An ERP investigation of Spanish scalar implicatures: An L1 attrition study

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The present study examines scalar quantifier interpretation in Spanish. Spanish has two scalar quantifiers that roughly translate to “some” in English, but that distribute uniquely according to the context in which they are used. Algunos ‘SomeA’ gives rise to a quantity implicature and is partitive due to semantic features constraining its meaning. Unos ‘SomeB’ does not give rise to an implicature and can refer to whole sets. We measured ERPs and offline judgments in an attempt to disentangle processing from the erosion of mental representations among Spanish-English bilinguals in long-time L2 immersion. The first experiment assessed offline judgments via a picture-sentence verification task that was also used to collect ERP data. Offline judgments for this task revealed that monolinguals reliably judged algunos to be partitive and unos to be either partitive or whole. Long-time bilingual Spanish learners of English showed an over-acceptance of algunos in reference to whole sets, and showed no preference for unos in either subset or whole set contexts, accepting both quantifiers in any context. The ERP responses for monolinguals for this task revealed an N400 for algunos whole set contexts compared to subset contexts, as well as an N400 effect for unos whole set compared to subset contexts. Monolinguals also showed a post-N400-positivity when comparing algunos conditions that we take to be associated with a strong semantic violation. Bilinguals show no N400 for the algunos comparisons and only the emergence of an N400 for the unos comparisons. Finally, a non-binary interpretation task showed that the monolinguals judge algunos to be partitive and unos to be either partitive or whole. Bilinguals over accept algunos in whole contexts and largely accept unos in either whole or subset contexts. The data suggest that L1 attrition at a truly external interface is not an issue of either just processing or just competence. Both implicit brain responses and judgments are non-native-like for scalar interpretations among bilinguals, showing evidence of L1 semantic-pragmatic mapping changes after prolonged exposure to a unique L2 with simultaneous decreases to L1 input. We suggest that a fine-grained approach offered by applying the Feature Reassembly Hypothesis to the domain of L1 attrition might be fruitful for thoroughly explaining the present data and for future studies in L1 attrition more generally.
Figure 1: Judgments for picture sentence verification task

Figure 2: Judgments for non-binary interpretation task

Figure 3: Grand average ERPs at CPz, Pz and Cz for algunos whole compared to algunos partitive among controls (left) and attriters (right). Topographical distribution for same condition made by subtracting felicitous from infelicitous conditions between 200-600 ms (in addition to 700-900 ms for controls).