

Second language acquisition of depicting signs

A corpus-based account

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This paper concerns the acquisition of the sign lexicon in L2 learners of Swedish Sign Language. Sampled data (conversation and narrative retelling) from a longitudinal learner corpus with 16 adult L2 signers was analyzed and compared with data from nine L1 signers. The use of three broad types of signs was analyzed: lexical signs, partly-lexical signs (i.e. depicting signs) and non-lexical signs. The results revealed some differences between L1 and L2 signers, especially with regard to depicting signs. The number of depicting signs used by L2 learners increased over time, approaching the target language use. Qualitatively, we observed differences between L1 and L2 signers in their use of depicting signs, related to handshake choice and sign constructions. We discuss these findings in light of previous research linked to L2 vocabulary as well as the role of gestural knowledge in sign L2 acquisition.

Keywords: sign language, L2M2, lexicon, sign types

1. Introduction

The vast body of research on Second Language Acquisition (SLA) is based on spoken languages, and comparatively little is known about the acquisition of sign languages. A learner of sign language (typically a hearing person), has to learn not only a new language (L2), but also a new modality (M2), i.e. the gestural-visual modality of sign languages in contrast to spoken languages' oral-auditory modality (Chen Pichler, 2011; Marshall et al., 2021).

In the spoken SLA literature, numerous studies have stressed the importance of research on L2 vocabulary acquisition in order to understand which factors affect word-learning. Researchers have therefore assessed lexical knowledge in different ways, for example, by measuring vocabulary size (how many words a

person knows) or vocabulary depth (how well a person knows a word) (for a comprehensive description, see Nation, 2001). Another way of assessing L2 vocabulary knowledge is to look at lexical sophistication or lexical richness by examining the lexical profiles of L2 learners (e.g. Bardel et al., 2012; Laufer & Nation, 1995).

Aside from the lack of knowledge about how sign SLA operates given sign languages' modality-dependent (e.g. spatial) and language-dependent (e.g. morphological) features, the analysis of sign SLA comes with some challenges. One critical challenge is that sign linguistics research is relatively young, and many issues linked to the sign language lexicon and grammar are understudied. For example, in this context, research on Swedish Sign Language, *Svenskt teckenspråk* (STS), lacks scientific resources such as access to data on STS vocabulary breadth and depth.

However, within sign SLA, one area that has been under investigation during the last decades is the sign language lexicon, i.e. the signs themselves. In this context, so-called classifier constructions, or as we label them, *depicting signs*, have received particular attention (e.g. Ferrara & Nilsson, 2017; Marshall & Morgan, 2015). Depicting signs have been treated as a less conventionalized category of signs by several sign linguists. Although they use conventionalized handshapes, these are combined with improvised locations and movements, in contrast with *lexical signs*, in which the phonological components of handshape, location, and movement are all conventionalized (Cormier et al., 2012; Schembri, 2003) (See Section 2 for a further explanation). Depicting signs are seen as a prominent part of the sign lexicon in many sign languages, including STS, and as a category that is acquired late by L1 learners (e.g. Schick, 1990; Simper-Allen, 2016). Furthermore, depicting signs occur in most kinds of discourse genres but are especially apparent in the narrative genre as they contribute to sophistication in narratives (e.g. Morford & MacFarlane, 2003).

Another area that has been under investigation is the role of gestural knowledge in sign SLA. Here, several researchers have argued that L2 learners' gestural knowledge influences sign production (e.g. Ortega & Morgan 2015a, 2015b; Taub et al., 2008).

We therefore explore how L2 signers use and develop the sign lexicon, with a particular focus on their use of depicting signs, through a longitudinal corpus-based account of the use of the sign lexicon in their STS production. To the best of our knowledge, this developmental perspective on sign learning is unique, as most of the results from earlier studies on L2 signers have been based on novice or non-signers (cf. Schönström, 2021; see also Marshall & Morgan, 2015). With this aim, even though our study is data-driven and merely exploratory and restricted to the use of lexicon in STS, we hope to contribute to a better understanding of

the status of signs, and in particular depicting signs, in relation to the entire sign language lexicon of L2 learners. Furthermore, we hope to contribute to the area of SLA in general.

2. The sign language lexicon and depicting signs

As in most sign languages, the lexicon of STS consists of different subcategories of signs. As well as the basic classification into content (open) and function (closed) signs (equivalent to the wide and traditional concept and definition of *words*) many sign languages share similar subcategories.¹ In the sign linguistics literature, there is a set of different labels for different types of signs based on the physical form of a sign and its degree of lexicalization; such types include lexical signs, fingerspelling, pointing, and depicting signs. Signs can also be classified based on their origins, i.e. so-called *native* vs. *non-native* signs (Brentari & Padden, 2001). In this paper, we borrow the terminology used for the Auslan Corpus by Johnston and Schembri (2010) and Johnston and Ferrara (2012) (see also Hodge & Johnston, 2014): *fully lexical*, *partly-lexical* and *non-lexical* signs. Taking as our starting point a more functional division of the sign types found in our corpus data, we are therefore able to adopt an exploratory and usage-based perspective on the signs used by the L2 signers in our data. *Lexical signs* are manual fully lexical signs – so-called “frozen” signs – which are listed in the STS dictionary (Öqvist et al., 2020; Riemer Kankkonen et al., 2018). This category is most aligned with the notion of “word” in spoken languages and is thus the most conventionalized (Hodge & Johnston, 2014). *Partly-lexical signs* include signs that have some degree of conventionalization in form and meaning, and may require a degree of contextualization to be understood. Here, pointing signs and depicting signs are counted as partly-lexical signs. The final category, *non-lexical signs*, constitutes gestures and other manual or non-manual acts that are the least conventionalized in form and meaning.

The descriptions and labels of depicting signs have varied over time and between researchers and different theoretical frameworks. In our article, we do not attempt to summarize this research but instead refer the reader to earlier extensive works (Cormier et al., 2012; Emmorey, 2003) which provide an overview of research on depicting signs and their counterpart labels (such as polycomponential signs, polysynthetic signs, and classifier constructions), as well as the different theoretical accounts for these signs. Within sign language studies

1. It should, however, be noted that there are alternative views on this kind of categorization of signs and lexicalization in sign languages in general (see e.g. Lepic, 2019).

there has been a great deal of research on depicting signs or so-called *classifier constructions*, with researchers describing them as complex morphosyntactic constructions and similar to the classifiers of spoken languages. This assumption has been challenged by some researchers taking a more cognitive/functional view (e.g. Liddell, 2003). In STS linguistics research, depicting signs (under the label of polysynthetic signs) have been described as multi-morphemic constructions (Wallin, 1996), using Talmy's semantic model for motion verbs expressing location and movement (Talmy, 1975).

In earlier descriptions of depicting signs, handshape types were a key component in the depicting sign structure, and the number of handshape categories or types has varied in the literature (Schembri, 2003; Simper-Allen, 2016). In our study, we adopt Schembri's (2003) three main handshape types of depicting signs, which have been consistently applied in the literature (although under different labels): *entity*, *handle*, and *descriptor* handshapes, as outlined below.

Depicting signs with entity handshapes

Here the hands represent entities. The handshapes are determined by the prototypical shapes of the (animate and inanimate) entities being referred to. They can be "whole entity" or "part entity" as well as objects or metaphorical representations of entities. In the STS data from the Swedish Sign Language Corpus (Mesch & Wallin, 2015), the glossing of depicting signs including entity handshapes is divided into two types: HUMAN BEING (Figure 1) and ENTITY (Figure 2), differing in terms of animacy. These signs can share the same handshape, e.g. an index finger can be used to refer to 'tree' or 'person'. This division was made in order to easily find signs representing animate/inanimate entities in the corpus.



Figure 1. ENTITY (HUMAN BEING) 'two persons are flying' (SSLC02_087, 00:03:35.866)



Figure 2. ENTITY 'a car is coming' (SSLCo2_252, 00:02:47.969)

Depicting signs with handle handshapes

Here the hands represent functions that are instrumental, manipulative or handling different objects. The shape of the objects being handled can contribute to the form of the handshapes. Also, the movement can depend on the kind of handling expressed. An L1 signer describes how a man is rolling a newspaper, Figure 3.



Figure 3. HANDLE 'a man is rolling a newspaper' (SSLCo2_087, 00:01:22.996)

Depicting signs with descriptor (size- and shape-specifying) handshapes

The third category includes handshapes whose function is to describe the size and shape of objects. Handshapes and movements represent the physical dimensions of any object. In Figure 4, an L1 signer describes the shape of a mobile phone.



Figure 4. DESCRIPTOR 'the shape of a mobile phone' (SSLCo1_304, 00:00:18.900)

As mentioned above, depicting signs are productive, partly-lexical signs, as opposed to more conventionalized lexical signs. Another category which has been investigated in terms of linguistic conventionalization is the manual gestures used in both spoken and sign languages. A relevant question is whether there are similarities and/or differences between depicting signs (which are less conventional than lexical signs) and speakers' gestures. Several researchers have investigated whether signers using depicting signs and non-signers using gestures differ in formational aspects (e.g. Schembri et al., 2005). Schembri et al. (2005) concluded that handshapes in depicting signs were conventionalized but not location and movement. Furthermore, Brentari et al. (2012) compared the handshapes of signers with gesturers and found, perhaps not surprisingly, that although signs and gestures have similarities in formation, the handshapes used by the signers were more complex phonologically. Another study compared the symmetric use of handshapes and movements in two-handed signs, i.e. the so-called Symmetry Condition, in signers and gesturers (Kita et al., 2014). The symmetry condition has been suggested to be language-specific and part of sign language phonology, but Kita et al. found no difference in the use of this condition in signers and gesturers suggesting that this is a matter of cognitive constraint rather than being language-specific. Clearly, there are many questions regarding the formational aspects of signs and how they are acquired. With this as a backdrop, it is interesting to study from a developmental perspective how L2 learners acquire and use the different types of signs, in particular those partly-lexical signs such as depicting signs, in a relatively spontaneous and naturalistic conversational situation.

3. Sign second language acquisition

The discipline of sign SLA is young. While L2 signers were included in some individual studies during the 20th century, it was not until the 2000s that the field really began to contribute to the theory and practice of SLA. However, despite the growing interest, research focusing on sign SLA is still very sparse (Boers-Visker, 2020; Chen Pichler & Koulidobrova, 2016; Schönström, 2021). In general, most studies involving L2 signers, beginner signers, and non-signers, have not had these as key participants but as a control cohort. Often, they have only been used as comparison data in (mostly experimental) studies focusing on deaf L1 signers for different purposes. Furthermore, the few such studies have mostly looked at beginners or non-signers, with less focus on intermediate or advanced signers. Here we will describe the studies most relevant to our study, as to our knowledge no study has yet looked at lexical use of intermediate L2 signers in a broader sense.

One experimental study looked at hearing L2 British Sign Language (BSL) signers' use of depicting signs (called in that paper 'classifier constructions') and compared their use with that of non-signers (Marshall & Morgan, 2015). The authors found that the L2 signers showed a high rate of depicting signs (with a focus on entity classifiers) but that the signs often included formational errors. In addition, they showed that the learners had difficulties with the handshape parameter. In contrast, the location parameter was more accurately used, and suggested that different error rates in the parameters can be linked to iconic mapping and conventionalization, i.e. locations are more transparent iconically than handshapes, which are less transparent and more conventionalized in form. In a study on L2 acquisition of Norwegian Sign Language (NTS), Ferrara & Nilsson (2017) explored the production and use of depicting signs in L2 NTS students through elicited tasks, and found that learners preferred lexical signs over depicting signs. The authors showed that learners' use of depicting signs was lower, at 10%, in comparison to the L1 group at 20%. In addition, L2 signers most often used signs depicting location entities, while L1 signers most often used signs depicting movement of entities, as well as size and shape of the entities. In addition, the authors observed that the L2 signers tended to rely on lexical signs rather than depicting signs in the signing space. The task was however more focused on describing spatial layouts, and the authors found that L2 signers struggled specifically with the placement and coordination of signs in the signing space (Ferrara & Nilsson, 2017). In one recent study on Sign Language of the Netherlands (NGT), Boers-Visker and colleagues studied L2 students' production of modality-specific devices, i.e. the use of space for linguistic information (Boers-Visker, 2020; Boers-Visker & van den Bogaerde, 2019). They noticed that depicting signs (labeled as classifier predicates) appeared relatively late in a free production study of two NGT L2 learners (Boers-Visker & van den Bogaerde, 2019). In a follow-up study, Boers-Visker (2020) administered a production task to elicit depicting signs from a group of NGT L2 learners, and concluded that depicting signs appeared at early stages in the acquisition, although the formational characteristics of these signs were erroneous and inconsistent. However, the learners showed a significant development at the end of the first year of their sign language education.

The L2 acquisition and use of a related linguistic structure, *constructed action* (or enactment), has been studied for British Sign Language (BSL), American Sign Language (ASL) and Quebec Sign Language (LSQ). Gulamani et al. (2022), for BSL, found that there are differences regarding the use of constructed action, and more specifically viewpoints, in L2 learners compared to deaf L1 signers. BSL learners use character viewpoint, which requires use of constructed action, less often than L1 signers, and they spend more time in observer viewpoint compared to the L1 signers. Observer viewpoint was therefore suggested to be easier to

acquire for the learners (Gulamani et al., 2022). In this context, their results are interesting and relevant to this study, as the use of observer viewpoint is more reliant on the use of depicting signs. Furthermore, Gulamani et al. observed that the learners did not use the same conventional handshapes in the depicting signs as the L1 signers. For ASL, Kurz et al. (2019), in a small qualitative study of L2 learners, found that the use of observer viewpoint seems to increase with time. The authors suggest that this may be a result of greater sensitivity to depicting signs (as in observer viewpoints) in L2 ASL signers compared to co-gesture-like constructions as constructed action (as in character viewpoints). Sanders and Parisot (2016) found that L2 signers of LSQ use constructed action less frequently compared to L1 signers.

Transfer or crosslinguistic influence as a concept is widely discussed in SLA (see Jarvis 2015 for an overview). Not surprisingly, sign SLA provides no exception; there has been much discussion of the role of iconicity and learners' gestural knowledge in sign L2 acquisition with respect to the issue of transfer (Chen Pichler & Koulidobrova, 2016), specifically considering what structures are "transferable" between spoken languages and sign languages and to what degree. On the one hand, given the different physical forms of the phonology in spoken languages (sound-based) and sign languages (visual-based), some researchers have concluded that the transfer of phonology between L1 spoken language and L2 sign language is not possible (Bochner et al., 2011; Rosen, 2004). On the other hand, researchers have discussed the possibility of a transfer of gestural knowledge to the signed modality. Several studies have pointed out gestural knowledge as an important source for sign L2 acquisition (Chen Pichler, 2011; Ortega & Morgan, 2015b). According to Ortega and colleagues, learners' gestural knowledge may facilitate their sign language production, but also contributes to formational errors in the phonology of signs (Ortega, 2013; Ortega & Morgan, 2015a).

In comparison to spoken languages, sign languages are argued to have a higher degree of iconicity: that is, a large proportion of signs and linguistic structures of sign languages are more or less transparent between the linguistic form and its referent, which has consequences for sign language acquisition (see Ortega, 2017 for an overview). Ortega and Morgan (2015a) studied hearing novice signers performing a sign repetition task, and found a higher accuracy in arbitrary signs compared to iconic signs in BSL L2 signers. This was explained by the fact that the learners, despite their "gestural advantage", transferred their gestural knowledge in the production of iconic signs, leading to less attention to the formational parts of the target signs, while with arbitrary signs, they have to pay greater attention to their formational parts in order to be able to sign them, leading to better phonological accuracy. Studies on brain activation through Event Related Potentials (ERP) in sign language comprehension tasks confirm that hearing

learners at the onset of learning transfer their gestural knowledge as “semiotic resources” to L2 sign language (Ortega et al., 2019).

In the early days of sign language linguistics, depicting signs were described as multimorphemic or polymorphemic by some researchers. That is, they are complex signs containing several morphemes, the use of which characterizes a higher degree of linguistic competence. With this in mind, we consider acquisition and use of signs in L2 signers to be of particular interest, given on the one hand the role of vocabulary in sign language lexicon/morphology, and on the other hand the role of morphology in SLA research. For STS there are now several ongoing studies on sign SLA using corpus-based approaches (Mesch & Schönström, 2018, 2021; Schönström & Mesch, 2017). The present study is among the first of this kind.

4. Purpose of the study

In this study, we aim to investigate the sign acquisition of adult L2 signers of STS, according to the sign types that constitute the STS lexicon. We are interested in particular in types of signs, such as depicting signs, that are not traditionally defined as fully lexical signs, but which are described as partly-lexical, i.e. a productive category of signs that need contextualization to be understood fully. In addition, we provide a comparison to a control group of L1 signers. As well as presenting results in terms of frequencies and distributions, we provide insights into the use and development of L2 signers’ sign production.

We aim to answer the following questions:

- What are the patterns of longitudinal change in the use of signs in the L2 group?
- How are partly-lexical signs such as depicting signs used and developed in relation to the other sign types in the STS lexicon?
- What similarities and differences do the L2 group exhibit in the sign production compared to the L1 signers?

5. Data and methodology

Our starting point is a functionalist perspective. We perform a data-driven, descriptive and functional account exploring and analyzing sign production and interlanguage, namely lexical production, of L2 learners, using a corpus-based approach, i.e. Contrastive Interlanguage Analysis (CIA; Granger, 2015). Within

the CIA framework not only are the L2 learners compared with L1 signers, but also L2 learners are compared at different stages, or between learners of different proficiency levels, providing a broader longitudinal picture of interlanguage varieties over time.

The results presented in this article are based on a sample of video data from the Swedish Sign Language as an L2 Corpus (STS L2 Corpus), which is a learner corpus, and to date, unique in L2 sign language research (Mesch & Schönström, 2018, 2021; Schönström & Mesch, 2017). The whole corpus consists of a set of longitudinal data of adult L2-learners' signed production. In total, it contains 25:06 hours of data from 38 learners, along with a control cohort consisting of 9 L1 signers (1:22 hours). The learners are hearing students in a three-year sign language interpreting program at a Swedish university.

Data were collected on four occasions over a period of a year and a half. In the recordings, the learners are asked to participate in a short conversation with an L1 user of STS, to retell stories based on a variety of different pictures, and lastly to retell a short narrative from a one-minute clip from the British short movie "The Plank".² In this study, two kinds of data extracted from the corpus were included: conversation data from interviews with the participants, and retelling data ("The Plank").

The sample comes from a total of 16 learners, on four occasions: one month after course onset T1 ($N=15$) (not including the retelling data because of the learners' limited sign competence), four-five months after onset T2 ($N=15$), nine months after onset T3 ($N=13$) and 16 months after onset T4 ($N=10$). All 16 learners had no prior STS knowledge when they enrolled at university; see Table 1. Average hours of sign language instruction were approximately 50, 125, 240 and 350 hours for T1, T2, T3 and T4, respectively. Comparisons to an L1 cohort (nine fluent signers) were made; see Table 2. All the L1 signers acquired STS from early childhood, had attended Swedish deaf schools, and are members of the Swedish deaf community.

In total, the sample includes 20,822 sign tokens in the conversation data, and 6,037 sign tokens in the retelling data.

2. The Plank (Sykes & Penington, 1967) is a cult classic short and near silent film with very little dialogue. The one-minute clip we are using shows two men carrying, with difficulty, a long wooden plank through streets and alleys. At one point they manage to get one end of the plank through a bar window where a man, unnoticed, manages to put his glass of beer on the plank that is sticking into the window, whereupon the glass disappears off the window, falling outside into a bowl with water intended for window cleaning. Shortly after, the window cleaner arrives, picking up the glass with confusion, and the beer man notices him holding the beer glass and gets angry, as he thinks the window cleaner has drunk the beer. He then pulls him into the bar through the window.

Table 1. Participants in the L2 cohort

L2 group	Age	Gender	Session	Total length (mm:ss)
S054	27	F	T1, T2	11:14
S055	24	F	T1, T2, T3	22:42
S057	19	F	T4	12:03
S058	22	F	T1, T2, T3, T4	44:13
S059	19	F	T1, T2, T3, T4	38:22
S060	40	F	T1, T2, T3	17:19
S061	23	F	T1, T2, T3, T4	47:02
S095	23	F	T1, T2, T3	23:20
S096	19	F	T1, T2, T3, T4	38:31
S097	24	F	T1, T2, T3, T4	33:19
S100	22	F	T1, T2, T3, T4	40:57
S111	22	M	T1, T2, T3, T4	29:03
S113	21	M	T1, T2, T3	28:06
S114	20	F	T1, T2	20:50
S115	24	F	T1, T2, T3, T4	43:44
S116	28	F	T1, T2, T3, T4	42:03
				08:12:48

Table 2. Participants in the L1 cohort

L1 group	Age	Gender	Total length (mm:ss)
S068	50	F	08:01
S069	21	M	07:25
S070	39	F	07:01
S103	21	F	04:15
S104	23	F	06:16
S105	20	F	03:29
S106	24	F	04:32
S107	21	F	05:31
S108	24	F	04:27
			00:50:57

Coding was done with the multimodal annotation software ELAN 6.2 (2021). Lexical signs and other sign types such as pointing, fingerspelling, depicting signs, noun classifiers, buoys, palm-up gestures, and gesture-like signs are annotated using the annotation conventions for STS (Mesch & Wallin, 2015, 2021). Besides these glossing categories, there are also tags for various pragmatic segments such as incomplete sign articulations, hesitation pauses and sign holds. However, target sign glosses were selected regardless of the produced form, that is, even if they

come with learners’ varieties (i.e. phonological, lexical varieties or other deviations) (cf. Mesch & Schönström, 2018). The STS L2 corpus does not report on the annotator reliability of the coding. However, the research assistants followed the annotation conventions, and the senior researcher, who was responsible for the coding work, checked the annotation work regularly. Table 3 shows the coding scheme of the sign categories.

Table 3. Coding scheme

Category	Sign type	Tag example	Description
Fully lexical signs	Lexical signs	WALK	Conventionalized lexical signs
	Fingerspelling	BECOME@fs	Signs based on manual alphabets of spoken words
	PRO1	PRO1	Self-pointing towards the signer’s chest, ‘first person pronoun’
Partly lexical signs	Depicting signs	ENTITY@p HANDLE@p or DESCRIPTOR@p	Context-bounded productive signs
	Pointing	POINT	Pointing in the signing space for referential information
Non-lexical signs	Gestures	PU@g	Gestures, e.g. palm-up

Furthermore, three broad handshape types of depicting signs, as described above, are *entity* handshapes, *handle* handshapes, and *descriptor* handshapes. In the STS corpus, annotation of entity handshapes is divided into two types for practical purposes, ENTITY and HUMAN BEING, based on their animacy, i.e. human vs. non-human (see Figure 1 and Figure 2 above).

6. Results

6.1 Analysis of the sign types

Tables 4 and 5 show the raw and normalized frequencies of sign types for lexical signs, fingerspelling, pointing, where pointing representing first-person pronoun PRO1 is counted separately, and depicting signs for conversation and retelling data, respectively. As the number of gestures in our data was very low (a total mean of 0.4 and 0.06 for conversation and retelling data, respectively), we will not account for these. The first main column accounts for the mean based on raw frequencies, and the second main column accounts for the normalized frequencies based on total signs (per 100 signs). As can be seen in Tables 4 and 5, the number of depicting signs is much smaller in the conversation data than in the retelling data

for the L2 groups, where the participants are describing events from “The Plank” with a higher frequency of co-occurrence of body movement and non-manual expression. We consider this to be typical of the two different genres.

Table 4 shows that lexical signs are a dominant sign type in the conversation data with a total mean of 216.9 for T1–T4 and L1. Next to lexical signs are PRO1 (total $M=24.1$), fingerspelling (20.3) and pointing (9.9). Depicting signs are completely or almost completely absent from the conversation data, which is expected of this discourse type. A Welch’s ANOVA was performed to compare the effects of groups on normalized frequencies of sign categories, as well as on raw frequencies of total signs, using SPSS 27. The analysis revealed that there was a statistically significant difference between at least two groups only for Total signs ($F(4, 21.2)=[33.409]$, $p<0.001$), but not for the sign types. A post-hoc analysis using a Games-Howell test shows that means for total signs was significantly different between T1 and T2 ($p<0.001$, 95% CI= $[-242.15, -84.24]$), T1 and T3 ($p<0.001$, 95% CI= $[-367.86, -145.72]$), T1 and T4 ($p=0.001$, 95% CI= $[-816.39, -226.94]$), and T1 and L1 ($p=0.006$, 95% CI= $[-494.71, -92.13]$). For pointing, there was a marginally significant difference ($F(4, 27.62)=[2.29]$, $p=0.085$). To sum up the conversation data, we could confirm an increase in the number of signs in learners’ production, but not differences between the groups in using different sign types; at least, those differences were not statistically significant. However, we can note a tendency to an increase in the use of pointing in the learners with time. In addition, the sign category fingerspelling deserves a separate mention. Although statistical evidence is absent, fingerspelling is used mostly in T1 but decreases with time, starting as soon as T2. Thus, fingerspelling seems to be a strategy for novice L2 learners to supplement their limited sign vocabulary in the beginning. Fingerspelling as an initial lexical strategy has also been confirmed for L2 signers of Irish Sign Language (Leeson et al., 2020).

Table 4. Raw and normalized frequencies of sign types by group in the conversation data

		Raw frequencies					Normalized frequencies (per 100 signs)				
							95% CI				
		N	M	SD	Min	Max	M	SD	S.E.	Lower	Upper
Pointing	L2-T1	15	1.1	1.4	0	4	1.76	2.45	0.63	0.40	3.12
	L2-T2	15	6.3	4.3	1	16	3.69	3.60	0.93	1.70	5.69
	L2-T3	13	10.1	7.4	1	24	3.11	1.68	0.47	2.10	4.13
	L2-T4	10	26.3	17.8	2	53	4.21	1.52	0.48	3.13	5.30
	L1	9	12.4	10.9	2	37	3.21	1.51	0.50	2.05	4.37
	Total	62	9.9	12.1	0	53	3.12	2.51	0.32	2.48	3.76

Table 4. (continued)

		Raw frequencies					Normalized frequencies (per 100 signs)				
							95% CI				
		N	M	SD	Min	Max	M	SD	S.E.	Lower	Upper
PRO1	L2-T1	15	5.3	4.7	0	15	9.22	7.09	1.83	5.29	13.15
	L2-T2	15	24.3	25.3	0	76	9.10	5.77	1.49	5.90	12.29
	L2-T3	13	29.3	19.2	11	77	9.33	3.94	1.09	6.95	11.72
	L2-T4	10	43.5	25.8	10	89	7.95	3.38	1.07	5.53	10.37
	L1	9	25.9	13.9	12	54	7.75	2.49	0.83	5.84	9.66
	Total	62	24.1	22.4	0	89	8.79	5.01	0.64	7.52	10.07
Fingerspelling	L2-T1	15	6.9	5.0	0	16	14.41	11.52	2.97	8.03	20.78
	L2-T2	15	14.9	6.0	6	27	7.16	1.63	0.42	6.26	8.06
	L2-T3	13	24.5	12.1	10	44	7.77	2.13	0.59	6.48	9.06
	L2-T4	10	39.8	21.8	3	77	6.59	1.52	0.48	5.50	7.68
	L1	9	24.2	15.3	6	48	6.70	2.28	0.76	4.94	8.45
	Total	62	20.3	16.2	0	77	8.88	6.56	0.83	7.22	10.55
Depicting signs	L2-T1	15	0.0	0.0	0	0	0.00	0.00	0.00	0.00	0.00
	L2-T2	15	0.1	0.3	0	1	0.02	0.07	0.02	-0.02	0.06
	L2-T3	13	2.2	2.0	0	6	0.88	1.05	0.29	0.25	1.51
	L2-T4	10	3.6	4.3	0	14	0.72	0.72	0.23	0.20	1.23
	L1	9	2.8	5.5	0	17	0.68	1.29	0.43	-0.32	1.67
	Total	62	1.5	3.1	0	17	0.40	0.82	0.10	0.20	0.61
Lexical signs	L2-T1	15	39.8	17.3	9	68	74.24	11.07	2.86	68.11	80.37
	L2-T2	15	170.7	69.0	82	286	79.93	5.02	1.30	77.15	82.71
	L2-T3	13	243.5	98.0	142	415	78.79	5.13	1.42	75.69	81.89
	L2-T4	10	461.0	221.1	72	792	80.38	2.94	0.93	78.28	82.49
	L1	9	279.8	139.4	155	538	81.01	2.66	0.89	78.96	83.05
	Total	62	216.9	177.6	9	792	78.55	6.91	0.88	76.79	80.30
Total signs	L2-T1	15	53.13	22.35	17	100					
	L2-T2	15	216.33	96.87	97	395					
	L2-T3	13	309.92	124.97	178	507					
	L2-T4	10	574.80	277.08	89	1010					
	L1	9	346.56	174.77	190	663					
	Total	62	273.19	222.20	17	1010					

Table 5. Raw and normalized frequencies of sign types by group in the retelling data

		Raw frequencies					Normalized frequencies (per 100 signs)				
							95% CI				
		N	M	SD	Min	Max	M	SD	S.E.	Lower	Upper
Pointing	L2-T2	15	5.47	6.15	0	23	4.78	4.42	1.14	2.33	7.23
	L2-T3	13	7.54	5.92	0	20	7.73	5.31	1.47	4.52	10.94
	L2-T4	10	12.00	11.01	3	33	9.50	6.63	2.10	4.76	14.25
	L1	9	11.67	6.10	3	23	8.12	3.05	1.02	5.77	10.46
	Total	47	8.62	7.66	0	33	7.24	5.18	0.76	5.72	8.76
PRO1	L2-T2	15	0.73	1.39	0	4	0.84	1.59	0.41	-0.05	1.72
	L2-T3	13	0.62	0.77	0	2	0.68	1.00	0.28	0.08	1.29
	L2-T4	10	0.70	0.82	0	2	0.59	0.77	0.24	0.04	1.14
	L1	9	0.56	1.01	0	3	0.41	0.69	0.23	-0.12	0.93
	Total	47	0.66	1.03	0	4	0.66	1.12	0.16	0.33	0.99
Fingerspelling	L2-T2	15	8.20	5.24	0	18	8.24	3.94	1.02	6.06	10.43
	L2-T3	13	8.54	4.72	2	15	8.49	3.35	0.93	6.47	10.51
	L2-T4	10	10.40	3.89	4	18	8.67	2.58	0.82	6.82	10.51
	L1	9	9.56	4.59	4	18	6.90	2.20	0.73	5.21	8.59
	Total	47	9.02	4.64	0	18	8.14	3.19	0.47	7.21	9.08
Depicting signs	L2-T2	15	21.53	10.32	7	41	21.26	6.85	1.77	17.47	25.05
	L2-T3	13	21.00	7.75	14	40	23.36	8.83	2.45	18.03	28.70
	L2-T4	10	27.70	12.17	17	50	23.99	10.10	3.20	16.76	31.22
	L1	9	39.56	11.23	23	57	29.43	6.45	2.15	24.47	34.40
	Total	47	26.13	12.18	7	57	23.99	8.38	1.22	21.53	26.45
Lexical signs	L2-T2	15	64.07	21.09	31	91	64.93	8.19	2.12	60.39	69.46
	L2-T3	13	57.31	21.41	31	89	59.91	9.33	2.59	54.27	65.55
	L2-T4	10	70.20	27.67	38	131	57.40	9.49	3.00	50.61	64.19
	L1	9	78.89	25.91	39	117	56.73	5.76	1.92	52.30	61.15
	Total	47	66.34	24.09	31	131	60.37	8.82	1.29	57.78	62.96
Total signs	L2-T2	15	100.00	35.06	57	152					
	L2-T3	13	95.00	28.74	55	135					
	L2-T4	10	121.00	36.51	74	174					
	L1	9	140.11	39.15	69	190					
	Total	47	110.77	37.63	55	190					

Table 5 shows that lexical signs are used in more than half of the sign types in the retelling data. In comparison with the conversation data, other sign types are more apparent here. Regarding the normalized frequencies of the signs, there are some notable differences between the L2 group and the L1 group, especially between learners at T2 and L1 signers. Overall, signers seem to be consistent in their lexical use pattern, especially in the beginning. However, the use of lexical

signs falls from T2 to T4, approaching the target language pattern i.e. that of the L1 signer group. At T4 the learners exhibit a greater number of pointing signs and a somewhat greater number of depicting signs. In comparison to conversation data, depicting signs are used more frequently in the L2 group. The narrative style of “The Plank” stimulus obviously elicits the use of depicting signs. L2 signers may also be aware of the use of depicting signs in narratives as an effect of their education. Depicting signs seem to increase with time from T2 to T4. Still, the L1 group exhibited greater use of depicting signs. A Welch’s ANOVA was performed to compare the effects of groups on normalized frequencies of sign categories, as well as on raw frequencies of total signs. The results revealed marginally significant differences between at least two groups in the categories depicting signs ($F(3, 21.719) = [2.764]$, $p = 0.066$), and lexical signs ($F(3, 22.605) = [2.857]$, $p = 0.060$) and a significant difference in total signs ($F(3, 21.384) = [3.375]$, $p = 0.037$). For multiple comparisons, A Games-Howell post-hoc test shows that there was a statistically significant difference between L1 and L2-T2 ($p = 0.040$), 95% CI (0.29, 16.05) in depicting signs and between L2-T2 and L1 ($p = 0.042$, 95% CI [0.25, 16.15]) in lexical signs. Furthermore, there was a significant difference between L1 and L2-T3 in total signs ($p = 0.047$, 95% CI [0.58, 89.64]). Although we see differences in normalized frequencies of the sign categories, statistical evidence is limited, probably as a result of a small sample size. However, there seems to be a tendency for differences in the categories depicting signs and lexical signs. This will be explored further in the next sections, through more qualitative approaches to the data.

6.2 Distribution of the subcategories of depicting signs

In order to investigate the variation in the use of handshape units in the depicting signs we present the distribution of subcategories of depicting signs across the groups: ENTITY (entity handshapes), HANDLE (handle handshapes), and DESCRIPTOR (size and shape descriptive handshapes). Proportions in the use of these depicting sign categories are shown in Table 6. As depicting signs occur rarely in the conversation data, we only consider the retelling data here. Overall, there are similarities between the groups, i.e. in both L1 and L2, HANDLE is the most frequent category followed by ENTITY and DESCRIPTOR. There seems to be a tendential difference between L2 signers and L1 signers, in particular in the use of ENTITY and HANDLE handshapes, but due to small numerical differences this could not be confirmed statistically.

Table 6. Average frequencies (number/participant) and proportion for depicting sign categories ENTITY, HANDLE and DESCRIPTOR at group level (Retelling data)

Depicting signs	T2	T3	T4	L1
ENTITY	8.00 (37.2%)	7.07 (33.7%)	9.70 (35.0%)	15.00 (37.9%)
HANDLE	10.93 (50.8%)	11.38 (54.2%)	14.00 (50.5%)	18.56 (46.9%)
DESCRIPTOR	2.60 (12.1%)	2.54 (12.1%)	4.00 (14.4%)	6.00 (15.2%)
Total	21.53 (100.0%)	21.00 (100.0%)	27.70 (100.0%)	39.56 (100.0%)

6.3 Exploring the use of depicting signs

Below we describe some qualitative observations on L2 learners' production in the retelling data. We have found some structures common in L2 depicting sign production: (1) using handle handshapes in contexts where entity handshapes should be the target form, (2) choice of handshapes, and (3) depicting signs as anchors. Thus, we provide information on some learner variation in the production of depicting signs in particular contexts that were not observed in the L1 group. It should be emphasized that the examples are analyzed according to their use in specific contexts, and these examples represent our observations in the data.

In the figures, Swedish Sign Language (STS) signs are shown using their sign gloss in small capital letters. All examples are taken from the STS L2 corpus with a code for L2 or L1, a unique code for a recording session, an identifier for the participant, for example So59, and a start-time for the sequence, for example SSL_L2_152_So59, 00:01:16.019.

6.3.1 *Handle handshapes instead of entity handshapes*

In our distribution data above, we saw a tendency for small differences between L2 and L1 signers with respect to handshape choices regarding ENTITY and HANDLE handshapes. In our qualitative analysis of the data, we noted that the L2 signers made some choices that differ from the L1 signers with respect to particular handshape choices. We observed examples of the learners using handshapes (and movements) typically used for handling ('open a window') to express entity contexts ('an open window'), see Figure 5. In the stimulus data ("The Plank") there was no such handling context with somebody opening the window. L1 describes the open window with the entity handshape flat hand, Figure 6.

In another context (Figure 7) the participant intends to produce PLANK (as a noun) using a handle handshape to represent the plank. This is emphasized by the repeated movement in the shoulders, as if she is carrying the plank. L1 signers tend to use entity handshapes in such contexts as shown in Figure 8.



Figure 5. The T4 participant describing an ‘open window’ using a handle handshape. (SSL_L2_152_S059, 00:01:09.655)



Figure 6. The L1 participant describing an ‘open window’ using an entity handshape. (SSL_L1_008, 00:00:17.080)



Figure 7. The T4 participant expressing the plank (as noun) using handle handshapes (grip hand). (SSL_L2_152_S59, 00:01:16.019)



Figure 8. The L1 participant expressing the movement of the plank using the entity handshape (flat hand). (SSL_L1_012_S070, 00.00.32.923)

6.3.2 Choice of handshapes

Next, we analyzed the use of different handshapes and constructions in the corpus data. The list with the number and distribution of handshapes is included in the supplementary files. We observed some differences between the L2 and L1 groups in the choice of handshape as well as in the construction of depicting signs, and will account for some of these differences here. First, we observed a difference in usage with respect to two depicting sign types: ENTITY (representing a human being) and HANDLE. Table 7 shows the variations used by the L2 learners as well as L1 signers and how the entity handshape for ‘human being’ is distributed between the L2 learners as well as when compared to L1 signers. Table 7 also shows the use of the non-dominant hand in every signer group, where the signers use the non-dominant hand independently (apart from the dominant hand, which is the right hand for right-handed signers). The L1 group uses the handshape index finger/s ( and ) for entities representing human beings, e.g. ‘two men walk along’. Such handshape and depicting sign types are not found in T2-T4 for human beings. Instead, the handshape  is used for the entities representing human beings in all L2 groups; however this was not observed in the L1 group. This handshape is also used for the lexical sign WALK. We also found examples of deviations in the choice of handshape. For example, the use of the deviating handshape  in the T2 group when the signer attempts to depict a person. This could be due to the learners’ difficulty in forming and producing a signed utterance in a short time.

The handshape  representing HANDLE occurs strongly in the L1 group for both dominant (DH) and non-dominant hands (NonDH), e.g. in the context when the signer depicts how a man in the movie holds a beer glass (using one hand (e.g. the dominant hand) when reading a newspaper with the other hand (e.g. the non-dominant hand). The L2 group seems to prefer the use of a  hand when describing holding a glass. This hand is also used in the lexical sign for DRINK.

For the description of carrying the plank, the L1 signers seem to alternate between different handshapes and seem to use a  hand to express carrying the plank. Using that handshape indicates handling an entity that is round and thin in shape. We suggest that this is influenced by the lexical signs CARRY or possibly MOVE, which both use a  hand.

Learners use also entity handshapes with a handshape or orientation that represents a different meaning. Figure 9 shows a participant expressing the plank (as an entity) using two flat hands with upright orientation. This could be interpreted as emphasizing a specific open upper surface or handshape as in “give anything”. Compare this to the L1 signer’s way of describing the path of the plank into the window, Figure 10.

Table 7. Examples of usage of depicting signs for ENTITY (human being) and HANDLE

	T2_DH	T2_NonDH	T3_DH	T3_NonDH	T4_DH	T4_NonDH	L1_DH	L1_NonDH
ENTITY (human being) (one-handed) 							9	
ENTITY (human being) (two-handed) 							5	
ENTITY (human being) 	11		10		3	3		
ENTITY (human being) 		4						
HANDLE 	25		17		7			
HANDLE (one-handed) 	25		28	5	28	7	49	11
HANDLE (two-handed) 	19		30		27		8	



Figure 9. The T4 participant trying to express PLANK using a depicting sign and upright orientation of flat hand. (SSL_L2_152_S059, 00:01:23.156)

Some learners seem to find using a depicting sign as a target construction challenging. We have observed that these learners can be somewhat ambivalent in using/choosing either a lexical sign or a depicting sign. The end result looks like a blend between a lexical sign and a depicting one, as described above, for example, with WALK ‘walk’ and HUMAN BEING+MOV ‘a person is walking’.



Figure 10. The L1 participant describes how a plank moves into the window.
(SSL_L1_022_S104, 00:00:30.631)

We have also observed further examples of the influence of lexical sign forms on the production of depicting signs. For example, in Figure 11 we see a learner using a sign with formal properties from the STS lexical sign for WALL 'wall' but modified in the movement part as a depiction of the characteristics of a 'wall'. At the same time, the learner is mouthing the Swedish word [vägg] 'wall' which is associated with the lexical sign WALL 'wall'. In our data we annotated this as a depicting sign following the target form principle. Interestingly, the L1 signers do not use any depicting sign for 'wall', only a lexical sign WINDOW 'window' when the plank is carried through the window.



Figure 11. The T4 participant describing a 'wall' using a blend of a lexical form and a depicting form. (SSL_L2_250_S100, 00:00:26.825)

It seems to be difficult for the learners to drop the use of lexical signs. There are also many cases in which the learners alternate between trying to express depicting signs but add lexical signs as well, doubling the information. As Figure 12 illustrates, the learner (T2) shows doubt while trying to express how the men in the movie moved the plank from the window (using a handle handshape). She repeats her depicted sign but adds a mouthing based on the Swedish word [flytta] 'move' and then the lexical sign for MOVE 'move', again while mouthing [flytta] 'move'. The handshapes for these signs are similar but the lexical sign MOVE has a strict phonological construction with rightward and leftward palm orienta-

tion. The total use of the lexical sign *MOVE* for the L1 group is zero, whereas we found it in six of the L2 signers. We found similar examples of lexical sign use for other lexical entries as well, such as *WALK* [gå] ‘to walk/to go’, where L2 learners show 32 cases in comparison to L1 signers with six. We believe this is a kind of lexical transfer from their L1 Swedish, as lexical signs are the closest linguistic device to Swedish words, at least conceptually.

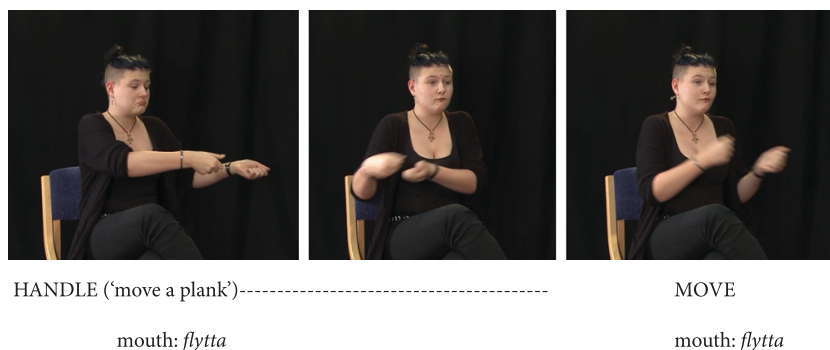


Figure 12. Sequence in which the T2 participant alternates between depicting signs and lexical signs. (SSL_L2_188_S096, 00.01.25)

6.3.3 Simultaneous use of two depicting signs with two hands

A prominent part of sign languages is simultaneity: using both hands at the same time to express different linguistic information, see Figure 13.

However, a qualitative look beyond the number of depicting signs using the NonDH reveals that using both hands and different handshapes as two depicting signs or in combination with lexical signs are complex constructions for L2 learners, rarely observed in our data. First, it is probably in part associated with modality-dependent skills: it is difficult to combine the dominant and non-dominant hands in the production of two depicting signs (cf. Boers-Visker, 2020 and Ferrara & Nilsson, 2017). Second, non-dominant hand handshapes are often mirrored by dominant hand handshapes or are different from target handshapes. For example, Figure 14 illustrates an anchor handshape holding a newspaper using a  handshape (as in holding a thick entity) (target language form:  or flat hand as in Figure 13 and 15), at the same time as the dominant hand is also using a  hand (as in drinking beer, holding the glass). L1 signers clearly use a  hand for holding the beer glass and a  flat hand representing the newspaper. The use of constructed action adds spatiality and complexity to the signing process, a point which has been confirmed in earlier studies (Ferrara & Nilsson, 2017; see also Gulamani et al., 2022).

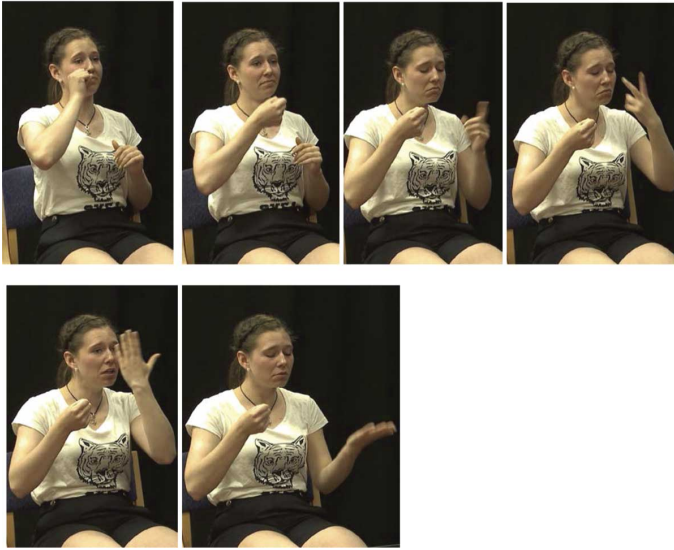


Figure 13. The L1 participant's simultaneous use of DH and NonDH depicting holding a beer glass and a newspaper in the last picture. (SSL_L1_027_S105, 00:00:32:80)



Figure 14. The T4 participant uses the dominant hand depicting holding a beer glass and the non-dominant hand holding a newspaper. (SSL_L2_250_S100, 00:00:53.806)



Figure 15. The L1 participant uses the dominant hand depicting holding a beer glass and the non-dominant hand representing a newspaper. (SSL_L1_022_S104, 00:00:35.075)

7. Discussion

Learning a sign language with its modality for the first time as an L2 can be a difficult task for many sign language students. Worth mentioning too is that L2 signers often undergo a relatively formal training rather than informal learning; they rarely learn to sign and develop their sign language outside the classroom, for practical reasons (there being few L1 signers available). Through our corpus data, we have provided a window into L2 learners' production of signs. By means of our longitudinal corpus, we have shown quantitative outcomes in distribution and frequency of acquisition of the sign lexicon. Specifically, we have provided an account of the use of depicting signs in the learners' interlanguage at certain points in their development, as well as by means of a qualitative description of the use of depicting signs.

Regarding the first question in the study on frequencies and patterns of sign type distribution and how it changes over time in the L2 group, we identified some interesting results pertaining to how variation in sign type distribution changes over time. In conversation data, where the learners were at a more novice stage (T1), they adopted a strategy of using fingerspelling, due to a limited sign vocabulary. We also noted a higher frequency of first-person pronoun (PRO1) among L2 signers in earlier stages (T1 and T2). It is a possible result of crosslinguistic influence from L1 Swedish, as Swedish in comparison to STS has a stricter obligation of subject marking in clauses. However, this needs to be further explored in detail in another study, which would include a syntactic analysis. Furthermore, even if depicting signs occur rarely in the conversation data, it is notable that L2 learners at T1 did not use depicting signs at all. In retelling data, we observed a change mainly in the use of the categories depicting signs and lexical signs, as well as pointing. L2 learners at T2 used lexical signs to a greater extent, and depicting signs and pointing to a lesser extent. However, the frequencies of depicting signs and pointing increased at T2 and T3 as well, while at the same time the use of lexical signs decreased. Concerning depicting signs and lexical signs, the differences within the L2 group were not statistically significant, and only marginally between the L2 learners at T2 and L1 signers. Taken together, we would suggest that although statistical evidence is limited, based on this study's data L2 learners seem to develop their use of the sign lexicon with time, and the patterns in the lexicon approach the patterns of the target language as used by L1 signers. Our interpretation is that the L2 learners stick at first to a "one word-one sign" pattern, more similar to their L1 Swedish, through the use of lexical signs and fingerspelling, rather than using partly-lexical signs such as pointing and especially depicting signs, a prominent and more sophisticated part of sign language lexicon. For example, we observed in our data that they tend to use

multi-word constructions as PUT ON ['put on'], using a verb + preposition phrase to express movement and placement which is prevalent in L1 Swedish (i.e. "lägga på"), but that in STS would typically consist of a single depicting sign used as a verb. Although there are equivalent signs for the verb ('put') and the preposition ('on'), they are not used in the same manner, which understandably causes difficulty for the learner. We would suggest that this may be closely related to the inter-lexical factor of vocabulary difficulty, i.e. the conceptual similarities between an L1 word and the new L2 word (sign) do not necessarily overlap semantically and in use, which causes difficulty for the L2 learner (cf. Laufer, 1990).

The second question of the study was how partly-lexical signs such as depicting signs are used and developed in relation to the other sign types in the STS lexicon. Overall, in the retellings, L2 signers seem to relatively quickly approach the target pattern of L1 signers with respect to sign type distribution. L2 signers use depicting signs relatively frequently and according to a distribution similar to that of L1 signers, especially after one year of instruction. This seems to be in line with previous findings for L2 NGT (Boers-Visker, 2020). A possible explanation for this may be that depicting signs are conventionally "weaker" and closer to the formational patterns of gestures. In addition, there may be a matter of methodological issues related to the glossing of the signs in the annotation process; the line between depicting signs and gestures can be somewhat blurred, especially when annotating, as it can be hard to identify to what type some signs belong, especially signs that involve handling contexts, i.e. "acting". For example, some of the L2 forms seem to be more of a gesture than an actual depicting sign, due to their vague phonological constructions, involving indistinct handshapes and movements, as well as different orientation. This is comparable with earlier studies on signers and gesturers in the use of handshapes (Brentari et al., 2012). One example is when one participant used a spread hand with indistinct movement instead of a proper flat hand or holding hand for 'carrying the plank' with clear movement, and we had to decide whether to annotate it as a depicting sign or a gesture. In this particular case, we annotated it as a depicting sign following the target language definition. This may have contributed to higher quantities of the depicting signs in the L2 group, especially for the early learners. Nevertheless, our findings show that L2 signers use depicting signs to a lesser extent, especially at the beginning, possibly because they struggle to learn these signs.

In addition, our qualitative analyses revealed some differences in formational parameters of depicting signs between L2 and L1 signers with regard to the use of depicting signs. The use of depicting signs among L2 signers is characterized by a more varied palette of handshapes and movements used for different meanings in comparison with the L1 control group, who are more consistent in their use. This is often associated with specific sequences in the movie "The Plank" and

the ways in which events are expressed. Among other things, the L2 group varied more in depicting signs in the choice of handshapes when compared to the L1 group. *HANDLE* seems to be one of the types which is easier to acquire and use. An explanation for this was given in the qualitative analysis: the L2 signers use handle handshapes in contexts where entity handshapes would have been more appropriate. This may have some connection to previous research on iconicity and gestures. In a study on silent gestures produced by non-signers, Ortega & Özyürek (2020) found that among four different types of iconicity strategies in gestures (acting, representing, drawing and personification (after Müller, 2013 and Hwang et al., 2017)), gesturers have a high prevalence for the acting type of iconicity in their silent gesture production. The acting type is similar to depicting signs representing handling using *HANDLE* handshapes (see also Ortega & Özyürek, 2020, p. 53). Therefore, we would suggest that our finding that L2 signers' use of depicting signs and the high prevalence of *HANDLE* handshapes is influenced by their gestural knowledge and based on an acting strategy.

Furthermore, we observed that L2 signers tend to blend lexical signs and depicting signs that are formally similar. This could be interpreted as an intralexical factor of a vocabulary difficulty as well (cf. Laufer, 1990). The formal similarities between the lexical sign *WALK* and the depicting signs for entities describing 'human beings' makes it difficult for the learner. This affects both the choice of handshapes and the structure of signing.

We also observed that using depicting signs together with mouthing was common in L2 signers. We believe it is a cognitive effect based on their L1 Swedish that has been transferred to STS production. The L2 learners are familiar with the concept of conventionalized lexicon and lexicogrammar with words (and phrases) in L1 Swedish, which are based on a higher degree of conventionalization. The learners thus rely on this word concept, which influences the production of signs. We speculate that it may be cognitively more challenging to use partly-lexical signs i.e. depicting signs whose formational properties depend to a degree on the context, and which are therefore more productive as a category. Such productive word categories do not exist in Swedish, at least not the same way and to the same degree as in STS. We think learners are aware of the importance of using depicting signs, but they are acquired and mastered at later stages in acquisition.

Finally, our findings show that simultaneous use of dominant hand and non-dominant hand in order to express two separate references or events by using two depicting signs seems to be complex for L2 learners regardless of acquisition stage. This confirms previous findings by Ferrara and Nilsson (2017) for L2 NTS, showing that L2 learners have difficulties with the coordination of the depicting signs in the signing space and coordination of the hands in relation to each other.

For example, with respect to *HANDLE* in our data, the simultaneous use of two separate handshake units was more common in L1 signers. We believe this is also associated both with modality-dependent skills, i.e. expressing two different handshapes at once, and with the linguistic complexity in expressing two separate events simultaneously.

To conclude, this study was a first step in the description of L2 acquisition of signs with a particular focus on depicting signs. In future work, exploring how the signs are used in utterances (especially as verbs) would add a syntactic perspective to the study of the signs and would offer further insights. We have observed some issues related to syntactic transfer from the L2 signers' L1 Swedish, i.e. a preference for using prepositional phrases (including use of lexical signs) to constitute adverbial constructions, and this issue seems to influence or overlap with the use of depicting signs. This needs to be studied further in future research.

8. Conclusion

Sign language data are time-consuming to construct, annotate and analyze, but provide a rich set of naturalistic and semi-spontaneous linguistic data for further studies. In this study, we have focused on the frequency and distribution of sign types, specifically by providing analysis of the use of depicting signs in L2 signers. In addition, we have compared the use of the signs of L2 signers with L1 signers. The findings presented here demonstrate that beginner L2 signers use depicting signs to a lesser extent and lexical signs to a greater extent, especially compared to L1 signers. However, with time, L2 signers seem to approach a target language pattern in the distribution of signs. Furthermore, our qualitative analyses show that L2 signers have some difficulties in the formation of depicting signs, which may be related to the simultaneity of sign languages as well as sources based on their L1 Swedish and gestural knowledge.

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Résumé

Cet article concerne l’acquisition du lexique chez les apprenants L2 de la langue des signes suédoise. Des données de conversation et de narration ont été sélectionnées dans un corpus longitudinal de 16 apprenants adultes signeurs L2. Ces données ont été analysées et comparées aux données de neuf signeurs L1. L’utilisation de trois grandes catégories de signes a été analysée: les signes lexicaux, les signes partiellement lexicaux (c’est-à-dire les *depicting signs*) et les signes non lexicaux. Les résultats ont révélé certaines différences entre les signeurs L1 et L2, en particulier en ce qui concerne les signes descriptifs. La quantité de signes descriptifs utilisés par les apprenants L2 a augmenté avec le temps, se rapprochant de leur utilisation dans

la langue cible. D'un point de vue qualitatif, nous avons observé quelques différences entre les signeurs L1 et L2 dans leur utilisation des signes descriptifs, selon le choix de la configuration manuelle et selon la construction des signes. Nous discutons ces résultats à la lumière de recherches antérieures liées au lexique en L2 ainsi qu'au rôle de la connaissance des gestes dans l'acquisition d'une L2 gestuelle.

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