Plural reduplication and spatial distribution in Sign Language of the Netherlands: Evidence from corpus and elicited data

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In most sign languages (SLs) studied to date, nominal pluralization is commonly realized through reduplication, which comes in two types: simple and sideward reduplication ([1], Figure 1). Phonological features of the base noun, specifically place of articulation and movement type, may constrain reduplication [2]; moreover, these constraints differ per SL. Although reduplication also occurs in spoken languages, sideward reduplication is specific to SLs. Additionally, SLs have the unique possibility of localizing entities in the signing space ('localization'), i.e., associating a certain point in space with a specific entity. Pluralization and localization can be combined in providing the spatial configuration of multiple entities ('distribution') (Figure 2).
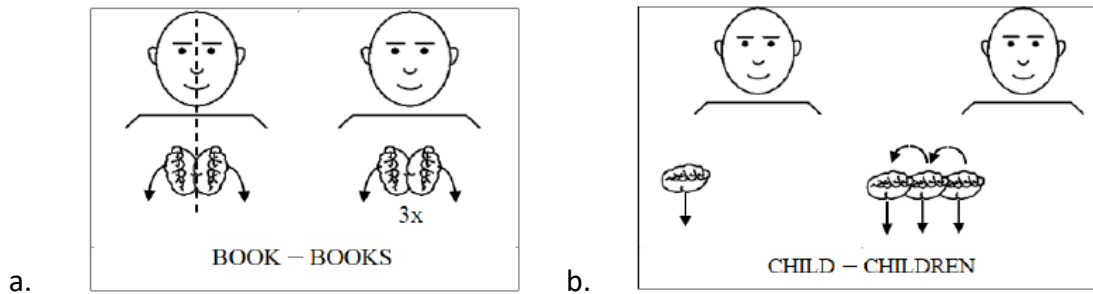

a.   b.

Figure 1. Simple (a) and sideward (b) reduplication [3].

a.

b.   c.

Figure 2. Stimulus (a), singular (b), and plural, distributed form (c) of FLOWER ([4], [5]).

Patterns of plural reduplication and distribution, and their relation to phonological properties of the base noun, have not been investigated thoroughly for Sign Language of the Netherlands (*Nederlandse Gebarentaal,* NGT). The available studies ([5], [6]) focus on plurality in general, are not based on naturalistic data, and offer some contradicting conclusions (e.g., whether signs involving repeated movement can undergo reduplication).

Our study is the first to investigate plural reduplication and distribution based on naturalistic data from the Corpus NGT [7]. We conducted automatic searches for plural nouns and analyzed these on several aspects. Firstly, we considered three phonological features: Is the sign articulated in the center of the signing space (midsagittal) or on the lateral side? Is it body-anchored or not? What is the movement type? Secondly, we analyzed whether reduplication, when present, was simple or sideward. In the latter case, we determined the absence/presence of distributional marking, and whether the (two-handed) reduplicants were produced simultaneously or alternating. Additionally, after discussions with a native signer, we designed and conducted a gap-filling task to elicit plural forms of additional nouns with various phonological specifications, and disentangle pluralization from distribution. Lastly, we are developing a grammaticality judgment task to check which distributional forms are acceptable for which spatial configurations.

So far, we extracted 305 plural nouns from the Corpus NGT and elicited 189 plural nouns from five native signers. Analysis reveals that plural reduplication is indeed influenced by phonological properties of the base noun – while simple reduplication occurs mostly with body-anchored nouns, and occasionally with midsagittal nouns, sideward reduplication mainly occurs with one-handed, non-body-anchored, lateral nouns, and occasionally with two-handed midsagittal nouns. Base nouns with a repeated movement are usually not reduplicated. Moreover, some lateral nouns can be simultaneously reduplicated by using two hands for an underlyingly one-handed sign. As for distribution, the choice between simultaneous and alternating movement seems to be affected by (i) the actual arrangement of the items (in a row vs. randomly), and (ii) whether all items are identical or not.

Our results show that plural reduplication in NGT is phonologically constrained, and that different strategies are used when pluralization and localization are combined. The grammaticality judgments will provide further insight into the different distributional forms.

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