

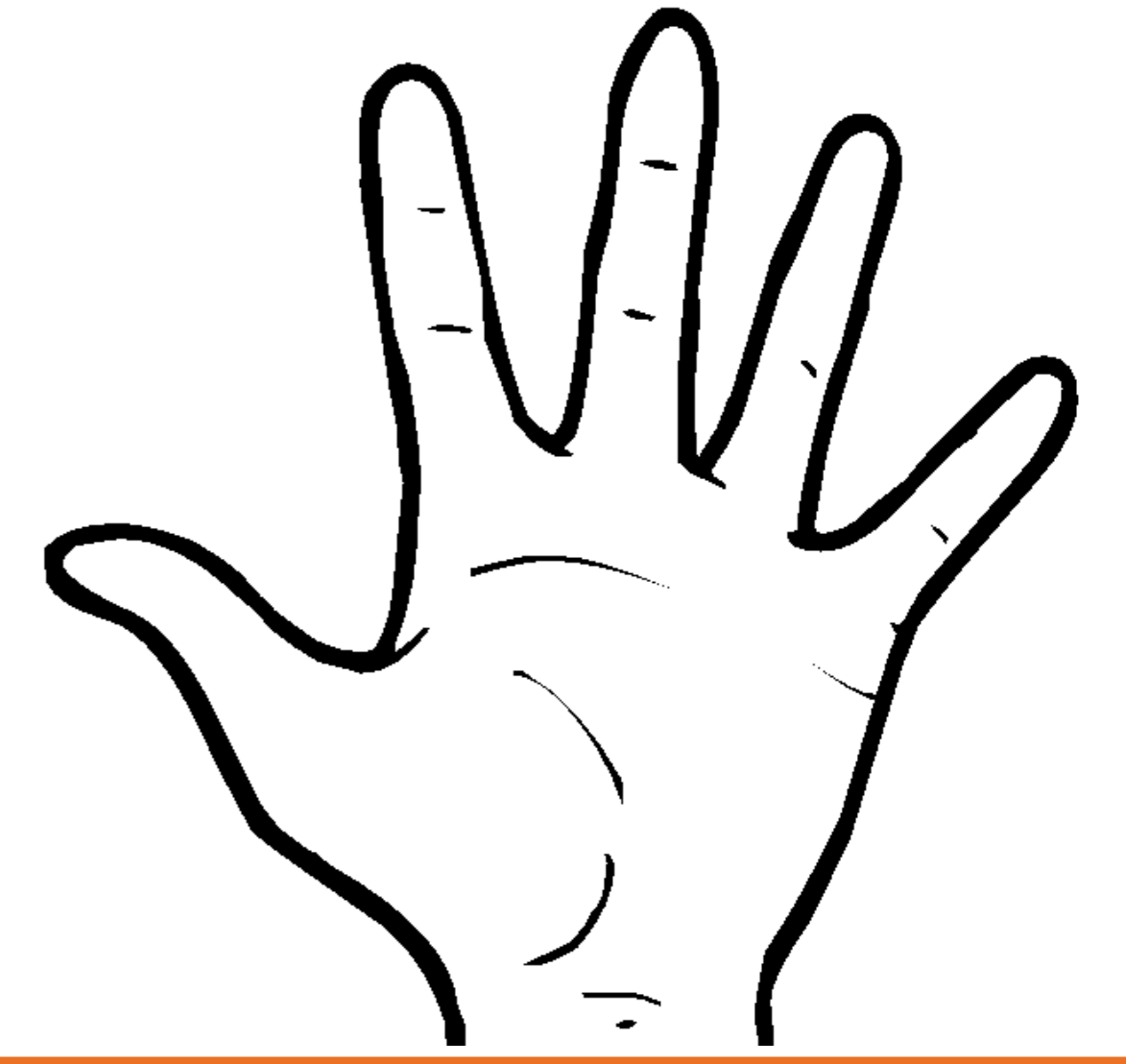
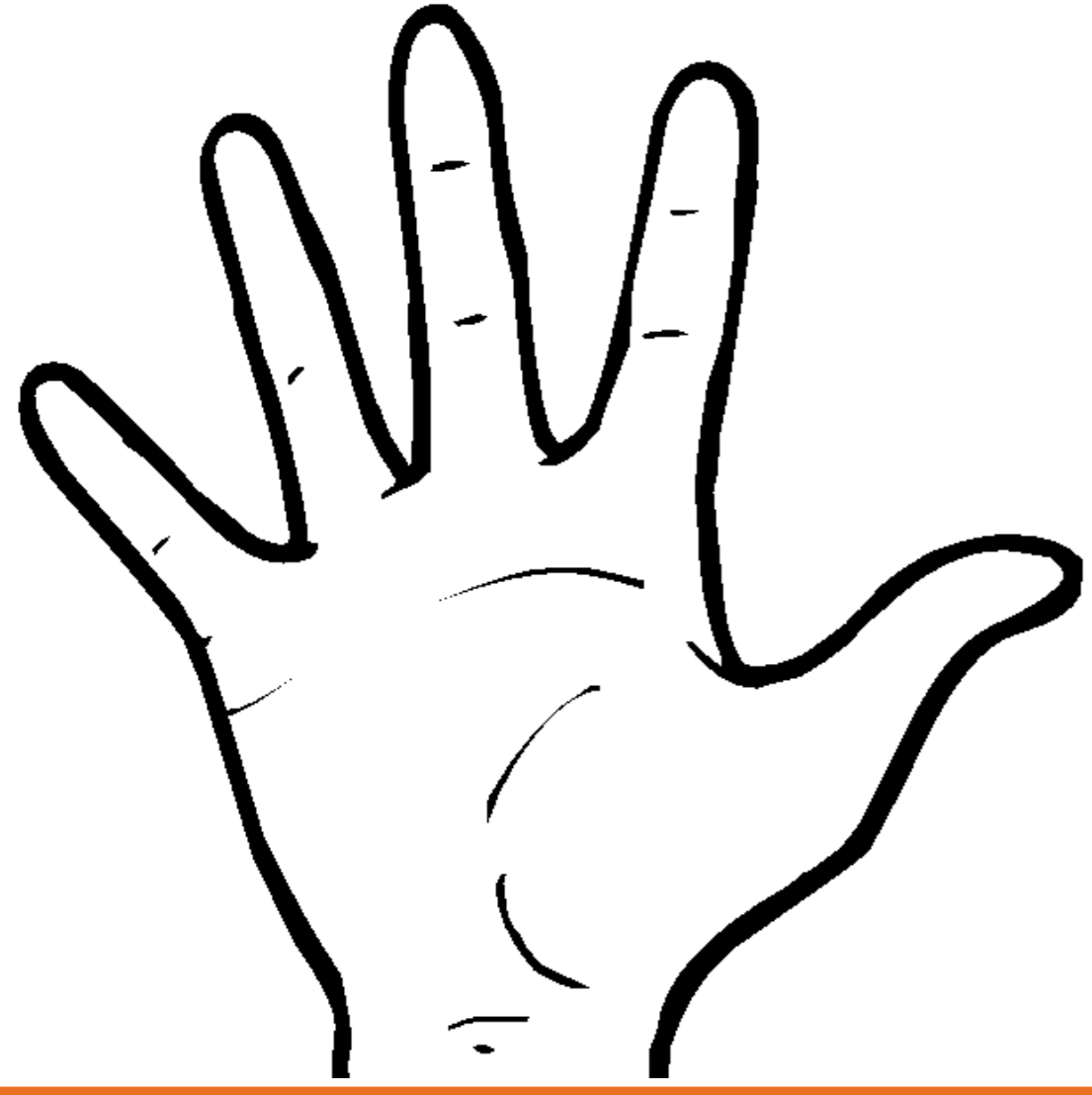
# Lexical plurality in sign language lexicons

## It takes two!

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### Concepts

From the literature<sup>[6-8]</sup>, we collected inherently plural concepts and compiled a list of 50 such concepts. The concepts fall into three groups:

- **Lexical reciprocals:** Involving >1 participant. *argue, colleague, combine, compare, different, fight, friend, marry, same, separate, similar, to match*
- **Collective nouns:** Collections of people/objects grouped as a whole. *army, audience, class, club, committee, company, council, crowd, data, enemy, family, government, library, media, nation, opposition, press, public, staff, team*
- **Dual entities:** Artifacts/body parts with two parts. *binoculars, ears, eyes, glasses, gloves, goggles, hands, headphones, legs, pants, scissors, shoes, shorts, socks, suspenders, tights, tongs, underwear*

### Introduction

Cross-linguistic studies on lexical plurality have identified a number of inherently plural concepts<sup>[1]</sup>. Studies on sign languages have shown that the two hands can be used to express plurality, either as a type of morphological alteration<sup>[2]</sup>, or directly in the citation forms of lexical signs<sup>[3-5]</sup>. Since plurality has been shown to be one important semantic feature associated with two-handed forms, we expect inherently plural concepts to be preferentially two-handed, across sign languages.

Our aim is to examine how these plural concepts are represented in signed language by investigating how a target list of inherently plural concepts is expressed across different sign languages.

### Hypothesis

Sign languages will employ a general principle of *articulatory plurality*, such that inherently plural concepts will be preferentially represented by a two-handed form

### Languages

We investigated 10 different sign languages, mainly using dictionaries. Our languages were:

- American Sign Language (ASL)<sup>[9]</sup>
- Australian Sign Language (Auslan)<sup>[10]</sup>
- British Sign Language (BSL)<sup>[11]</sup>
- Flemish Sign Language (VGT)<sup>[12]</sup>
- French Sign Language (LSF)<sup>[13-15]</sup>
- Icelandic Sign Language (ITM)<sup>[16]</sup>
- Israeli Sign Language (ISL)<sup>[17]</sup>
- New Zealand Sign Language (NZSL)<sup>[18]</sup>
- Norwegian Sign Language (NSL)<sup>[19]</sup>
- Swedish Sign Language (SSL)<sup>[20]</sup>

Diacritics show possible influence/connections.

## Results

Green columns = # of SLs that prefer a two-handed form for a concept

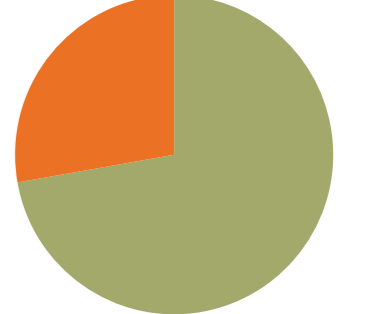
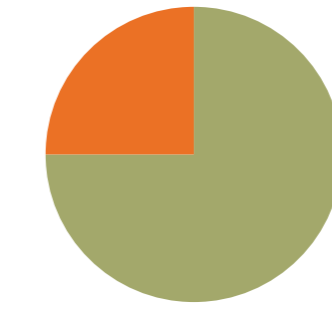
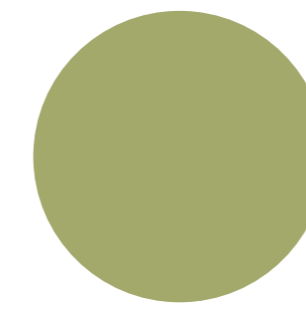
Orange columns = # of SLs that use either a one-handed form, or both one- and two-handed forms for a concept (i.e. no clear two-handed preference)

Blanks = # of SLs for which we did not find a sign for the concept

Lexical reciprocals (12/12)

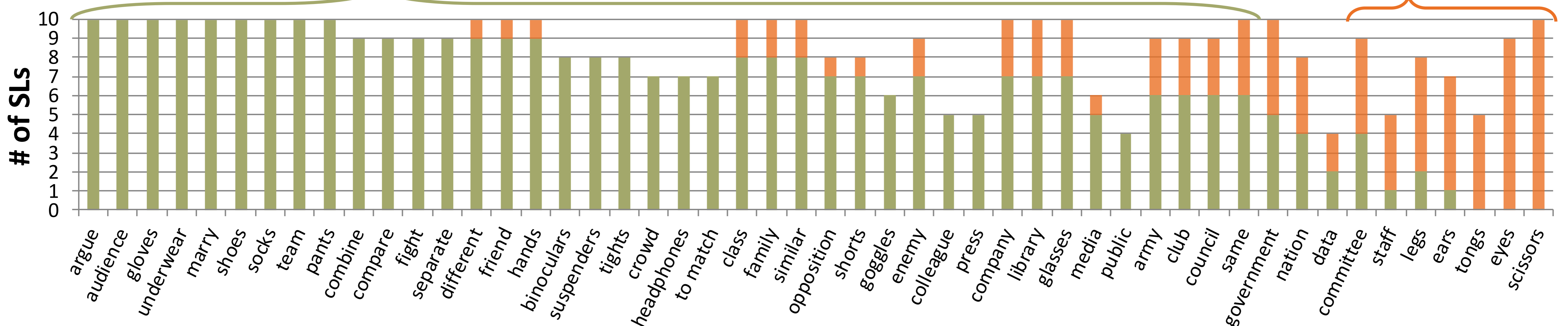
Collective nouns (15/20)

Dual entities (13/18)



40 concepts were preferably two-handed across SLs

Only 7 concepts were not preferably two-handed across SLs



### Articulatory plurality

Inherently plural concepts are, across SLs, encoded by two-handed signs. *Why might this be?* We argue that signers make use of the plural articulators (in this case, the two hands) as a direct visual representation of the plural meaning. Thus, signers visually map e.g. each participant of a reciprocal situation onto each of their two hands. However, in some signs, instead of using the two hands to express plurality, the handshape may have multiple selected fingers, or the movement may be repeated and/or include multiple locations.

We see this as other instances of articulatory plurality. Thus, articulatory plurality does not necessarily entail using the two hands as the plural articulators, but e.g. two-finger handshapes or a repeated movement could serve the same function, depending on how the plurality is best mapped visually onto the signer's body. We argue that articulatory plurality is found in lexical signs, but also in morphological modifications such as doubling, or the complex two-handed forms found in e.g. classifier constructions.

### Discussion

Although most of our concepts are preferentially two-handed, some concepts show an opposite pattern by being preferentially one-handed. Body parts (*legs, ears, eyes*) are notably one-handed. This can be explained in by two facts: i) body part signs tend to be deictic; and ii) these concepts were often listed under a singular form in the dictionaries (i.e. *eye* instead of *eyes*). Furthermore, the sign for e.g. *scissors* encodes plurality with a two-finger V handshape, across our sampled SLs, i.e. a subtype of articulatory plurality. Across our SLs, we observe that *balanced signs* (i.e. both hands having movement) constitute over 80% of all two-handed signs, whereas *unbalanced signs* make up only 11% (remaining signs being mixed entries in our dictionaries). Thus, phonological subtype is clearly also a factor, not only *two-handed* or *not two-handed*, at least for lexical plurality.

### Conclusions

- With this study, we have expanded on previous findings to show that *articulatory plurality* is a form-meaning configuration found across sign languages, and that lexical plurality is a semantic feature that clearly favors two-handed forms.
- The notion of articulatory plurality need not only refer to the two hands, but may also include plural handshapes and repeated movements, a topic for future work.
- That *lexical reciprocals* are more susceptible to using two-handed forms can be explained in terms of cognitive representations of individuation: *collective nouns* and *dual entities* constitute single entities with multiple members, but reciprocals are dependent on involving individuated referents. Thus, reciprocals are most clearly represented by two-handed forms, as they require a cognitive individuation of referents<sup>[21]</sup>.

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