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ABSTRACT

Bradley, Chuck Ph.D, Purdue University, May 2019. Transparency of transitivity in pantomime, sign language. Major Professor: Ronnie B. Wilbur.

This dissertation investigates whether transitivity distinctions are manifest in the phonetics of linguistic and paralinguistic manual actions, namely lexical verbs and classifier constructions in American Sign Language (ASL) and gestures produced by hearing non-signers without speech (i.e., pantomime). A positive result would indicate that grammatical features are (a) transparent and (b) may thus arise from non-linguistic sources, here the visual-praxic domain. Given previous literature, we predict that transitivity is transparent in pantomime and classifier constructions, but opaque in lexical verbs.

We first collected judgments from hearing non-signers who classed pantomimes, classifier constructions, and ASL lexical verbs as *unergative*, *unaccusative*, *transitive*, or *ditransitive*. We found that non-signers consistently judged items across all three stimulus types, suggesting that there is transitivity-related information in the signed signal.

We then asked whether non-signers' judging ability has its roots in a top-down or bottom-up strategy. A top-down strategy might entail guessing the meaning of the sign or pantomime and then using the guessed meaning to assess/guess its transitivity. A bottom-up strategy entails using one or more meaningful phonetic features available in the formation of the signal to judge an item. We predicted that both strategies would be available in classing pantomimes and classifier constructions, but that transitivity information would only be available top-down in lexical verbs, given that the former are argued to be more imagistic generally than lexical verbs. Further, each strategy makes a different prediction with respect to the internal representation

of signs and pantomimes. The top-down strategy would suggest signs and pantomimes are unanalyzable wholes, whereas the bottom-up strategy would suggest the same are compositional.

For the top-down analysis, we correlated lexical iconicity score and a measure of the degree to which non-signers 'agreed' on the transitivity of an item.we found that lexical iconicity only weakly predicts non-signer judgments of transitivity, on average explaining 10-20% of the variance for each stimulus class. However, we note that this is the only strategy available for lexical verbs.

For the bottom-up analysis, we annotate our stimuli for phonetic and phonological features known to be relevant to transitivity and/ or event semantics in sign languages. We then apply a text classification model to try to predict transitivity from these features. As expected, our classifiers achieved stably high accuracy for pantomimes and classifier constructions, but only chance accuracy for lexical verbs.

Taken together, the top-down and bottom-up analyses were able to predict non-signer transitivity judgments for the pantomimes and classifier constructions, with the bottom-up analysis providing a stronger, more convincing result. For the lexical verbs, only the top-down analysis was relevant and it performed weakly, providing little explanatory power. When interpreting these results, we look to the semantics of the stimuli to explain the observed differences between classes: pantomimes and classifier constructions both encode events of motion and manipulation (by human hands), the transitivity of which may be encoded using a limited set of strategies. By contrast, lexical verbs denote a multitude of event types, with properties of those events (and not necessarily their transitivity) being preferentially encoded compared to the encoding of transitivity. That is, the resolution of transitivity is a much more difficult problem when looking at lexical verbs.

This dissertation contributes to the growing body of literature that appreciates how linguistic and paralinguistic forms may be both (para)linguistic and iconic at the same time. It further helps disentangle at least two different types of iconicities (lexical vs. structural), which may be selectively active in some signs or constructions

but not others. We also argue from our results that pantomimes are not holistic units, but instead combine elements of form and meaning in an *analogous* way to classifier constructions. Finally, this work also contributes to the discussion of how Language could have evolved in the species from a gesture-first perspective: The 'understanding' of others' object-directed (i.e. transitive) manual actions becomes communicative.