

Iconic strategies in silent gesture: Perceiving the distinction between nouns and verbs

Iconicity in the manual modality can be exhibited to varying degrees such that the signal can represent one or many features of the referent. For instance, hearing non-signers' tend to gesturally represent manipulable objects through "handled" (or more broadly, action-variant) displays that iconically represent the associated action rather than the object itself, which could alternatively be represented by an instrument display or a trace of its shape (Padden et al, 2015; Ortega et al, 2014). While this bias can be overturned via learning (Verhoef et al, 2016), it is uncertain if the interactive negotiation (and subsequent transmission) of iconic signals would result in the maintenance of this action-bias and its corresponding gestural signals.

The first study presented here corroborates the findings of hearing non-signers' natural biases as demonstrated through an iterated, gradual turnover silent gesture communication task (Micklos, 2016) requiring the disambiguation of similarly co-speech gestured noun-verb pairs (manipulable and non-manipulable targets). Participants interactively negotiated the gestures for noun-verb pairs (e.g. "A Hammer" and "Hammering"), which were transmitted via observation. Most noun and verb gestures maintained an action-based iconicity with handled or acted representations (see Ortega & Ozyurek, 2016). However, many participant chains innovated and negotiated noun-marking systems, which themselves exhibit motivatedness. Chains that developed a systematically used marker for noun targets allowed for the main gesture of the noun-verb pair to be similar in terms of handshape, duration, and exclusion of additional information (e.g. tracing shape, gesturing associated meanings), while those without a well-established noun marking system did not exhibit these features to the same degree.

In a second study, video-recorded final gestures from the first experiment were judged by naive participants for how much they resembled either the corresponding noun or verb. Participants gave confidence ratings for their judgments of iconicity as well as qualitative accounts for their judgments. Each participant saw a video of one of three gestures: 1) a gesture from a marked noun-verb pair with the marker, 2) a gesture from a marked pair without the marker, or 3) a gesture from a non-marked noun-verb pair. Motivated markers facilitate participants' guesses for the noun-ness of the target gesture, while non-marked gesture judgments conform to the natural bias to perceive actions (i.e., verbs). Finally, non-marked gestures exhibit more iconicity by means of highlighting the noun- or verb-ness of the meaning via additional gestural strategies (e.g. additional shape gesture).

This study demonstrates that: 1) noun-verb gestures that are negotiated interactively retain a degree of iconicity, 2) a marking system allows for similar meanings to be gestured with the same iconic strategy while maintaining distinguishability between nouns and verbs; and, 3) interactively negotiated communication systems may increase in iconicity in the absence of noun-marking.

References

- Micklos, A. (2016). Interaction for facilitating conventionalization: Negotiating the silent gesture communication of noun-verb pairs. In S.G. Roberts, C. Cuskley, L. McCrohon, L. Barceló-Coblijn, O. Fehér & T. Verhoef (eds.) *The Evolution of Language: Proceedings of the 11th International Conference (EVLANG11)*.
- Ortega, G., & Ozyurek, A. (2016). Generalisable patterns of gesture distinguish semantic categories in communication without language. In A. Papafragou, D. Grodner, D. Mirman, & J. Trueswell (Eds.), *Proceedings of the 38th Annual Meeting of the Cognitive Science Society (CogSci 2016)* (pp. 1182-1187). Austin, TX: Cognitive Science Society.
- Ortega, G., Sumer, B., & Ozyurek, A. (2014). Type of iconicity matters: Bias for action-based signs in sign language acquisition. In P. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.), *Proceedings of the 36th Annual Meeting of the Cognitive Science Society (CogSci 2014)* (pp. 1114-1119). Austin, Tx: Cognitive Science Society.
- Padden, C., Hwang, S.-O., Lopic, R., & Seegers, S. (2015). Tools for language: patterned iconicity in sign language nouns and verbs. *Topics in Cognitive Science*, 7(1), 81–94.
- Verhoef T., Padden C., & Kirby S. (2016). Iconicity, Naturalness And Systematicity In The Emergence Of Sign Language Structure. In S.G. Roberts, C. Cuskley, L. McCrohon, L. Barceló-Coblijn, O. Fehér & T. Verhoef (eds.) *The Evolution of Language: Proceedings of the 11th International Conference (EVLANG11)*.