be language-independent (Francis, 2005). This particular type of brain degeneration is known to affect semantic memory, and for this reason it was expected that the conceptual representations were equally deteriorated in her three languages (Catalan, Spanish, and English). Indeed the results showed that the damage to the left anterior temporal lobe of her brain affected the lexico-semantic representations equally in all languages. This conclusion was supported by the high response consistency of errors across her three languages during word production tasks. Consequently, her semantic optimum after brain damage was back to a 'fuzzy condition', but in a similar way for her L1 and L2.

Nevertheless, when the semantic context was manipulated by modifying the semantic relatedness of items to be named, response consistency disappeared. This suggests that the control component of lexical retrieval was changing the optimum, despite the semantic representations in her memory being quite deteriorated. Hence, these findings demonstrate that the

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optimum of semantic processing may vary according to linguistic contexts, and such modulation may still exist in those conditions in which the integrity of representations is not complete. So, optimum might be optima for different contexts.

Bordag, Gor, and Opitz do not explicitly include in their model the control dimension as a modulator of semantic optimum. Nevertheless, this idea is indirectly proposed in the concepts of mapping between lexical entries and domains, and the dimensions of networks. Specifically, the dimensions of networks define the degree of richness of such connections. Consequently, the strength of such connections probably determines the role of control in retrieving the representations in a flexible way depending on the context and task demands.

References

Bordag D, Gor K and Opitz A (2021) Ontogenesis Model of the L2 Lexical Representation. *Bilingualism: Language and Cognition*, 1–17. doi:10.1017/S1366728921000250

Calabria M, Jefferies E, Sala I, Morenas-Rodríguez E, Illán-Gala I, Montal V, Fortea J, Lleó A and Costa A (2021) Multilingualism in semantic dementia: Language-dependent lexical retrieval from degraded conceptual representations. *Aphasiology* **35**, 240–266.

Francis WS (2005) Bilingual Semantic and Conceptual Representation. In Kroll JF and de Groot AMB (eds), *Handbook of bilingualism: Psycholinguistic approaches*. Oxford University Press, pp. 251–267.

Ralph MA, Jefferies E, Patterson K and Rogers TT (2017) The neural and computational bases of semantic cognition. *Nature reviews. Neuroscience* **18**, 42–55. https://doi.org/10.1038/nrn.2016.150

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