Violating the formational properties of American Sign Language to create phonotactically illegal pseudosigns

Emily P. McGuire
School of Human Communication Disorders
Dalhousie University

Emily C. Patrick
Department of Psychology and Neuroscience
Dalhousie University

Aaron J. Newman
Associate Professor, Departments of Psychology and Neuroscience, Psychiatry, Surgery, and Pediatrics
Dalhousie University
Scientific Staff, Department of Neurology, IWK Health Centre

In linguistics, pseudowords are a useful tool to investigate language processing independent of meaning, and can serve important functions as control stimuli in language learning studies. Further, comparing the perception of true words and pseudowords allows researchers to investigate the word formation properties of a certain language, as well as factors influencing memory and comprehension of linguistic material (e.g., Heim et al., 2005). Creating pseudowords often involves rearranging or substituting one or more letters of a lexical word, and they vary in how well they conform to the formational properties of real words in a language (e.g., *freg* vs. *lpsee*).

Similar to pseudowords, many studies of sign language linguistics make use of pseudosigns, which are manual gestures based on the properties of a signed language such as American Sign Language (ASL; e.g., Emmorey et al., 2011). Pseudosigns serve many of the same research functions as pseudowords, and can also be used to gain insight on modality-specific or -independent linguistic processes (e.g., Petitto et al, 2000). However, research to date has almost exclusively employed pseudosigns which conform to the rules of a signed language. These "legal" pseudosigns are generally formed by substituting one or more phonotactic parameters (handshape-location-movement) from another lexical sign (e.g., Grosvald et al., 2012). Pseudosigns which do not conform to the rules of a signed language, or "illegal" pseudosigns, are currently undeveloped in the

literature. Validating a set of illegal pseudosigns would provide a complement to phonotactically illegal stimuli already established in spoken language research, and have diverse applications in the study of sign language learning and implicit signed language processing.

The goal of the current study was to establish formational properties of ASL signs which, when broken, make a sign illegal, and from these violations to create a set of phonotactically illegal pseudosigns. Phonotactic violations were identified by native ASL signers and systematically applied to a standard set of basic single-syllable ASL signs. These illegal pseudosigns were further refined based on formational parameters from published inventories of ASL (e.g., Brentari, 1998). Each illegal pseudosign was performed by a native signer and video-recorded. The same native signer also recorded a set of legal pseudosigns (from Grosvald et al., 2012), a set of ASL signs, and a set of recognizable emblematic gestures commonly used by English speakers.

Native English speakers (non-signers) and native signers evaluated the stimuli from each of the four categories by rating the meaningfulness of each stimulus on 7-point scale, defining or guessing at the meaning, and deciding if the stimulus was ASL (yes/no). Acceptable stimuli for each category were then selected based on their meeting of expected criteria: selected ASL signs were not meaningful to non-signers and were highly meaningful to native signers; selected emblems were highly meaningful to both groups; selected legal and illegal pseudosigns were not meaningful to non-signers nor to native signers. Further, sign stimuli whose meaning was correctly guessed by any non-signer, or any pseudosign stimuli with multiple similar guesses were eliminated. The final four sets of stimuli, including phonotactically illegal pseudosigns, will be instrumental in future sign language linguistics research.

References

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