

**Acquisition of sign phonology by hearing second language learners: The role of sign structure and iconicity**  
(Language: English or BSL)

In spoken languages most of the phonetic errors produced by second language (L2) learners result from the influence of the phonological repertoire of their first language (L1)<sup>1,2</sup>. An intriguing question is what factors motivate the errors observed in learners of a sign language as L2 when modality differences do not allow for such cross-linguistic influence (i.e., when the L1 is a spoken language and the L2 is a signed language). In the present longitudinal study we focus on sign structure and iconicity to determine whether and how they influence sign articulation in L2 learners.

Fifteen hearing learners of British Sign Language (BSL) took part in a sign repetition task at two points in time (before they started their BSL course and then 11 weeks later). Participants were asked to imitate as accurately as possible a set of iconic and arbitrary signs balanced for phonological complexity (six levels of increasing complexity) and their renditions were coded for accuracy for four phonological parameters (handshape, location, movement and orientation).

The results show that from the onset some parameters were produced more accurately than others: handshape being the most difficult, followed by movement, then orientation and location being the most accurate. We also found that as sign complexity increased, articulation accuracy decreased, and that body-anchored signs were executed more accurately than signs in neutral space. Iconic signs were articulated significantly less accurately than arbitrary signs and iconicity's negative effect was exacerbated as phonological complexity increased (see Figure 1). Instruction had a positive effect because learners improved their sign articulation over time, in particular for the parameter handshape.

The differences observed across parameters suggest that they pose varying degrees of difficulty due to their intrinsic sensory-motor characteristics (location being more visually salient, movement more ephemeral, handshape harder to articulate). Interestingly, learners produced the same pattern of errors as those reported for L1 acquisition<sup>3-5</sup>. Phonologically complex signs posed a greater challenge than simpler ones because learners struggled to process all the parameters of signs as their number of features increased. Body-anchored signs were more accurately produced than signs in neutral space because the proprioceptive feedback they generated freed up resources to focus on the accurate execution of other parameters. Lastly, iconicity had a negative effect on sign articulation because it gave the learners access to the meaning of the sign, thus they produced signs that retained the same iconic features but not their exact phonological form. We also consider whether participants' gestural repertoire interfered in sign articulation due to the similarities with their own iconic gestures.

We conclude that sign structure and iconicity are important aspects that influence articulation and that the interaction of these two factors may impact in the development of phonology in L2 learners. The contribution of this study is that it delineates some aspects of L2 learning that are specific to sign languages (i.e., iconicity and gestural influences) from those that are common to all language learners regardless of modality (i.e., the effect of phonological complexity and instruction).

**Word count:** 499 words

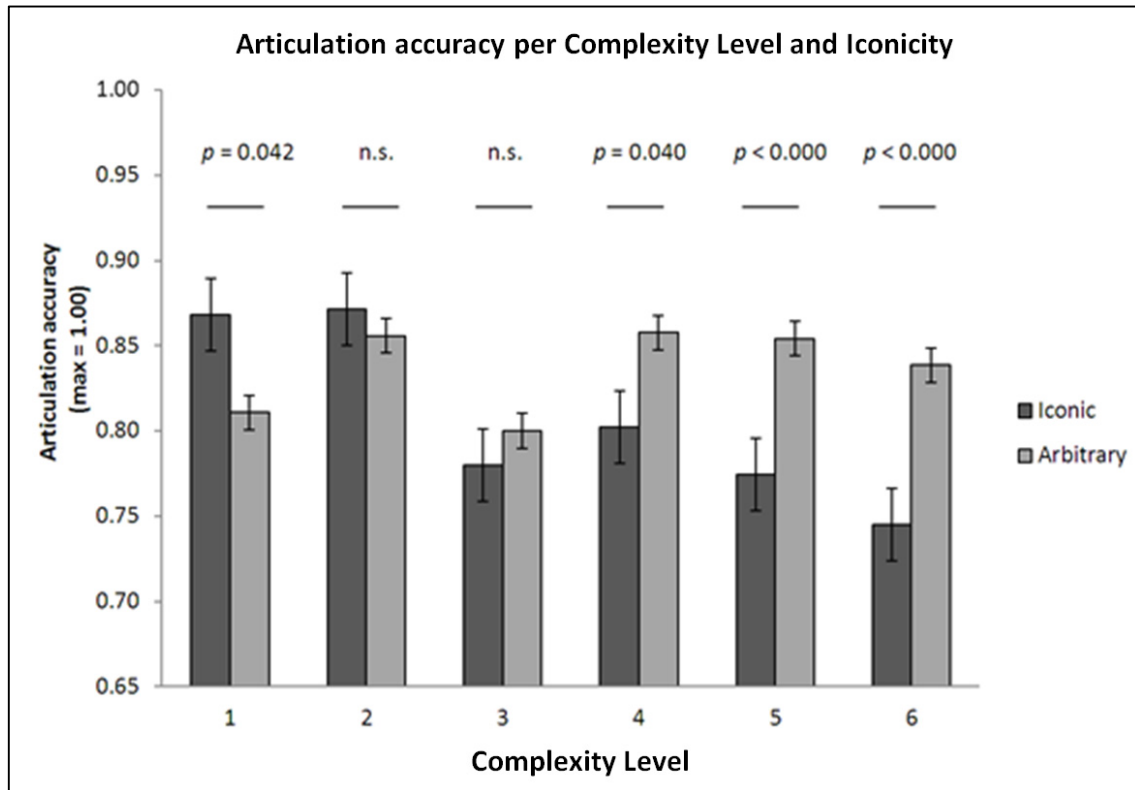


Figure 1. Articulation accuracy for iconic and arbitrary signs for each level of increasing phonological complexity (1 the simplest and 6 the most complex). Levels 1 and 3 are signs articulated in neutral space and Levels 2 and 4 are signs anchored to the body (bars represent standard error).

## References

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