ASL Handshapes: Phonetic Features and Phonological Categories

to be presented in ASL

This paper describes the methods and results of a pilot study using a narrow phonetic transcription of American Sign Language (ASL) hand configurations to examine inter- and intra-signer variation in produced features. Video recordings of a three-year-old child and his mother were coded for low-level hand configuration features. Occurrence and co-occurrence of features were analyzed using ELAN and R, with relationships between and among features, target handshapes, sign lemmas, and participants examined. Results show significant amounts of variation across multiple productions of target forms, indicating that increased attention to phonetic features is necessary for the accurate description of signed languages.

Many analyses of signed languages (e.g. Liddell & Johnson 1989; Sandler 1996; Brentari & Eccarius 2010) have treated 'handshape' as a class of phonemic-level contrastive unit, comparable to 'consonant' or 'vowel' for spoken languages. Transcriptions of signed data typically record the handshapes and/or features posited for citation forms, but not the lower-level features (such as individual joint positions) that are actually produced. These features are assumed to be predictable from the posited target handshape, and any variation is assumed to be noncontrastive and is typically neither recorded nor examined. Researchers have tended to (1) assume that they (or their research assistants/informants) know what the handshape categories for a language are; (2) assume that they/their assistants know which produced forms belong to different categories and which are variants of the same category; (3) assume they/their assistants can tell which handshape was intended, based on the produced form; and (4) treat unexpected configurations either as errors or as the result of postlexical phonological processes.

Results from this study indicate that many ASL signs are produced with different handshape features than their target forms. For many of the produced forms in this data, it is impossible to tell what the target handshape is solely by examining the produced configuration. Figure 1a shows three target handshapes in ASL; 1b shows four configurations that appear in tokens for all three targets. None of the four configurations shown in 1b is a canonical production of any phonemic handshape in ASL, but they all appear regularly in signs with posited target handshapes V, K, and 3. The amount of variation in feature values for individual joints and the amount of overlap between produced forms with different targets indicate that although the handshapes V, K, and 3 may be distinct categories in ASL, the category boundaries are not clear.

This study uses the phonetic details of produced ASL hand configurations to examine the nature of handshape categories, including not only category-central citation forms but also the description and quantification of variation in produced forms. Results indicate that traditional transcription methods and assumptions about category identity may be obscuring important facts about allophonic, dialectal, and crosslinguistic variation in signed languages, concealing underlying categories and/or encouraging false distinctions between categories that do not actually pertain.



Figure 1b: produced forms associated with targets V, K and 3

References

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- Liddell, Scott K. & Robert E. Johnson. 1989. American Sign Language: The phonological base. *Sign Language Studies* 64. 197-277.
- Sandler, Wendy. 1996. Representing handshapes. *International Review of Sign Linguistics* 1. 115-158.