

ARTICLE

List constructions in two signed languages

Sherman Wilcox¹, André Nogueira Xavier² and Satu Siltaloppi³

¹University of New Mexico, Albuquerque, NM, USA; ²Federal University of Parana, Curitiba, Brazil;

³Tampere University, Tampere, Finland

Corresponding author: Sherman Wilcox; Email: wilcox@unm.edu

(Received 01 November 2022; Revised 08 May 2023; Accepted 16 May 2023)

Abstract

This paper examines how signers make lists. One way is to use the fingers on the signer's nondominant hand to enumerate items on a list. The signer points to these list-fingers with the dominant hand. Previous analyses considered lists to be nondominant, one-handed signs, and thus were called list buoys because the nondominant hand often remains in place during the production of the list. The pointing hand was largely ignored as a nonlinguistic gesture. We take a constructional approach based on Cognitive Grammar. In our approach, we analyze lists as a type of pointing construction consisting of two meaningful components: a pointing device (the pointing hand) used to direct attention; and a Place, also consisting of form and a meaning. Using data from Brazilian Sign Language (Libras) and Finland–Swedish Sign Language (FinSSL), we examine the semantic role of each component, showing how the nondominant list-fingers identify and track discourse referents, and how the pointing hand is used to create higher-order entities by grouping list-fingers. We also examine the integration of list constructions and their components with other conventional constructions.

Keywords: List constructions; sign language; Cognitive Grammar

1. Introduction: what is a list?

People make lists. Lists help us plan the day's tasks, remember what to buy at the store, and organize our thoughts. Lists also play an important role in conversational interaction, structuring discourse for the speaker and the audience (Jefferson, 1990; Schiffrin, 1994). Lists occur in spoken, written, and signed modalities, as well as in co-speech gestures. In the latter case, it is common to observe that hearing gesturers use hands and fingers for enumeration (Bender & Beller, 2011, 2012; Fischer et al., 2012). Such finger counting has been attested among hearing gesturers for centuries (Bulwer, 1644).

Sign linguists have identified three ways that signers enumerate items in a list: linear, spatial, and digital (Pinsonneault & Lelièvre, 1994). In linear enumeration, the



list elements are signed in a sequential manner, often with accompanying nonmanual prosody. Spatial enumeration associates each list element with a location in space. In digital enumeration, the signer associates each list item with a finger on the non-dominant hand, and the dominant hand points to these fingers. The most common way of making lists in signed languages is digital enumeration. Unlike hearing co-speech gesturers who vary regarding the finger with which they start a list (thumb/index versus pinkie) (Lindemann et al., 2011), signers predominantly start with the thumb or index finger.

Digital lists have been treated by Liddell (2003) as one of five types of the buoy, that is, a set of signs in which the nondominant hand is held in a stationary configuration while the dominant hand continues producing signs. Liddell coined the term “buoy” based on an articulatory property – “they maintain a physical presence”; he noted that semantically, buoys “guide the discourse by serving as conceptual landmarks” (Liddell, 2003, p. 223). We will focus on the digital enumeration or list buoy type.

Liddell et al. (2007) described several formal properties that distinguish number signs from list signs in American Sign Language (ASL), Swedish Sign Language, and Norwegian Sign Language. They note, for example, that number signs are produced with the dominant hand, whereas list signs are made with the nondominant hand. In number signs, the fingers point up; the orientation of list signs is more horizontal. List signs can persevere for as long as the dominant hand continues to sign; number signs do not exhibit such perseveration. Number signs and list signs also exhibit certain semantic differences. Number signs can quantify nouns, but list signs cannot. Number signs express numerical values, but list signs express the existence of a list with a certain number of items. In Brazilian Sign Language (Libras), number signs and list signs share these same orientation properties. However, whereas the languages reported by Liddell et al. (2007) use the same handshapes for numbers 1–5 and list signs with 1–5 items, in Libras the number 5 sign uses a distinctly different handshape (index and middle finger hooked and the others closed) than the 5-handshape used in Libras list signs (five fingers extended). Further, as we will show in Section 6, these contrasts between number signs and list signs/buoys are not as categorical as has been claimed.

In addition to ASL (Liddell, 2003), list buoys have been described for several signed languages, including Libras (Heitkoetter & Xavier, 2020; Leite, 2008); Danish Sign Language (Engberg-Pedersen, 1994); Finland–Swedish Sign Language (FinSSL) (Siltaloppi, 2018, 2019, 2023); French Belgian Sign Language (Gabarró-López, 2019); German Sign Language (Hansen & Hessmann, 2015); Norwegian Sign Language and Swedish Sign Language (Liddell et al., 2007; Vogt-Svendsen & Bergman, 2007); Québec Sign Language (Miller, 1994; Pinsonneault & Lelièvre, 1994); and others. In addition to enumeration, list buoys have been shown to have referential and textual (e.g., cohesion) functions, and are used for marking specificity and definiteness. They often introduce an indefinite referent in a text, which will later become identified as a definite referent. Lists buoys have been shown to serve as discourse markers, introducing referents and later reactivating referents throughout a discourse. Examining the use of the five buoy types identified by Liddell (2003) across four genres in a corpus of French Belgian Sign Language, Gabarró-López and Meurant (2014) found that list buoys did not appear in narratives, but did occur with roughly the same frequency in argumentative, explicative, and metalinguistic texts.

Our study focuses on two historically unrelated signed languages: Libras, the language of Brazilian deaf communities, and FinSSL, a severely endangered signed

language used by approximately 90 native deaf signers in Finland and a smaller minority group in Sweden (Andersson-Koski, 2015). Data for Libras came from naturalistic video, including interactive interviews on Zoom; conversational exchanges on WhatsApp; and a Libras translation from Portuguese of instructions for an instructor position application process. Data for FinSSL consist of a dataset of videos compiled for Teckeneko, a webpage for the FinSSL users organization Finlandssvenska Teckenspråkiga (FST). They are primarily information videos and recordings of live broadcasts from events and meetings. All data were transcribed and coded in ELAN. Data sources are described more fully in the Appendix. A note on terminology: we will refer to the nondominant hand when used in list constructions as the list-hand, and to the fingers as list fingers, specifying each finger as one-list, two-list, and so on.

One fact to be noted in previous research on signed language list buoys is that the role of the dominant hand has rarely been given serious attention. Liddell (2003) described list buoys as one-handed signs, unique in that they are normally produced by the weak or nondominant hand rather than the strong or dominant hand. When the dominant hand is mentioned at all, it is typically classified as a gesture. Liddell, for example, considers the movement of the signer's dominant hand index finger in a list buoy to be a "a meaningful gesture pointing to the things she will talk about rather than as a fixed lexical item" (2003, p. 225). Gabarró-López (2019, p. 211) makes no mention of the dominant hand, describing list buoys as "numeral signs that are held with the weak hand." Describing digital enumeration, Pinsonneault and Lelièvre (1994) say only that the relation between referents and list-fingers is established by touch, presumably by a finger on the dominant hand. Our analysis will show that the dominant hand has significant linguistic function, serving to direct conceptual attention to list elements and thus their referents, and also integrating semantically and phonologically with the nondominant hand list buoy to form a variety of composite structures and creating higher-order groupings of list elements.

Recognizing their compositional nature, we treat list expressions as constructions and will refer to them as **list constructions**. Our central claim is that these list expressions are a type of pointing construction composed of two conventional linguistic components: a dominant hand pointing component and nondominant hand finger locations. Both components are comprised of form and meaning. Our analysis is grounded in previous research on pointing constructions in signed and spoken languages (Martínez & Wilcox, 2019; Ruth-Hirrel & Wilcox, 2018; Wilcox & Martínez, 2020; Wilcox & Occhino, 2016; Wilcox et al., 2022). This constructional approach enables us not only to understand list-finger referents in a broader linguistic context, but also to give due attention to the important linguistic function of the often-neglected dominant hand. We also explore how list constructions integrate with other conventional constructions in the two languages.

This paper is organized as follows. In [Section 2](#), we give an overview of list types. In [Section 3](#), we introduce the theoretical foundation of our analysis, which is based on Cognitive Grammar (Langacker, 1987, 2008). We also describe our account of pointing as a construction and its application to list expressions. In [Section 4](#), we examine in detail the semantic and grammatical function of the dominant hand component of list constructions. [Section 5](#) continues this discussion, focusing on a type of construction that integrates the dominant hand and nondominant hand in list constructions, and further examining the grammatical function of the dominant hand. In [Section 6](#), we provide a preliminary look at networks of constructional

families in which list constructions are one component. In [Section 7](#), we offer conclusions and suggestions for future research.

2. List construction types

Heitkoetter and Xavier (2020, 2022), expanding on the preliminary typology of Liddell (2003), have shown that Libras list constructions exhibit two types (fixed versus sequential), which may be perseverated or non-perseverated. These two types, with or without perseveration, may be mixed in single list expression. Liddell et al. (2007) report a typological study with similar findings. Based on our data, the same types occur in FinSSL as well. Classified formally, the types include ([Fig. 1](#)):

- Fixed: simultaneous presentation of the list-fingers;
- Sequentially built: sequential presentation of the list-fingers;
- Perseverating: constructions in which the list-hand is held in place throughout a stretch of discourse;
- Non-perseverating: constructions in which the list-hand alternates with other signs
- Mixed: use of fixed and sequentially-built lists constructions, which can perseverate or not.

Regarding perservation/non-perservation, Heitkoetter and Xavier (2020) report that more than 68% of the tokens they analyzed were non-perservation. In a FinSSL corpus, 83% of the tokens were also non-perservation (Sitaloppi, 2023).

2.1. Fixed list construction with perseveration

In [Fig. 2](#), the Libras signer is saying in a video of a university assignment that her home town is small in comparison with Curitiba, and that it was always her dream to work in Curitiba but she couldn't when she was 15, 16, 17, or even 18 years old.

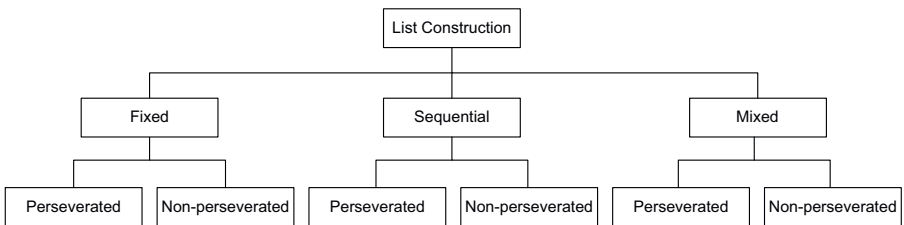


Figure 1. List construction types.

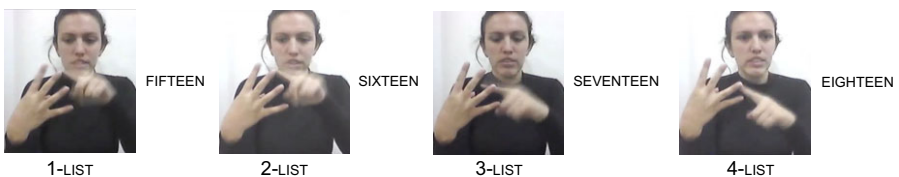


Figure 2. Fixed list construction with perseveration (Libras).

The signer uses a fixed list construction with perseveration. The list-hand is held in place during an extended stretch of discourse, and the four list-fingers are simultaneously presented. The dominant hand index finger sequentially directs attention to each list-finger. After directing attention to a list-finger (e.g., 1-LIST, 2-LIST, etc.), the signer then elaborates the referent by explaining in signs with the dominant hand what each one is: her successive ages (e.g., FIFTEEN, SIXTEEN, etc.).

2.2. Fixed list construction without perseveration

In this type, the list-hand is not held in place but is raised as each list item is introduced. Fig. 3, from a Libras YouTube video in which the signer names the components of a deaf studies course, is a fixed list construction without perseveration. The list-hand is not perseverated because in order to explain what each list-finger refers to, the signer must use both hands. The list-fingers are simultaneously presented (fixed), and the signer directs attention sequentially to three list-hand fingers. After the signer directs attention to each list item, he elaborates its schematic meaning with signs and fingerspelling (“text genre”) or signs (“sign writing” and “deaf literature”).

2.3. Sequentially built list construction with perseveration

Fig. 4, from FinSSL, is a sequentially built list construction with perseveration. The list-hand is held in place throughout, while each list-finger is sequentially extended. After the signer directs attention to each list-finger with her dominant hand, she

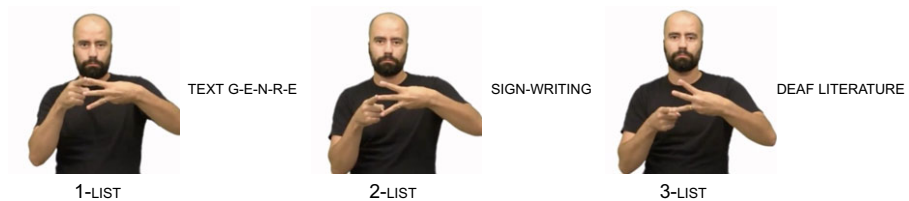


Figure 3. Fixed list construction without perseveration (Libras).



Figure 4. Sequentially built list construction with perseveration (Libras).

elaborates the meaning of each list-finger with signs produced only on the dominant hand (saying “Sunday the 14th April” and “Sunday the 26th May”), allowing the list-hand to perseverate.

2.4. *Sequentially built list construction without perseveration*

In Fig. 5, from FinSSL, the signer describes the three upcoming events for a deaf association. Because of the length of the intervening discourse and the need to use both hands, the list-hand does not perseverate but is raised to the canonical list location only as each item is introduced. Upon the first presentation of the list-hand, the one-list-finger, referring to the first event, is extended. With each subsequent presentation of the list-hand in the ongoing discourse, another list-finger is extended, and the dominant hand index finger directs attention to a list-finger. The referent of each list-finger is subsequently elaborated with signs (e.g., “We will have a grill party ...”) requiring both hands. In Fig. 5, because each intervening discourse is quite lengthy, it is summarized as indicated by ellipses.

2.5. *Mixed list constructions*

Signed language discourse often exhibits various combinations of these types. Fig. 6, again from Libras, mixes list types. As in Fig. 3, the signer is naming the components

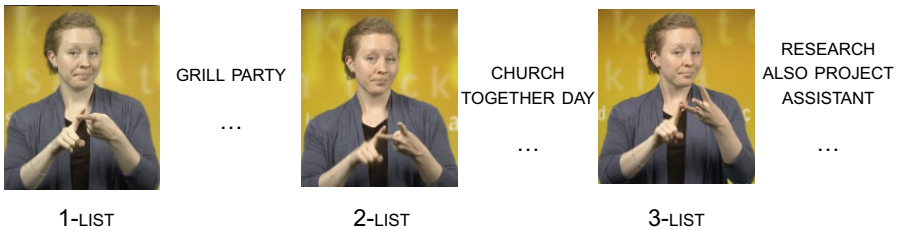


Figure 5. Sequentially built list construction without perseveration (FinSSL).

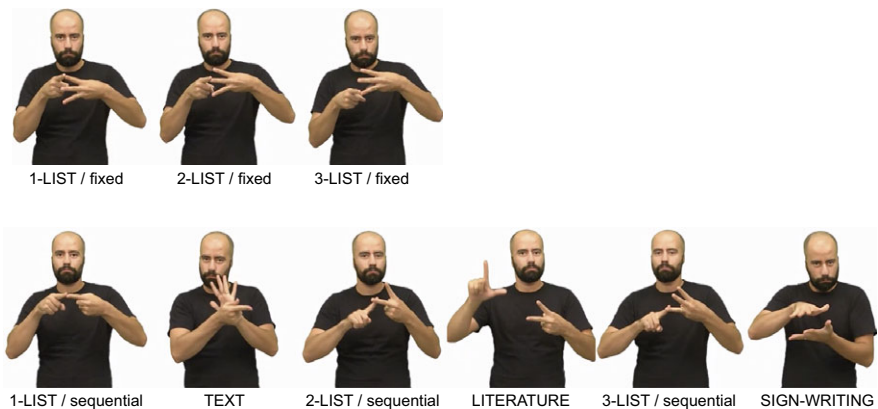


Figure 6. Mixed types of list constructions (Libras).

of a deaf studies course and how they are integrated. He explains again that the components are text genre, deaf literature, and sign writing.

Fig. 6 uses a mix of fixed and sequential types. First, the signer presents a fixed list with three (extended) list-fingers. This fixed list perseverates until he presents a sequentially-built list consisting of three list-items; the referent of each item is subsequently elaborated. Two of the elaborations require both hands, so the list hands are not perseverated for these (“text genre” and “sign writing”); the 2-list item (“deaf literature”) requires only one hand to elaborate, and so for this elaboration the list-hand perseverates.

The formal characteristics of these list types afford different semantic and discourse potential. One way in which signers can use the different types is to manage attention and activation state (Chafe, 1987; Leino, 2013) of the list referents. Fixed lists present the components of the list all at once, for example, while sequentially-built lists draw conceptual attention to each component individually. Perseverated lists maintain the list in an active state in the interlocutor’s focus of consciousness; in non-perseverated lists, the referents become semi-active or, depending on the length of intervening material, inactive in the person’s consciousness, but stored in long-term memory to be reactivated when the list returns.

We present a semantic analysis of list constructions with equal attention given to both components: the nondominant list hand, as well as the dominant pointing hand. Our analysis examines how focus of attention (FOC) is managed by the pointing hand component, how list-fingers are semantically associated with their corresponding referents, and how list constructions are used to implement various grammatical constructions, such as antecedent–anaphor and topic-comment.

3. A cognitive grammar approach to list constructions

Linguists employ several theoretical approaches to analyze signed language data, ranging from generative (Lillo-Martin & Meier, 2011; Sandler & Lillo-Martin, 2006), to cognitive-functional frameworks (Janzen et al., 2001; Shaffer & Janzen, 2016) including mental space and blending theory (Dudis, 2004; Liddell, 2003). For analyzing the semantic structure of signed language lists we work within the theory of Cognitive Grammar. Although developed to account for spoken language grammatical phenomena (De Wit & Brisard, 2014; Langacker, 1987, 1991; Zima, 2013), we find that Cognitive Grammar provides the concepts, conceptual models, and analytic tools needed for a detailed conceptual analysis of signed language grammatical patterns (Martínez & Wilcox, 2019; Wilcox, 2004; Wilcox et al., 2003). Conversely, we believe it is important to test theory against data, and especially sign language data, to show where theory is revelatory or where problems might arise when analyzing these typologically unique languages.

Cognitive Grammar proposes a radical theoretical parsimony, positing only three basic kinds of linguistic structures: semantic, phonological, and symbolic. **Semantic structures** are conceptualizations exploited for linguistic purposes. **Phonological structures** include the elements of signed languages (handshapes, locations, movements, facial displays), sounds, gestures, and orthographic representations; an essential feature of phonological structures is that they are able to be perceived. **Symbolic structures** are pairings of semantic structures and phonological structures, also referred to as the two poles. Symbolic structures vary in

terms of their **schematicity** or their **specificity**, pertaining to the level of detail in their characterization, and form a continuum of symbolic assemblies. The lexicon consists of fairly specific symbolic assemblies; grammar resides in schematic symbolic assemblies. Schematic elements are said to be **elaborated** (or **instantiated**) by more specific structures. Semantic and phonological structures can vary in size, and at either pole complex structures emerge by the integration of simpler structures. Symbolic structures of any level of schematicity also varies in degree of complexity; single symbolic structures may combine to form more **complex symbolic assemblies** composed of component structures that integrate to form more elaborate composite structures. In Cognitive Grammar, these complex symbolic assemblies are called **constructions**. While Cognitive Grammar is thus a construction grammar, it departs from other types of construction grammars in that it does not posit a level of grammatical form. Grammar, or grammatical form, reduces to schematic symbolic assemblies. For a full discussion of the similarities and differences between Cognitive Grammar and other construction grammars, see Langacker, 2005.

All of these elements of Cognitive Grammar are crucial in our account of signed language list constructions. In producing a list construction, signers point with their dominant hand at specific fingers on the nondominant or list-hand. One function of pointing is to direct attention to a referent (Clark, 2003; Kita, 2003). Langacker (2016, p. 110) has observed that “In a given culture pointing is conventional in nature, so an act of pointing can be thought of as a kind of linguistic symbol.” In Fig. 7 (from Langacker, 2016), G is the spatiotemporal ground, that is, the time, place, participants, and context of the communicative event. S and H are the speaker and hearer, where these terms are extended to mean the interlocutors producing and perceiving the pointing. The current discourse space (CDS) includes the visually accessible immediate physical context. Within the CDS, an onstage (OS) region (i.e., the general locus of attention) contains a number of things (circles) which could be singled out by pointing. The solid arrow represents the pointing finger directed at one thing, which is the FOC. The act of pointing has directive force (double arrow), instructing the addressee to follow, both visually and conceptually, its direction. As a result, both interlocutors focus their attention on the same entity, the intended referent. A linguistic expression is said to select some body of conceptual content from a larger conceptual base. When attention is focused on this structure it is said to be the **profile**

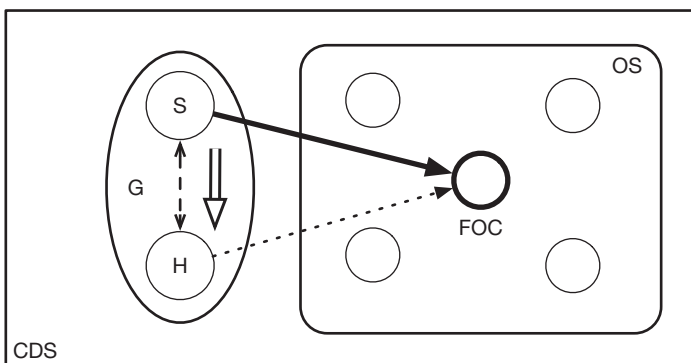


Figure 7. Pointing as analyzed in Cognitive Grammar.

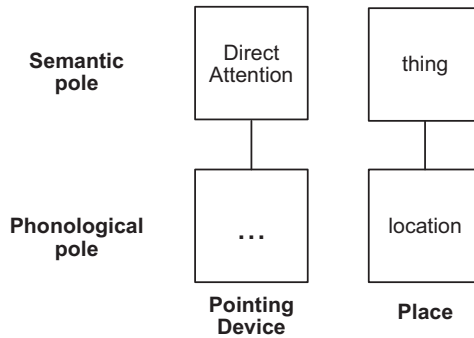


Figure 8. Two components of a pointing construction from Wilcox and Occhino (2016).

of the expression. The focused referent of pointing is shown in bold to indicate that it is profiled.

In our analysis, pointing is a construction consisting of two component symbolic structures: a **pointing device** and a **Place** (Martínez & Wilcox, 2019; Wilcox & Occhino, 2016) (Fig. 8). We capitalize Place to signify that it is the name of the entire symbolic structure, not just the phonological pole. One common kind of pointing device is an index finger, but others may include hand(s), eyegaze, mouth or nose pointing, and even body orientation Cooperrider et al., 2018; Enfield, 2001; Li & Cao, 2019). The schematic form is indicated by ellipsis in the diagram. Directing attention is recognized as a function of pointing (Clark, 2003). The meaning of the pointing device is to direct attention to some entity. This entity is the Place symbolic structure. The schematic phonological pole of Place is a spatial location (LOC) in the discourse environment. The schematic semantic pole of Place is something conceived as a single entity, either intrinsically such as *tree* or as the result of grouping such as *family* (Langacker, 2016).

This analysis of pointing has been described for ASL, Argentine Sign Language, and co-speech gesture in English (Martínez & Wilcox, 2019; Ruth-Hirrel & Wilcox, 2018; Wilcox & Martínez, 2020; Wilcox & Occhino, 2016; Wilcox et al., 2022). As applied to signed language list constructions, the dominant hand pointing finger is the pointing device, and the list-hand fingers are Place symbolic structures. The phonological pole of each Place is a list-finger. An analysis of the semantic pole is more complicated. A first approximation would be to say that list-finger Places are semantically schematic. Carrying no inherent meaning, the signer must elaborate each schematic Place elsewhere in the discourse. As we saw in Section 2, the semantic pole of a list Place is often elaborated with one or more signs either immediately prior to or subsequent to the presentation of the list-finger. List-fingers may, however, have semantic specification in certain list constructions. Items in a list are often ordered, and this order is indicated by the ordering of list-fingers. In this case, the index finger or thumb (depending on where the list begins) indicates higher rank on some scale, with the lowest ranked item indicated with the pinky finger (Liddell, 2003, p. 224). In using a list to enumerate family members, for example, assuming the list starts at the thumb, the father may be indicated with thumb, mother with index finger, and children with subsequent list-fingers.



Figure 10. Explanation of how to apply for a substitute teacher position (Libras).

(CV) that they have downloaded from an online system called Lattes; they will be evaluated and assigned a summary score.

- (1) How will you be evaluated? There are two parts (to the process). First, your Lattes CV will be assigned a summary score.

Fig. 10 is arranged to show intonation groups and clauses. The signer begins by setting the discourse topic with a fictive question: HOW TEST (Fig. 10a) “How will you be evaluated?” TEST is marked with head/chin down and affirmative head nods confirming intersubjective alignment with the addressee: both the signer and the addressee have focused their attention jointly on the discourse topic. Together, the fictive question and the head and face markers on TEST signal to the addressee that more information is forthcoming.

In the next clause the signer explains that the evaluation will consist of two parts (Fig. 10b), using a fixed list construction. The signer moves the pointing device finger across the two list-fingers in rapid succession, directing attention not to the individual fingers but to the group: the evaluation has two parts. (The second part of the evaluation is described in Section 4.)

The next clause consists of five signs, beginning and ending with points to the 1-list Place. The first, labeled 1-LIST (a) (Fig. 10c), is marked as a topic with a raised eyebrows facial display (Janzen, 1999). The list-finger Place is only partially specified, in this case as one part of the evaluation process. The full elaboration occurs next: LATTES (Fig. 10d), fingerspelled L-A-T-T-E-S, and YOUR (Fig. 10e) CV (Fig. 10f). The 1-LIST (a) topic is now fully specified, “your Lattes curriculum vitae.”

The signer again points to the 1-LIST Place (Fig. 10g), labeled 1-LIST (b), this time with a distinctly different facial marking. Here, 1-LIST (b) refers to the now fully specified topic, and thus is a coreferential anaphor. In the Cognitive Grammar analysis of anaphoric pronouns depicted in Fig. 11 (Langacker, 1993, 2000; Van Hoek, 1997), anaphors are reference point targets (T) profiling a schematic thing (indicated by ellipses in the target). A prior reference point (R) is the antecedent, providing mental access (indicated by the dashed arrow) to the anaphor target. In our Libras example, the now semantically elaborated and accessible 1-LIST (a) Place meets the conditions to serve as a reference point and is interpreted by the addressee as the antecedent to 1-LIST (b), the anaphor. The signer then drops his dominant hand (Fig. 10h) indicating a phrase boundary.

Topic-comment constructions are also reference point phenomena. Topic is defined as a reference point; comments are targets (see page 26 in Langacker, 2001). Comment clauses offer some propositional content pertaining to the topic. Comment clauses typically include an element, the *pivot*, that corresponds to the topic and thus enables the proposition to function as a comment with respect to that topic. The next phrase (Fig. 10i), 1-LIST (c) HAVE SUM, is the comment clause expressing the proposition “It will have a score [assigned].” We have translated the point to 1-LIST (c) as *it* because it is now the pivot, coreferential with the fully specified topic “your Lattes CV.” Head nods occurring on SUM indicate the end of the comment clause.

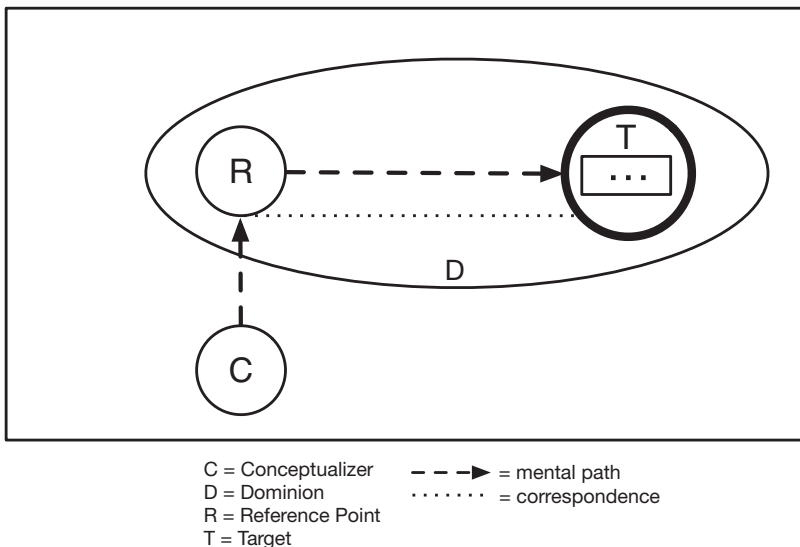


Figure 11. Antecedent–anaphor relation (Langacker, 1993).

The facial markings on the three instances of the 1-LIST Place support this analysis. The 1-LIST (a) Place occurs with facial marking for topic, with the full elaboration of the topic occurring in the subsequent clause, “your Lattes CV.” 1-LIST (b), the anaphoric reference to the full topic, is marked with head/chin down, the same marking seen on TEST, and is used to confirm intersubjective alignment between the signer and addressee. When this head/chin down marking occurs on the 1-LIST (b) anaphor, it confirms that the signer and the addressees now have the fully specified topic “your Lattes CV” as their FOC. This permits the signer to use the topic reference point to provide mental access to the upcoming target comment clause. Finally, 1-LIST (c), occurring immediately after 1-LIST (b) has an entirely different facial display, a relaxed, neutral face indicated a new clause. (Although the signer drops his hand indicating a clause boundary as seen in Fig. 11, the list-hand is held in place.) The signer smiles and begins an affirmative head nod, both extending across the full comment clause. The Place of 1-LIST (c) is now the pivot in the comment clause, coreferential with the full nominal topic and the subject of a full assertion “Your Lattes CV, it will have a score [assigned].”

4. Grouping, plurality, and higher order entities

In previous sections we showed how elements in a list construction are construed as individual, discrete entities. Here we explore how these elements may also be grouped and profiled as a single entity at a higher level of conceptual organization. One function served by grouping to create higher-order entities is the expression of various construals of plurality. To understand how this works, we first present a brief discussion of plurality within the framework of cognitive grammar, and how it can be expressed in signed languages.

Collective nouns such as *group*, *family*, *board*, and *committee* are examples of higher-order entities; although they consist of individual elements, they make no explicit reference to these component entities, profiling instead a single, higher-order entity. Signed languages have similar collective nouns. Fig. 12, for example, depicts the FinSSL collective nouns BOARD (e.g., the board of directors of a deaf association), GATHERING (e.g., a gathering of deaf people at a party) and Libras COMMITTEE.

Another way in which higher-order entities emerge in the expression of plurality is in count and mass nouns (McCawley, 1975). A singular count noun such as *pebble*

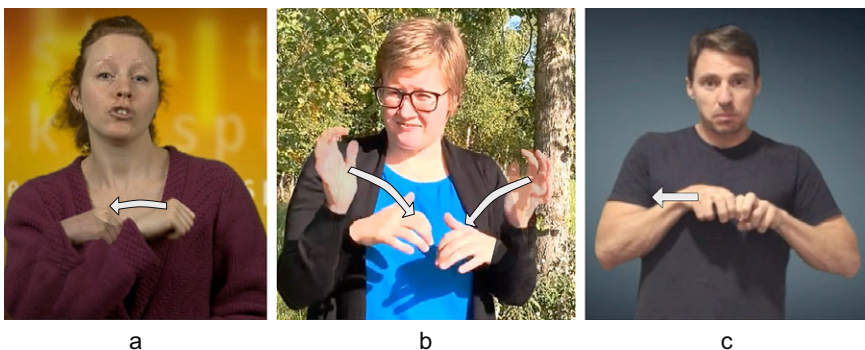


Figure 12. FinSSL BOARD (a), GATHERING (b), and Libras COMMITTEE (c).

profiles one discrete entity. At the extreme collective end of conceptualization, higher-order non-plural mass nouns such as *sand*, *water*, and *rice*, profile a mass which may consist of discrete elements but are construed to highlight internal uniformity. Intermediate on the continuum, plural nouns such as *pebbles* profile a mass, such that “considerable prominence is accorded to the discrete entities out of which the mass is constituted” (Langacker, 1991, p. 78).

Path movements, in conjunction with other phonetic features, are commonly used to indicate plurality in signed languages (Steinbach, 2012). The way in which path movements are used to form different construals of plurality can be seen in a pair of Libras signs taken from a video chat: CAR-plural “many cars lined up [on a highway]” (Fig. 13) and TRAFFIC-JAM “traffic jam” (Fig. 14). CAR-plural consists of a series of reduplicated arc movements made while the dominant hand simultaneously moves backward in a path movement. CAR-plural conceptually profiles a plural mass noun: its form (the series of arc movements) gives considerable prominence to the individual (but unspecified number of) cars in the plural mass. TRAFFIC-JAM is articulated with only a single backward path movement of the dominant hand. TRAFFIC-JAM profiles a mass that also consists of discrete elements (a traffic jam consists of an unspecified number of cars); its construal, however, highlights internal uniformity. The comparison between the mass noun TRAFFIC-JAM and a canonical non-plural



Figure 13. CAR-plural (Libras).



Figure 14. TRAFFIC-JAM (Libras).

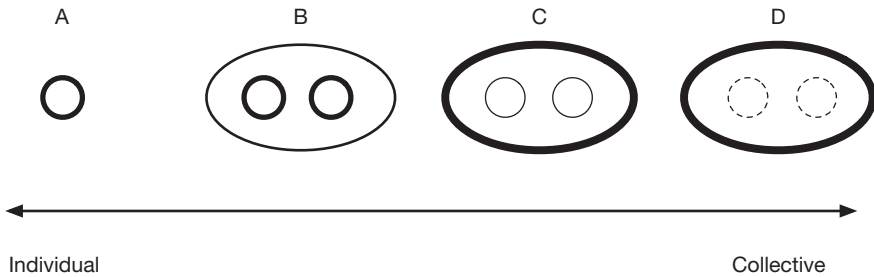


Figure 15. Individual-collective continuum.

mass noun such as *rice* is close but not exact: while *rice* cannot be pluralized, Libras signers can express *two traffic jams* by signing each in a different spatial location.

Another way to visualize the continuum from individual elements to a fully collective higher-order entity is shown in Fig. 15 (based on Langacker, 1997, p. 200). At one end (A), a single entity is profiled, such as for singular count nouns. At the other end of the continuum, the individual elements are no longer salient, and the collective is profiled (D), as for collective nouns and non-plural mass nouns (as in Libras TRAFFIC-JAM). In (B), the individual elements are profiled while any higher-order entity has only background prominence (only two elements are shown for diagrammatic convenience). In the sentence *Joe and Jill are a happy couple*, the meaning of *couple* places the construal in (B); the individual entities are prominent, but the collective entity has gained some level of prominence (cf. Langacker, 1997). The construal in (C) profiles the higher-order group, with some prominence still given to the discrete components out of which the group is composed as for plural mass nouns (cf. Libras CAR-plural).

The salience of individual elements versus the collective higher-order entity is particularly relevant for list constructions. As Schiffrin (1994) observed, the purpose of a list is to enumerate and link together specific items as elements of a general category. The general category is always present in signed list constructions as the list-hand: since fingers cannot be detached from the hand, the grouping and profiling of higher-order groups of list-fingers necessarily requires that the list-hand is also present. Certain factors vary the prominence of the list-hand itself, however. In perseverated lists, for example, while individual list-finger elements are profiled, the list-hand is always present, placing these expressions at (C). In a non-perseverated list, the conceptual prominence of the list fades as the discourse proceeds. The signer must raise the list-hand at some point to once again produce a list, but its conceptual prominence is weaker in relation to the immediate profiling of a list-finger. Whether the non-perseverated list is fixed or sequentially built also impacts the varying prominence of the list itself: a sequentially-built list presents and profiles a single list-finger at a time, decreasing the prominence of the overall list.

- (2) a. All three (individual elements)
- b. All three (as a unit)

Fig. 16 shows one way that grouping is used to create different construals of higher-order entities works in list constructions. The signer presents a three-item fixed list and, with his dominant pointing hand, articulates a downward path

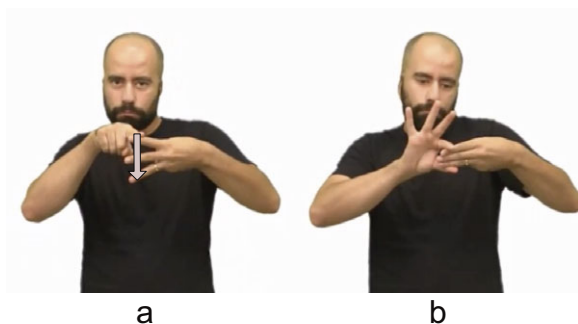


Figure 16. Two examples of higher-order entities (Libras).

movement across all three list-fingers (Fig. 16a), profiling a single entity while retaining the prominence of the internal entities, as would a plural determiner such as *these*, thus putting (a) at C in Fig. 15. In Fig. 16b, the signer uses his dominant hand to grab and fuse together the three list-fingers, reducing the prominence of the individual elements. This form thus creates and profiles a mass-like entity which, while composed of individual elements, is construed to highlight its internal uniformity, pushing the construal to D in Fig. 15. Johnson and Liddell (2011) describe the phonetic aspect fusion as ‘deformation’. As we can see, however, the dominant hand has done more than to merely deform the fingers; it has created a higher-order entity. The phonological fusion of list-fingers has semantic import.

Grouping and the creation of higher-order entities is a common process in signed language list constructions. The elements that are construed at increasing levels of conceptual organization along the continuum are the list-fingers. Since the semantic function of the dominant hand pointing device in list constructions is to profile nominal list-finger Places, it is no surprise that the dominant hand also plays a key role in creating and profiling higher-order entities. In the following, we will show how the dominant hand is used to create several types of higher-order entities that fall along the continuum in Fig. 15.

4.1. Pointing with two fingers

The canonical pointing device in pointing constructions, including list constructions, is a single finger, typically the index finger. In some constructions, however, the signer uses the index and the middle finger as a single pointing device, simultaneously profiling two list-finger Places and thus creating a single higher-order entity composed of the two referents.

In Fig. 17, from a YouTube video channel for the deaf community, the signer explains that deaf people need to know who they are voting for in the upcoming election in Brazil. Two candidates are running for office – one for state legislature and the other for federal legislature.

- (3) Two things (that are important). First is the candidate for state legislature. Second is the candidate for federal legislature. These two candidates are the most important (to consider).



Figure 17. Using two pointing devices to direct simultaneous attention (Libras).

The signer first produces a fixed, two-item list, with the two Place components not yet elaborated. The index finger pointing device directs attention to each Place in rapid succession (Fig. 17a). With the fixed list still perseverated, the signer directs attention to the first list-finger Place (Fig. 17b) and elaborates its schematic semantic pole: the candidate (Fig. 17c) for state legislature (Fig. 17d). After elaborating the Place referent, the signer again produces the fixed list and directs attention to the second list-finger (Fig. 17e). He elaborates this schematic Place referent: the candidate for federal legislature (Fig. 17f). Finally, the signer again produces the fixed two-item list and directs attention to both list-fingers, but in this case by moving index and middle finger pointing devices simultaneously (Fig. 17g). The two-finger pointing device directs attention simultaneously to the two Place referents, producing a complex profile. He then signs “most important” (Fig. 17h). While both list components are present, the lack of individual profiling produces a construal in which the collective entity has emerging prominence.

In FinSSL a similar construction is attested. In Fig. 18 the signer describes an upcoming annual general meeting of a Finland-Swedish deaf association during which the participants will choose a new board for the organization. The association has a system whereby board members are chosen for alternating two-year terms, and each year half of the board positions open for new elections. This year, three positions are open – for president and two board members.

- (4) We have three board members that are due to step aside, so we need to choose a new president of the board and two board members.

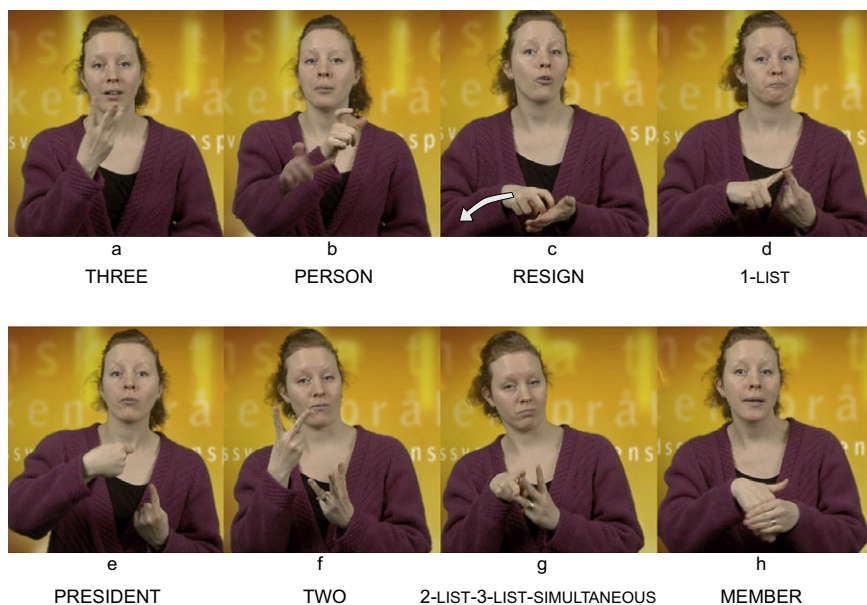


Figure 18. Using two pointing devices to direct simultaneous attention (FinSSL).

The signer explains that “three” (Fig. 18a) “people” (Fig. 18b) “will resign” (Fig. 18c). She then produces a 1-list construction (Fig. 18d). This schematic Place referent is elaborated as “the president” (Fig. 18e), while perseverating the 1-list. Next, the signer produces a simultaneous construction. On her dominant hand she signs the numeral two (V-handshape); on her nondominant hand she signs a fixed three-item list (Fig. 18f). The remaining two people make up the other two board positions which must be replaced. The dominant V-handshape then serves as a two-finger pointing device directing simultaneous attention to these two schematic Places (Fig. 18g), which she subsequently elaborates as board members (Fig. 18h).

A construction in which the signer profiles discontinuous list-finger Places comes from Libras video interview (Fig. 19). In this example the signer is discussing two couples and their travel arrangements. The signer first presents a fixed list with four elements. The first, schematic Place (Fig. 19a) is profiled and then elaborated as a “woman” (Fig. 19b). The second (Fig. 19c) is profiled and elaborated as a “man” (Fig. 19d). The third and fourth list-fingers are profiled (Fig. 19e,f) and elaborated in the same way as a woman and a man, respectively. The signer then uses two pointing devices to profile list-fingers two and three (a man and a woman) in Fig. 19g, explaining that they will travel together. He continues, explaining that list-fingers one and four (a woman and a man) in Fig. 19h will get married. The signer explains that these expressions clearly mean that the first two will travel “together as a couple,” not that each will travel with someone else; the second expression means that the two will “marry each other,” not that each will marry another person. Thus, these two expressions create higher-order entities: the “couple” that travel together, and the two people who marry “each other.”



Figure 19. Using two pointing devices to create two distinct higher-order entities (Libras).

- (5) This woman and this man, and this other woman and this other man – the first two will travel together, the second two will marry each other.

4.2. Fusing two or more list-fingers

In Fig. 16b, from a video interview, the signer fused three list-fingers to form a higher-order entity, a deaf studies course. The same signer produces a similar construction in Fig. 20.

- (6) I will buy an apple, an orange, and a banana.

The signer first explains that he has to buy three items at the grocery store, profiling them as three conceptually distinct entities. He profiles the index list-finger (Fig. 20a) and elaborates it as “apples” (Fig. 20b); the second list-finger (Fig. 20c) as “oranges” (Fig. 20d); and the third list-finger (Fig. 20e) as “bananas” (Fig. 20f). Then he construes the three discrete items as a single, conceptual entity by grabbing and fusing together the three list-fingers (Fig. 20g) while pulling the hand up and away.

4.3. Circling

Signers may use a single pointing device with a circular path movement to group list-fingers. In Fig. 21 from FinSSL the signer explains that an organization received a large sum of money from the government for the purpose of language revitalization. The four partner organizations that will participate in the project are identified using a list construction. The signer explains that the four will work together as a group on this project. She creates this higher-order group by circling the four list-fingers

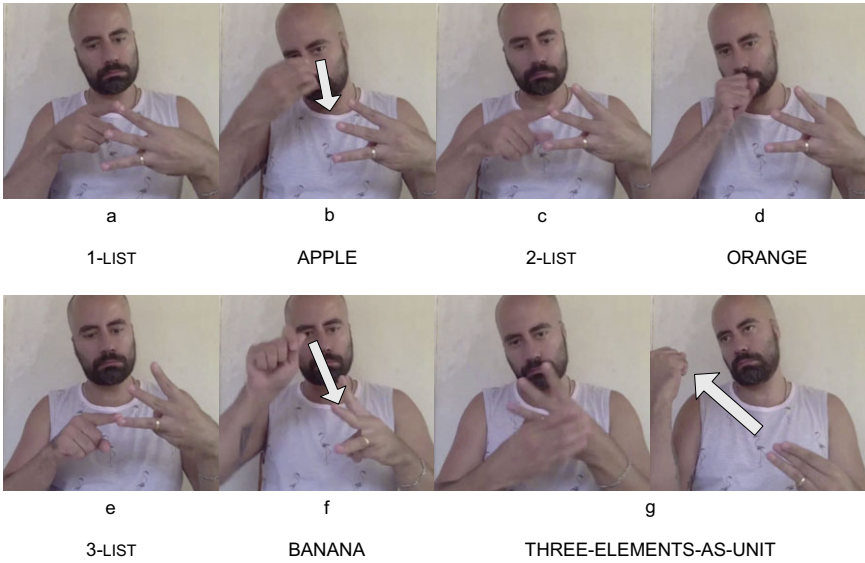


Figure 20. Fusing list-fingers to create a higher-order entity (Libras).

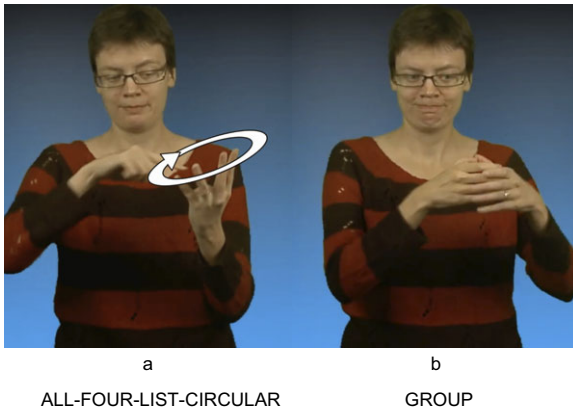


Figure 21. Using a circular pointing device to create a higher-order entity (FinSSL).

(Fig. 21a) forming a single conceptual entity, and then identifying it with the collective noun *group* (Fig. 21b). We have also observed this strategy in Libras.

- (7) We four in the steering committee for the project ... we all have delegates that come to the meetings.

4.4. *Swiping path movement*

As we have seen, swiping the dominant hand index finger pointing device across list-fingers is a frequently used strategy in Libras and FinSSL for creating and profiling

higher-order entities. In Fig. 22 the FinSSL signer has described a program organized by the deaf association in which two types of events will take place, consisting of four activities. Previously, the signer explained the four activities and where they would be held. In one type, free lectures will be held in three different locations to discuss issues relevant to the deaf community (health, etc.). The second type of event consists of only one activity: members will visit and eat lunch with elderly deaf people. In Fig. 22a she profiles the three events that constitute the first type, using a swiping motion to create a higher-order group. In Fig. 22b she produces a simultaneous construction, identifying the higher-order entity on her list hand with the collective noun “gathering” on her dominant hand; she then specifies that these three constitute the “program” (Fig. 22c). Next, she profiles the fourth event (Fig. 22d); the special nature of this event is given added prominence by pushing down the list-item pinky finger with the pointing device. Increased phonological force has been shown to symbolize increased conceptual directive force (Martínez & Wilcox, 2019). Finally, she explains that this event is special because members will have to pay at Åvik (Fig. 22e) for lunch (Fig. 22f).

- (8) For these three gatherings, the program is from 9 am to 11:30 am. The fourth event in Åvik is from 9 am to 12:30 pm since we’ll be eating lunch there.

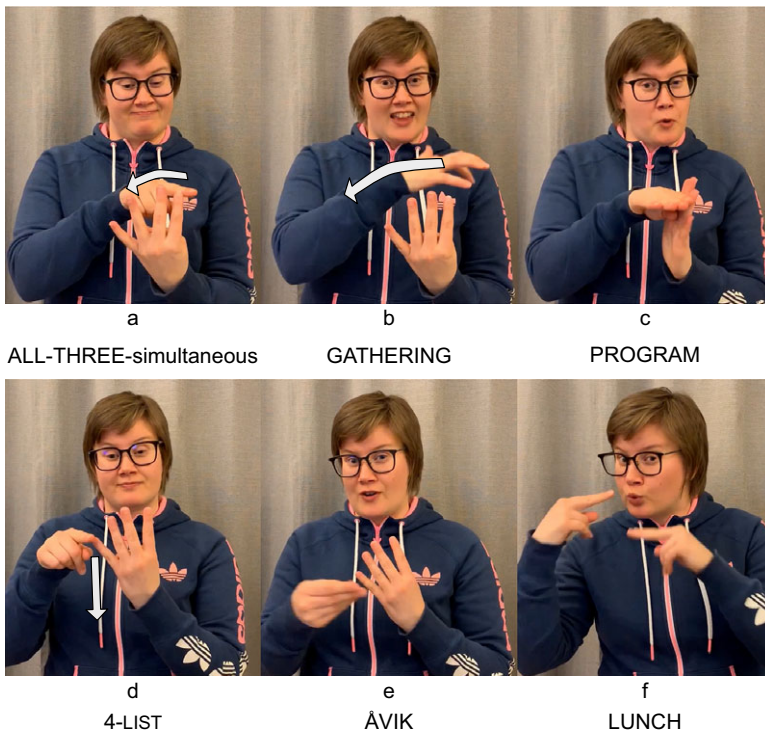


Figure 22. Using a swiping path movement of the pointing device to create a higher-order entity (FinSSL).

5. Placing in list constructions

The concept of placing was first identified in spoken language discourse by Clark (2003) as a type of indicating or indexing different in important ways from pointing. Clark noted that whereas in pointing speakers **direct** the addressee's attention to the object they are indicating, in placing, "speakers try to place the object they are indicating so that it falls within the addressees' focus of attention" so that it **attracts** the addressee's attention (Clark, 2003, p. 187). A customer may point to direct attention to an item on a store shelf to ask the price. Placing a bar of soap on the checkout counter moves the item into the addressee's focus of attention (Clark, 2003).

Placing was extended to signed languages (Martínez & Wilcox, 2019; Wilcox et al., 2022). In signed language constructions, the objects that are placed are linguistic objects. Two types of placing were identified: create-placing and recruit-placing. In create-placing, a sign is produced in a certain location which thereby creates a new Place. Recruit-placing uses the spatial location (the phonological pole) of an existing Place as the placed sign's phonological location. For example, in telling the history of the Argentine revolutionary San Martín the signer places the sign PERSON, creating a new Place (Fig. 23a). Later, by directing a pointing device to a Place, the signer identifies and focuses attention on that Place, reactivating its nominal referent (Fig. 23b).

Placing can occur with list constructions in two ways. In the first, the list-hand is placed, either creating a new Place or recruiting an existing Place. An example of this use of placing with a list construction is shown in Fig. 24, from a video chat. The signer begins by establishing that there are two lists on a wall by using a lexical sign; each hand refers to a separate list (Fig. 24a), and thus creates two Places. He explains that the group on the right is the class of 2018 (Fig. 24b), and the group on the left is the class of 2019 (Fig. 24c), recruiting these two Places.

- (9) There are two class lists on the wall. The one on the right is 2018, the one on the left is 2019. On the right list there are four students, on the left list there are five students. [Names the five students on the right; names the four students on the left.] All of the students on the right failed. All the students on the left also failed. ... The students on the right all failed.

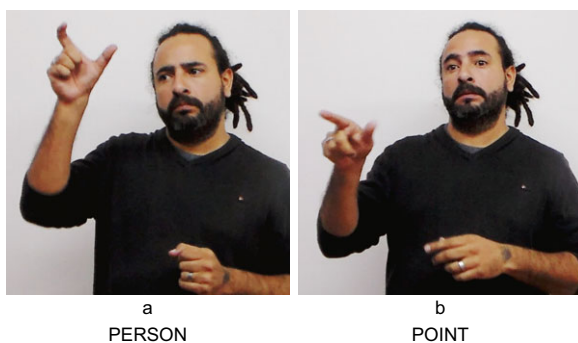


Figure 23. Create-placing (a) and pointing (b) (Argentine Sign Language).

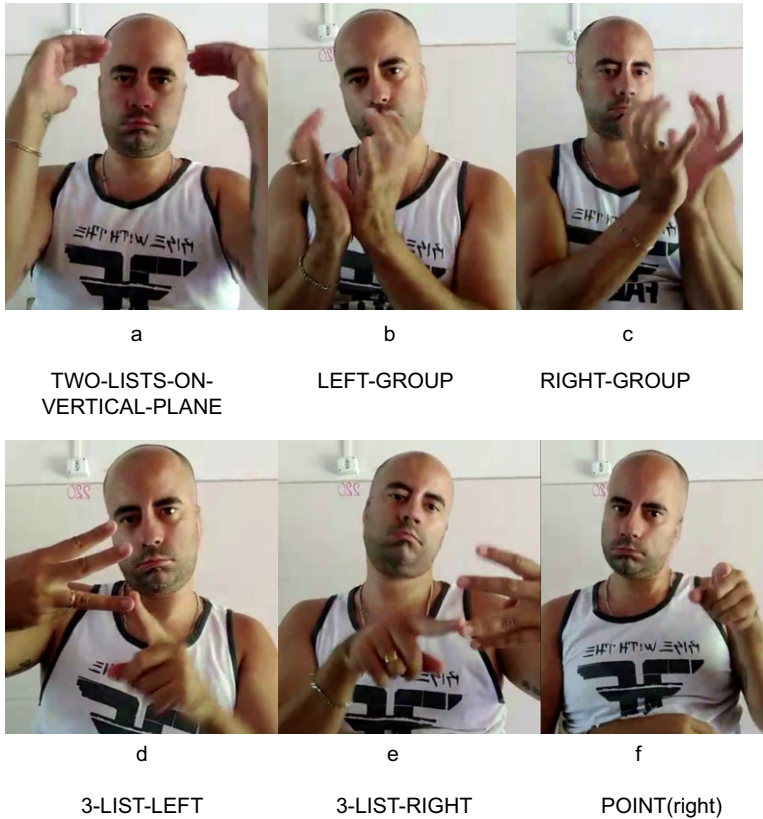


Figure 24. Using placing to create two Places symbolizing two classes, and then directing attention to students in each class (Libras).

The signer then uses his left and right hands to recruit place a list-hand in each Place to identify the students in each class. As he points in turn to the individual list-finger Places, he elaborates the semantic pole of that Place with the student's name; he repeats for the list-fingers of right and the left list-hands (Fig. 24d,e). Because the two spatial locations that correspond to the 2018 and 2019 classes are Places, the signer is able to use a pointing construction to direct attention to and reactivate the class of 2019 Place (Fig. 24f).

In the second way placing is used in list constructions, the dominant hand is placed at a list-finger Place. In all pointing constructions, the pointing device is directed to a Place as a way of directing attention to the associated referent. In list constructions, the dominant hand not only directs attention to list-fingers, it can also place a sign on them. The first action is achieved by a pointing device which is quite schematic in terms of conceptual content; its predominant function is to direct attention to the Place. The second action is accomplished by more semantically substantive signs which integrate grammatically with their referent when placed at one or more list-finger Places. It is these more substantive lexical signs that exhibit canonical properties of being placed. This distinction is not categorical; depending on the construction, uses fall along the lexicon/grammar continuum. Generally,



Figure 25. Continuum from canonical pointing device to placing.



Figure 26. The sign *REQUIRED* placed on 3-LIST (Libras).

grammatical forms are more semantically schematic, while lexical forms are more specific (Langacker, 1987, 2008). A prototypical pointing device is semantically schematic, serving only to direct attention to the more semantically specific Place referent, and thus lies more at the grammatical end of the continuum (the gradient bar in Fig. 25). At the opposite end are more substantive, placed lexical signs. In the mid-range of the continuum, the dominant hand may exhibit both pointing device and lexical meaning.

The examples in Section 4 vary along this continuum. Higher-order entities created with a more semantically schematic dominant hand index finger, such as swiping and circling, function more as pointing devices. The pinching form used in Fig. 16 has somewhat more conceptual content than a canonical pointing device; in Libras this form has the conventional meaning of “together.” The two-finger pointing device used in Fig. 18 co-occurs with the lexical numeral two. The fusing strategy shown in Fig. 20 is a form of the lexical sign *SUM* with mathematical meaning, situating it at the placing end of the continuum.

Finally, an example at the placing end of the continuum is seen in Fig. 26. A signer has been explaining a university program in a YouTube video. He produces a sequentially built list with four items for each of the courses in the program. Each list-finger Place is profiled with the index finger pointing device and then elaborated in the way already described. After elaborating the semantic pole of the third list-finger Place by signing *DEAF LITERATURE*, the signer says that this is a required course (Fig. 26). The sign meaning “required” is based on the Libras modal *MUST* (Xavier & Wilcox, 2014) as shown in (Fig. 27). When placed in a list construction, the composite construction means “deaf literature is a required course.” The pointing device function of directing attention is quite attenuated; instead, the sign *MUST* integrates with the list construction, the list-finger serving as a grammatical argument to *MUST*, and the placing function predominates.

We can make a further distinction between expressions in which the placed sign interacts directly with or manipulates the list, serving only to create a higher-order



Figure 27. Canonical form of MUST/REQUIRED (Libras).

entity, such as Fig. 20, and those in which the sign is placed at the list, both creating a higher-order entity and integrating grammatically with one or more elements in list. An example of the latter occurs in the excerpt depicted in Fig. 28, in which the signer describes the second type of examination applicants for a position of Libras substitute instructor must go through. The first type was depicted in Fig. 10. He starts by identifying the second type with a topic-marked list construction directing attention to the second list-finger Place (Fig. 28a). He then elaborates the Place: applicants must demonstrate how they will teach a lesson. This will be evaluated by a committee, each committee member evaluating the teaching demonstration on multiple criteria, which are then summed up. This is explained using the two-handed lexical form SUM (Fig. 28b). The signer then signs SUM with the dominant hand, placing it at the second list-finger (Fig. 28c), meaning that committee member summary scores will now be combined to arrive at one overall summary score. In Fig. 28d he places SUM at the first list-finger, which represented the evaluation described in Fig. 10, indicating these scores will also be totaled. Finally, he places SUM at both list-fingers (Fig. 28e), creating a new, higher-order group, the final summary score across all components of the evaluation.

In this example we see again variability of meaning of the dominant hand along the continuum shown in Fig. 25. In Fig. 28a, from a document translated to Libras, the dominant hand is semantically a grammatical pointing device functioning to direct attention. In Fig. 28c–e, however, by articulating the lexical verb SUM at the list-fingers the dominant hand is grammatically integrated with the list and the placing function predominates.

Canonically, SUM is a balanced two-handed sign (Fig. 28b) in which both hands move (van der Hulst, 1996). MUST (Fig. 27) is an unbalanced two-handed sign, in which the active dominant hand acts on a base hand. When such signs integrate with list constructions, they become one-handed signs, as in Figs. 26 and 28c–e. The result is a construction comprised of two components: the dominant hand lexical sign (meaning “required” and “sum,” respectively), and the list construction Place (“def

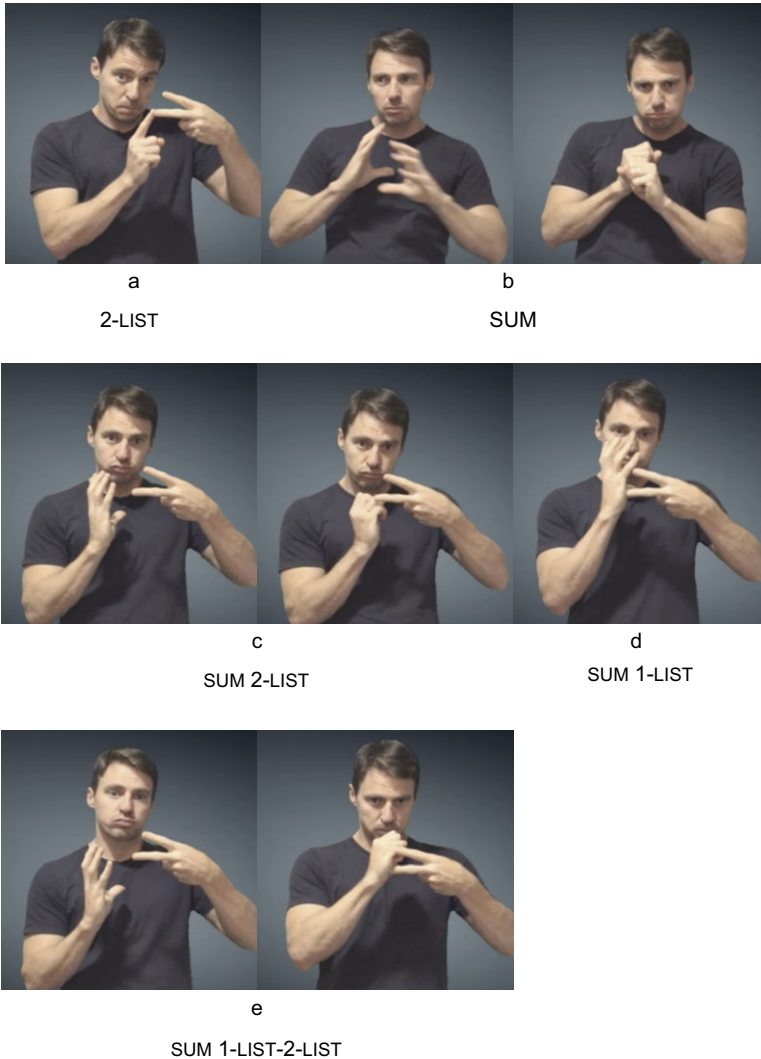


Figure 28. Continuation of the explanation of application process for a substitute teacher position (Libras).

literature” and “summary scores”). The integrations create the composite meanings “deaf literature is a required course” and “the final scores are summed up.”

- (10) The second set of scores will include how you teach your demonstration class. The committee sums the scores of your demonstration class. The committee then will sum the second set of scores, sum the first set of scores, and sum the two together.

This integration of linguistic elements with components of list constructions can be extended even further as we will see in the next section, where we examine the integration of the person construction with list constructions.

6. List construction families

In a usage-based approach, constructional schemas develop by abstraction from actual expressions. Components of these constructional schemas – symbolic structures such as lexical items or larger symbolic assemblies – are classified across these utterances, resulting in intersecting schematic hierarchies (Langacker, 2005). For example, in FinSSL (Fig. 18) the index and middle finger hand configuration was classified first as the lexical number two, and subsequently as a two-finger pointing device in a list construction. The grasping hand in Libras (Fig. 28) is classified as a component in a construction meaning to sum scores, and as a non-canonical pointing device fusing list-fingers into a higher-order entity (Fig. 20).

In the following example, we show how intersecting hierarchies integrate components of a list construction with components of the Libras person construction, creating non-canonical, innovative forms. The upright index finger can be used to express PERSON in Libras and many other signed languages. In ASL, the conventional lexical sign MEET consists of the upright index of each hand, facing each other in the space in front of the signer's upper torso, coming together in a straight path movement. As Lepic and Occhino (2018) note, however, the phonological form of MEET varies depending on its meaning. MEET can be altered to form a morphologically-related sign, MISS-EACH-OTHER, by moving the hands past one another instead of coming together. PERSON is thus a component in constructions that vary in symbolic complexity and productivity.

Fig. 29 is from an artistic piece describing an event of deaf and hearing people marching together in defense of Libras. It starts with one deaf person; in Fig. 29a another deaf person enters the scene. More and more deaf people converge (Fig. 29b), until there is a group of deaf people marching together (Fig. 29c). Additional fingers indicate first specific numbers of deaf people: one, then two, then five (Fig. 29b). In Fig. 29c, however, the two five-hands do not mean ten deaf people are congregated and marching; rather, the meaning here is of a group of deaf marchers unspecified for number. The signer explains that hearing people in general do not understand deaf people and classify them negatively. Eventually, a group of hearing people who might have stood in opposition (Fig. 29d) turn and join forces with the growing group of deaf people (Fig. 29e). We see in this vivid, poetic expressive form the productive and creative use of a person construction. In all cases, whether the number of people is specific as in Fig. 29a,b or unspecified Fig. 29c–e, the upright fingers are people.

- (11) I'm a deaf person walking alone. I look and see another deaf person who comes and walks with me. We are joined by another deaf people. More and more deaf people join us. We march together. Are we marching to fight? No. We are here to struggle. ... We want hearing people to learn Libras and join us and march with us.

Such person constructions can integrate with list constructions. In these constructions, the upright fingers that symbolize people are blended with non-canonical list-fingers. In a YouTube channel video, a Libras signer provides an example that integrates a person construction and a list construction with several strategies for creating and profiling higher-order entities. He is explaining the meaning of the tattoo on his wife's back. The tattoo is an image of four birds, shown diagrammatically in Fig. 30. Two of them have bows on their heads, and two do not. He explains



Figure 29. Using a person construction to describe an event of deaf and hearing people marching together in defense of Libras.



Figure 30. Schematic depiction of the wife's tattoo.

that the two birds with bows metaphorically correspond to his wife and his daughter. The two birds without bows represent himself and his stepson.

In Fig. 31, the example begins with HAVE (Fig. 31a) WHAT (Fig. 31b), “what does the tattoo depict?” He then creates and profiles the four entity fingers (Fig. 31c) with a path movement. Using his dominant hand he fuses the index and middle fingers (Fig. 31d), points to the now reified group (Fig. 31e), and explains that this group is the female birds with bows on their heads. Next, he unfuses the two fingers and directs dual attention to the two with a two-finger pointing device (Fig. 31f). He explains that the two birds in the tattoo represent his wife and daughter. He does this by signing [COPULA] MEAN FEMALE WHAT “what do the female birds represent?” He directs attention to the index finger (Fig. 31g) and elaborates its meaning as his wife, and then directs attention to the middle finger (Fig. 31h) and elaborates its meaning as his daughter.

Up to this point, the nondominant hand with four fingers extended is a component of the person construction as seen in Fig. 29: the orientation is not that of a canonical list-hand, instead matching the orientation of upright people. At (Fig. 31g) and (Fig. 31h), however, the signer uses the person construction to form components of a list construction. The two fingers are schematic Places which are profiled and subsequently semantically elaborated.

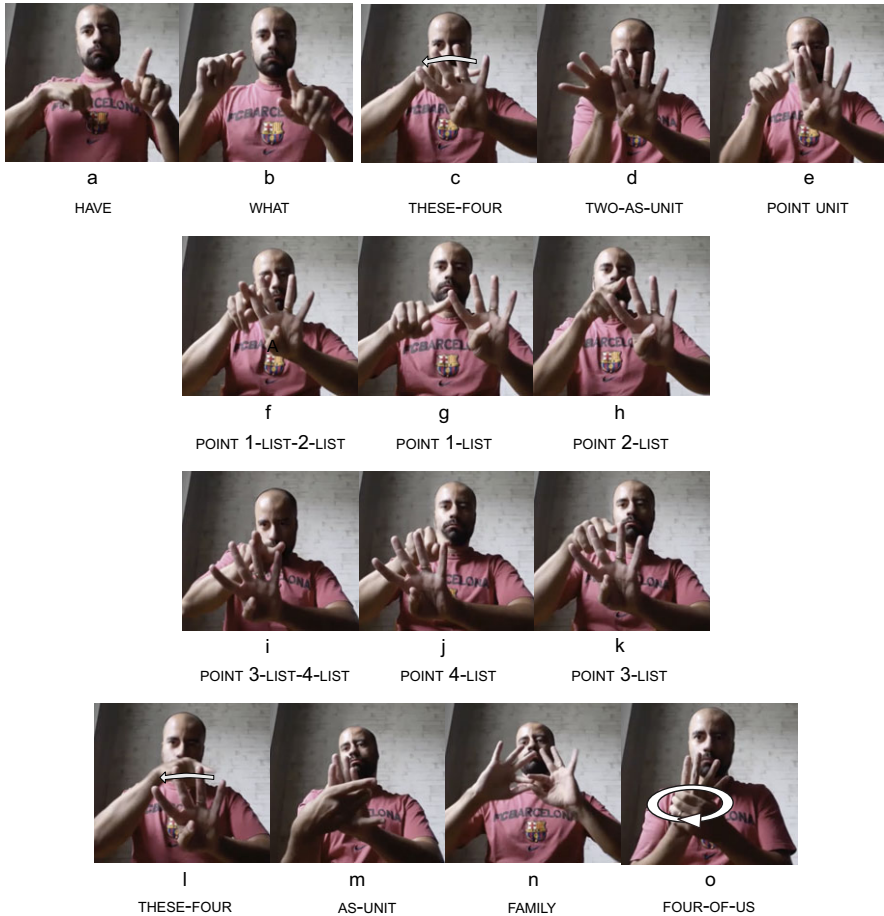


Figure 31. Integrating components of the list and the person constructions to describe the signer’s family (Libras).

- (12) What does the tattoo depict? There are four people. There are two female birds wearing a bow. They represent my wife and my daughter. These two birds have no bows. They represent me and my stepson. The four of us make up a family.

Next, the signer returns to the image of the birds in the tattoo. At Fig. 31i the signer simultaneously directs attention to the pinky and ring finger, giving them a dual profile. He explains these two have no bow on their head. He then explains the meaning of these two birds. He directs attention to the pinky finger (Fig. 31j) and signs ME, the husband, and then directs attention to the ring finger (Fig. 31k) and explains that it represents his stepson. Again, we see the people component being recruited as list-fingers, with the canonical list construction pattern of first profiling a schematic list-finger Place and subsequently semantically elaborating the Place.

With a path movement, the signer directs attention to the four entities that have now been presented (Fig. 31l), grabs and fuses the four fingers to form a higher-order entity (Fig. 31m), and names the entity: this is his family (Fig. 31n). The fingers are now a complex integration of a person construction, a list construction, and a metaphorical representation of his family as the four birds depicted in his wife's tattoo. He concludes his story by using his dominant hand to hold the nondominant hand, moving both hands in repeated rapid circular movements, and he then signs FAMILY again. This final sign is a highly complex construction consisting of several symbolic components. The four fingers represent four individuals; their prior phonological fusing (Fig. 31m) created and profiled the higher-order entity, the collective noun FAMILY. Finally, the group is once again individuated into four discrete elements (Fig. 31o), the four individual family members. The circular movement is a component of yet another construction found in Libras and other signed languages, the inclusive/exclusive (including versus excluding the addressee) plural pronominal construction (Moreira, 2007): moving the four entity fingers in a circular movement in the space in front of and near to the signer means "the four of us" (inclusive). In other words, the inclusive/exclusive distinction is manifest as a schematic Place: the phonological pole is close/distant from the signer (various other distinctions are possible as well), and the semantic pole, while unspecified for number, is specified for inclusive/exclusive.

An interesting aspect of this list construction is that the prototypical ordering of list-fingers, which would have father and mother as index and middle fingers (or the reverse), is iconically overridden by the tattoo, which depicts the two females with bows next to each other, leaving the two males also grouped as in the list construction (Fig. 32).

This example demonstrates the integration of the person construction and a list construction. The fingers symbolizing people from the person construction component are recruited as list-fingers in the list construction. Elements of the list construction that appear are the use of the pointing device to direct attention to a schematic list-finger Place, elaboration of each Place, and the various strategies of creating and directing attention to higher order-entities. Finally, the path movement



Figure 32. Correspondence between elements of the signer's wife's tattoo and family (Libras).

component from inclusive plural pronominal constructions is integrated to create a high-order plural group.

7. Conclusions

Signed language lists have been described in the literature as list buoys, one-handed signs produced on the nondominant hand. Treating list expressions as constructions reveals that they are complex symbolic assemblies consisting of two component structures: the nondominant list-hand and its fingers, and the dominant pointing hand. Both are linguistic structures comprised of form and meaning. List-fingers are Places, symbolic structures initially schematic in their phonological and semantic content, which are semantically elaborated in prior or subsequent discourse. List-finger Places in list constructions not only identify and profile referents, they also may serve as conceptual reference points in topic-comment and antecedent-anaphor expressions. The list-hand itself is also a symbolic structure that may be placed at meaningful spatial locations, creating a Place which may later be used in a pointing construction.

The dominant, pointing hand has received little to no attention in previous studies, often characterized as simply a gesture used to touch the list-fingers. The dominant hand, canonically an index finger, is also a symbolic structure with form and meaning. Our constructional approach has shown that while its primary semantic function is to direct attention to list-finger referents, the dominant hand serves other linguistic functions, such as creating higher-order conceptual groupings of list-finger referents. The dominant hand meaning also varies along a continuum from a more grammatical meaning of directing attention to a more lexical meaning, the latter resulting in constructions in which a lexical sign on the dominant hand is placed at a list-finger to form a complex clausal predicate construction.

List constructions may integrate with other constructions, creating both conventional and innovative constructional families. The symbolic components of list constructions form patterns at different levels of schematicity with the potential to integrate with components of other constructions to form intersecting schematic hierarchies. In these cases, list construction components – the list-fingers and the dominant hand-pointing device – take on different but related semantic function.

We have shown that the typology of list constructions is more diverse than previously described. The list-hand in a list construction does not always remain stationary, and thus its function as a conceptual landmark is more complex than previously thought. The presentation of fixed versus sequentially-built list-fingers, when combined with perseveration and non-perseveration of the list-hand, has conceptual and discourse significance which deserves further research.

Several issues remain for further investigation. Certain list constructions appear to lexicalize into fixed expressions. Although list constructions recruit the five fingers of the list hand, signers have strategies for referring to more than five items in a list. In our data, we have seen variation in whether signers start a list with the thumb, the index, and even the pinky finger, and whether the first item in a list is presented or the list starts with the second item. Given the conceptual overlap of enumerating and counting, it might be interesting to see how the pattern of list constructions relates to the representation of ordinal and cardinal numbers in the languages discussed.

While we have explored the grammatical functions of the dominant, pointing hand, more remains to be described. One example is the different dynamic qualities of movement that a signer may use: more articulatory force of the dominant hand-pointing action increases conceptual directive force, varying the degree of conceptual attention directed at the referent. Finally, while we have shown that certain conventional grammatical facial displays appear with list constructions, such as those used to mark topics and confirmation of intersubjective alignment, a fuller analysis of this interaction is needed. Eye gaze directed at a list-finger also serves the semantic function of directing attention, and often accompanies the dominant hand-pointing device. This interaction may also serve to increase conceptual force directed at a referent.

List expressions have been shown to exhibit considerable similarities across signed languages. Our data from Libras and FinSSL, two historically unrelated languages, also show striking similarities, both when compared with each other, and with list expressions in other signed languages. Liddell et al. (2007) conclude that there is no obvious answer to these cross-linguistic similarities. We suggest that a cognitive constructional approach offers a preliminary answer. Fingers are conceptually intrinsic entities that can be recruited as meaningful locations, Places in our analysis, by associating fingers with nominal referents in list constructions. The dominant hand's meaning is grounded in conceptualization as well: pointing is commonly used to single out and direct conceptual as well as visual attention to referents and groupings of referents. Thus, together the two components of list constructions perform the referential task of singling out and directing attention to an entity through a combination of description and deixis. Establishing joint referential attention is a ubiquitous goal of communication. Our cognitive analysis in terms of Places and pointing devices offers a conceptual unification of list constructions with other linguistic expressions that accomplish the same goal.

Data availability statement. Video data used in this article are available at the following sites.

FinSSL:

<http://teckeneko.fi/fst/tematrafar-for-aldre-teckensprakiga-finlandssvenskar>

<https://teckeneko.fi/fst/frivilliga-borsvakter-till-en-liten-gest>

<https://teckeneko.fi/fst/styrelsens-arbete-och-roller>

<http://teckeneko.fi/ovrigt/projektpengar-hos-humak>

Libras:

Figure 2.

<https://youtu.be/eMLgPSwqkFI>

Figure 3.

<https://youtu.be/Iloq8FjKHZo>

Figure 6.

<https://youtu.be/IawAqPUKja8>

Figure 10.

<https://youtu.be/YkRa-MIsf5w>

Figure 17.

https://youtu.be/_0CyTImeZOQ

Figure 19.

<https://youtu.be/RA8PjpErQEw>

Figure 20.

<https://youtu.be/YuivL9bRmNc>

Figure 24.

<https://youtu.be/fIMJn9OGasw>

Figure 28.

<https://youtu.be/aLoegTC3eCM>

Figure 29.

<https://www.facebook.com/wagner.serafim.5/posts/pfbid0Ymrh8G5EWkpFGKnuTUbr1g9HVgysZ>

Z3UewzvjzCokaB8NBcfxaooK78S2akqHbhCl

Figure 31.

<https://youtu.be/YrkLMUOjKfI>

Acknowledgments. We thank Marcelo Porto, Jefferson Diego de Jesus, and the signers of FinSSL from Finlandssvenska teckenspråkiga rf and Teckeneko for giving us permission to use their images to illustrate our data. We especially thank Jefferson for sharing with us his knowledge of Libras so many times throughout the writing of this paper.

Competing interest. The authors declare none.

References

- Andersson-Koski, M. (2015). Mitt eget språk – vår kultur. En kartläggning av situationen för det finlandssvenska teckenspråket och döva finlandssvenska teckenspråkiga i Finland 2014–2015 [My language – our culture. A survey of the situation of the Finland-Swedish Sign Language and the deaf Finland-Swedish Sign Language users in Finland 2014–2015]. Finlandssvenska Teckenspråkiga.
- Bender, A., & Beller, S. (2011). Fingers as a tool for counting—Naturally fixed or culturally flexible. *Frontiers in Psychology*, 2, 256. <https://doi.org/10.3389/fpsyg.2011.00256>
- Bender, A., & Beller, S. (2012). Nature and culture of finger counting: Diversity and representational effects of an embodied cognitive tool. *Cognition: International Journal of Cognitive Science*, 124(2), 156–182. <https://doi.org/10.1016/j.cognition.2012.05.005>
- Bulwer, J. (1644). *Chirologia: or The naturall language of the hand: Composed of the speaking motions, and discoursing gestures thereof; whereunto is added Chironomia: or, The art of the manuall rhetoricke: Consisting of the naturall expressions, digested by art in the hand, as the chieftest instrument of eloquence.* Thom. Harper and Henry Twyford. <https://doi.org/10.1037/11828-000>
- Chafe, W. (1987). Cognitive constraints on information flow. In R. S. Tomlin (Ed.), *Coherence and grounding in discourse* (pp. 21–51). John Benjamins.
- Clark, H. H. (2003). Pointing and placing. In S. Kita (Ed.), *Pointing: Where language, culture, and cognition meet* (pp. 243–268). Psychology Press. http://web.stanford.edu/~clark/2000s/Clark,H.H._Pointing_and_placing_2003.pdf
- Cooperrider, K., Slotta, J., & Núñez, R. (2018). The preference for pointing with the hand is not universal. *Cognitive Science*, 42(4), 1375–1390. <https://doi.org/10.1111/cogs.12585>
- De Wit, A., & Brisard, F. (2014). A Cognitive Grammar account of the semantics of the English present progressive. *Journal of Linguistics*, 50(1), 49–90.
- Dudis, P. G. (2004). Body partitioning and real-space blends. *Cognitive Linguistics*, 15, 223–238.
- Enfield, N. J. (2001). Lip-pointing: A discussion of form and function with reference to data from Laos. *Gesture*, 10(1), 185–211.
- Engberg-Pedersen, E. (1994). Some simultaneous constructions in Danish Sign Language. In *Word-order issues in sign language* (pp. 73–87). International Sign Linguistics Association.
- Fischer, M. H., Kaufmann, L., & Domahs, F. (2012). Finger counting and numerical cognition. *Frontiers in Psychology*, 3, 108. <https://doi.org/10.3389/fpsyg.2012.00108>
- Gabarró-López, S. (2019). Describing buoys from the perspective of discourse markers. *Sign Language and Linguistics*, 22(2), 210–240. <https://doi.org/10.1075/sll.00034.gab>
- Gabarró-López, S., & Meurant, L. (2014). The use of Buoys across genres in French Belgian sign language. In *Actes Du IXe Colloque de Linguistique Des Doctorands et Jeunes Chercheurs Du Laboratoire MoDyCo (COLDOC 2013): La Question Des Genres à l'écrit et à l'oral* (pp. 43–54). https://coldoc2013fr.files.wordpress.com/2014/11/livret_actescoldoc_version2.pdf
- Hansen, M., & Hessmann, J. (2015). Researching linguistic features of text genres in a DGS corpus. *Sign Language & Linguistics*, 18(1), 1–40. <https://doi.org/10.1075/sll.18.1.01han>

- Heitkoetter, R. P., & Xavier, A. N. (2020). Descrição e Análise de Boias de Listagem em Libras. *Humanidades & inovação*, 7(26), 86–111.
- Heitkoetter, R. P., & Xavier, A. N. (2022). Estudo Comparativo de Boias de Listagem em Produções de Dois Sinalizantes Surdos Paranaenses. *Interletras*, 11(36), 1–15.
- Janzen, T. (1999). The grammaticization of topics in American Sign Language. *Studies in Language*, 23, 271–306.
- Janzen, T., O’Dea, B., & Shaffer, B. (2001). The construal of events: Passives in American Sign Language. *Sign Language Studies*, 1, 281–310.
- Jefferson, G. (1990). List-construction as a task and resource. In G. Psathas (Ed.), *Interaction competence* (pp. 63–92). University Press of America.
- Johnson, R. E., & Liddell, S. K. (2011). Toward a phonetic representation of hand configuration. *Sign Language Studies*, 12(1), 5–45. <https://doi.org/10.2307/26190822>
- Kita, S. (2003). *Pointing: Where language, culture, and cognition meet*. Lawrence Erlbaum.
- Langacker, R. W. (1987). *Foundations of cognitive grammar: Volume I, Theoretical prerequisites*. Stanford University Press.
- Langacker, R. W. (1991). *Foundations of cognitive grammar. Volume II, Descriptive application*. Stanford University Press.
- Langacker, R. W. (1993). Reference-point constructions. *Cognitive Linguistics*, 4, 1–38.
- Langacker, R. W. (1997). Generics and habituals. In A. Athanasiadou & R. Dirven (Eds.), *On conditionals again* (pp. 191–222). John Benjamins.
- Langacker, R. W. (2000). *Grammar and conceptualization*. Mouton de Gruyter.
- Langacker, R. W. (2001). Topic, subject, and possessor. In H. G. Simonsen & R. T. Endresen (Eds.), *A cognitive approach to the verb: Morphological and constructional perspectives* (pp. 11–48). Walter de Gruyter.
- Langacker, R. W. (2005). Construction grammars: Cognitive, radical, and less so. In F. J. R. D. M. Ibáñez & M. S. P. Cervel (Eds.), *Cognitive linguistics: Internal dynamics and interdisciplinary interaction* (pp. 101–159). Mouton de Gruyter.
- Langacker, R. W. (2008). *Cognitive grammar: A basic introduction*. Oxford University Press.
- Langacker, R. W. (2016). *Nominal structure in cognitive grammar*. Marie-Curie Skłodowska University Press.
- Leino, J. (2013). Information structure. In T. Hoffmann & G. Trousdale (Eds.), *The Oxford handbook of construction grammar* (pp. 100–126). Oxford University Press Oxford.
- Leite, T. A. (2008). *A segmentação da língua de sinais brasileira (libras): um estudo lingüístico descritivo a partir da conversação espontânea entre surdos*.
- Lepic, R., & Occhino, C. (2018). A construction morphology approach to sign language analysis. In G. Booij (Ed.), *The construction of words* (pp. 141–172). Springer.
- Li, H., & Cao, Y. (2019). Hands occupied: Chinese farmers use more non-manual pointing than herders. *Lingua: International Review of General Linguistics* 222, 1–9. <https://doi.org/10.1016/j.lingua.2019.02.006>
- Liddell, S. K. (2003). *Grammar, gesture, and meaning in American Sign Language*. Cambridge University Press.
- Liddell, S. K., Vogt-Svendsen, M., & Bergman, B. (2007). A crosslinguistic comparison of buoys. In M. Vermeerbergen, L. Leeson, & O. A. Crasborn (Eds.), *Simultaneity in signed languages: Form and function* (pp. 187–215). John Benjamins.
- Lillo-Martin, D., & Meier, R. P. (2011). On the linguistic status of ‘agreement’ in sign languages. *Theoretical Linguistics*, 37(3/4), 95–141.
- Lindemann, O., Alipour, A., & Fischer, M. H. (2011). Finger counting habits in middle eastern and western individuals: An online survey. *Journal of Cross-Cultural Psychology*, 42(4), 566–578. <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=4a9d47406920fb2e50ca986b8c2771c50a6d3f64>
- Martinez, R., & Wilcox, S. (2019). Pointing and placing: Nominal grounding in Argentine Sign Language. *Cognitive Linguistics*, 30(1), 85–121. <https://doi.org/10.1515/cog-2018-0010>
- McCawley, J. D. (1975). Lexicography and the count-mass distinction. In *Proceedings of the First Annual Meeting of the Berkeley Linguistics Society* (Vol. 1, pp. 314–321). Berkeley Linguistics Society.
- Miller, C. (1994). Simultaneous constructions and complex signs in Québec Sign Language. In Ahlgren & M. Brennan (Eds.), *Word-order perspectives on sign language structure. Papers from the Fifth International Symposium on Sign Language Research* (pp. 131–148). International Sign Linguistics Association.

- Moreira, R. (2007). *Uma descrição da dêixis de pessoa na língua de sinais brasileira: Pronomes pessoais e verbos indicadores*. University of São Paulo.
- Pinsonneault, D., & Lelièvre, L. (1994). Enumeration in LSQ (Québec Sign Language): The use of fingertip loci. In I. Alhgren, B. Bergman, & M. Brennan (Eds.), *Perspectives on sign language structure: Papers from the Fifth Symposium on sign Language Research* (Vol. 1, pp. 159–172). International Sign Linguistics Association.
- Ruth-Hirrel, L., & Wilcox, S. (2018). Speech-gesture constructions in cognitive grammar: The case of beats and points. *Cognitive Linguistics*, 29(3), 453–493. <https://doi.org/10.1515/cog-2017-0116>
- Sandler, W., & Lillo-Martin, D. (2006). *Sign language and linguistic universals*. Cambridge University Press.
- Schiffrin, D. (1994). Making a list. *Discourse Processes*, 17(3), 377–406. <https://doi.org/10.1080/01638539409544875>
- Shaffer, B., & Janzen, T. (2016). Modality and mood in American Sign Language. In J. Nuyts & J. van der Auwera (Eds.), *The Oxford handbook of mood and modality* (pp. 448–469). Oxford University Press.
- Siltaloppi, S. (2018). *The enumeration morpheme as a resource for sign language interpreters in Finland-Swedish Sign Language (FinSSL)*. Auckland, NZ.
- Siltaloppi, S. (2019). Finlandssvenskt teckenspråk. Listkonstruktion, koherens och konstruktionsgrammatik [Finland-Swedish Sign Language. List construction, coherence, and Construction Grammar]. In M. Bianchi, D. Håkansson, B. Melander, L. Pfister, M. Westman, & C. Östman (Eds.), *Svenskans beskrivning 36. Förhandlingar vid trettiosjätte sammankomsten* (pp. 281–293). Institutionen för nordiska språk vid Uppsala universitet.
- Siltaloppi, S. (2023). *List construction in Finland-Swedish Sign Language*. University of Helsinki. <https://helda.helsinki.fi/handle/10138/17738>
- Steinbach, M. (2012). Plurality. In R. Pfau, M. Steinbach, & B. Woll (Eds.), *Sign language: An international handbook* (Vol. 37, pp. 112–136). Walter de Gruyter.
- van der Hulst, H. (1996). On the other hand. *Lingua: International Review of General Linguistics*, 98(1–3), 121–143. <https://www.sciencedirect.com/science/article/pii/0024384195000356>
- Van Hoek, K. (1997). *Anaphora and conceptual structure*. University of Chicago Press.
- Vogt-Svendsen, M., & Bergman, B. (2007). Point buoys: The weak hand as a point of reference for time and space. In *Amsterdam studies in the theory and history of linguistic science series* (Vol. 4, pp.217–235). John Benjamins.
- Wilcox, S. (2004). Cognitive iconicity: Conceptual spaces, meaning, and gesture in signed languages. *Cognitive Linguistics*, 15, 119–147.
- Wilcox, S., & Martínez, R. (2020). The conceptualization of space: Places in signed language discourse. *Frontiers in Psychology*, 11, 1406. <https://doi.org/10.3389/fpsyg.2020.01406>
- Wilcox, S., Martínez, R., & Morales, D. (2022). The conceptualization of space in signed languages: Placing the signer in narratives. In A. Jucker & H. Hausendorf (Eds.), *Pragmatics of space* (pp. 63–94). Mouton de Gruyter. <https://doi.org/10.1515/9783110693713-003>
- Wilcox, S., & Occhino, C. (2016). Constructing signs: Place as a symbolic structure in signed languages. *Cognitive Linguistics*, 27, 371–404. <https://doi.org/10.1515/cog-2016-0003>
- Wilcox, S., Wilcox, P., & Jarque, M. J. (2003). Mappings in conceptual space: Metonymy, metaphor, and iconicity in two signed languages. *Jezikoslovlje*, 4(1), 139–156.
- Xavier, A. N., & Wilcox, S. (2014). Necessity and possibility modals in Brazilian Sign Language (Libras). *Linguistic Typology*, 18, 449–488. <https://doi.org/10.1515/lingty-2014-0019>
- Zima, E. (2013). Cognitive grammar and dialogic Syntax: Exploring potential synergies. *Review of Cognitive Linguistics*, 11, 36–72. <https://doi.org/10.1075/rcl.11.1.02zim>.

Appendix

Dataset for FinSSL comes from Techeneko (www.techeneko.fi). All signers lived in Finland, most in the areas where FinSSL is predominant, that is, the coastal areas of Finland. The data was collected in 2014–2019, the entire dataset analyzed in Siltaloppi (2023). The entire dataset consists of 186 videos, representing 13 different signers, of which seven used list constructions. The list construction subset consisted of 48 videos, 2 hours and 16 minutes in length. List constructions were used 241 times. For the research reported here, we selected videos from four signers totaling six videos.

The dataset for Libras comes from several sources. One is a reanalysis of data reported in Heitkoetter and Xavier (2020, 2022). Data represent two signers from Parana state in Brazil. Data from the male signer were collected on YouTube and Facebook videos made available by the signer. This data totaled 1 hour 57 minutes and contained 60 list constructions. Data from the female signer came from university assignments and were provided by the signer. Data totaled 1 hour 31 minutes and contained 25 list constructions.

A second Libras data source came from conversational data that took place on Zoom between the second author and a deaf man, consisting of metalinguistic discussions about various topics, including dominant hand actions, list constructions versus counting, straight versus circular movement, palm orientation, and more. This dataset totaled 49 minutes and comprised 15 list constructions.

A third data source consisted of WhatsApp messages between the second author and the same deaf man. The data totaled 14:12 minutes and comprised 9 list constructions.

A fourth Libras data source came from a public video, a Libras translation of the Portuguese “Edital” stating the protocol for applying for a public university job position as a Libras instructor, totaling 3:27 minutes and comprising two list constructions.