The contribution of individual parameters to perceived iconicity and transparency in gesture-sign pairs – mini-presentation

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Introduction Sign languages are characterized by a high degree of iconicity in the lexicon, such that many signs can be described in terms of a resemblance relationship between form and meaning. The iconicity of signs is accessible to both signers and non-signers, and studies have shown that the language-specific knowledge of signers and the gestural repertoire of hearing non-signers influences the perception of iconicity in lexical signs[3][5][6][7]. Knowledge of the phonological structure of signs (e.g. knowing that the non-selected fingers are unlikely to be iconically mapped)[7] as well as knowledge of the etymology of signs[8] and of the structure of lexical networks within a sign language[3] may differentially influence judgements about the degree of iconicity as measured by iconicity ratings. While mappings on the level of sublexical elements seem to contribute to these judgments, the degree to which separate phonological characteristics of signs are perceived as iconic remains largely unclear[1][2]. Furthermore, while the gestural repertoires of sign-naïve adults are often cited as influencing the perception of iconicity in signs, there has been little systematic investigation of how this is mediated by the iconicity of (silent) gestures[4][5][6][7]. We propose a study that applies a combination of existing methodologies to the domain of perceived iconicity, taking into account both formational properties of the item and the gestural knowledge of the rater. This will result in a database of gestures that are pervasive in the gestural repertoires of speakers, the signs corresponding to the same concepts, and iconicity ratings for each of these items. **Embedding** This study is part of a larger project investigating the roles of iconicity, phonology and gestural knowledge in lexical learning in L2M2 (second language, second modality) acquisition of DGS (*Deutsche Gebärdensprache,* German Sign Language) by German hearing adults. As a proxy for the actual learners' gestural repertoire, we elicited silent gestures from 16-20 different German sign-naïve adults[1]. We matched pervasive gestures (i.e. gestures produced by >50% of the participants) to corresponding DGS signs to create a database of a total of 120 sign-gesture pairs across six conditions, determined by the degree of formal overlap between sign-gesture pairs (high-low) and the parameter (handshape-location-movement) which overlaps or not[5]. To be able to control for the characteristics (including formal features and iconicity) of the (DGS) items in the larger L2M2 acquisition study, the current study creates norming data by eliciting transparency and iconicity judgments made by sign-naïve adults for all items (i.e. 120 signs and 120 corresponding silent gestures for the same concepts). **Task** The task will consist of two parts. In the first part, participants will be asked to guess the meaning of the items (gesture or sign) as a measure of transparency. In the second part, they will be shown items alongside their meaning and asked to rate the degree to which the form evokes the meaning (measuring iconicity) on a 7-point Likert-scale. Participants will provide four ratings for each item: one for the whole gesture/sign, and one for each of the three parameters (handshape, location and movement). **Participants** We aim to obtain ratings by 320 German sign-naïve hearing adults so that each item will be rated 40 times. To achieve this, we will construct an online experiment consisting of subsets of items.[10] Each participant will be shown 60 items (30 meaning guesses and 30 iconicity judgements). **Analysis** Since the primary goal is to norm the stimuli set, we will foremost use the data to assign average ratings to the items. However, several predicting factors can be identified, and will be tested in statistical analysis: item type (gesture-sign), formational overlap between signs and gestures (high-low), parameter overlap (handshape-location-movement). **Expectations** The gestures to be rated were selected from

[1] Partially collected by the authors, partially in another ongoing project in the same lab.

the previously collected data set based on being produced in a similar way by >50% of participants in a silent gesture task[5]. We expect this systematicity (or agreement) to be reflected in the iconicity ratings for the silent gestures[9], with more correct meaning guesses for items with more agreement and a positive correlation between ratings and the amount of agreement (i.e. between 50%-100%). For DGS signs, we may expect lower iconicity ratings in comparison, due to phonological changes abstracting away from iconicity[5]. Since gesture-sign overlap influences the perception of iconicity[5], high-overlap signs are expected to be rated higher than low-overlap signs. For the same reason, we expect the iconicity ratings for the individual parameters to correlate positively with overlap between gesture and sign in this parameter. **Limitations** A potential limitation of this study is given by the selection of the items. Representational gestures, as produced for concepts in silent gesture tasks, are assumed to be highly iconic[9]. Since we are interested in gesture-sign pairs that differ in formal overlap, we can expect that the signs with high formational overlap with silent gestures will also be highly iconic. Even the low-overlap signs (note: we specifically do not use no-overlap signs) will contain iconic elements, as they are selected to have one overlapping parameter with the gesture. Considering this, our item set may be skewed towards the iconic range of the spectrum. This may be a less ecologically valid representation of sign language lexicons, but it enables us to determine the relative iconicity of gestures and signs. **Conclusion** With the proposed methodology, we expect to (i) reveal the contribution of individual parameters in the perception of iconicity by sign-naïve adults, and (ii) quantify the iconicity of gestures relative to (iconic) signs for the same concepts. The data will result in a normed database of pervasively used silent gestures and corresponding signs, as well as a task that can be reused for different studies.

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