CHAPTER 6

Verb classes in South African Sign Language

A corpus-driven approach

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This chapter presents a pioneer exploration of verb categories in South African Sign Language (SASL), using a corpus of authentic naturalistic narrative data. The paucity of linguistic descriptions of SASL meant that a theoretical basis for the study was derived using models developed for other sign languages, in particular those of Padden (1986, 1988, 1990), Johnston (1991), and De Beuzeville et al. (2009). The study also sought to explore whether verb classes can be distinguished in terms of gaze, head turns, body turns, location shift, nature of movement, emotive facial expressions, and explicitation of arguments, and how these parameters change during role-shift. The study finds that De Beuzeville et al.'s (2009) categorization provides the closest description for SASL verbs, but with a split in their 'directional verbs' category into agreement and motion verbs. A typology for SASL verbs is proposed and reflected upon in terms of teaching objectives.

Keywords: South African Sign Language, verb classes, plain verbs, agreement verbs, verbs of motion, depicting verbs, corpus-driven research

1. Introduction

Although much has been written about verbs in other sign languages, there is a paucity of knowledge about verbs in South African Sign Language (SASL), and the only publication touching on verbs in SASL (Akach 1997) is based on theoretical insights gleaned from American Sign Language (ASL) (Baker-Shenk & Cokely 1981) and not on empirical research. As the first exploration of verb classes in SASL based on authentic naturalistic data, this chapter's primary aim is to propose a typology for SASL verbs that can be taught to students learning the language, drawing as theoretical framework on verbal categories and characteristics identified in other sign languages, taking Padden's (1986, 1988, 1990) tripartite model as starting point. Second, the study also aims to explore what features can be identified as being characteristic of a particular verbal category. Again based on the literature, the function

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of gaze, head turns, body turns, facial expression (i.e., combinations of brow, eye and mouth actions), hand orientation, location, and nature and directionality of movement are explored (see Cormier et al. 2015). Third, the study aims to explore how verbs relate to their grammatical arguments (e.g., subject/agent, object/patient). Should verbs anchored on the body be interpreted as first-person, as Oomen and Kimmelman (2019) propose, or simply as executed by the subject, as Meir et al. (2007) propose? How is agreement expressed by SASL verbs? Do verb classes differ in the extent to which arguments are explicitated? Fourth, the study aims to explore whether the type of discourse influences the variables listed.

2. Padden's verb typology

Padden (1986, 1988, 1990) was the first to propose a verb typology. She proposed a tripartite categorization of verbs in ASL, namely plain, agreement, and spatial verbs.

Plain verbs do not inflect for person or number, nor do they take locative affixes. However, some (e.g., CRY) can be modified for aspect. Padden further distinguished plain verbs between those executed on the body (body-anchored verbs) and those performed in neutral space (plain neutral verbs), that is, the space in front of the signer's torso (see also Lillo-Martin & Meier 2011; Meir et al. 2007; Oomen & Kimmelman 2019). Padden acknowledges that some neutral verbs (e.g., WANT) can shift location in a manner that indicates agreement, but rejects the notion that they contain agreement morphology, and instead proposes that they contain "pronoun clitics" (Padden 1990: 121).

Agreement verbs inflect for person, number and aspect, but do not take locative affixes (Padden 1986, 1988, 1990; see also Lillo-Martin & Meier 2011; Lutalo-Kiingi 2014). In terms of person, Padden recognizes three possibilities, namely first person (represented on or near the signer's body), second person (involving eye contact and deixis towards the addressee), and third person (deixis towards the location of the person referred to if they are present, or towards an assigned location in the signing space, a so-called R-locus, if they are absent), but accepts Meier's (1990) proposal that ASL only makes first versus non-first person distinctions (see also Hou & Meier 2018; Lillo-Martin & Meier 2011; McBurney 2002).[1] In Example (1), the verb GIVE is executed moving from position 3a associated with the agent, to position 3b associated with the patient:

1. This allocation of referents to locations in the signing space is also referred to as 'arbitrary' (Emmorey 1996), 'referential' (Poizner et al. 1987), or 'token' (Liddell 2003) use of space (see also Barberà 2014; Cormier et al. 2015; Perniss 2012; Sandler & Lillo-Martin 2006; Sutton-Spence & Woll 1999).

(1) FATHER, INDEX$_{3a}$, SON, INDEX$_{3b}$, COAT, $_{3a}$GIVE$_{3b}$
'The father gives [his] son a coat.' (SASL corpus)

In terms of number, Padden recognizes *singular* and *plural*, with the latter consisting of *dual* ("two"), *exhaustive* ("each") and *multiple* ("them"). Thus, in (1) above, the movement is performed once to indicate a singular object. In Example (2), plurality is reflected in that the verb give is executed three times, each time with a slight shift in final location.

(2) FATHER, INDEX$_{3a}$, SON+++, INDEX$_{3b}$, MONEY, $_{3a}$GIVE$_{3b,c,d}$
'The father gives [each of his] sons money.' (SASL corpus)

Padden (1988) therefore understands agreement as the expression of a *grammatical* relationship between arguments, with the verb's articulation starting at the locus of the subject and ending at the locus of the object (see also Lillo-Martin & Meier 2011). Padden observed that not all agreement verbs inflect for both subject and object, but proposed that object modification is obligatory in ASL, whereas Meier (2002) and Lillo-Martin and Meier (2011) argue that both subject and object modification are obligatory for ASL agreement verbs. According to Padden, while agreement verbs use directionality to mark grammatical relationships (subject, object) between two arguments in a manner similar to spatial verbs (see below), their use of space is limited to vectors and fixed trajectories of movement, and the specific starting and ending loci are not meaningful. In other words, agreement verbs do not take locative affixes. Padden (1988) also distinguishes agreement verbs proper, which have neither loci associated with the body, from 'partial' agreement verbs that have the initial locus on the body, and 'backwards' agreement verbs that have the final locus on the body.

Spatial verbs take locative affixes (Padden 1986, 1988, 1990). Padden (1986) divides spatial verbs into five subclasses, depending on their grammatical attributes:

- I: predicates that take locative affixes (e.g., MOVE, PUT) – what Supalla (1982) refers to as 'classifier verbs' or 'verbs of motion and location';
- II: predicates that take locative, manner, and instrument-classifier affixes (e.g., CARRY-BY-HAND);
- III: predicates that take locative, manner, and noun-classifier affixes (e.g., VEHICLE-MOVE-ALONG-PATH);
- IV: predicates for which the locative affix is on the body, e.g., PUT-GUN-TO-HEAD (see also Supalla 1982);
- V: predicates with locative affixes and body-part noun classifiers, e.g. CLENCHED-FIST (see also Supalla 1982).

Hence, according to Padden (1990), spatial verbs differ from agreement verbs in that they allow "rich combinations of simultaneously occurring locative, nominal, instrument and manner affixes". Furthermore, according to Padden (1990), the phenomenon of role-shift (in which a twist of the torso or head introduces a different perspective) can only be used to signal direct speech with agreement verbs, whereas with spatial verbs, body shift initiates what Padden (1990: 130) calls "shifting locative grids" (see also Supalla 1982), allowing signers to access multiple arrays of three-dimensional spaces.[2]

3. Alternative verb typologies

Padden's tripartite categorization was accepted by Sutton-Spence and Woll (1999) as applicable to verbs in British Sign Language (BSL), and by Meir (1998) as applicable to Israeli Sign Language. However, it has been challenged by Liddell (1990, 2000, 2003, 2011), Johnston (1991) and De Beuzeville et al. (2009). As De Beuzeville et al. (2009: 75) argue, if spatial modifications are grammaticalized inflectional morphemes, then one would expect that they should occur obligatorily, and therefore lose iconicity as the relationship between form and meaning becomes more abstract, that is, become "semantically bleached".

Liddell (1990, 2000, 2003, 2011) rejects Padden's proposal of an inflectional morphology and her distinction between agreement – what he calls "indicating verbs" (Liddell 1990: 176) – and spatial verbs. According to Liddell, the pointing gesture is overlaid onto the lexical structure of indicating and spatial verbs. He argues that indicating verbs are directed towards their referents, either physically if present or represented in the signing space if not – for example, the directionality of $_{1}$TELL$_{3a}$ identifies the one to be told. However, the end location is not meaningful, nor is it a referential locus, but simply the final location of the sign. As De Beuzeville et al. (2009) note, three arguments support Liddell's position, namely (1) the apparently unlimited number of potential R-loci, (2) the non-obligatory nature of spatial modifications, and (3) the iconic relationship between referent location and verb modification. In addition, Liddell (2003) proposes that (ASL) agreement verbs activate blended mental space (i.e., motivated space) more than plain verbs (see also Cormier et al. 2015; Metzger 1995; Quer 2011).

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2. Role-shift is a grammatical means of expressing context shift, in which the signer conveys the thoughts, words or actions of another (Lillo-Martin 2012; Herrmann & Steinbach 2012; Oomen & Kimmelman 2019). It occurs either as *constructive dialogue* (quoting somebody) or as *constructed action*, in which signers imagine themselves to be somebody else (Pfau & Quer 2010).

Johnston (1991) classifies verbs into those that are spatially-inflecting and those that are not. His category of 'non-spatially inflecting' verbs – what he also calls "anchored verbs" (Johnston 1991: 31) – corresponds to Padden's subcategory of plain body-anchored verbs. Johnston notes that such verbs cannot modify direction or location, and that the place of articulation on the body is often semantically relevant. Johnston (1991) distinguishes spatially inflecting verbs in terms of whether they involve one or two loci. Those involving one locus include those located on the body, with limited variability in location, and those located in space that can shift location. Those involving two loci are divided into those that imply two loci through meaningful change in orientation ('orientating signs'), and those where the relationship between the two loci is expressed through movement between the two loci ('directional signs'). Johnston further distinguishes between 'fully directional' signs that can shift both start and end locations (e.g., GIVE), and 'partial directional' signs for which either the start or end location is fixed onto the signer's body or non-dominant hand (e.g., SEE, TAKE).[3]

Johnston's 'directional verbs' include Padden's category of 'agreement verbs', and Supalla's 'classifier verbs'. However, Johnston proposes that the loci correspond primarily to source and goal loci, and therefore that while the movement may be interpreted in terms of relationships between agent/subject and patient/object, the underlying location shift from source to goal is the predominant consideration and part of the sign's meaning. He argues that spatial and agreement verbs use the same mechanisms for indicating arguments, but denote different types of arguments – for spatial verbs, those with locative (source-goal) semantic roles, and for agreement verbs, those with agent/patient roles. In other words, Johnston views the relationship of agreement that is expressed by the movement as semantic and iconic – "a direct or metaphorical analogue of displacement" (Johnston 1991: 51), with an optional additional grammatical component (see also Cormier et al. 2015; Fenlon et al. 2018). He classifies this displacement as one of three types: *centrifugal* (away from the signer, e.g., PUT), *centripetal* (towards the signer, e.g., TAKE,) and *concentric* (where something is transferred from one location to another, e.g. CARRY-SUITCASE). The terminology implying circular motion is somewhat misleading. Johnston's categorizations clearly influence Zeshan's (2003) broader classification of signs (including both nouns and verbs) for Indo-Pakistani Sign Language (IPSL) as: (a) those that cannot be modified in space, (b) those that permit a change in the location where they are articulated; and (c) directional signs.

3. Partial directional signs have acquired different nomenclature in the literature, such as 'partial agreeing verbs' (starting locus fixed), 'backwards/defective agreeing verbs' (end locus fixed). See e.g., Costello 2016; McKee et al. 2011; Meir 1998.

De Beuzeville et al. (2009: 63) define four categories, namely *plain*, *locatable indicating*, *directional indicating*, and *depicting* verbs. Plain verbs (e.g., THINK, LOVE) are lexicalized, that is belong to the established lexicon (Leeson & Saeed 2012). They cannot be moved physically in space, and are usually body-anchored. They therefore correspond to Padden's category of plain verbs, and to Johnston's category of non-spatially indicating verbs. Locatable indicating verbs (e.g., HAVE, WORK) are also lexicalized, but "can be located meaningfully in space, though not moved through space". They therefore relate to Padden's category of plain neutral verbs, but with an additional inherent feature of movable location. They seem to include both Johnston's categories of freely-locating one-locus spatially inflecting signs and two-loci 'orientating signs'. Third, directional indicating verbs (e.g., SEE, TAKE) correspond to Johnston's category of 'directional signs', and, following Johnston, combine Padden's categories of agreement verbs and first subclass of spatial verbs. Fourth, depicting verbs or 'classifier signs' are defined as "a productive combination of meaningful units of handshape, location and movement" (De Beuzeville et al. 2009: 63). In other words, they belong to the productive lexicon (Leeson & Saeed 2012) and are therefore not lexicalized. They correspond to Padden's other subclasses of spatial verbs.[4] De Beuzeville et al. (2009) find that while spatial modification occurs more for directional indicating verbs than other verb types, it is not obligatory. They regard spatial modification in verbs as a derivational process, and like Liddell, reject the notion that it expresses grammatical concepts like agreement.

A somewhat different approach is taken by Kiingi (2013), who classifies predicates (a term he prefers over 'verbs') by their function as *absolute* (i.e., intransitive verbs), *relative* (i.e., verbs that can be spatially modified), *contactive* (i.e., predicates that express contact of two arguments with each other), or *causative* (i.e., predicates that link cause and effect).[5]

In summary, the different models agree that some verbs are "invariant" (Johnston 1991); that is, they are lexicalized and always used in their citation form. In particular, body-anchored verbs are regarded as belonging to this class. Second, there are verbs that modify their citation form in that they can either be articulated at different locations in the signing space, or their orientation can be meaningfully adapted. While Padden notes them as exceptions, De Beuzeville et al. regard them as a separate class, and Johnston as two different classes. Although the above verbs types may possess intrinsic and arguably meaningful movements (e.g. BE-ANGRY

4. Although the authors do not discuss how they developed their verb typology, their model appears to derive from that of Johnston (1991).

5. My definitions: Kiingi uses mathematical operators to define the categories.

is executed with a downward movement), they do not use movement between two loci as a means of spatial modification.

Third, there are verbs that move in a straight line between two loci (one of which may be associated with the signer's body), either to express a relationship between two arguments, or to express a transfer (of something or someone) from a source to a goal location. While Johnston and De Beuzeville et al. regard these verbs as belonging to the same class, Padden regards them as belonging to two different classes, namely agreement verbs and classifier verbs. Finally, there are non-lexicalized predicates that use handshape, location and movement in a descriptive and creative manner. These correspond to Padden's other subclasses of spatial verbs (excluding classifier verbs) and De Beuzeville et al.'s class of descriptive verbs.

The different nomenclature, and the different and sometimes contradictory categories proposed by the various scholars, present challenges in establishing a verb typology for SASL verbs. Notwithstanding, taking the above description of which phonological features are modified for each class, a tentative typology for SASL verbs is presented in Table 1.

Table 1. Verb subclasses

Subclass	Handshape	Palm orientation	Location	Movement
'body-anchored' plain verbs	citation form	citation form	citation form, on body	intrinsic, citation form
'neutral' plain verbs	citation form	modifiable	not on body, modifiable	intrinsic, citation form
agreement/ indicating verbs ('directional' verbs I)	citation form	modifiable with movement	modifiable	modifiable, linear
classifier/ motion verbs ('directional' verbs II)	citation form	modifiable with movement	modifiable	modifiable, linear
depicting verbs ('spatial verb classes II–V')	modifiable	modifiable	modifiable	modifiable, nonlinear

It is evident that agreement and classifier verbs differ only in the interpretation of the start and end locations, and not in their phonological parameters. It would therefore be of interest to explore whether there are other characteristics that distinguish these two subclasses.

4. Other properties associated with verbs

Besides the above phonological parameters, other issues discussed in the literature include how plain verbs relate to their arguments (since their handshape, location, orientation and movement do not modify), whether and how verbs use motivated space, and which classes of verbs allow subject drop.

For agreement verbs, scholars concur that loci on the body are to be interpreted as first person (e.g., Meir et al. 2007; Oomen & Kimmelman 2019). However, there is debate on the function of the body for body-anchored plain verbs. Meir et al. (2007) argue that the signer's body corresponds to the subject/agent performing the action (see also Engberg-Pedersen 1993), but propose that there is a gradual evolution away from *body-as-subject* as a sign language develops – that is, "semantic leaching" (De Beuzeville et al. 2009) occurs as signs become more arbitrary over time. Oomen and Kimmelman (2019) propose a first-person interpretation of the body even for plain body-anchored verbs (see also Cormier et al. 2015; Lillo-Martin & Meier 2011; Meier 1990; Oomen 2017). They also propose that neutral plain verbs therefore cannot show first-person agreement, but can use location shift to express non-first-person agreement. Gaze is also proposed as a way to mark agreement (Engberg-Pedersen 2003), either independently (Neidle et al. 2000) or together with manual markers (Thompson et al. 2006; Thompson et al. 2009). There is also evidence that gaze and head tilts can be used to mark agreement with plain verbs (Bahan et al. 2000; Liddell & Metzger 1998). It is therefore of interest to explore whether and how SASL verb subclasses express person.

A second debate in the literature is how verbs make use of space. Padden (1990) contends that only spatial verbs can be deployed in what she terms "location grid shifts", whereas Liddell (2003) contends that all verbs utilize 'blended mental space', or what is also called 'motivated space' – that is, signers map imagined interlocutors onto the signing space. There is a growing consensus that 'indicating verbs' (agreement and classifier verbs) use motivated space (Cormier et al. 2015; De Beuzeville et al. 2009; Janzen 2004; Oomen & Kimmelman 2019; Perniss 2012). Role-shift is expressed through changes in eye gaze, body leans/twists towards the imagined reference locus, facial expressions representing those of the referent and use of first-person pronominal signs that do not refer to the signer (Cormier et al. 2015; Engberg-Pedersen 2003; Herrmann & Steinbach 2012; Padden 1986; Quer 2011). Geraci (2012) proposes that signers generally prefer motivated space if a mapping of the real world is available, and typically establish agents on their ipsilateral (dominant) side and patients on their contralateral (non-dominant) side, giving rise to body-diagonal articulation of agreement verbs in motivated space. Thus, it is of interest to explore which, and to what extent, SASL verbs make use of motivated space rather than what is referred to as 'referential' or 'arbitrary' space (Emmorey

1996; Poizner et al. 1987; see also Barberà 2014; Cormier et al. 2015; Perniss 2012; Sandler & Lillo-Martin 2006; Sutton-Spence & Woll 1999).

Third, the issue of what verb classes allow null subjects and under what conditions is still under-researched. Lillo-Martin (1986, 1991) proposed that null arguments in ASL can be licensed either by agreement, or by the topic. By contrast, Bahan et al. (2000) contend that they can only be licensed by agreement. Wulf et al. (2002) found that approximately 65% of ASL plain verbs in their study evidenced subject pronoun drop. They found that subject drop was more likely to occur with role-shift and third-person subjects, but less likely to occur with first-person subjects. Sociological factors and co-reference with a subject in a preceding clause also influenced subject drop. Oomen and Kimmelman (2019) found similar results for plain verbs in German Sign Language (DGS) and Russian Sign Language (RSL). They propose that body-anchored plain verbs possess an inherent first-person feature, thereby requiring that non-first person subjects be expressed overtly, whereas neutral plain verbs possess no restrictions related to person, and therefore allow third-person subject drop. Although they have not yet followed up with empirical research, Oomen and Kimmelman (2019) predict that DGS and RSL agreement verbs should have no inherent person restrictions and therefore allow third-person subject drop, but that 'partial' agreement verbs should exhibit restrictions. Indeed, McKee et al. (2011) find that plain verbs and partial agreement verbs in Australian Sign Language (Auslan) and New Zealand Sign Language (NZSL) generally prefer overt subjects, whereas double agreement verbs in Auslan prefer covert subjects. By contrast, for ASL, Koulidobrova (2017) argues for a discourse-based explanation, and views null subjects as a form of ellipsis.

From the above discussion, there is evidence that verb subclasses might utilize different ways of relating to arguments on the one hand, and to (referential verses motivated) space on the other, implying potentially different functions of non-manuals such as gaze, head turns, body turns and facial expression. The studies mentioned above only focus on particular subcategories of verbs, notably plain and indicating verbs, meaning that until now, comparisons across verb subclasses have not been undertaken. For this reason, the present study seeks to compare how nonmanuals are used with SASL verbs, and whether there are significant differences in usage between verb classes. Gaze and head turns have been reported to occur as agreement markers in referential space. Gaze, body turns, facial expression and the use of first-person pronouns (to refer to narrative characters instead of the signer) have been observed as markers of motivated space. Following Oomen and Kimmelman (2019), the study also explores the extent which subject drop occurs with SASL verbs. In addition, object drop and transitivity – aspects that are under-explored in sign language literature – are also explored.

5. Method

The present study is based on data taken from a small pilot corpus of SASL narratives. SASL can be characterized as mainly an urban sign language. Although home forms and localized formal use of sign systems in schools for the deaf and adult Deaf communities (that developed mainly around schools and churches) have existed for at least 150 years (see Aarons & Akach 2002; Penn 1992), it is only since 1994 that curricula have been developed for teaching SASL at primary, secondary and tertiary education levels. Formal teaching of SASL has considerably contributed to standardization of the language, especially during the last decade. Despite interest and participation in related national and international organizations (such as DeafSA and the World Association of Sign Language Interpreters), only a few linguistic descriptions of SASL based on naturalistic data exist, notably studies on negatives (Huddleston 2017, 2021) and an exploration of syntax, mouthings, and fingerspelling patterns in interpreted discourse (Wehrmeyer 2019a).

The SASL corpus project aims to collect authentic linguistic data based on spontaneous monologues and dialogues in an annotated corpus, in order to categorize and describe the linguistics of SASL as used by the Deaf community. Participants will be recruited from major towns in each of the nine South African provinces, and because of the size of the country, a national project is being planned in collaboration with other South African scholars. Data collection started early 2020, but progress was significantly hampered by the pandemic. (Two field workers lost family members and one contracted the virus himself.) So far, footage from four participating signers from Pretoria has been collected (1F age 58; 3M ages 30, 41 and 60). Four recordings constitute narrative monologues (to a present small Deaf audience), and the fifth records a discussion between the four signers who provided the narrations. The narrative monologues were based on the story of Joseph, with pictorial stimuli provided from a large illustrated children's Bible if participants got stuck or requested the page be turned. (Participants were never interrupted with page turns.) Only two of the four participants actually knew the story, but participants were instructed beforehand that they could invent their own story around the pictures if they didn't remember or know the actual Biblical narrative; instead, it was important that they should keep on signing. During the subsequent discussion that focused on aspects of the Joseph story, participants strongly identified with the rejection and misunderstanding experienced by Joseph. Each recording is approximately 5 to 10 minutes long. All the signers were born to hearing parents and were early learners of SASL (the age at which signers started to acquire SASL ranged from 2 years to 8 years).[6] Because L1 signers only represent a small proportion of

6. South African children typically start school at age 7, hence anyone who learnt to sign by age 8 or by their second school year was included in the study.

the Deaf population, and because of the inclusive norm in South African Deaf communities (see Wehrmeyer 2019b), it was decided to document SASL as it is used in active Deaf communities, rather than restrict the corpus data to L1 users. Funding permitting, the corpus will be expanded into a national corpus representing Deaf communities in all nine South African provinces.

Only one camera was used for the recordings (owing to limited funding) and this was placed centrally in front of the signer, behind a small audience of two or three fluent Deaf persons. An audience of Deaf people precludes signers adapting their signing to accommodate hearing people. For the same reason, once the camera was set up, the hearing researcher left the room, and the recording was stopped by a designated person in the audience.

Translation (into Afrikaans) of the video material was completed by a fluent Deaf signer, Mrs Van Aarde (the Pretoria field worker). From the translations, 991 verb tokens in total were identified in the small corpus. However, because of disruptions caused by the pandemic, in the end only verbs in the first five minutes of three of the individual narratives were fully annotated and collected for analysis, that is, about 15 minutes in total. This rendered 367 verb tokens. Lemmatization and annotation of these utterances were undertaken by the researcher, and checked by Mrs Van Aarde.[7] Afterward, the researcher and field worker checked through the data together, so that ambiguities or uncertainties could be discussed and resolved. Because the study aimed to explore verb class representation in the corpus and whether parameters associated with verbs varied, it was decided to analyze all annotated verb tokens and not focus on unique types – which, according to Zipf's (1949) law, might feature only once in a corpus.

ELAN (Crasborn & Sloetjies 2008) was used as annotation platform, and thereafter the data was transferred to an Excel worksheet for further processing. The first tier contained the ID gloss, that is, a unique lemmatized word denoting the basic meaning for established signs (see Johnston 2010), a hyphenated phrase for productive renderings, and, following Johnston (2019), codes for partially lexicalized forms such as pronouns.[8] English words were selected as ID glosses for convenience and envisaged future cross-linguistic comparisons with other sign language corpora. However, because South Africa is multilingual, not all participants use English as

7. Mrs Van Aarde had partially completed a BA in linguistics, which enabled her to understand and assist in the process of lemmatization and annotation. However, transcribers objected to the process of lemmatization, insisting that meaning was lost (e.g., verb tense and aspect), which confirms that gloss transcription alone is insufficient to carry the full meaning of a signed message. Annotating is tedious and time-consuming, and transcribers struggled to remember the codes. In the end, it proved more efficient for the hearing researcher to apply the codes, and then discuss and check them with the Deaf field worker.

8. Signbanks for SASL are under construction, see e.g., <https://www.realsasl.com/>, but currently the corpus is not yet associated with its own Signbank.

their spoken language. For this reason, mouthing annotations (included in tier 2) are done in the language used by the participants. The second tier contained the translation. The third tier was used for parts-of-speech annotation. In this study, only verbal forms were identified and annotated on the parts-of-speech tier, to enable the primary query. The fourth tier was used to code the verb's initial and (if applicable) final location. Locations, gaze, head turns and body turns were annotated using the compass directions found on a computer keyboard (Wehrmeyer 2015, 2019b). For example 4 = signer's right, 6 = signer's left, 5 = near space in front of the signer. These were augmented by annotations for locations on the body (b), and to denote no second location (n). For example, b5 denotes motion from the body as initial location to central near space, bn denotes a sign located on the body, 5n denotes a sign located in neutral space in front of the signer, 64 denotes motion from an initial location to the left of the signer to a final location to the signer's right. This code provided accurate description of locations and movements. The fifth tier coded adaptations in handshape (fixed, mimetic, CL). The sixth tier recorded directions of head, gaze and body as a single string, using the computer keyboard codes, e.g., h7e7b5 indicates head (h) tilt and gaze (e) to the signer's upper right (7), but body (b) facing audience (5). These were all annotated on the same tier in ELAN in order to circumvent having many tiers, but were unpacked as three separate columns on the Excel worksheet for calculations. The seventh tier coded facial expression, that is brow, eye or mouth actions related to constructed action or dialogue and *not* associated with grammatical functions, in terms of which narrative character was being portrayed as well as the scope, e.g., <CA(Joseph)/> …. </CA(Joseph)>.[9] Tier 8 recorded whether the verb's subject was explicit (S-E) or implicit (S-I), and similarly, whether the verb's object was explicit (O-E), implicit (O-I), or whether the verb was used intransitively (O-N). A final tier designated the verb as 'iconic' or 'arbitrary'.

On the Excel worksheet, SASL verb were provisionally classified using Table 1 above as guide. First, verbs exhibiting (non-intrinsic) linear movement between different initial and final locations were classified as indicating verbs, following De Beuzeville.[10] In order to explore potential differences in properties, indicating verbs were further subdivided into those corresponding to Padden's category of

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9. In the ELAN files, the annotation CA was used for all emotive facial expression, that is, for both constructed action and dialogue. In retrospect, it would have been more efficient to code these separately.

10. Obviously many plain verbs exhibit movements intrinsic to the sign. For example, BE-ANGRY is executed with a downward movement. While these intrinsic movements are arguably meaningful, they do not express grammatical relations between two arguments or locations, and are therefore not annotated (v = "none").

'agreement' (A) verbs depicting agent-patient relationships (e.g., SEE), or transfer of assets (e.g., BUY), and those describing motion (M) towards a goal location (e.g., MOVE, COME, WALK), which (following Russian verb categories) I term verbs of motion.[11] Indicating verbs were also subcategorized in terms of their relation to the signer's body as emanating from the body (A-b1, M-b1), terminating at the body (A-b2, M-b2) or executed in neutral space (A-n, M-n). Using the data derived from the annotations on the location and gaze tiers, further columns were added to the Excel worksheet to describe the movement vector v (0 = sagittal movement, 1 = movement to the left or right), and agreement of gaze with vector motion (ev_1 =gaze to initial location, ev_2 = gaze to final location, sag = sagittal gaze and vector motion, perp = gaze perpendicular to vector motion).

Verbs exhibiting fixed handshapes that could be described by a single-word ID-gloss and that were either articulated at a single location or only involved intrinsic motion that was not grammatically meaningful (e.g., HAPPEN) were annotated as plain verbs, and subcategorized as body anchored (plain-body) if executed on or near the body, or neutral (plain-neutral) if not. Some verbs were executed at a location (to the left or right) other than their citation form. These potentially correspond to De Beuzeville et al.'s (2009) category of 'locatable indicating verbs', and were categorized as 'loc' on the Excel worksheet, e.g., 'plain-neutral-loc'. With the SASL corpus verbs, location shift occurred only occasionally and seemed to be a variable acting on plain and spatial verbs. Therefore, it was annotated as a feature and not as a separate verb class.

The remaining verbs were provisionally classified as 'spatial', and then grouped according to common features. Initial attempts to subcategorize these verbs in terms of Padden's subclasses II to V by identifying handshape (namely, instrument-classifiers = subclass II; noun-classifiers = subclass III; body-part noun classifiers = subclass V) and location modifications (body locations = subclass IV) proved time-consuming and complicated. In the end, De Beuzeville et al.'s (2009) definition of 'depicting verbs' proved more useful. A characteristic feature of depicting verbs is that they can seldom be glossed using a single English word. First, whole-body mimetic actions were identified and subcategorized ('spatial-body-mime'), for example, DVprostrate-before-the-king, DVsit-think, DVfeign-ignorance. These mimetic actions fall within De Beuzeville et al.'s (2009) category of 'depicting verbs', but outside Padden's and Johnston's categorizations. Second, actions involving mimetic hand and arm movements (but not the whole body) were categorized as 'spatial-hand-mime', for example, DVtie-up-bundle, DVcarry-suitcase, DVdish-up-around-table. These mostly corresponded to Padden's spatial subclasses II and V.

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11. In Russian, nouns representing destinations can take the accusative case following verbs of motion, and in doing so function as direct objects, e.g., я езжу **в Москву** ('I travel to Moscow').

A few were executed at locations on the body (Padden subclass IV), for example, DVhang-by-the-neck, DVtie-rope-around-neck. The remaining verbs involved creative depictions using classifier constructions (e.g., DVperson-die, DVcow-eat), or occasionally handshapes associated with lexicalized (neutral) signs executed with free or non-linear movement (e.g., DVsit-in-circle).

Iconicity was determined using Johnston's (1991: 49) definitions, namely (1) "the extent to which the visual shape of a sign is an icon of its meaning", or (2) "the extent to which the displacement and behavior of a sign is an analogue of its meaning". Body-anchored verbs such as EAT conform to the first definition, and motion verbs to the second, whereas depicting verbs generally conform to both.

According to Oomen and Kimmelman's (2019) analysis, if body-anchored plain verbs contained an inherent first-person feature, then they should exhibit greater subject explicitation with third-person subjects in the absence of role-play (which implies a first-person perspective), compared to neutral verbs, but that the converse would be true during role-play. Comparisons between explicit and implicit subjects were further explored by focusing on references to characters in the narrative (i.e., absent third-person animate references). To do this, a column was added in the Excel worksheet relating explicitness with discourse mode, that is third-person narration (3a) versus role-shift (role): E_{3a} = overt subject in third-person narration, as in Example (3); I_{3a} = implicit subject in third-person narration, as in Example (4); E_{role} = explicit subject in role-shift, as in Example (5); I_{role} = implicit subject in role-shift, as in Example (6).

(3) FATHER MAKE SON CLOTHES, COAT.
'The father made his son clothes, a coat.'

(4) Ø MUST GO, WANT-NOT, GO.
'[The brothers] had-to go, [so] unwillingly, [they] went.'

(5) PRO1 GOSSIP, BOIL-UP, ANGRY. (angry facial expression)
'We (Joseph's brothers) gossiped [about him], boiling (with) anger.'

(6) Ø DVhands-together DVwalk-mime (sad facial expression)
'Hands bound together, [Joseph] walked [behind them].'

Following Cormier et al.'s (2015) findings that role-shift can be signalled on the basis of gaze alone without other accompanying features of constructed action, role-shift was identified on the basis of a shift in narrative perspective (e.g., use of first-person pronouns, shifted frames of reference), and not solely on the basis of facial expressions, although these were usually present. Shifts in gaze, head turns and body turns also often accompanied the shift in narrative perspective. For example, in Example (5) above, the signer uses the first person together with an angry facial expression, and also uses gaze and head turns to shift the reference frame.

(Joseph is initially centred, and the brothers are established to the signer's right. In assuming the identity of the brothers, the signer looks to her right to reference the brothers with GOSSIP, but to the left – Joseph's position relative to his brothers – to reference the object of their anger. In Example (6), the signer stretches her arms out together in front of her and executes WALK not with the usual classifier constructions, but with a whole-body mime, to convey to the audience that she is assuming the role of Joseph.

The ratio of explicit to implicit verbs was then calculated for each discourse mode and used to compare verb categories. From Oomen and Kimmelman (2019), it was hypothesized that E_{3a}/I_{3a} (BAV) >> E_{3a}/I_{3a} (neutral verbs), but E_{role}/I_{role} (BAV) << E_{role}/I_{role} (neutral verbs).

6. Results

Altogether, 367 verb tokens were identified and collected for analysis. The distributions are presented in Table 2. Plain verbs (49%) dominated, followed by agreement verbs (28%). Depicting verbs (13%) and motion verbs (10%) were less represented. Of the verbs, 52% involve locations on or near the signer's body.

Table 2. Verb class distributions

Class	Body-anchored	Neutral	Total
Plain	74 (20%)	104 (28%)	178 (48%)
Agreement	from body 74 (20%) to body 9 (2%)	12 (3%)	95 (25%)
Motion	from body 10 (3%) to body 14 (4%)	23 (6%)	38 (13%)
Spatial	body-mime: 9 (3%)	classifiers 16 (4%) hand-mimes 22 (6%)	47 (13%)
Total	**191 (52%)**	**176 (48%)**	**367**

6.1 Plain verbs

The data for plain verbs are presented in Table 3. For the sake of simplicity, only non-sagittal – i.e. to the left or right – values for gaze (e_{46}), head turns (h_{46}), and body turns (b_{46}) are reported. (While sagittal actions may be congruent with reference locations, they are indistinguishable from citation forms.) Also reported are the frequencies and percentages of verbs that are associated with location shift (loc), explicit subjects (S-E) and explicit objects (O-E). The data is also presented in terms of which verbs are associated with emotive facial expressions (with ☺) and those performed with 'neutral' face (no ☺).

Table 3. Plain verbs summary

Plain verbs	N	E_{46}	H_{46}	B_{46}	Loc	S-E	O-E
Neutral no ☺	51	27 (53%)	24 (47%)	7 (14%)	9 (18%)	20 (38%)	13 (25%)
Neutral with ☺	53 (51%)	35 (66%)	33 (62%)	3 (6%)	11 (19%)	15 (28%)	21 (40%)
Totals neutral	**104**	**62 (60%)**	**57 (55%)**	**10 (10%)**	**20 (19%)**	**35 (33%)**	**34 (33%)**
Body-anchored no ☺	18	7 (39%)	8 (44%)	2 (11%)	0%	8 (44%)	6 (33%)
Body-anchored with ☺	56 (76%)	35 (63%)	29 (52%)	13 (23%)	1 (2%)	21 (38%)	8 (14%)
Totals body-anchored	**74**	**42 (57%)**	**37 (50%)**	**15 (20%)**	**1 (1%)**	**29 (39%)**	**14 (19%)**

Neutral verbs exhibited slightly (but not significantly) more non-sagittal gaze and head turns, than body-anchored verbs. For both plain verb categories, sideways gaze (e_{46}) and head turns (h_{46}) co-occurred more with facial expressions (☺) than without, suggesting that these are also used as markers of motivated space and not just of referential space.

On the whole, neutral verbs exhibited slightly (but not significantly) less subject explicitness than body-anchored verbs. Both plain verb classes were mainly associated with implicit subjects (S-E << 50%) and objects (O-E << 50%). During third-person narration, both categories slightly preferred implicit subjects, body-anchored verbs ($E_{3a}/I_{3a} = 0.86$) more so than neutral verbs ($E_{3a}/I_{3a} = 0.94$). During role-shift, implicit subjects predominated, more for neutral verbs ($E_{role}/I_{role} = 0.28$) than for body-anchored verbs ($E_{role}/I_{role} = 0.50$). These results are contrary to my hypotheses based on Oomen and Kimmelman (2019). However, these differences are not significant, indicating that, for SASL, context and overall discourse structure (topic-marking, theme-rheme patterns) potentially determine subject explicitness for plain verbs. During role-shift, both classes were accompanied by proportionally more sideways gaze and head turns for explicit subjects, whereas body turns and location shifts occurred proportionally more with implicit subjects.

Neutral verbs (104) evidenced the highest percentage of arbitrary signs (48%, i.e., iconicity = 52%) of all verb categories. The ten most frequent neutral verbs in the current corpus are: WILL, MAKE, HAVE, HAPPEN, MUST, LIVE, FINISH, DO, SIT, and BEGIN. Chi square tests of independence revealed that neutral verbs exhibit significantly more location shifts ($N = 178$, $df = 1$, $X^2 = 126.6954$, $p << .0001$) than body-anchored plain verbs. Although detailed micro-analysis is needed, it seems that location shift is used with neutral verbs to mark agreement. In Example (7), Joseph (marked by upwards head tilt and gaze as topic) predicts the future of one

of Pharaoh's servants – the one later released – who is located to the signer's left (6). (The one who executed is subsequently located on the signer's right.) The location shift expresses that the servant, and not Joseph, is the object of HAPPEN. The agreement is reinforced by head turn and gaze.

(7) <h8e8b5> JOSEPH <h6e6> $_{b}$TELL$_{6}$ $_{6}$INDEX, $_{6}$HAPPEN
'Joseph told him [what would] happen [to him].'

By contrast, neutral verbs exhibited very few body turns, mainly without ☺, and mostly to address specific members of the audience, or to reference contrasting topics. It may also be that signers suppressed body turns because of the single camera set-up.

Neutral verbs evidenced significantly more object explicitation ($N = 178$, $df = 1$, $X^2 = 4.1647$, $p < .05$) than body-anchored plain verbs. Further analysis revealed that almost half (49%) the neutral verbs were used intransitively. When object explicitation was corrected for intransitivity, it was found that 34 (64%) of the remaining 53 transitive neutral verbs were associated with explicit objects. In other words, when used transitively, neutral verbs strongly prefer explicit objects.

The set of plain body-anchored verbs (74) is highly iconic (92%), for example, EAT, THINK, SLEEP, supporting previous observations in the literature that body-anchoring is associated with high iconicity (Oomen & Kimmelman 2019). Currently, the ten most frequent body-anchored verbs in the corpus are: DREAM, KNOW, HEAR, REMEMBER, WONDER, CRY, MEAN, BE-ANGRY, BE-INNOCENT, and LOVE. Most (46, i.e., 62%) were used intransitively, which is not surprising since many describe a mental (e.g., BE-ANGRY) or physical (e.g., SLEEP) state. Of the 28 verbs used transitively, 50% were associated with an explicit object (e.g., LOVE SON).

Chi-squared tests of independence showed that, compared to plain neutral verbs, plain body-anchored verbs were associated with significantly greater use of facial expression ($N = 178$, $df = 1$, $X^2 = 11.125$, $p << .01$). Whereas plain neutral verbs were fairly evenly distributed over the categories ☺ and no-☺, 76% of plain body-anchored verbs were accompanied by emotive facial expressions, for example, GOSSIP, WONDER, REMEMBER, BE-HUNGRY, suggesting either that their iconic origin triggers motivated use of space, or that facial NMFs have become lexicalized components of body-anchored verbs. Of the body-anchored plain verbs, 27 (17%) can be categorized as psych-verbs, that is "verbs that denote an emotional (psychological) state, or the bringing about of a change in emotional state" (Oomen 2017: 56), for example, BE-ANGRY, BEAR-GRUDGE. This group displayed even more (81%) associated facial expression.

With body-anchored verbs, the location on the body is often semantically relevant. Hence, the low incidences of location shift (1%) and significantly greater preference for body turns (20%; $N = 178$, $df = 1$, $X^2 = 4.0658$, $p < .05$) compared to neutral verbs are not surprising. Body turns were mainly used with ☺, indicating

that their primary purpose is to signal motivated use of space. Psych verbs also evidenced proportionally more body turns (37%) than the body-anchored group as a whole, which is consistent with their higher ☺ percentage.

6.2 Agreement verbs

The data for agreement verbs are presented in Table 4. Most (80%) of the agreement verbs found are 'partial' agreement verbs (A-b1), that is, exhibiting motion away from an initial locus associated with the body, which is represented as the agent/subject, for example, SEE. A further 7% constitute 'backwards' agreement verbs (A-b2), that is, the final locus is associated with the body, for example, RECEIVE. Only 13% constitute 'neutral' (A-n) – or what Johnson (1991) calls 'fully directional' – agreement verbs, that is, with neither locus associated with the body. Agreement verbs are highly visually iconic (91%), mainly because of the high iconicity of the predominant

Table 4. Agreement verbs

Subclass	N	E_{46}	H_{46}	B_{46}	V_{46}	S-E	O-E
A-b1 totals	**74**	**50 (68%)**	**47 (64%)**	**20 (27%)**	**43 (58%)**	**35 (47%)**	**39 (53%)**
A-b1 no ☺	30	21 (70%)	19 (63%)	18 (60%)	15 (50%)	17 (57%)	22 (73%)
A-b1 with ☺	44 (59%)	29 (66%)	28 (64%)	27 (61%)	28 (64%)	18 (41%)	17 (39%)
A-b2 totals	**9**	**4 (44%)**	**5 (56%)**	**2 (22%)**	**5 (56%)**	**6 (67%)**	**3 (33%)**
A-b2 no ☺	3	1 (33%)	2 (67%)	0%	1 (33%)	2 (67%)	1 (33%)
A-b2 with ☺	6 (67%)	3 (50%)	3 (50%)	2 (30%)	4 (67%)	4 (67%)	2 (30%)
A-n totals	**12**	**8 (67%)**	**9 (75%)**	**0%**	**9 (75%)**	**5 (42%)**	**6 (50%)**
A-n no ☺	9	7 (78%)	7 (78%)	0%	8 (89%)	4 (38%)	5 (63%)
A-n with ☺	3 (25%)	1 (33%)	2 (67%)	0%	1 (33%)	1 (33%)	1 (25%)
Total agreement	**95**	**62 (65%)**	**61 (64%)**	**22 (23%)**	**57 (60%)**	**46 (48%)**	**48 (51%)**
Total no ☺	42	29 (69%)	28 (67%)	18 (43%)	24 (57%)	23 (55%)	28 (67%)
Total with ☺	53 (56%)	33 (62%)	33 (62%)	29 (55%)	33 (62%)	23 (43%)	20 (38%)

'partial' agreement verb subset. Currently, the ten most common agreement verbs occurring in the corpus are: SEE, SAY, TELL, THROW, TALK (with/to), GIVE, LOOK, BUY, ASK, and HELP. Agreement verbs were always used transitively.

Most agreement verbs referred to characters in the narrative (i.e., absent third persons). Only once does a signer address the audience directly (PRO1 $_1$TELL$_2$ STORY). Body turns are exclusively associated with agreement verbs related to the body (A-b1: 27%; A-b2: 22%), and never with 'neutral' agreement verbs (A-n), which instead exhibit higher (but not significantly so) non-sagittal vector motion (75%) than the other two subclasses (A-b1: 58%; A-b2: 56%). Facial expression was also more strongly associated with agreement verbs related to the body (A-b1: 61%; A-b2: 67%) than with 'neutral' (A-n: 33%) agreement verbs. Otherwise, 'partial' and 'neutral' agreement verbs exhibit similar frequencies of gaze (A-b1: 68%; A-n: 67%), head turns (A-b1: 64%; A-n: 67%), subject explicitation (A-b1: 47%; A-n: 42%) and object explicitation (A-b1: 53%; A-n: 50%). By contrast, 'backward' agreeing verbs (A-b2) evidence greater subject explicitation (67%), and less non-sagittal gaze (44%), head turns (56%) and object explicitation(33%) than the other two subclasses, suggesting an inherent first-person (patient) interpretation for these verbs.

During third-person narration, backward (E_{3a} = 100%) agreement verbs preferred explicit subject, which supports the *body-as-first-person* interpretation (Oomen & Kimmelman 2019), whereas partial (E_{3a}/I_{3a} = 0.95) and neutral agreement verbs (E_{3a}/I_{3a} = 0.80) slightly preferred implicit subjects. During role-shift, implicit subjects were preferred (A-b1: E_{role}/I_{role} = 0.92; A-b2: E_{role}/I_{role} = 0.67; A-n: E_{role}/I_{role} = 0.33). Similar to plain verbs, it is the body-anchored verbs that exhibit higher subject explicitation during role-shift. For all three subclasses, non-sagittal gaze, and agreement of gaze with vector motion, decreased with role-shift, indicating that the use of NMFs to signal motivated space interferes with their grammatical function of agreement. Generally, implicit subjects were accompanied by more gaze, head turns, body turns and sideways vector motion than explicit subjects, indicating the use of these variables to affirm R-loci.

'Partial agreement verbs' (e.g., SEE, THROW, SEND, SAY) exhibited the highest agreement of gaze with direction of motion (non-sagittal: 74%; sagittal: 68%), compared to 'backward' (non-sagittal: 50%; sagittal: 60%) and 'neutral' (non-sagittal: 56%; sagittal: 67%) agreement verbs, which suggests that pinning the start location to the body simplifies the otherwise complex array of NMF functions. This subclass signalled role-shift mainly by facial expression and increased non-sagittal motion, whereas sideways gaze, agreement of gaze with vector motion, subject explicitation and object explicitation decreased during role-shift. (The first three are consistent with a body-as-first-person interpretation.) Interestingly, body turns do not increase appreciably in role-shift for partial agreement verbs as they did for plain body-anchored verbs.

As noted above, the nine 'backward' agreement verbs (e.g., HELP-ME, GIVE-ME, GRAB, HOLD-ONTO) strongly indicate a first-person interpretation ("to me"). In five instances the signer's body represented the patient, as in Example (8), where Pharaoh appeals to the wizards for help. In the other four instances, the signer's body represented the agent, as in (9).

(8) <h5e5b5/> INDEX$_5$_V(julle-towernaars), $_5$HELP$_b$.
'You [wizards], help [me].'

(9) <h5e5b5/> EGYPTIANS, $_5$GRAB$_b$ Ø.
'The Egyptians grabbed [Joseph].'

'Backward' agreement verbs used facial expressions and body turns exclusively to mark role-shift. Non-sagittal gaze and vector motion also increased during role-shift, whereas head turns decreased, and subject explicitation and object explicitation more or less remained the same.

The 12 'neutral' agreement verbs (A-n), for example, BUY, PAY, RELEASE, mostly exhibited motion to the signer's dominant side (50%) (cf. Geraci 2012). In the three (25%) instances that sagittal motion was employed (two of which involved role-shift), the motion was executed from neutral mid-space (where the topic was located), and not from the signer's body. Neutral agreement verbs were seldom used with emotive facial expressions, and when these were absent, high gaze agreement with vector motion (80%) was achieved, again indicating that the use of gaze in role-shift interferes with its agreement and referencing functions. Similar to partial agreement verbs, non-sagittal gaze, subject explicitation and object explicitation decreased during role-shift; however, non-sagittal vector motion, and to a lesser extent, head turns, also decreased. These results indicate that during the few occurrences of role-shift, 'neutral' agreement verbs indicate first-person by increased sagittality.

Comparing the verb types in each subclass, it was observed that certain agreement verbs utilize meaningful body locations, particularly on or near the head for partial agreement verbs, for example, SEE, SEARCH-FOR, SAY, TALK-TO, TELL, TELL-TALES, KNOW-YOU, or the chest for backward agreement verbs, for example, GRAB, TAKE, HOLD-ONTO. These verbs were only executed with motion from or towards the body, and never in neutral space. In other words, the location on the body seems to be an inherent feature of these 'body-relevant' agreement verbs. By contrast, other agreement verbs involve a 'transaction' (of objects, persons or services) that takes place between two arguments, for example, BUY, SELL, GIVE, HELP. Both loci of 'transaction' agreement verbs may be shifted, possibly to utilize already established reference locations, or to change perspective – for example, by moving one of the loci onto the body if the signer wants to create a first-person (agent/patient) interpretation during role-shift, or off the body to highlight a third-person

('omniscient'?) narrative perspective. Situating initial/final locations of 'transaction' agreement verbs on the body might also be a strategy to simplify the complex and competing grammatical and discourse functions of NMFs – much higher agreement of gaze with vector motion was achieved by anchoring one locus on the body than when both loci were situated in neutral space. It is also suggested that, since topics were usually articulated at central near space, transferring their R-locus closer to or onto the signer's body is less disruptive than transferring it to the left or right.

6.3 Verbs of motion

Although Padden (1986) lists verbs of motion as a subclass of spatial verbs, in this study they are analyzed as a separate group since, like agreement verbs, they also demonstrate linear vector motion. The 47 verbs of motion differed from agreement verbs in that less (49%) were body-anchored. They were also less iconic than agreement verbs (74%) in terms of their visual shape, to a large extent because they lack the iconicity afforded by the body. However, they are more iconic than agreement verbs in terms of their movement being a more accurate analogue of the distances (near, medium, far) and directions travelled (Johnston 1991), whereas the motion of agreement verbs is merely in the general direction of the referent, the actual vector displacement not showing variation. Moreover, for 34% of motion verbs, classifier handshapes were used to indicate number and means of motion, e.g. MANY-GO-PAST-RIDING-ANIMALS. This indicates that motion verbs share some properties of descriptive verbs, but with linear, not free, motion, whereas agreement verbs exhibit no modification of handshape. In addition, motion verbs exhibit more non-sagittal gaze and head turns, and significantly more non-sagittal vector motion ($N = 142$, $X^2 = 10.9057$, $df = 1$, $p << .01$), than do agreement verbs, but less subject and object/destination explicitation, and also less facial expression. Motion verbs evidenced low overall object explicitation (34%). However, correcting for the 20 (43%) instances that they were used intransitively, 59% of the remaining 53 transitive neutral verbs were associated with explicit objects.

The data for verbs of motion are presented in Table 5. As noted above, 49% are executed in neutral space (M-n), compared to 26% with initial location at the body (M-b1) and 30% with final location at the body (M-b2). Besides evidencing similar frequencies of non-sagittal vector motion, the three subclasses varied in the frequencies of the other variables. Motion verbs executed from the body exhibited the highest agreement of gaze with sagittal motion (100%), compared to the other two subclasses (M-b2: 50%; M-n: 60%), whereas motion verbs executed towards the body exhibited the highest agreement of gaze with *non-sagittal* motion (83%), compared to the other two subclasses (M-b1: 67%; M-n: 50%). Motion verbs from

the body (60%) and 'neutral' motion verbs (74%) were mostly executed during third-person narration, whereas 79% of motion verbs towards the body were executed during role-shift.

During third-person narration, 'neutral' motion verbs preferred explicit subjects ($E_{3a}/I_{3a} = 1.43$), whereas motion verbs from ($E_{3a}/I_{3a} = 0.67$), and especially to ($E_{3a}/I_{3a} = 0.33$), the body preferred implicit subjects. During role-shift, all subclasses of motion verbs showed strong and even exclusive preference for implicit subjects (M-b1: $I_{3a} = 100\%$; M-b2: $E_{role}/I_{role} = 0.20$; M-n: $E_{role}/I_{role} = 0.60$). Hence, in both discourse modes, neutral verbs of motion evidence the highest subject explicitness. However, verbs with explicit subjects showed significantly higher agreement of gaze with vector motion (Fisher = 0.0382, $df = 1$, $p < .05$) than verbs with implicit subjects, and were also more likely to explicitate the object/destination (Fisher = 0.0012, $df = 1$, $p < .05$).

Table 5. Verbs of motion

	N	E_{46}	H_{46}	B_{46}	V_{46}	S-E	O-E	Cl
M-b1	**10**	**8 (80%)**	**9 (90%)**	**4 (40%)**	**9 (90%)**	**3 (30%)**	**3 (30%)**	**6 (60%)**
no ☺	6	5 (83%)	6 (100%)	2 (33%)	5 (83%)	3 (50%)	2 (33%)	4 (67%)
☺	4 (40%)	3 (75%)	3 (75%)	2 (50%)	4 (100%)	0%	1 (25%)	2 (50%)
M-b2	**14**	**11 (79%)**	**10 (71%)**	**0%**	**12 (86%)**	**2 (14%)**	**7 (50%)**	**1 (7%)**
no ☺	5	4 (80%)	3 (60%)	0%	5 (100%)	1 (20%)	3 (60%)	1 (20%)
☺	9 (64%)	7 (78%)	7 (78%)	0%	7 (78%)	1 (11%)	4 (44%)	0%
M-n	**23**	**14 (61%)**	**13 (57%)**	**7 (30%)**	**20 (87%)**	**11 (48%)**	**2 (9%)**	**9 (39%)**
no ☺	15	10 (67%)	10 (67%)	5 (33%)	13 (87%)	7 (47%)	2 (13%)	6 (40%)
☺	8 (35%)	4 (50%)	3 (38%)	2 (25%)	7 (88%)	4 (50%)	0%	3 (38%)
Total	**47**	**33 (70%)**	**32 (68%)**	**11 (23%)**	**41 (87%)**	**14 (30%)**	**12 (26%)**	**16 (34%)**
no ☺	26	19 (73%)	19 (73%)	7 (27%)	23 (88%)	10 (38%)	6 (23%)	11 (42%)
☺	21 (45%)	14 (67%)	13 (62%)	4 (19%)	18 (86%)	4 (19%)	6 (29%)	5 (24%)

Verbs of motion emanating from the body (M-b1), e.g., WALK, RIDE, SEND, exhibit more non-sagittal head turns (90%), body turns (40%), and use of classifier handshapes to indicate number and means of movement (60%), and marginally more non-sagittal gaze (80%) and vector motion (90%) than the other two subgroups. Besides low subject explicitation, this class also evidenced low object/patient/destination explicitation (30%), mainly because most (60%) of these verbs were used intransitively, that is, the activity (e.g., walking, riding, leaving) and general direction, not the destination, is the focus. In the three instances of explicitation, the subject causes another (the patient) to perform the motion (e.g., KING SEND MESSENGER).

Unlike agreement verbs emanating from the body which showed relatively high frequencies of facial expression, only 40% of motion verbs emanating from the body exhibited facial expressions. In third-person narration, there was full agreement of gaze (100%) with motion, but this agreement dropped very low (25%) during role-shift, again demonstrating that the use of NMFs with role-shift overrides their referential and agreement functions. During role-shift, non-sagittal gaze, head turns and object explicitation also decreased, whereas body turns and non-sagittal vector motion increased.

The 14 motion verbs towards the body (M-b2) – for example, BRING, FETCH, COME, RETURN, APPROACH – differed from the other two subgroups in that they exhibited the most facial expression (64%) and object explicitation (50%), but the least subject explicitation (14%) and classifier modification (7%), and no body turns. All M-b2 verbs were used transitively, and object explicitation primarily involved characters being acted upon by others (i.e., patients), and not destinations. During role-shift, non-sagittal gaze, non-sagittal vector motion, subject explicitation, and object explicitation decreased, whereas head turns and agreement of gaze with vector motion increased.

The 23 'neutral' verbs of motion (M-n) exhibit the highest subject explicitation (48%), but the lowest accompanying facial expressions (35%), non-sagittal gaze (61%), head turns (57%), and object explicitation (9%), compared to the other two subclasses. The few body turns evidenced were in the direction of motion, and seem to have been used for emphasis, as demonstrated in Example (10).

(10) <h4e4b4/> Ø $_{5}$WALK$_{4}$
'[They] walk(ed) [far].

Except for one classifier construction (GO-PAST), which involved interaction between the dominant and non-dominant hands, verbs in this subclass were no different than those in the other two subclasses (e.g. COME, GO, WALK, RETURN), except that their vector motion occurred in neutral space, mostly perpendicular

to the signer's sagittal plane, and mostly from or to central neutral space. Further analysis revealed that 'neutral' motion verbs were mostly used intransitively (61%), that is, the activity is focused on, not the patient or destination, as in Example (10). However, even accounting for intransitivity, object explicitness was still lower compared to the other two subgroups (22%). During role-shift, non-sagittal gaze, head turns, body turns, subject explicitation and object explicitation decreased without an accompanying decrease in non-sagittal vector motion. Agreement between gaze and direction of motion also decreased during role-shift (to 33%), again indicating that signalling role-shift overrides other NMF functions.

6.4 Depicting verbs

The 47 depicting verbs, comprising 13% of the corpus verbs, are highly iconic (98%). Hand-mimes (47%), for example, DISH-UP-AROUND-TABLE, TIE-UP-BUNDLE, CARRY-SUITCASE, constitute the largest sub-group, followed by classifier constructions (34%), for example, SIT-IN-SEMICIRCLE, KILL-PERSON, COWS-EAT, and body-mimes (19%), for example, SIT-THINK, PROSTRATE-BEFORE-KING, ACT-IGNORANT. Hand- and particularly body-mimes probably originated from gesture, and it would be interesting to investigate the distribution of classifier constructions versus mimetic action in the SASL of younger signers (see Padden et al. 2010).

The properties for depicting verbs are presented in Table 6. Possibly because of the low sample numbers, statistical analysis (chi-squared) showed no significant differences between subgroups for any variable. Despite their obvious motivated use of space, depicting verbs utilize about as much facial expressions (53%) as plain neutral verbs, and occasionally involve body turns (13%), or (with hand mimes and classifier constructions) location shift (9%). Depicting verbs evidence very low subject (23%) and object explicitation (23%), that is, arguments are assumed by signers to be self-explanatory owing to the high visual iconicity, or were previously introduced. Implicit subjects are strongly preferred for both third-person narration ($E_{3a}/I_{3a} = 0.28$) and role-shift ($E_{role}/I_{role} = 0.41$). Implicit subjects were accompanied by proportionally more gaze shifts, head movements, body turns, location shift and object explicitation than explicit subjects. Most (70%) depicting verbs were used transitively, meaning that only 33% of transitive verbs were associated with explicit objects.

Classifier constructions evidence the most oblique gaze (69%), directed either at the hands or towards the referent's location, but the least subject (19%) and object (13%) explicitation. Even correcting for intransitivity (44%), object explicitation still remained low (22%). Non-sagittal gaze and head turns increased during role-shift.

Table 6. Properties of depicting verbs

Subclass	N	E46	H46	Loc	B46	S-E	O-E
Classifier no ☺	8	5 (63%)	3 (38%)	2 (25%)	1 (13%)	2 (25%)	0%
Classifier with ☺	8 (50%)	6 (75%)	6 (75%)	0%	1 (13%)	1 (13%)	2 (25%)
Classifier Totals	**16**	**11 (69%)**	**9 (56%)**	**2 (13%)**	**2 (13%)**	**3 (19%)**	**2 (13%)**
Hand mime no ☺	12	8 (67%)	6 (50%)	4 (33%)	3 (25%)	2 (17%)	6 (50%)
Hand mime with ☺	10 (45%)	3 (30%)	3 (30%)	3 (10%)	0%	3 (30%)	1 (10%)
Hand mime totals	**22**	**11 (50%)**	**9 (41%)**	**7 (32%)**	**3 (14%)**	**5 (24%)**	**7 (32%)**
Body mime no ☺	2	1 (50%)	2 (100%)	0%	0%	1 (50%)	0%
Body mime with ☺	7 (78%)	2 (29%)	3 (43%)	0%	1 (14%)	2 (29%)	2 (29%)
Body mime totals	**9**	**3 (33%)**	**5 (56%)**	**0%**	**1 (11%)**	**3 (33%)**	**2 (22%)**
Total no ☺	22	14 (64%)	11 (50%)	6 (27%)	4 (18%)	5 (23%)	6 (27%)
Total with ☺	25 (53%)	11 (44%)	12 (48%)	3 (4%)	2 (8%)	6 (24%)	5 (20%)
Total	**47**	**25 (53%)**	**23 (49%)**	**9 (19%)**	**6 (13%)**	**11 (23%)**	**11 (23%)**

Of the 16 verbs annotated as 'classifier constructions', one comprised a re-orientation downwards of the lexicalized noun STAR performed with both hands ($_2$STAR2h = DVstars-look-at-me), and one comprised the agreement verb LOOK performed with both hands, using directed orientation with head turn instead of motion (LOOK$_4$2h = DVmany-look-at). The verb DVstars-look-at relates to Padden's spatial subclass III, and suggests that not only classifiers, but potentially also lexicalized nouns, can be modified by orientation and use of both hands to express verbal agreement. Similarly, DVmany-look-at suggests that other verb forms may be modifiable through orientation and use of both hands, rather than through movement, to express agreement. These instances also suggest that changing orientation is probably just one way which signers can use to express agreement, and not a separate verb category ('orienting verbs'), as Johnston (1991) proposes. Additionally, five other verbs annotated as classifier constructions consisted of the handshapes of lexicalized

(neutral) verbs executed with an arc movement (annotated as "_mC"; e.g., SIT_mC = DVmany-sit-in-circle, COMPARE_mC = DVcompare-with-others). These instances suggest that neutral verbs can potentially express number agreement – at least in terms of Padden's (1988) 'exhaustive' plural ("each" or "many"). It would be interesting to explore whether the arc movement can be used with other neutral verbs to express agreement, that is, whether it is also a property of neutral verbs, and not just of classifier constructions. Verbal agreement in terms of arc movement was also found by Lutalo-Kiingi (2014) for Ugandan Sign Language (UgSL).

Hand-mimes evidenced the most object explicitation (32%), and more location shift (23%) than classifier constructions, but the least head turns (41%). Non-sagittal gaze evidenced mixed functions – sometimes following the hands (15%), sometimes directed towards the R-locus of the character portrayed (10%), or towards the R-locus of the imagined addressee (20%). In contrast to classifier constructions, non-sagittal gaze, and head turns, and object explicitation, decreased during role-shift. For both subgroups, location shift and body turns were mainly evident during third-person narration. Indeed, location shift, and to a lesser extent, gaze, head turns and body turns, seem to signal agreement, as in Examples (11) and (12).

(11) <h8e8/> SECOND MAN <h9e9/> $_{4}$DVtie-rope-around-neck, $_{4}$DVhang-by-neck <hn>, <h6e6/> $_{6}$OTHER, $_{6}$INNOCENT, $_{b}$SET-FREE$_{6}$.
'The second man, [they] tied a rope around his neck and hanged [him], the other [was declared] innocent, and set free.'

In Example (11), the hand mimes (DVtie-rope-around-neck, DVhang-by-neck) are executed to the right of the signer's neck, not centrally, in agreement with the referencing arrangement of the previous segment of discourse where the condemned man had been assigned a location on the signer's right, and the man to be set free on the left. The signer's hands perform the function of the executioner, whereas the signer's neck and body represent the condemned man.

(12) <h7e7b4/> <E221/> Ø $_{7}$DVwave! $_{7}$HOW-YOU!
'[Joseph] waved and greeted [his brothers].'

In (13), the signer role-plays Joseph greeting his brothers as he approaches (E211 = brow raise, open eyes, smile). The signer's head, gaze and body are turned to the right, corresponding to where the brothers were located in a previous utterance. (The raised head, gaze and hand, and emphatic execution (!) signal that Joseph is still far away.)

Body-mimes evidence the most facial expressions (78%) and subject explicitation (33%) of the three groups (thereby supporting a *body-as-first-person* interpretation), and the least non-sagittal gaze (33%). Non-sagittal gaze, head turns, and body turns all appear to be markers of constructed action rather than reference. Even

the two instances where emotive facial expressions were not evident (DVsit-think, DVride-camel) can be interpreted as "serious face" with constructed action. Thus, body-mimes inherently trigger role-shift.

7. Discussion

One aim of the study was to investigate which variables discussed in the literature can be associated with particular verb classes. To this end, the relative frequencies of variables explored in this chapter are presented in Figure 1.

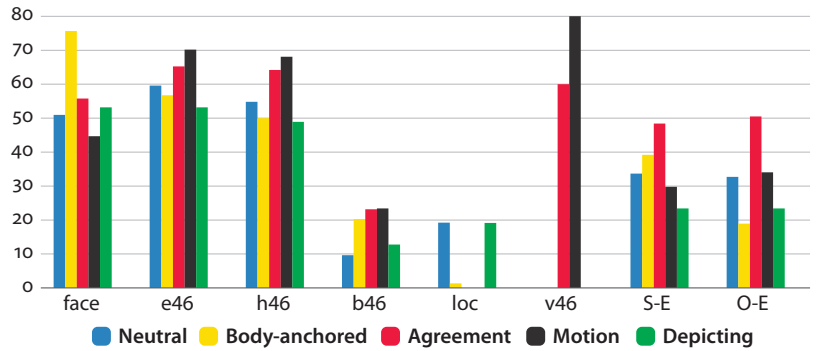

Figure 1. Characteristics of verb classes

First, the study found that body-anchored verbs exhibit significantly more facial expression (face) than the other verb classes ($N = 367$, $df = 4$, $X^2 = 15.2792$, $p < .05$).[12] This suggests that facial NMFs are probably lexicalized components of body-anchored verbs, or that the iconicity of body-anchored verbs potentially triggers role-shift. Differences between neutral, agreement, motion and spatial classes are not significant.

Second, the study found that the relative frequencies of non-sagittal gaze (e46) and head turns (h46) were slightly higher for motion and agreement verbs, indicating their potential role in marking agreement, and lowest for depicting verbs. These findings indicate that gaze and head turns potentially perform referential functions, signal motivated use of space, and mark agreement (at least for agreement and motion verbs) (see Bahan et al. 2000; Engberg-Pedersen 2003; Liddell

12. Chi-squared results for individual class differences between body-anchored verbs and: neutral verbs ($N = 178$, $df = 1$, $X^2 = 11.125$, $p << .01$); agreement verbs ($N = 169$, $df = 1$, $X^2 = 7.184$, $p << .01$); motion verbs ($N = 121$, $df = 1$, $X^2 = 11.93$, $p << .01$); depicting verbs ($N = 121$, $df = 1$, $X^2 = 6.5664$, $p << .01$).

& Metzger 1998; Neidle et al. 2000; Thompson et al. 2006; Thompson et al. 2009). Relative frequencies of gaze and head turns increased during role-shift for plain body-anchored and neutral verbs, but decreased for agreement, motion and depicting verbs. However, statistical chi-squared tests show no significant differences in terms of gaze and head turns between the verb classes. Thus, the lack of significance suggests that these variables are probably related to discourse functions and not to verb characteristics. The study therefore calls for research to describe NMF functions at discourse level in SASL.

Third, the study found that motion and agreement verbs, followed by body-anchored verbs, evidenced the highest frequency of body turns (b46). The differences between motion, agreement and body-anchored verbs are not significant; however, the differences between neutral verbs and these three categories are significant (neutral-body anchored: $N = 178$, $df = 1$, $X^2 = 4.0658$, $p < .05$; neutral-motion: $N = 151$, $df = 1$, $X^2 = 5.1405$, $p < .05$; neutral-agreement: $N = 199$, $df = 1$, $X^2 = 6.7475$, $p < .01$). Differences between depicting verbs and other categories are not significant. More research is needed to clarify whether body turns are simply used for emphasis, or to signal agreement or motivated use of space, or whether these functions differ in terms of verb class. Notably, the highest relative frequencies of body turns were found for motion and agreement verbs for which the initial locus is the body (see Cormier et al. 2015).

Fourth, the study found that location shift (loc) was primarily a property of neutral and depicting verbs (classifier constructions and hand-mimes) – that is, primarily restricted to verbs executed in neutral space (see De Beuzeville et al. 2009; Johnston 1991). Only one body-anchored verb (GOSSIP) evidenced location shift in that the (dominant) hand could locate to the right or to the left cheek. Location shift was not used with agreement and motion verbs, suggesting that it is a means of expressing agreement where vector motion is absent. The differences between neutral and body-anchored verbs ($N = 178$, $df = 1$, $X^2 = 126.6954$, $p << .01$), and depicting and body-anchored verbs ($N = 121$, $df = 1$, $X^2 = 12.0092$, $p << .01$) are highly significant.

Fifth, straight-line (vector) motion is a property only of agreement and motion verbs (see De Beuzeville et al. 2009; Johnston 1991). For agreement verbs, vector motion indicated agreement between agent/subject and patient/object, whereas for motion verbs, vector motion indicated mainly the direction in which someone or something was moving. The study found that motion verbs exhibit significantly higher frequencies of non-sagittal vector motion (v46) than do agreement verbs ($N = 142$, $df = 1$, $X^2 = 10.9057$, $p << .01$). In other words, *displacement* (as opposed to agreement) is almost always expressed obliquely.

Sixth, subject explicitation (S-E) is highest for agreement verbs, followed by body-anchored verbs, and lowest for depicting verbs. The percentage of subject

drop found in this study (36%) for SASL plain (body-anchored and neutral) verbs is similar to the 35% found by Wulf et al. (2002) for ASL plain verbs. Implicit subjects are strongly preferred during role-shift, whereas third-person narration calls for more explicitation, thereby supporting Wulf et al.'s (2002) and Oomen and Kimmelman's (2019) observations. Differences in subject explicitation are significant ($N = 367$, $df = 4$, $X^2 = 10.7625$, $p < .05$), and therefore can be related to verb type. That agreement verbs (which are mostly body-located) and body-anchored verbs evidence higher subject explicitation than the other classes lends some support to Oomen and Kimmelman's (2019) proposal that body-anchoring imposes an inherent first-person interpretation. However, the findings contradict Oomen and Kimmelman's (2019) proposed distinctions between body-anchored and neutral plain verbs in third-person narration. Moreover, the study found that, even for agreement and body-anchored verbs, implicit subjects are more common than explicitated subjects. Indeed, in third-person narration, E_{3a}/I_{3a} ratios show that while agreement (1.00) and motion (1.00) verbs evidence equal preference (for explicit versus implicit subjects), implicit subjects are slightly preferred for neutral (0.94) and body-anchored (0.86) plain verbs, and strongly preferred for depicting verbs (0.28). Agreement verbs also exhibited the highest subject explicitation during role-shift ($E_{role}/I_{role} = 0.86$), showing only slight preference for implicit subjects, whereas the other verb classes showed strong preference for implicit subjects (motion: 0.18; neutral: 0.28; depicting: 0.41; body-anchored: 0.50). Although as yet no empirical research on its discourse structure and syntax has been undertaken, SASL is anecdotally regarded (and taught) as having a strong topic-comment structure, i.e. it appears to be a discourse-oriented language, and therefore subjects that are also local topics might not need further explicitation while the topic is still active (see Lillo-Martin 1986). Again, this points to the need for research on SASL discourse patterns.

Finally, differences in object explicitation (O-E) are significant ($N = 367$, $df = 4$, $X^2 = 10.7625$, $p < .05$). Agreement verbs (51%), evidenced the highest object explicitation, followed by motion (34%) and neutral (34%) verbs. By contrast, objects were seldom explicitated with body-anchored (19%) and depicting (23%) verbs. Differences in transitivity patterns were also highly significant, even when agreement verbs were excluded ($N = 367$, $df = 4$, $X^2 = 10.7625$, $p < .05$). Agreement verbs differed from the other classes in being solely transitive in nature (which explains their significantly higher overall object explicitation), although depicting verbs also evidenced high transitivity (70%). However, when object explication is considered only in terms of potentially transitive verbs, the differences are not significant (neutral: 64%; body-anchored: 50%; agreement: 51%; motion: 59%; spatial: 33%).

8. Conclusion

This study presents the first description and typology of SASL verbs as used by the South African Deaf community, based on authentic naturalistic data and not on anecdotal perceptions or elicited data, thereby contributing towards a systematic and rigorous description of SASL linguistics, which has implications for teaching the language. The literature was used to explore existing verbal typologies, and also to identify phonological and other features associated with verbs. In the study, verbs in a pilot corpus of SASL narratives were identified and categorized according to their phonological features in a corpus-driven approach. From the results, five verb classes are proposed for SASL: body-anchored verbs, neutral verbs, agreement verbs, motion verbs and depicting verbs.

First, body-anchored verbs do not appear to express agreement between arguments by manual means (but may potentially through gaze, head turns and body turns). They therefore correspond to De Beuzeville et al.'s (2009) 'plain verbs' (Johnston's 1991 'anchored verbs') category. Body-anchored plain verbs involve fixed and mostly semantically relevant location on the body. They are associated with significantly higher facial expressions than other classes, suggesting that they lend themselves to, or potentially trigger, role-shift, and that facial NMFs have possibly become lexicalized components of body-anchored verbs. Body-anchored verbs make use of body turns, especially during role-shift; however, location shift is rare, as the location on the body is often meaningful. They prefer implicit subjects even during third-person narration, and are mostly used intransitively. When used transitively, they evidence equal preference for explicit and implicit objects. They often express states of being (the so-called 'psych verbs'). The results therefore do not support Padden's (1990) contention that plain verbs cannot access "shifting locative grids", as it is clear that body-anchored verbs do engage in, and probably even trigger, role-shift. While their high iconicity and co-occurrence with facial expression support the body-as-subject argument (Meir et al. 2007), the subject explicitation patterns do not support the default first-person interpretation proposed by Oomen and Kimmelman (2019).

Second, 'neutral' verbs are executed in neutral space, are the least iconic of all the verb classes, and do not involve grammatically meaningful movement in their citation form. They occasionally express person agreement through location shift, and can potentially express exhaustive number agreement ("each", "everybody") through arc movement. These verbs correspond to De Beuzeville et al.'s (2009) 'locatable indicating verbs' category. Neutral verbs rarely co-occur with body turns, and are associated with relatively low frequencies of facial expression (probably only during role-shift). They evidence slight preference for implicit subjects during third-person narration, but strong preference for implicit subjects during

role-shift. They are almost equally divided in terms of transitive and intransitive use, but evidence relatively (but not significantly) high object explicitness when used transitively, compared to the other verb classes. The significant differences in co-occurrence with facial expressions, location shift, body turns, transitivity patterns, and object explicitation warrant distinguishing neutral and body-anchored verbs as two distinct classes of verbs.

Third, agreement verbs involve agent/patient relationships, or transfer of ownership. They correspond to Padden's (1986, 1988, 1990) 'agreement verbs' and De Beuzeville et al.'s (2009) 'directional indicating verbs' categories. Agreement (and motion) verbs differ from 'plain' verbs in possessing a single, directed motion. Through this motion, which is often accompanied by gaze directed along the direction of motion (67%), agreement verbs exhibit a high relationship of agreement between agent/subject and patient/object, whereas plain verbs only occasionally express agreement. Agreement verbs are mostly executed from the body (so-called 'partial' agreement verbs), therefore exhibiting body-diagonal (51%) or sagittal (40%) motion, with only a small percentage executed across the sagittal plane in neutral space (10%). They evidence relatively high frequencies of non-sagittal gaze and head turns. Use is also made of facial expression and body turns. These results are consistent with motivated use of space (Cormier et al. 2015; Geraci 2012; cf. Padden et al. 2010). As with plain verbs, body-anchoring seems to be an inherent feature for verbs relating to speech or sight. It was also observed that there are potentially two types of agreement verbs, namely 'body-relevant' agreement verbs that possessed one meaningful – and therefore inherent and fixed – locus on the body, and 'transaction' agreement verbs that can potentially shift both loci. Compared to other verb classes, they are (significantly) more likely to occur with explicit subjects, evidencing equal distribution of explicit and implicit subjects during third person narration, and only slight preference for implicit subjects during role-shift. High subject explicitation was more evident for 'backwards' agreeing verbs, whereas 'partial' and 'neutral' agreement verbs exhibit similar frequencies of subject explicitation (which argues against a specific first-person interpretation for partial agreement verbs). Agreement verbs are inherently transitive, and slightly prefer explicit objects. However, their apparently significantly higher object explicitation compared to other verb classes disappears when only transitive verbs are taken into account.

Fourth, motion verbs describe displacement of people or things from one location to another. They correspond to the other subsets of Padden's (1986, 1988, 1990) 'agreement verbs' and De Beuzeville et al.'s (2009) 'directional indicating verbs' categories. Besides being significantly more likely to be executed obliquely, motion verbs differ from agreement verbs in that they are mostly executed in neutral space across the sagittal plane, and therefore less likely to involve body-anchoring,

body-diagonal movements, or facial expressions. Motion verbs also exhibit slightly less agreement of gaze with direction of motion (61%) than do agreement verbs, and less visual iconicity, but greater 'displacement' iconicity in depicting distances travelled (near, medium, far). They also evidence strong preference for implicit subjects during role-shift, whereas agreement verbs only evidence weak preference. However, they share with agreement verbs equal distribution between explicit and implicit subjects during third person narration, and more frequent use of non-sagittal gaze, head turns and body turns than neutral, body-anchored or depicting verbs. With motion verbs, body turns seem to be used mostly for emphasis, rather than for referencing or signalling role-shift. Motion verbs also differ from neutral, body-anchored and agreement verbs in that the handshape can be modified through the use of classifier constructions, to show number and means of transport. They are mostly used intransitively, to emphasize the activity ("going", "walking", "riding") rather than the destination/indirect object. However, when used transitively, they evidence slight preference for explicit objects.

Fifth, depicting verbs are characterized by non-linear, free, and often mimetic, movement. Since they include the productive lexicon, they correspond best to De Beuzeville et al.'s (2009) category, although there are overlaps with Padden's (1986, 1988, 1990) spatial verb categories II to V. They mainly consist of mimetic actions using the arms and hands ('hand-mimes'), but also comprise classifier constructions, and mimetic actions using the whole upper torso ('body-mimes'). Like neutral verbs, hand mimes and classifier constructions occasionally mark agreement using location shift and arc movement, and to a lesser extent, through gaze, head turns, body turns and re-orientation. They differ from other verb classes in evidencing a strong preference for implicit subjects, even during third-person narration. Likewise, objects are seldom explicated, even though most verbs were transitive. Despite their obvious use of motivated space (Liddell's 2003 'blended mental space') and strong preference for implicit subjects, which suggest an inherent role-shift feature, hand-mimes and classifier constructions use facial expressions no more than neutral verbs, and were also used like neutral verbs in third-person narration, e.g. ONE-REMAINED-STANDING (= $_{4}$ONE). By contrast, body mimes are mostly accompanied by emotive facial expressions and are primarily associated with role-shift. Despite their mimetic appearance suggesting gestural origins, some body- and hand-mimes – for example, EMBRACE, KISS, BE-SHOCKED, take-clothes-off (DISROBE), put-clothes-on (DRESS), WAVE – were used more than once, behaving similar to body-anchored verbs. It would be interesting to research how these mimetic gestures are adapted by future generations of signers – whether or not, as De Beuzeville et al. (2009) suggest, they become semantically bleached over time.

In terms of distribution in the corpus, it was found that body-anchored and neutral verbs are mostly used, followed by agreement verbs, and that motion and depicting verbs are used sparingly. This has implications for teaching SASL as L2. It is therefore recommended that learners are first taught and grounded in neutral and body-anchored verbs. This will give them a good basic vocabulary, enabling them to communicate without necessarily mastering the complexities of SASL discourse. Verbal vocabulary can be taught in the context of basic syntactic patterns (e.g., topic-comment, question-answer) on the one hand, and a simple referencing framework that does not involve role-shift (e.g., first-person on body or manually explicitated, present non-first-person through deixis, absent third-person to their dominant side and subsequent absent third-persons to their non-dominant side). Once students have mastered a basic referencing framework, they can be introduced to motion verbs, focussing on non-sagittal movement between two R-loci in neutral space. At the second level, students should be taught how to execute agreement verbs correctly, initially using the body as agent/patient, and practicing agreement of gaze with final location, non-sagittal motion for third-person referents and explicitating and referencing patients/objects. At this stage, students should also be taught how to role-shift (which implies adjusting reference frameworks), and how to switch between narration and role-shift. At the third level, student should be taught how to create and use depicting verbs, particularly in the context of role-shift. Besides advanced referencing and perspective-changing techniques, mastering depicting verbs involves knowledge of the classifiers available to that sign language and what they represent, mastery of figure-ground syntactic constructions, and use of emotive facial expression. Even experienced (hearing) sign language interpreters struggle to master these higher-level skills (see Goswell 2011).

The present findings are limited by the small size of the corpus, the focus on narrative discourse, and the specific locality of the participants. However, this pilot study not only lays the framework for a larger study, but also paves the way for cross-linguistic research. The study also highlights the value of triangulating research methods. Corpus-based/driven research alone cannot provide all the answers – as Zipf's (1949) law admonishes, interesting tokens may only appear once, and number-crunching means that finer qualitative details are overlooked. Moreover, corpus queries are only as effective as far as the availability and accuracy of annotations permit. Hence, detailed micro-analysis is also needed in order to obtain a more accurate linguistic description.

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