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Title: Opening up Corpus FinSL : enriching corpus analysis with linguistic ethnography in a study of constructed action

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Opening up Corpus FinSL: enriching corpus analysis with linguistic ethnography in a study of constructed action

Abstract: Corpus methods are now established within the field of signed language linguistics. Empirical investigations of signed language corpora have challenged many early assumptions about the nature of deaf community signed languages, while making us more aware of the limitations of traditional corpus documentation methods. One limitation relates to insufficient documentation of ethnographic information that is often necessary for accurately understanding and interpreting corpus data. Linguistic ethnography offers unique possibilities for addressing this limitation. This article outlines a novel interview method developed to enrich the original Corpus of Finnish Sign Language (Corpus FinSL) with additional ethnographic information eight years after it was first documented and archived with standard IMDI corpus metadata. We interviewed 22 Corpus FinSL signers about their family and social networks, as well as their lifelong language, geographical, educational, and employment trajectories. Here we describe how this information illuminates the linguistic analysis and interpretation of constructed action – an enactment-based way to express meaning – in Corpus FinSL data. Our results reveal constructed action in FinSL discourse is influenced by factors like signer's educational background and age, but not exclusively by family networks or use of other

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sign languages. The interview materials demonstrate diversity and change in the communicative ecologies of FinSL, which is discussed in relation to the use of constructed action in FinSL. We argue that this kind of approach enables signed language corpus linguistics to "open up" more to signers' lived experiences, while still "tying down" empirical descriptions of FinSL. A major benefit is the enrichment of both machine-readable annotations and metadata, while supporting deeper engagement between deaf signing communities and signed language corpus projects.

Keywords: sign language; corpus; linguistic ethnography; enactment; constructed action

1 Introduction

Signed language (SL) corpus linguistics evolved in response to the technological advancements and the heavy reliance on "native signer informant" methodologies that dominated signed language linguistics throughout the twentieth century (see Hodge & Crasborn 2022; Johnston 2010). Instead of asking one or two signers to judge the grammaticality of sentences to camera and out of context, for example, corpus methods have enabled researchers to build machine-readable databases of language use from greater numbers of signers interacting more naturalistically, and to link these to existing or new lexical databases (Fenlon et al. 2014; Johnston 2010). Corpus methods have also enabled researchers to temporally align annotated analyses to the filmed interactions, and to count these annotations in systematic ways, instead of awkwardly transcribing three-dimensional signing using written glosses on a two-dimensional page (see Crasborn and Sloetjes 2008; Fenlon et al. 2015). In this way, corpus methods support the empirical description of naturalistic signed language use.

In the past decade, many different signed language corpora have been developed, facilitating substantial contributions to what is known about deaf community signed languages and how they are used (see Fenlon and Hochgesang 2022). We now have a much more empirically rigorous understanding of how different bodily actions are meaningfully combined within specific types of signed interactions, along with valuable information about the frequency and use of manual signs and patterns of grammatical constructions (e.g., Fenlon et al. 2018; Ferrara and Johnston 2014; Jantunen 2017; Johnston 2012). We also have much more awareness of various social factors influencing signed language variation, such as age and region – at least for the cohorts of deaf signers who have been included in corpus documentation, who are usually signers who learned sign language from birth or early childhood (e.g., Fenlon

et al. 2014; Stamp et al. 2014). Signed language corpus studies have also contributed to the development of vital resources such as online dictionaries, teaching pedagogies and language revitalisation activities (e.g., Cresdee and Johnston 2014; Leeson et al. 2019; Salonen et al. 2020, 2022).

Yet these studies have raised new questions regarding the nature of deaf community signed languages, especially regarding the extensive variation documented within signed language corpora. Some aspects of language variation, such as phonological variation or regional lexical variation, can be investigated using narrative retellings as a control, offering insights on some of the factors that might explain this variation. For example, one investigation of referring expressions in Auslan retellings found that cognitive accessibility and animacy explained 52 % of the variance observed in how these referring expressions were composed, especially in relation to signers' use of a specific type of enactment referred to as *constructed action* (CA) (Hodge et al. 2019; see Section 2.3). Yet the question remains: what factors explain the remaining variance? Are these factors that have not yet been annotated in existing corpora? Or are these factors that corpus data is not currently able to describe, perhaps because of how they were designed? As signed language corpus studies mature through the exploration of more naturalistic forms of discourse such as conversation, the number and type of factors explaining language variation are likely to become more complex. It is therefore necessary to analyse corpus data more deeply in terms of the broader communicative ecologies in which the documented signers live and work (see Ferrara et al. 2023; Hodge et al. 2023). In doing so, we can also seek better engagement between signed language corpus projects and the deaf communities they aim to support.

In this paper we describe our recent efforts to widen SL corpus analysis in such ways. The aims of the paper are twofold. Firstly, we wish to describe an *interview method* with which we aim at enriching the analysis on the Corpus of Finnish Sign Language (Corpus FinSL). Secondly, we present a study in which we bring together quantitative analysis on the aforementioned enactment type, CA, using data documented in the Corpus FinSL, and qualitative descriptions of signers' personal histories and communicative ecologies collected through the interviews. The aim is to analyse the corpus materials and signers' background information quantitatively as well as to discuss these results against the detailed and granular aspects of the communicative practices and personal histories of the signers. The work is a combined effort by us, a group of deaf and hearing professionals working in and outside academia, who represent different nationalities, positions, and backgrounds when it comes to sign language studies. Our language and education backgrounds, and relationship with sign languages are varying, with signed languages as a first language, second/foreign language or a relatively recent new part of one's linguistic repertoire. We have worked as researchers, educators, authors or interpreters, in

academia as well as in social impact projects. Our research has focused on, for example, linguistics, corpus analysis, ethnography, and cognitive sciences.

The importance of studying depiction, in general, and CA, in particular, lies in the fact that such iconic meaning-making strategies are integral parts of deaf community sign languages. Despite this importance, to date, most of the corpus-based studies on sign language have focused on the phonological variation or variation of lexical or partly lexical units (i.e., lexical, indicating and pointing signs [see e.g., Fenlon et al. 2018; Stamp et al. 2014]; for an exception, see Ferrara et al. 2023). This is understandable, as large multimodal sign language corpora have been available only for a relatively short time. The annotations included in the creation of these corpora mostly include tagging for lexical and partly lexical units and their characteristics (such as one-/two-handedness), and therefore offer a first step into corpus-based analysis of variation in sign languages. However, if we aim at understanding more fully the variation in the use of FinSL – or any other sign language – more attention should be paid to the more gradient and less conventionalised ways of making meaning, such as enactment.

2 Background

2.1 Language ecologies and deaf mobilities

People live within richly contextualised language ecologies: the historically contingent sedimentation and constantly emerging trajectories of interactions between language users and their environments (see Ferrara and Hodge 2018; Goodwin 2000; Haugen 1972). Within these ecologies, different people draw on any and all of the semiotic resources available to them within specific interactions and spatio-temporal contexts. This contributes to the development of semiotic repertoires, in which different languages, modes, and practices for communicating combine according to the needs and demands of the people interacting (Kusters et al. 2017a). Some of these become heavily conventionalised codes that are shared widely across communities of use (cf. "language"). Others remain more ephemeral, emerging and disappearing within specific social contexts and for specific ends, especially when undertaken between people with sensorial asymmetries (see e.g., Kusters 2017a, 2017b). We refer to these complex networks of information and communication practices in an individual's everyday life as communicative ecologies.

As minoritised language users marginalised within hegemonic socio-political structures, deaf people using deaf community signed languages such as FinSL develop extremely rich and varied repertoires that encompass the full spectrum of these possibilities. These repertoires are heavily shaped by small-scale encounters

with friends, family members, and others within local, national, and transnational networks, in addition to the mainstream and institutionalised structures of language transmission that typically shape majority language use (see Hodge and Goswell 2021). It should also be pointed out that institutionalised transmission, such as language teaching, is often rooted in mainstream linguistics and traditional views on language, which emphasise the linear organisation of conventionalised units in written modes of language – views which have ultimately pushed signed languages (as well as iconic and indexical aspects of speech) to the margins (see Ferrara and Hodge 2018; Jantunen 2022; Puupponen 2019).

In Finland, most deaf signers, especially younger signers, are multilingual in several signed, spoken, and written languages (Rainò 2021; Tapio and Takkinen 2012). These may include FinSL, Finnish, FinSSL (Finland-Swedish Sign Language), English, and many other languages. Given the engagement with other European deaf communities, some deaf signers are also skilled in International Sign. These multilingual, translanguaging experiences have been described well, for example, in the context of the multilingual language practices of deaf and hearing children acquiring a signed language (Kanto 2022; Tapio 2013). Tapio (2013) observed that deaf children develop rich meaning-making skills for navigating various types of (mis)understanding while learning English in a classroom, including online communication and the coordination of fingerspelled and mouthed English within FinSL interactions. Kanto (2022) has also reported on the multifaceted and multilingual nature of the language environments and practices of deaf and hearing children acquiring FinSL as one of their languages. Kanto underlines the importance of seeing languages as dynamic, adaptive, and hybrid resources for communication and multiculturalism. Tapio (e.g., 2013, 2019) and Kanto (2022) point out that the communicative practices of child and adult users of FinSL are highly multimodal, combining visual-kinetic, sound, textual, and other semiotic resources.

However, deaf signers in Finland may also experience quite different language learning trajectories from each other, depending on their specific familial, educational, and social experiences (e.g., Tapio and Takkinen 2012). Some signers develop repertoires that are not available to others, or are systemically prevented from doing so. For example, in an ethnographic study of deaf adult asylum seekers and their experiences claiming asylum in Finland, Sivunen (2019) found that while these deaf adults are usually fluent in their own signed languages or home signs, due to limited educational opportunities they are typically only emergent readers of written languages such as Arabic, and may experience extreme language barriers and social isolation in the process of claiming asylum in Finland. This makes it difficult for deaf asylum seekers to learn FinSL or Finnish to the level that is required for negotiating bureaucratic and other processes, and underlines the need for other deaf people around them, both for languaging and psychosocial support (Sivunen 2019).

Historically, a similar importance can be seen, for example, in the role of deaf peers (other pupils) for deaf children acquiring FinSL for the first time when starting school in an oralist boarding school for the deaf in Finland – a phenomenon sometimes referred to as horizontal peer (i.e., intragenerational) transmission (see e.g., Mudd et al. 2020). During the early twentieth century – along with most of Europe – Finnish deaf education paradigms shifted from bilingual deaf-teacher-inclusive methodologies focused on general education and sign language, towards oralist methodologies focusing on speech, writing, and practical skills, stigmatising sign language use, and excluding deaf teachers from the field (Finnish Museum of the Deaf 2023; Salmi and Laakso 2005; Takkinen et al. 2023.) The role of deaf peers therefore became hugely important for the creation of deaf spaces (see e.g., Friedner and Kusters 2015), learning of FinSL (Finnish Museum of the Deaf 2023), and the transmission of deaf ontologies and epistemologies (see Humphries 2008; Kusters et al. 2017b), especially amongst pupils who did not have a heritage signer background.

Towards the 1970s, the paradigm started to reshift as attitudes toward sign language started to slowly change among educators, largely due to the lobbying and activism of the Finnish Association of the Deaf (FAD) during the 1950s and 1960s. This resulted in the introduction of the so-called "simultaneous method" (i.e., sign-supported speech) as a method of instruction; offering first sign language courses for hearing educators of deaf pupils in the late 1960s and during the 1970s; and reintroducing bilingual education and the teaching of FinSL as a mother tongue into the education system with the advent of the Deaf Awareness movement. During this time there was a lot of areal variation in how and how much sign language was present in the everyday life and pedagogy of different institutions. For example, Tapio (2013) reports that at the school of the deaf in Oulu (in the region of North Ostrobothnia, Finland), called Merikartano School, sign language was strongly promoted and used as a language of instruction as early as the 1960s.

The rights of deaf individuals have been included, in some form or another, in Finnish legislation since 1979 when interpreting services for deaf citizens were included in legislation (Rainò 2021). FinSL was first introduced to the Basic Education Act in 1983 as a method to support the language of instruction (i.e., mainly Finnish or Swedish). During the 1990s, when Finnish education policy aimed at improving the position of linguistic minorities, the FAD worked towards the recognition of sign language users as a linguistic and cultural minority. Formal teaching of FinSL did, indeed, become present in Finnish basic education in 1991 and FinSL was enshrined in the Constitution in 1995. The updates in the school laws that followed in 1998 made it possible, but did not oblige, the authorities to organise sign language teaching and to teach sign language as a mother tongue (Finnish Association of the Deaf et al. 2010; Finnish Museum of the Deaf 2023; Salmi and Laakso 2005; Takkinen et al. 2023.)

Finally, the Sign Language Act, which entered into force in 2015, places an obligation on public authorities to promote the linguistic rights of sign language users (both FinSL and FinSSL users). According to the Act, authorities are required to promote in their activities the opportunities of sign language users to use their own language and receive information in their own language, including the right of a sign language user to be taught in his or her own language and to sign language teaching, laid down in educational laws in 1998.

However, the realisation of these rights is still very varying. For example, according to the Sign Language Barometer 2020 citizens survey (Rainò 2021), 60 % of the survey participants (of whom all identified an SL as their mother tongue) reported that their deaf or hearing children did not receive any teaching of FinSL in their basic education. In the case that the formal learning of FinSL was included in the education, sometimes the teaching was given only for a short period of time, after which it had ended due to issues such as difficulties in the place of residence and school location or the lack of funding agreement in the municipal authorities. In addition, teaching of FinSL as a mother tongue is, in general, a fairly new addition to the national curriculum of Finnish basic education. The field still lacks standards as well as methodological variety and metadiscourse among professionals. This demonstrates how the role of institutions in the transmission of FinSL, deaf ontologies, and epistemologies varies a lot across individuals and institutions.

The research literature and deaf education and legislation history, described above, illustrate the different experiences of deaf signers in Finland across generations as well as synchronically, and highlight the importance of ongoing language immersion for deaf signed language users. They also suggest how different life trajectories might manifest in markedly different semiotic repertoires for different deaf people in different life circumstances, in a way that corpus data does not currently capture. The nuances of these social conditions, and their influence on deaf lives and languaging, are most carefully taken up within the deaf anthropology[1] and linguistic ethnography literature. In this domain, "it is impossible to disentangle discussions of deaf sociality from discussions of (sign) language" (Friedner and Kusters 2020: 34; see also Kusters and Hou 2020). This is highly relevant to signed language corpus studies, where it is often assumed that the signers documented

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[1] Deaf anthropology is an emerging field that is based on "a commitment to understanding deafnesses across time and space while holding on to 'deaf' as a category that does something socially, politically, morally, and methodologically" (Friedner and Kusters 2020: 31). Furthermore, by "placing 'deaf' central in explorations of socialities, mobilities, modalities, and technologies", deaf anthropology has "illuminated different ways of being deaf", and it "offers up diverse analyses of what it means to be a sensing, communicating, and social person in the world", while it also "argues for deafnesses as providing ontologies and epistemologies that are valuable and worth preserving" (Friedner and Kusters 2020: 41).

within a corpus represent an idealised "native signer"[2] standard that serves as a benchmark for describing the signed language in question. Traditionally, the impact of parental signer profiles (whether parents are hearing M2L2[3] signers, non-signers, or deaf signers) has been given a lot of attention when studying sign language acquisition, for example (e.g., Curtin et al. 2021). While it is essential to describe the language use of signers who have experienced uninterrupted language transmission use, it also risks obscuring aspects of deaf socialities that are relevant to understanding language variation and complexity (cf. Schembri et al. 2018). One solution is to enrich existing corpus methods with linguistic ethnography.

2.2 Enriching the Corpus FinSL with linguistic ethnography

Since 2014, studies undertaken using the Corpus FinSL have greatly enhanced our understanding of Finnish Sign Language (FinSL) structure and use (e.g., Jantunen 2016; Puupponen 2019; Takkinen et al. 2018). Corpus FinSL data has been invaluable for revising earlier claims about FinSL (e.g., Jantunen 2017) while illuminating the primary social factors influencing signers' use of communicative strategies (Puupponen et al. 2022). All these studies were made possible through the systematic development and enrichment of video data in the Corpus FinSL, with findings directly applied to teaching and learning FinSL at Jyväskylä University (see Salonen et al. 2020).

Over time, analyses of Corpus FinSL data have become increasingly robust as new studies build on earlier ones (see e.g., Jantunen 2017; cf. Puupponen et al. 2022). Together, these corpus studies build a picture of FinSL as semiotically diverse, highly dependent on context, and with patterns of use that are only partly explained by the First Wave sociolinguistic variables sampled in the original corpus design and metadata collection (cf. Ferrara et al. 2023). This includes information about individual signers' age of signed language acquisition, whether their parents are deaf or hearing, where they have lived in the past ten years, and so on. There is a need to

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2 The majority (90 %) of deaf children are born to hearing parents (Mitchell and Karchmer 2004). The term native signer is often used to refer to so-called heritage signers, i.e., signers whose parents are also signers, usually deaf signers.

3 The abbreviation M2L2 has been recently used to refer to individuals who are learning a new modality (M2) while they are learning a new language (L2), in contrast to, e.g., signers of a particular sign language who are learning a new sign language (M1L2) (for an overview, see e.g., Schönström 2021). In the current study, we use the abbreviation M2L2 to refer to people in the participants' networks who are hearing Finnish speakers, who have learned FinSL as a second language (L2) during adulthood and who therefore have started to utilise their bodies and modes of embodied communication in a new way during this learning process (M2).

recalibrate our corpus methods and theories of language in light of these findings, and to orient our research lens to the more socially indexical practices of FinSL. In other words, orient towards what it means to be *viittomakielinen* in Finland: a sign language person (see Salonen 2021).

In terms of the Corpus FinSL, this means considering the various deaf spaces and networks in which the documented signers have lived and worked. It is not enough to know that signers have used FinSL since birth or early childhood: a more complex picture of language structure and variation can only be developed with detailed insights regarding family, geographical, educational, and employment mobilities through time (see e.g., Breivik et al. 2002; Friedner and Kusters 2015; Haualand 2007). This includes a better understanding of how different signers make use of different modalities and sense-making strategies beyond sign, including writing, speech, or speech-reading, and in the context of broader socio-historical contexts and the political influences pushing and pulling at each of these practices in different ways (see Braithwaite 2018; Hill 2017; Snoddon 2022). In turn, we can uncover better understanding of signed language ideologies in practice, i.e., the on-the-ground practices and attitudes driving different aspects of signed language use, including CA, and signers' perceptions of their signed language use (see Kusters et al. 2020). If we are to progress in our understanding of these factors, it is necessary for signed language corpus researchers to look "beyond languages, beyond corpora" (see Kusters et al. 2017a), and into related fields such as linguistic ethnography.

Signed language linguistic ethnography involves designing and applying new methodologies for investigating and understanding language and communication in specific contexts (Kusters and Hou 2020). Central to this is the recognition that "meaning takes shape within specific social relations, interactional histories and institutional regimes, produced and construed by agents with expectations and repertoires that have to be grasped ethnographically" (Rampton 2007: 585). It is a way of supporting researchers to link "the micro to the macro, the small to the large, the varied to the routine, the individual to the social, the creative to the constraining, and the historical to the present and to the future" (Copland and Creese 2015: 26). Combined with the quantitative power and methodological transparency of corpus methods, the development and application of linguistic ethnography methods to enrich an existing signed language corpus is potentially powerful for improving our understanding of the corpus data, and our ability to ask new and different questions. We can potentially continue to "tie down" empirical descriptions of FinSL while "opening up" more to signers' lived experiences and how these may have shaped their language use (see Rampton 2007).

In this paper, we outline a novel interview method that was developed to enrich the original Corpus FinSL with additional ethnographic information eight years after it was first documented and archived with standard IMDI corpus metadata (Salonen

et al. 2020). We then test the potential benefits of this enrichment by applying the new information to an analysis of FinSL signers' use of CA – a depictive meaning-making strategy in which signers use different parts of their body to enact discourse referents. In the next section we give a short review on CA in FinSL on the basis of existing research literature.

2.3 Constructed action (CA) in FinSL

Constructed action is a form of depictive meaning-making in which a signer enacts the actions, thoughts, feelings and utterances of discourse referents (e.g., Cormier et al. 2015; Hodge and Ferrara 2014; Liddell and Metzger 1998; Metzger 1995; Puupponen et al. 2022; Winston 1992). CA is a well-known and extensively studied phenomenon in sign language discourse, and it has been referred to with different terminology in sign language linguistics literature, depending on theoretical emphasis (e.g., role shift, reference shift, point of view predicate, personal transfer (*transfert personnel*), surrogate blending; for an overview see, e.g., Cormier et al. 2013; Lillo-Martin 2012; Puupponen et al. 2022; Vandenitte 2022a). This type of enactment has been a topic of investigation also in relation to the embodied communication of speakers (referred to also with terms such as *demonstration*, *body quotation*, *(mimetic) (re-) enactment*, *character viewpoint gesture*, and *depiction* (e.g., Clark and Gerrig 1990; Enfield 2009; Ferrara and Hodge 2018; Lilja and Piirainen-Marsh 2019; McNeill 1992; Streeck 2008; Vandenitte 2022a). In the current study, we define CA as a type of enactment in which a signer or speaker depicts the actions and states (including thoughts and utterances) of discourse referents by using different parts of their body (e.g., head, face) to represent different features of the referent (e.g., their head or face; see also Puupponen et al. [2022]). An example of CA is given in Figure 1.

CA is connected to the structure of FinSL. It has been associated with the omission of lexical core arguments of clauses and syntactic organisation with flat (coordination, chaining) rather than hierarchical clausal linkages (Jantunen 2017); expressing and defocusing of semantic agents (Ala-Sippola 2012; Nordlund 2019); and organisation of non-manual signals (Puupponen 2018, 2019). Constructed action has also been found to combine especially with FinSL signs that depict a person's hand or whole entities, rather than other types of depicting signs (e.g., signs that draw sizes and shapes [Hoffrén 2019]). Previous studies have also shown that stronger use of CA results in more activity of the signer's whole body (Jantunen 2017), and that especially the torso and the head of the signer move on a larger horizontal area (Jantunen et al. 2020).
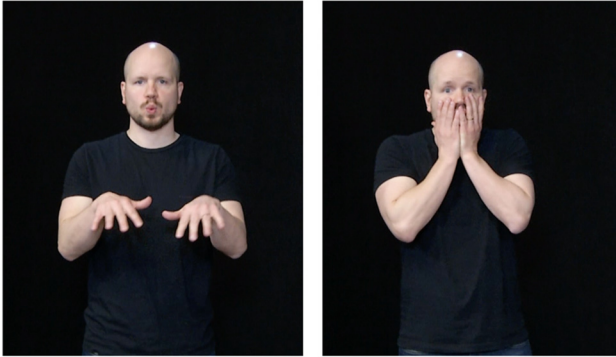
Figure 1: Examples of conveying the meaning 'being surprised' in FinSL, first with a lexical sign and second with CA during which hands, facial expression, and body movements depict those of the referent's.

In Auslan, the use of CA has been found to vary among different people and across different discourse contexts (e.g., Ferrara and Johnston 2014; Hodge and Ferrara 2014). The same applies for CA in FinSL (see Jantunen 2017; Puupponen et al. 2022). A recent study on the use of CA in FinSL showed that the strategy was used significantly more in narratives than in conversations (Puupponen et al. 2022). Furthermore, younger signers were found to use less CA than older signers in narratives (Puupponen et al. 2022). However, as the data consisted of materials from only 12 FinSL signers and showed considerable variation across individuals, these observations were preliminary.

In general, age is not a clear-cut factor when it comes to SL sociolinguistics and variation, as has been pointed out in the sign language linguistics literature (e.g., Lucas et al. 2001; Schembri and Lucas 2015). Characteristics in the communicative ecologies of signers, education, as well as their personal preferences, traits, and idiosyncrasies may be connected to the linguistic strategies that they use in a given moment. This will presumably apply also to the use of CA (see Puupponen et al. 2022). Also, the requirements of the situational language use, conversation topic, and efficient information packaging may play a role in how CA is distributed across communicative situations. Discourse context (e.g., discourse type/genre, social distance between interlocutors as well as other interpersonal characteristics, communicative move/aim) can all have an impact on which meaning-making strategies a signer sees cognitively accessible or appropriate in a given situation.

In addition, contents that include a lot of first person perspective of a discourse character may encourage perspective taking. For example, CA has been found to be used in reference-tracking (especially when maintaining and reintroducing human/animal referents) in signed retellings of the picture book *Frog, where are you* (Mayer

1969). This is a picture book that invites the narrator to depict the contents from the perspective of the main character, a boy (Ferrara et al. 2023; Hodge et al. 2019). Constructed action also may be a practice of stance taking (epistemic and evaluative, e.g., Niemelä [2010]) or of expressing (language) attitudes (see Vandenitte 2022b). Constructed action may also emerge when a signer does not understand a referent or concept, so that CA is used to elaborate on something that needs unpacking (cf. Johnston's [1996] "spiral manner" of signed language discourse unfolding).

What becomes clear from the discussion above is that the situation appears to be quite complex, and understanding the variation in the use of CA will require looking beyond seemingly simple macro-sociodemographic facts such as age and gender (see Eckert 2012). This forms the motivation for a study on the use of CA, described in the following sections, that reaches towards Second and Third Wave sociolinguistics to a greater extent (see Eckert 2012; Kusters and Lucas 2022; Schembri and Lucas 2015) and that brings together corpus linguistics and features of linguistic ethnography (see Hodge and Goico 2022).

3 An ethnographically enriched (re)analysis of constructed action in FinSL

We set out to conduct a study that utilises both Corpus FinSL data and survey data collected in interviews for the benefit of linguistic analysis on constructed action. In the study, our aim is to bring together the information on the life trajectories, mobilities, and networks of the 22 interview participants and the analysis of the use of CA by these signers in Corpus FinSL. We seek to find out whether any characteristics in the signers' communicative ecologies and personal histories may interact with how CA is used in FinSL conversations and narratives. The study is data-driven and we do not have predetermined hypotheses about what aspects of the signers' language ecologies may interact with their use of CA. For this reason, we use exploratory statistical methods to investigate whether any interactions could be found between the two types of data. This was followed by confirmatory analysis, in which we expect to find that the interactions discovered by the exploratory analysis would be found statistically significant. Finally, we examined the interview data more closely in order to deepen the discussion of the findings of the quantitative analysis.

In this section, we will describe the aforementioned process. First, we give a short description of the Corpus FinSL data and how it was annotated for CA, and of the collection and processing of the interview materials (Sections 3.1–3.3). Secondly, we'll describe how we have brought together these two materials and analysed the possible interactions between signers' socio-individual characteristics and their use of CA (Section 3.4).

3.1 Analysis of Corpus FinSL materials

The Corpus FinSL data used in the current study comprises signed conversations and narrations of 22 deaf FinSL signers (11 female, 11 male) between the ages of 18–84 (age 45.86 ± 19.19) and from different parts of Finland (see Salonen et al. 2020). Nine of the 22 signers were 18–38, seven 39–60, and six 61–84 years of age. Participants to Corpus FinSL were recruited regionally, with the help of locals, by seeking signers of different ages and backgrounds that use FinSL as their first language. Pairs were formed so that participants could choose their own partner, usually a friend or acquaintance. In the data collection situation, the signers performed different linguistic tasks in a dyad setting. In the current study we used data of two tasks: (1) a conversation task in which the signers converse about work, hobbies, and important things in their everyday life and (2) a storytelling task in which the signers retell the story of the picture book *Frog, where are you* (Mayer 1969; *n* = 13) or *The Snowman* (Briggs 1978; *n* = 9) to the interlocutor. Of the whole FinSL corpus materials, conversation and narrations of the 22 signers were selected on the basis of accessibility (i.e., which materials had been annotated for signs and utterance-level translations), age distribution (i.e., including signers that were under 35, middle-aged, as well as elderly), and family background (i.e., having a minimum of five participants with a heritage signer background to better enable possible statistical comparison).

The corpus materials included annotations for signs and a sentence-level translation according to the Corpus FinSL annotation conventions (Salonen et al. 2020). During the course of the study, the data were annotated in ELAN for tokens of CA according to the framework of Cormier et al. (2015; see also Jantunen et al. 2020; Puupponen et al. 2022). The annotation method includes identifying the tokens of CA, tagging the active articulators (face, gaze, head, torso, hands) in each CA token in separate tiers, and defining a primary and potentially also a secondary role for the signer according to how prominently they were representing a character in the discourse. A detailed description of the annotation method is provided in Jantunen et al. (2020), Puupponen et al. (2022), and in our OSF repository.

After the data was tagged for CA, the duration information of the CA annotations was exported from ELAN by using the *Structured search multiple eaf > Single Layer Search > Save hit statistics* functions. The resulting data matrix included the following information: (1) the duration of CA tokens in each participant's story/conversation, (2) the duration of all signing of each participant's story/conversation, and (3) the relative duration of CA in each participant's story/conversation (duration of CA of the duration of all signing). From these, the relative duration of CA (3) was used as a basis for the analysis when bringing together the CA results and the interview data.

3.2 Corpus FinSL metadata survey and interviews

The Corpus FinSL metadata survey was built around documenting the participants' rich languaging experiences in relation to six domains: (1) family and social networks, such as whether their caregivers, siblings, and friends signed and/or used other signed, spoken, or written languages; (2) geographical mobilities, such as where each signer lived prior to the original corpus documentation; (3) educational mobilities, such as what kind of school they went to, what kind of educational path they went through as adults, if any, and what kinds of environments these institutions were when it came to using FinSL; (4) employment mobilities, such as whether they were the only deaf person in the workplace and/or worked with other people who signed; (5) language mobilities, such as contexts of using signed, spoken, and/or written languages; and (6) language attitudes, including their views on CA and how it is used in FinSL. As the interviews were conducted approximately eight years after the collection of the Corpus FinSL materials, the survey had sections that specified information that was relevant only after the recording of the corpus videos. This was taken into consideration when analysing the survey materials in the current study. Also, the participants were given the opportunity to see excerpts of their Corpus FinSL video recordings in order to prompt reminiscence. The survey form is provided on our OSF repository.

The design of the metadata survey was shaped by a tension between the need for signers to have opportunities to respond in FinSL rather than a written survey, and the need for the Corpus FinSL project to comply with legal constraints on collecting new data. Answering the survey in FinSL was found to be of paramount importance in order to capture all possible levels of meaning and to ensure that the participants could answer the questions in as much detail and nuance as they preferred. The legal constraints relate to GDPR and the legal terms of the original Corpus FinSL documentation and data storage processes, according to which it was not possible to film signers again. Our solution was to develop an interview method which could be undertaken between a team member and each participant, either in person or online, during which natural interpersonal engagement was supported by tailoring each interview to the needs and interests of the person participating. In this way, interviewers were able to elicit, document, and explicitly negotiate the creation of qualitative sociocultural information pertinent to understanding each signers' languaging trajectories and social networks over their lifetime, and on their own terms.

Prior to conducting each interview, the interviewers reviewed the existing Corpus FinSL data for the participant and pre-filled any previously disclosed information that might be useful for prompting the interviewee to remember aspects of

their lives, and avoid eliciting information that had already been offered earlier and documented. A topic index was also created for each signer, providing an accessible record of the topics that signers talk about in their own corpus deposits. This can later be used for browsing the corpus, improving corpus navigation for both researchers and community members. The interviewers also identified short and useful clips of each signer that could be used as a starting point to talk about their ideas and attitudes about specific aspects of signed language use. In particular, examples of the interviewee making use of CA, since this is an aspect of language use we are all interested in. This was done to ensure that interviewers could clearly and easily define what information was sought, while promoting a sense of wellbeing and good memories for the interviewee.

3.3 Quantitative processing of the interview data

After the qualitative readthrough of the filled-in interview forms, the topics on which we would concentrate in the quantitative analysis were chosen. Only two topics in the interview, employment mobility and geographical mobility, were not taken into consideration. This was due to the fact that, firstly, the participants were of different ages, and many of the younger adults had not yet entered into working life. Secondly, the number of the participants was small for studying regional variation, and the participants' personal histories with regard to geographical mobility were varying (e.g., only 8 of the 22 signers lived in the same region where they had been born). The topics included in the quantitative analysis are listed in Table 1. Information regarding two of them, age and gender, were asked prior to the interviews, in the metadata form included in the original corpus data collection.

Specific text values were assigned to each participant according to their answers to the survey questions so that the survey questions formed the following selection of variables: signer profiles of childhood family members; signer profiles of family members in adulthood; (sign) language environments in formal education (kindergarten, lower school, upper school, high school/trade school[4]), age of exposure to SL, SL use in childhood family, SL use outside family/kindergarten/school/dormitory in childhood, SL use during free time as an adult, use of other SLs and International Sign, teaching of SL (whether has been taught, whether has taught), activity in deaf clubs/associations/networks. The description and

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4 Possible higher education was also documented in the interviews but left out of the analysis as it was relevant in the case of only a few participants.

Table 1: The topics used in the quantitative analysis of constructed action in FinSL.

Factor	Description
Age	Participants' age categorised in two different ways: into two groups (Younger and Older; i.e., 18–39 and 44–84) and into three groups (Junior, Middle, and Senior; i.e., 18–38, 39–60, and 61–84)
Gender	Female, male
Family network	The signer/non-signer profiles of the members of the childhood and adulthood families
Educational mobility	The type of formal education (basic education and trade/high school) and the SL environment and teaching of SL during it
Language mobility, SL use, and social networks	Age of exposure to SL, use of SLs in childhood, youth, and adulthood in different social contexts outside formal education or family networks

definitions of each variable and the text values assigned to them are available on our OSF repository.

3.4 Statistical analysis of corpus and interview data

After we had annotated and analysed the share of CA in the Corpus FinSL data and had established the factors and text values for the socio-individual characteristics of the participants from the interview data, we moved on to investigate whether any interaction could be found between the use of CA and the participants' socio-individual characteristics. First, we did exploratory analysis on the data with *Conditional Inference Trees* (CITs) using the *party* package (Hothorn et al. 2006) in R programming environment version 4.2.3 (R Core Team 2023). CIT is a method for identifying variables of interest in a dataset without *a priori* assumptions resulting in an algorithmically generated decision tree (see Figure 3a) which determines which variables to categorise into groups and at what value variables should be split. We chose this method since we collected a large number of participant characteristics, for many of which we did not have clear predictions of their effect on the use of CA. In our analysis we iteratively tested their interactions to develop hypotheses on how the characteristics might influence the occurrence of CA in our corpus data.

In order to establish whether the interactions found with the exploratory CIT method may reflect patterns in the general population, *Generalised linear models* (GLMs) were used for confirmatory analysis. The distribution of the data was strongly right-skewed with a high proportion of observations of our dependent

variable clustering around 0. We performed a Box-Cox transformation (Box and Cox 1964) with a relatively high lambda to preserve as much of the structure of the data as possible while still satisfying normality assumptions. This means we risk low predictive power of the models while still being confident that we are accurately modelling patterns for the sampled participants (i.e., we are not particularly confident that these participants are representative of the general population). All results are visualised using raincloud plots (Allen et al. 2019) to allow the reader to judge the density and distribution of all untransformed data in as transparent a manner as possible. Full documentation of the script used to transform the data and generate these models/plots is available on our OSF repository.

3.5 Qualitative analysis of the interview data

After the quantitative analysis, we went back to the interview data and looked at the following aspects in the signers' personal histories on a more granular level:
1. Educational modality
2. Family networks
3. Other social networks

In the qualitative inspection of the materials we used content analysis and focused on the participant's experiences on the languaging practices in their childhood family and school institutions, whether they had received formal teaching of FinSL during their education, what kinds of environments their schools were regarding SL use, what kinds of social networks they were involved in during their free time, and what kind of languaging practices they had in these networks. This was done in order to review and discuss the quantitative findings in the light of the complexity and diversity of the participants' communicative ecologies.

4 Results of the statistical analysis

4.1 Genre

The quantitative analysis of the corpus data shows that discourse type has a significant effect on the use of constructed action. The share of CA was found to be significantly smaller ($p < 0.001$) in the conversations than narration (Figure 2). Five
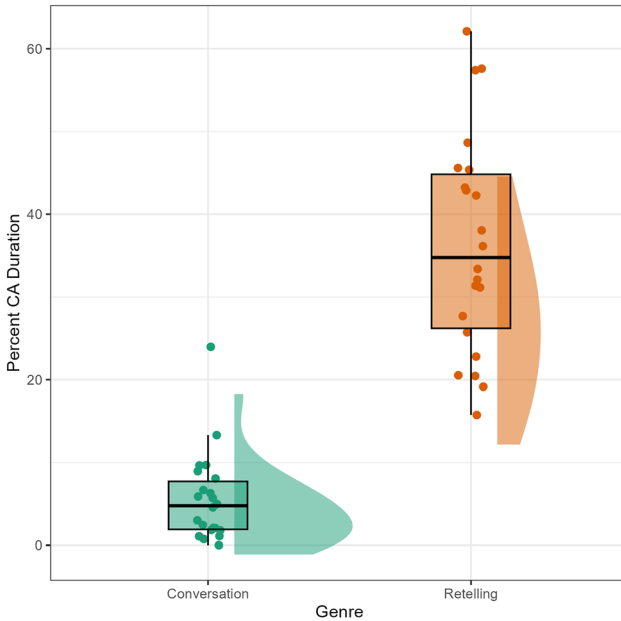
Figure 2: The share of CA in the conversations and narratives of FinSL signers. Each dot in the raincloud plot represents the share of CA in individual participants' narratives and conversations. Boxplots show the mean and interquartile regions with whiskers showing outliers. Density violin plots are additionally overlaid to show the distribution of values within these descriptors.

per cent (M = 5.63; Mdn = 4.77; SD = 5.42) of an average conversation included CA whereas a signers' communication in an average narrative retelling included a 36 % share of CA (M = 36.34; Mdn = 34.79; SD = 13.23).

4.2 Age of signers

The exploratory analysis (CIT) revealed two factors in the signers' backgrounds and personal histories which may be connected to the variation in the use of CA in the corpus materials. Firstly, the share of CA in the narratives was found to interact with signers' age. Older adults (44 84; M = 44.07; SD = 12.72; n = 11) used more CA in storytelling than younger adults (18–39; M = 28.61; SD = 8.64; n = 11; p = 0.012; see Figure 3a).

The interaction CA × signers' age was tested with the GLM, which confirmed the result of the CIT analysis. When analysing the data regardless of genre, older signers
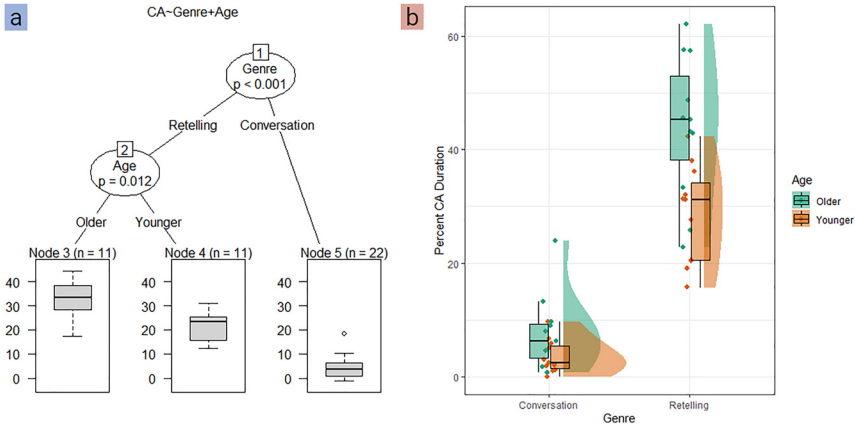
Figure 3: The interaction between discourse type (i.e., genre), share of CA and age according to the CIT (a). A raincloud plot visualising the results (b).

Table 2: The confirmatory model results for the interaction between discourse type and age.

GLM	EST	S.E.	T VAL.	p	DF
(Intercept)	15.44	0.92	16.75	0.00	40
Conversation	11.47		12.44	0.00	
Age = older	3.56		3.86	0.00	
Retelling:age = older	1.82		1.98	0.05	

used significantly more CA than younger (ED = 3.56; SE = 0.92; $t_{(40)}$ = 3.86; $p < 0.01$; see Table 2) and we also found a strong tendency toward a significant interaction between age and use of CA in the narrative retelling (ED = 1.82; SE = 0.92; $t_{(40)}$ = 1.98; $p = 0.05$) but not in conversations (see Figure 3b). Model residuals were light-tailed, but normal.

4.3 Formal learning of FinSL

The second finding in the exploratory analysis was an interaction between formal learning of sign language and the share of CA in signers' narratives. Signers to whom FinSL had been taught in formal contexts such as in basic education or in adult education courses produced less CA in narratives than signers who had not received any formal learning of FinSL ($p = 0.042$; formal SL learning $M = 42.25$; SD = 12.30; $n = 10$; no formal SL learning $M = 29.25$; SD = 11.02; $n = 12$; see Figure 4a).
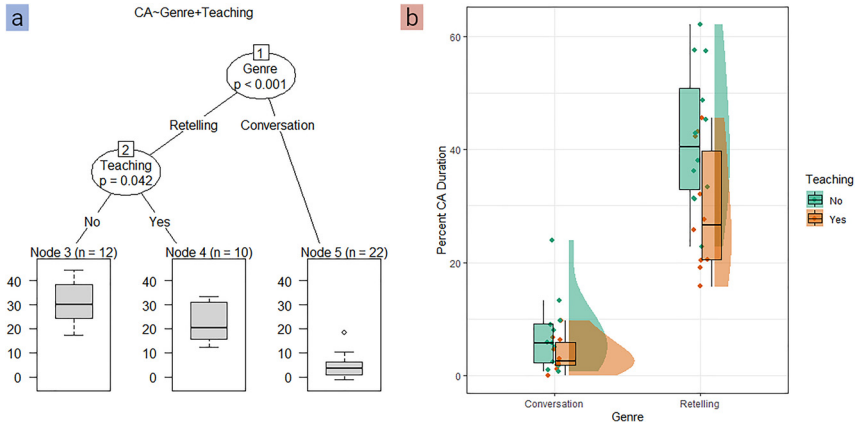
Figure 4: The interaction between the discourse type (i.e., genre), share of CA and SL teaching according to the CIT (a). A raincloud plot visualising the results (b).

Table 3: The confirmatory model results for the interaction between discourse type and formal SL learning experiences.

GLM	EST	S.E.	T VAL.	p	DF
(Intercept)	15.17	0.99	15.36	0	40
Retelling	11.33		11.47	0.00	
Formal learning = yes	−2.99		−3.03	0.00	
Retelling:formal learning = yes	−1.57		−1.59	0.12	

The GLM failed to confirm this (Table 3). Although signers who had received formal SL teaching produced significantly less CA than signers who had not (Figure 4b) (ED = −2.99; SE = 0.99; $t_{(40)}$ = −3.03; $p < 0.01$), no significant difference was found in interaction with retelling in this aspect (ED = −1.57; SE = 0.99; $t_{(40)}$ = −1.59; $p = 0.12$; Figure 4b). Again, model residuals were light-tailed, but normal.

4.4 Family signer profiles and the use of constructed action

4.4.1 Parental signer profile

In addition to the results described above, we want to draw attention to what we *did not find* in the exploratory analysis. Interestingly, the majority of the interview variables did not show an interaction with use of CA. For example, the use of CA did
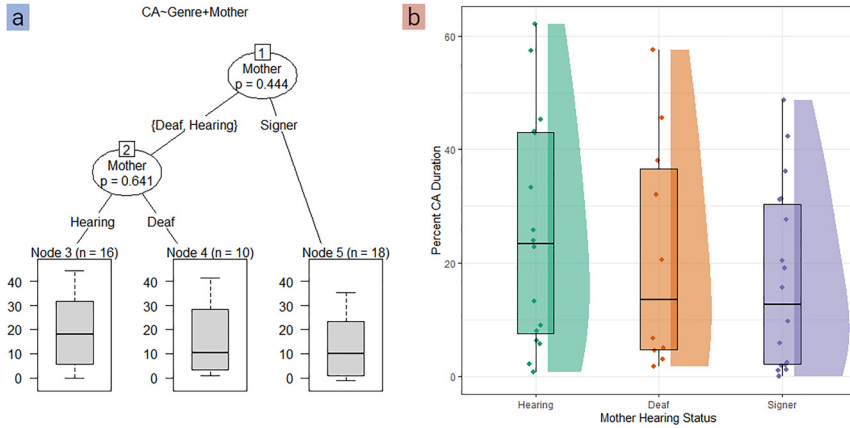
Figure 5: The (lack of) interaction between the discourse type (i.e., genre), share of CA and mother hearing status according to the CIT (a). A raincloud plot visualising the results (b).

Table 4: The results for the interaction between the use of CA and parental signer profile.

GLM	EST	S.E.	*T* VAL.	*p*	DF
(Intercept)	18.50	3.72	5.40	0.00	41
Mother = deaf	−2.74	5.52	−0.50	0.62	
Mother = signer	−5.96	4.71	−1.27	0.21	

not interact with whether the participants' parents were deaf signers, hearing signers, or hearing non-signers, despite the emphasis in the literature on parental hearing status as a predictor of individual language behaviour (e.g., Curtin et al. 2021; see Figure 5). Due to this, we decided to run the GLM model analysis on the interaction between parental signer profiles and the participants' use of CA.

The GLM confirmed the results of the exploratory analysis: a statistically significant interaction was not found between parental signer profile and the use of CA by the participants (Table 4). That is, whether participants' parents were deaf signers, hearing signers, or hearing non-signers did not seem to be associated with their use of CA.

4.4.2 Core family signer profile

As parents may form only one part of a child's family network and language environment at home, we decided to expand the analysis to participants whose older

Table 5: The results for the interaction between the use of CA and core family signer profile.

GLM	EST	S.E.	*T* VAL.	*p*	DF
(Intercept)	15.53	1.16	13.39	0.00	40
Conversations	11.37		9.81	0.00	
Core family = deaf	0.30		0.26	0.80	
Retelling:core family = deaf	−0.36		−0.31	0.76	

siblings were deaf signers. The reason for including specifically older siblings in the analysis is that in this case the participant was born into a family in which sign language may have already been in use, and deafness was no longer an unfamiliar concept, regardless of whether the parents were deaf signers (which is rarely the case). Interaction with an older sibling may have a significant role in an individual's sign language acquisition, especially if they live together (which may not be the case if the sibling lives, e.g., in a residential school or in another home).

In the analysis, we assigned a new *core family signer profile* variable, which was given the value *hearing* in the case that a participant's parents and/or older siblings were hearing signers or non-signers, and *deaf* in the case that participant's parents and/or older siblings included at least one deaf signer. The results of this second analysis confirmed the previous results: the signer profiles of family members were not found to be associated with the participants' use of CA (*p* = 0.76) (Table 5).

5 Going back to the communicative ecologies: qualitative inspection of the interview data

5.1 Age and educational profiles regarding FinSL instruction

As described in Section 2, formal teaching of FinSL was not reintroduced into basic education before 1991. This raises the question whether its presence would only involve those participants in the study who are of a younger generation. This would make it unclear whether the interaction between the use of CA and formal learning of FinSL just reiterates the result regarding older signers' more frequent use of CA than younger signers. In order to discuss the issue in depth, we need to go back to the interview data to view the educational mobilities of the participants on a more granular level and according to generational differences.

When viewing the interview materials, different profiles emerge from the educational mobilities of the individuals when it comes to formal learning of FinSL.

Five of the participants had been taught FinSL **across basic education**. FinSL was taught to them for 1 h per week from lower school to upper school (age 7–15 in the Finnish system[5]). These participants were between the ages of 18 and 31 at the time of the corpus data collection. Three of the signers were taught FinSL **late in basic education or during general upper secondary education**. They did not receive teaching of FinSL during the first years of school but later, from sixth or seventh grade of secondary school (age 11–13 in the Finnish system) and/or during high school (age 15–18 in the Finnish system). To them as well, FinSL was taught for 1 h per week. At the time of the corpus data collection, they were between the ages of 33 and 39. Three of the participants were taught FinSL **during their adulthood**. This teaching was provided by the Folk High School for the Deaf and the Finnish Association of the Deaf as a part of FinSL teacher training, FinSL instruction for deaf adults, or Deaf Awareness training.[6] At the time of the recording these signers were between the ages of 55 and 70.

Half (i.e., 11) of the 22 participants had **not received any teaching of FinSL** during their basic education and general upper secondary education or later in life. These participants were between the ages of 25 and 84 years at the time of the recording. Four of them were 25–38 years, three of them 44–58 years, and four of them 65–84 years of age. All of the four participants between the ages of 25 and 38 years went to a deaf school in their basic education: two of them started school after 1991, one of them was in lower school (i.e., primary education, six years between the ages of 7 and 13) at that time, and one of them was just finishing upper school (lower secondary school, three years between the ages of 13 and 16) at that time. The signers between the ages of 44 and 58 went either to a deaf school with instruction in FinSL, to mainstream education without interpreters, to an oralist deaf school, or a combination of these. The 65–84-year-old signers all went to an oralist deaf school. From all 11 participants, four had been involved in some level of SL instruction during their adulthood, such as a single course in another SL.

These profiles demonstrate how diverse the linguistic backgrounds of the signers are when it comes to sign language in education. Although there has been a clear return in deaf education towards including FinSL as a language of instruction and eventually as a subject of L1 teaching, signers of younger generations have not automatically had access to teaching of FinSL. In addition, the educational mobilities

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5 Here and in the following references to the Finnish system, please see Finnish National Agency of Education (2023).

6 Deaf Awareness training was organised by the FAD during the 1980s (Finnish Museum of the Deaf 2023). The training included contents on deafness, deaf history and oralism, deaf culture, the development of deaf children, language learning, family life, and the legal status of deaf citizens and sign language (Finnish Museum of the Deaf 2023).

of the participants varied also in other aspects. While some participants had a systematic path across basic education in the same institution, several participants had moved between educational environments, for example, between a deaf dormitory school and a municipal deaf unit, class, or school. Different schools were reported to have different practices when it came to sign language teaching and instruction, in some cases including situations in which the signing of educators was evaluated as weak or, in the worst case, even incomprehensible. Also, even though a participant went to a dormitory school for the deaf, they did not necessarily stay in the dormitory overnight throughout their basic education, either if the school was in the proximity of a participant's home or if they lived in private (non-signing) households close to the school.

5.2 Family and other social networks

In order to get a more holistic view of the communicative ecologies of the signers, we needed to view the interview materials also regarding the participants' family networks and other social networks outside educational settings. When viewing the interview materials, different profiles emerge from the descriptions of these networks by the participants. The signers who were **between the ages of 50 and 84** at the time of the corpus data collection reported to have acquired FinSL either when starting school or at home from deaf parents, older siblings, or relatives. They reported using gestures, home sign and speech with their non-signing hearing family members prior to school age. In some cases, participants specifically mentioned that speaking – as a resource in communication with non-signers – started during the course of their (oralist) deaf education. Participants of this group described socialising a lot especially in deaf signing networks such as different deaf clubs and associations, sports and arts networks, religious networks, cultural events, deaf camps, friend networks, and so on. Of participants from non-signing family backgrounds, some described that these networks were built with peers in school or after school years, but some told that they socialised with deaf children/adults outside school in dormitories or deaf clubs already during the later years of their schooling. Participants from signing family backgrounds described that they grew up having these networks as a part of their everyday life and upbringing. Most of these participants described not socialising a lot in non-signing networks outside of their family networks (close family and/or relatives) and that they use interpreters mainly in settings including service.

Signers who were **between the ages of 18 and 50** reported that they either started acquiring FinSL together with their hearing non-signing family members

through family sign language instruction, or acquired FinSL from their deaf parents or older siblings. In the former case, the teaching was done mostly by M2L2 signers, such as social welfare workers or interpreters, but in a few cases the teaching was done by deaf signers or hearing signers from their social networks. All these participants described that their parent(s) used sign language at home, some more and some less. Half of them described that their mother signed more whereas their father "used some basic signs" or "signed a little" together with fingerspelling, writing, and/or gesturing. Regarding other family members, the majority of the participants who had hearing siblings reported that they "sign" or "sign and use fingerspelling", whereas in some cases the siblings were reported to "sign a little", to use "home sign" or "visual production", or to not sign at all. A little less than half reported having at least one or several grandparents who sign, use a little sign language, or use signs and/or gesturing, whereas the rest described their grandparents as non-signers and/or that they used gesturing, writing, or speech with them to communicate. In the latter case, the signers with a heritage signing background described learning to sign at home with their family members, when meeting deaf relatives and family friends, at deaf clubs, and at kindergarten and school.

The majority of the participants in the 18–50-year-old group described being active in both deaf networks and non-signing networks, and using interpreters together with gesturing and visual communication in their hobbies. Others reported using home sign and gesture with non-signing peers in hobbies or having a family member who interpreted for them in these contexts. Some participants described being more active in deaf networks than non-signing networks, for example in associations and deaf clubs, whereas some reported keeping contact with their deaf networks mainly via video technology, through non-weekly visits to deaf clubs, and by taking part in deaf events. Some reported using several sign languages in their lives in addition to FinSL and International Sign.

5.3 Summary

When we looked more closely at the age, educational mobility, family network, and other social networks of the participants, two generational profiles emerged:

1. Older participants experienced oralist deaf education, learned FinSL informally through peers, had no access to formal teaching of FinSL, used gestures/home sign before school, and socialised mostly in deaf networks.
2. Younger participants, educated after the 1970s, encountered FinSL earlier, often from family or sign language teachers. They had varying formal instruction, attended different institutions, and took part in both deaf and non-signing networks.

6 Discussion

6.1 Zooming out: signers' age, discourse genre, educational backgrounds, and family networks in relation to their use of constructed action

In this study we set out to investigate whether any characteristics in the signers' communicative ecologies and personal histories may interact with how constructed action is used in FinSL conversations and narrative retellings. In a previous study, Puupponen et al. (2022) found that age and discourse genre seem to be significant factors when it comes to the use of CA: FinSL signers of older generations used more CA than younger signers in narratives. The findings of the current study – using a larger sample size and more robust statistical analysis – support these earlier observations. According to the quantitative analysis of the corpus and interview materials, signers of an older generation used more CA than signers of a younger generation. Furthermore, we found a strong tendency (p = 0.05) that age interacted with the use of CA particularly in narrative retellings but not in conversations. It seems that storytelling is a context which especially underlines the difference between younger and older generation signers' use of CA. This confirms that there are other factors at play than just age when it comes to the variation in the use of CA by FinSL signers, which is in line with the fact that, in general, age is not treated as a clear-cut factor when it comes to sociolinguistic analysis of deaf community SLs (e.g., Schembri and Lucas 2015). Different contexts in which we use language clearly have an effect on whether a meaning-making strategy such as CA is chosen to be used.

According to another result of the current study, use of CA seems to be connected to other features in signers' communicative ecologies, such as their educational mobility. The analysis showed that signers' education history has an influence on their use of CA, particularly whether they had been taught FinSL during their basic education. Signers who had been formally taught FinSL produced less CA than those who did not receive formal FinSL teaching. This result of the current study differed from the age-related finding in that it did not interact with the narrative discourse genre. That is, the access to teaching of FinSL was connected to the signers' use of CA in general, not only in the context of narrative retellings.

The fact that the effect of formal FinSL learning on the use of CA was found, and that it was not genre-specific, indicates that, again, there are other factors at play than age and discourse-oriented issues when it comes to the variation in the use of CA. Societal changes, changes in language legislation, and changes in education systems, paradigms, and educational discourses and ideologies have an impact on

how signers of different generations express meaning, tell stories, and interact (see e.g., Puupponen et al. 2022; Schembri and Lucas 2015).

Finally, when viewing the results of the quantitative analysis, we were interested not only in the connections that we found between the interview materials and corpus data, but also in what we *did not* find. It was noteworthy that, in general, few interactions were found between the CA use in the corpus data and the different aspects of the participants' backgrounds. For example, in the exploratory analysis, the participants' family networks or their use of other sign languages or International Sign in their everyday life did not interact with how much they used CA. Due to this finding, we decided to test whether any interaction could be found in the confirmatory analysis between the participants' family networks and how much they used CA. We found that the signer profiles of the participants' parents and older siblings – whether they were deaf signers, hearing M2L2 signers, or hearing non-signers – did not interact with how much the participants used CA in storytelling and conversation. This brings into question whether concepts such as a *heritage signer*, *early childhood signer*, or *signer learning a sign language later in life* are actually relevant when talking about the share of enactment in signing.

Another interesting question is whether any other connections could be found between the different characteristics in the signers' backgrounds and communicative ecologies and their use of CA if we looked at quality (what *kind* of CA is used) in addition to quantity (how *much* CA is used). In the current study we looked at the use of CA in the corpus data holistically without differentiating between, for example, more overt and non-overt uses of CA. In order to get a more comprehensive understanding of how the use of CA varies across signers of different ages and with diverse life trajectories, we need to include in the analysis these different types of CA – a task that we intend to take up in our future work.

6.2 Zooming in: constructed action and the profiles emerging from the diverse educational mobilities, family networks, and other social networks of FinSL signers of different ages

In order to understand in depth the findings of the quantitative analysis, we needed to zoom back in to the characteristics, nuances, and diversity in the participants' communicative ecologies. The qualitative inspection of the interview data (see Section 4.4) demonstrated how diverse the linguistic backgrounds of the participants are when it comes to educational mobility, family networks, and other social networks. Despite this diversity, we found different generational profiles when it comes to participants' educational paths and family and other social networks.

Firstly, participants that were of an older generation had gone through the oralist deaf education in dormitory schools, with most of them learning FinSL through horizontal peer transmission (i.e., outside the classroom from their peers [see e.g., Mudd et al. 2020]) with no access to formal teaching to FinSL. These participants had late access to FinSL and many of them reported using gesturing/home sign in their family prior to school age. They reported socialising mostly in deaf networks. Both the horizontal peer transmission and the home sign contexts are environments in which constructed action is a highly beneficial and efficient iconic strategy for constructing and negotiating meaning. Also, during this time FinSL had low/no institutional status, there was no standardising mediums such as the current daily signed news broadcasts, nor informative materials or support infrastructure from the Association of the Deaf. There was a lot of areal variation according to which deaf school a person attended (e.g., Takkinen et al. 2015), which in practice also meant that at inter-deaf events (e.g., sport or cultural events among deaf people) people had to adapt to different signing styles. These characteristics in the signers' communicative ecologies also promote the use of highly depictive strategies of meaning-making, such as CA.

Secondly, participants who went through their basic education after the 1970s had earlier access to FinSL. All of them encountered FinSL prior to school age, most of them already at the age of 0–3 years, at home with family members (who were either hearing M2L2 signers or deaf signers) or sign language teachers (who were usually M2L2 signers). Instead of attending the same deaf school during the course of their basic education, these participants reported more mobility between different institutions and environments. They had varying access to teaching of and instruction in FinSL by mostly teachers that were M2L2 users of FinSL, but they also reported having signing peers. However, several of those participants who attended a deaf school reported a decrease in the number of signing peers in the course of their basic education. An issue that indicates the increase of integration into mainstream education – a paradigmatic shift in deaf education in Finland during the 21st century. In addition, many of these participants reported taking active part in hobbies and activities in hearing non-signing networks (with or without FinSL interpreting) in addition to deaf networks – a feature that was less present in the social networks of the participants that were of the older generation.

When looking at these characteristics in the younger generation signers' educational mobilities and social networks, there are characteristics that may encourage as well as reduce the tendency to use CA. The early sign language interaction predominantly with M2L2 signers, such as parents and teachers, may be viewed as a different kind of environment compared to home sign and gesturing with parents who are non-signers – a context that was prevalent for the older generation signers and which invites the use of highly iconic strategies such as CA. On the other

hand, socialising in hearing networks without interpreters – which was reported by some of the participants – may encourage the use of such strategies, as has been found in other settings where languages come together with communicational and/ or sensory asymmetries (i.e., international contexts with cross-signing / International Sign [e.g., Kusters 2021; Sivunen and Tapio 2022]; hearing-deaf encounters in public spaces / customer service [e.g., Kusters 2017a, 2017b]).

The generational profiles that emerged from the interview materials show a change in FinSL signers' communicative ecology. Through the slow progress of implementing the linguistic and educational rights of FinSL users in the Finnish legislation system, access to teaching of FinSL and instruction in FinSL changed during the 1980s and 1990s in the Finnish deaf education system. This has had an effect on the educational practices and communicative ecologies of the participants of our study, as is evident from the educational and social profiles of these signers. This is an example of how major large-scale societal influences interact with the small-scale communicative ecologies and practices of deaf individuals (see Hodge and Goswell 2021). What is crucial is that this change is ongoing. In the oralist deaf schools and dormitories the pupils produced deaf spaces (see Breivik et al. 2002; Friedner and Kusters 2015; Haualand 2007) inside an educational setting that did not institutionally support their existence. These spaces emerged as hubs for the horizontal peer transmission (and creation) of FinSL, deaf ontologies and epistemologies (see Humphries 2008; Kusters et al. 2017b), as well as the building of lifelong networks.

In many cases, signers of younger generations have less access to such spaces. The "third generation" of FinSL users, born after the 1990s, may have early access to different forms of signed or sign-supported communication, as well as formal FinSL teaching, but there is huge variation in access to FinSL instruction as well as deaf spaces and networks. Most hearing and deaf children acquiring a sign language attend mainstream education, where the presence of sign languages varies from co-existence of signed, written, and spoken language (e.g., co-teaching settings) to no visibility of sign language at all (see Kanto 2022; Murray et al. 2018; Rainò 2021; Swanwick 2017). Furthermore, this younger generation shows huge variation in how much access they have to deaf spaces and networks also outside educational settings. Many of these signers may be seen as so-called *deaf new signers* whose communicative ecologies are diverse, including the use of multiple spoken and signed languages, along with many other multimodal resources (cf. de Meulder 2019; Jaeger 2019). This will, without a doubt, also have an impact on how strategies such as CA are present in communication.

When looking at the diverse educational mobilities of the signers on a more granular level, we also found that the concept of *formal teaching* of FinSL is complex. The access to formal teaching of FinSL varied a lot across different generations of

signers and the experiences were very diverse when it came to the use of FinSL as a language of instruction. Furthermore, having access to formal FinSL instruction during basic education does not automatically put individuals on an equal footing. Finnish deaf education has had different trends and goals at different times when it comes to FinSL teaching, and the teaching has naturally followed the current understanding of the nature of sign language. At times, and depending on specific local practices, the goal of teaching FinSL has been to increase awareness of the language, whereas sometimes the goal has been to improve the learning of Finnish language, for example, in which case the use of lexical signs may be emphasised. In addition, the teaching can be highly dependent on the qualifications and preferences of individual teachers and educators. The contents as well as the quality of the FinSL instruction may vary significantly according to individual teachers' opportunities, practices, methods, education, and position.

When bringing this discussion back to the use of CA, a relevant question is how much have largely depictive strategies of meaning-making such as CA been included in the teaching of FinSL, as the educational mobilities and histories of deaf individuals are very diverse and the teaching practices vary a lot. In addition to the interview materials, the discussion among the authors of the current paper demonstrated different experiences when it came to the presence of CA in their education, including local practices depending on the institution and area of residence. According to Marieke Kusters (2017: 254), deaf teachers working in deaf education in Flanders Belgium reported that they "enriched their signing with more iconic structures" as "highly iconic signing helps deaf pupils understand the subject matter better, for example, through the abundant use of […] impersonations" – a strategy that was found "more challenging" for the hearing M2L2 signers in the staff than the "acquisition of a 'frozen' sign language lexicon".

These individual experiences bring up, among others, the following questions that the future studies and work on deaf education in Finland need to address: How much has the formal teaching of FinSL concentrated on conventionalised lexicon rather than highly depicting strategies of meaning-making across the history of Finnish deaf education, and what are the current trends in this aspect? Is the use of CA present mainly when the teaching involves particular genres such as SL poetry or drama?[7] What kind of language ideologies are connected to the (non)use of CA in different discourse contexts in practice? What kind of a resource do we find enactment to be for (i) improving the quality in sign language teaching, instruction and practices of (sign) language use in deaf education; (ii) the transmission of deaf

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[7] Use of enactment has been found to be more frequent in specific genres such as storytelling (e.g., Puupponen et al. 2022), and it is a frequently used resource in artistic signing (see, e.g., Quinto-Pozos and Mehta 2010; Sutton-Spence 2017).

ontologies and epistemologies in macro-level institutionalised educational settings; and (iii) the identification of intergenerational responsibilities in deaf education in the future (see Kusters 2017; Kusters et al. 2020)?

6.3 Evaluation of the methods

In the current study, we have set out to strengthen corpus analysis with linguistic ethnography in a novel way that combines exploratory and confirmatory statistical analysis with interview documentation of signers' life experiences. Reaching towards a more ethnographic approach has pointed out the diversity in the personal histories and life trajectories of FinSL signers in a way that enriches corpus analysis. The nuances of these social conditions, and their influence on deaf lives and languaging, are most carefully taken up within the deaf anthropology and linguistic ethnography literature. In this domain, "it is impossible to disentangle discussions of deaf sociality from discussions of (sign) language" (Friedner and Kusters 2020: 34; see also Kusters and Hou 2020). This is highly relevant to signed language corpus studies, where it is often assumed that the signers documented within a corpus represent an idealised "native signer" standard that serves as a benchmark for describing the signed language in question. While it is essential to describe language use of signers who have experienced uninterrupted language transmission use, it also risks obscuring aspects of deaf socialities that are relevant to understanding language variation and complexity (cf. Schembri et al. 2018). It also obscures identification of various attitudes and ideologies of language use, many of which may influence the on-the-ground languaging practices that emerge (Kusters et al. 2020).

The main limitation of the current study lies in the fact that the information collected with the reported interview method was written and not filmed due to GDPR-related issues. This is a shame, especially regarding signers' responses to questions about their language attitudes and specific signs or turns of phrase they used to describe them. The interviewers had to be very present and alert during the interactions. While concentrating on the interaction and each participants' individual needs, the interviewers also needed to take notes, which required instantaneous translation and moving between two languages (FinSL and Finnish). The participants may also have personal issues that they are going through at the moment (e.g., Covid-related issues, illnesses), and the interview itself could bring up strong emotions. Thus, conducting the interviews required a lot of cognitive effort and multitasking as well as interpersonal and emotional sensitivity. However, the response from participants was overwhelmingly positive, with many indicating they felt good to become more aware of their different languages, modes of communication, and contexts of use, and to be reminded of the Corpus FinSL and its value for

their communities. In addition, the interviewers reported that the interview situations were rewarding and the discussions interesting.

This positive response demonstrates how a reach towards ethnographic methods, such as has been done in the current study, can contribute to the ways corpus work includes community engagement (Hodge and Goico 2022). Corpus work involves not only researchers and teachers, but also sign language users who have been involved in the corpus as informants or outside it. Application of community-engaging ethnographic methods provides an opportunity to inform the participants about the use and meaning of the corpus and to demonstrate how it can be used for research purposes. This kind of reciprocal knowledge exchange can be seen as an important practice and an ethical requirement for work on minority and/or micro-community corpora in the future. In this way, we have a better chance at describing and developing the discourse about what it means to be *viittomakielinen* (a sign language person) in Finland (see Salonen 2021).

On the basis of our experiences, when designing similar interview methodologies in future studies, enough time and preparation should be given to consider how to ask each interview question uniquely of each participant, so that it meets the goals of the collection. In the current study the order of the questionnaire was varied according to the interviewee's will/situation/condition during the interview. Some participants preferred to start with a topic that was not related to their childhood family networks but, rather, to working life or language use during adulthood. According to the interviewers, the most important thing in the interview was to build mutual trust on the participants' terms. Along the course of the data collection, some points had to be skipped, as participants could not always remember all things relevant for the interview. During the course of the data collection, we also found it important to give the participant the opportunity to reflect on their own answers after the interview and, if necessary, to make clarifications afterwards.

When developing this method in the future, the interview questions should be carefully thought out in terms of signing. This comes back to issues such as how to best convey the idea of the question in a signed language; how to personalise the questions in a way that suits each participant; and what kind of different signing strategies and lexical choices are available when trying to establish common ground with the participant and to reach the aims of each interview question in a safe environment and while respecting each individual's need for privacy. Some of these decisions have to be made according to the situation and the interviewer has to be quite sensitive. Some, on the other hand, may be relevant already when designing the interview questions. For example, according to our experience, it might be worthwhile to first form the questions in sign language terms, as they would be produced in natural FinSL discourse, and then translate them into Finnish (Stone 2009). This can be relevant, for example, when making choices of whether certain questions and

topics are approached inductively rather than deductively (i.e., starting with examples before getting to the concept in the question). We also recommend that piloting and testing these linguistic solutions are given enough time. Finally, if one aims at a more ethnographic approach, conducting the interview in more than one session may be a good solution.

The query data collected through the interviews includes very specific information about the participants' lives. Most of such information cannot be included in standard metadata descriptions of SL corpora that are archived or made available online. However, generalisations and statistics of this information on a group level could be included in metadata descriptions, if found informative or necessary. The specific ways of how this could be done is left for future research to uncover. What the interview method and query of the current study bring to the table, is that this type of more detailed, ethnographic data can shed light on aspects of sign language use that cannot be accessed through the information described in the standard participant metadata of SL corpora. Combining the micro-level (unpublished) data with the macrolevel inspection of the corpora deepens our understanding of the different factors that are at play when signers use particular communicative strategies.

Regarding the corpus data, it should be noted that the data collection is a particular communicative situation which may influence the communicative choices that participants make – including the choice to use CA. For example, it has been suggested that the interlocutors' personal characteristics (e.g., experience or preference in storytelling, persona, language skills) and social distance between them may impact signers' choice to (not) use CA in a given moment (Hodge and Ferrara 2014; Puupponen et al. 2022). This may have also influenced the language choices of the participants in the current study. How much such features may affect a signer's choice to use CA is an empirical question that we hope ethnographic additions to sign language corpora might help to one day answer. In addition to personal choice, the content of what is signed (storyline, conversation topic) may also influence how (much) CA is used (Puupponen et al. 2022). Regarding conversation topics, this question is left open as it was not investigated in the current study. However, regarding the narrative retelling, the plot of the story (Snowman vs. Frog story) did not interact in a statistically significant way with how much CA was used. It should also be noted that Corpus FinSL materials have been collected in a professional TV studio at the University of Jyväskylä with multiple cameras recording the situation. Such a setting may impact a participant's mental state and therefore, for example, the willingness to use strongly enacting discourse strategies. However, as we know from previous work on CA (Cormier et al. 2015; Jantunen et al. 2020; Puupponen et al. 2022), CA need not be produced strongly, also non-overt enactment is present in conversations and narrations. Here lies another motivation for future work that investigates the distribution of different kinds of CA (from overt to non-overt) and

how their use may be connected to the different characteristics of signers' communicative ecologies.

Regarding the statistical analysis, our approach was quite data-driven and progressive. In order to get new insights from the data, we used exploratory methods, later supplemented with confirmatory analyses. So far, only a limited number of studies have taken this as their point of departure (e.g., Ferrara et al. 2023; Hodge et al. 2019). In general, as sign language corpus studies are still relatively new, there has not been extensive development of statistical methods in this area. This is a reasonable situation given the early stage of the research field, but it is important to emphasise the significance of incorporating statistics into our work. It is not only a potential avenue for future research but also a valuable consideration for all academic programmes dealing with sign languages.

7 Conclusions

In this study, we set out to investigate whether any characteristics in the signers' communicative ecologies and personal histories interact with how constructed action is used in FinSL conversations and narratives. This was done by bringing together Corpus FinSL data and interview materials on the corpus signers' backgrounds. The results show that, in addition to factors such as discourse genre and age, features in signers' educational mobility are connected to how much constructed action they use in discourse. More specifically, we found that signers who had been taught FinSL as a mother tongue during their basic education produced less constructed action than signers who had not. In addition, the results also showed that many other features in the signers' communicative ecologies – such as characteristics of their family networks or their use of other sign languages and International Sign – did not interact in a statistically significant way with their use of CA. According to our conclusions, in order to fully understand how and why the use of CA varies across signers and communicative situations, we need to study in more detail the type of CA (from overt to non-overt) used in a given moment, the functions of CA in interaction, and the more granular aspects in FinSL signers' everyday languaging and communicative ecologies.

As a response to the last of the aforementioned issues, we examined the interview materials in more detail with special attention to educational mobility, family networks, and other social networks. Through this process we were able to shed more light on the diversity in the communicative ecologies and educational experiences of deaf individuals in Finland across different generations, with a focus on the evolving role of FinSL and constructed action in these contexts. We found that, despite diversity, generational profiles emerged that demonstrated changes in FinSL signers' communicative ecology, and that these changes may be significant when investigating the use

of highly iconic strategies of meaning-making such as constructed action. Furthermore, we found that the concept of formal teaching of FinSL is complex, including varying access among different generations and individuals, varying goals and content of FinSL teaching over time, and the influence of local practices and individual teachers' qualifications and preferences. Future research and work on deaf pedagogies in Finland need to explore the extent to which CA is included in FinSL teaching and how significant this resource is considered to be for the transmission of deaf ontologies and epistemologies in macro-level institutionalised educational settings.

In the paper, we have highlighted the evolving landscape of signed language linguistics, showcasing the role of corpus methods in challenging long-standing assumptions and enhancing our understanding of deaf community sign languages. We have also discussed the limitations of corpus documentation and analysis methods, particularly in terms of capturing the essential ethnographic context necessary for a nuanced interpretation of corpus data. Through the interview method of the current study, Corpus FinSL signers shared insights into their lives, family networks, educational journeys, and experiences with signed language usage. This ethnographic enrichment not only illuminated our linguistic analysis of constructed action in FinSL, but also deepened the connection between the linguistic corpus and the lived experiences of the signing community. Our research underscores the significance of employing linguistic ethnography to "open up" the world of signed language corpus linguistics to the rich tapestry of signers' lives, while still "tying down" empirical descriptions of signed languages. The approach enhances the quality of machine-readable metadata and has potential to foster a more meaningful and engaged collaboration between deaf signing communities and signed language corpus projects. We argue that the approach represents a crucial step towards bridging the gap between empirical data and the cultural, social, and personal contexts in which signed languages thrive, ultimately advancing our understanding of these vibrant linguistic systems and the people who create them.

Data availability statement: The data that support the findings of this study are available in an OSF-repository at https://osf.io/hzndg/?view_only=346f2cd0d3274709a840e23b1a7cc6e6.

References

Ala-Sippola, Sanna. 2012. *Agentin ilmaiseminen suomalaisella viittomakielellä tuotetussa asiatekstissä [Expressing agent in an informational text in FinSL]*. Helsinki: University of Helsinki MA thesis.

Allen, Micah, Davide Poggiali, Kirstie Whitaker, Rhys Marshall Tom, Jordy van Langen & Rogier A. Kievit. 2019. Raincloud plots: A multi-platform tool for robust data visualization. *Wellcome Open Research* 4. 63.

Box, George E. P. & David R. Cox. 1964. An analysis of transformations. *Journal of the Royal Statistical Society: Series B* 26(2). 211–243.

Braithwaite, Ben. 2018. Language contact and the history of sign language in Trinidad and Tobago. *Sign Language Studies* 19(1). 5–39.

Breivik, Jan-Kåre, Hilde Haualand & Per Solvang. 2002. *Rome—a temporary Deaf city! Deaflympics 2001*. Working Paper, Stein Rokkan centre for Social Studies. Bergen: Bergen University. Available at: https://bora.uib.no/bora-xmlui/handle/1956/1434.

Briggs, Raymond. 1978. The snowman. London: Hamish Hamilton.

Clark, Herbert H. & Richard J. Gerrig. 1990. Quotations as demonstrations. *Language* 66. 764–805.

Copland, Fiona & Angela Creese. 2015. *Linguistic ethnography: Collecting, analysing and presenting data*. London: Sage.

Cormier, Kearsy, Sandra Smith & Zed Sevcikova. 2015. Rethinking constructed action. *Sign Language and Linguistics* 18. 167–204.

Cormier, Kearsy, Sandra Smith & Martine Zwets. 2013. Framing constructed action in British Sign Language narratives. *Journal of Pragmatics* 55. 119–139.

Onno, Crasborn & Han Sloetjes. 2008. Enhanced ELAN functionality for sign language corpora. In *Proceedings of 3rd workshop on the representation and processing of sign languages at LREC 2008*, 39–43. Paris: ELRA.

Cresdee, Donovan & Trevor Johnston. 2014. Using corpus-based research to inform the teaching of Auslan (Australian Sign Language) as a second language. In David McKee, Russell S. Rosen & Rachel McKee (eds.), *Teaching and learning signed languages*, 85–110. London: Palgrave Macmillan.

Curtin, Martina, Ros Herman, Madeline Cruice & Gary Morgan. 2021. Assessing parent-child interaction in infant deafness. *Current Opinion in Otolaryngology & Head and Neck Surgery* 29(3). 200–203.

De Meulder, Maartje. 2019. "So, why do you sign?" Deaf and hearing new signers, their motivation, and revitalisation policies for sign languages. *Applied Linguistics Review* 10(4). 705–724.

Eckert, Penelope. 2012. Three waves of variation study: The emergence of meaning in the study of sociolinguistic variation. *Annual Review of Anthropology* 41(1). 87–110.

Enfield, Nick J. 2009. *The anatomy of meaning*. Cambridge: Cambridge University Press.

Fenlon, Jordan, Kearsy Cormier & Schembri Adam. 2015. Building BSL SignBank: The lemma dilemma revisited. *International Journal of Lexicography* 28(2). 169–206.

Fenlon, Jordan & Julie A. Hochgesang (eds.). 2022. *Signed language corpora*. Washington, DC: Gallaudet University Press.

Fenlon, Jordan, Adam Schembri & Kearsy Cormier. 2018. Modification of indicating verbs in British Sign Language: A corpus-based study. *Language* 94(1). 84–118.

Fenlon, Jordan, Adam Schembri, Ramas Rentelis, David Vinson & Kearsy Cormier. 2014. Using conversational data to determine lexical frequency in British Sign Language: The influence of text type. *Lingua* 143. 187–202.

Ferrara, Lindsay, Benjamin Anible, Gabrielle Hodge, Tommi Jantunen, Lorraine Leeson, Johanna Mesch & Anna-Lena Nilsson. 2023. A cross-linguistic comparison of reference across five signed languages. *Linguistic Typology* 27(3). 591–627.

Ferrara, Lindsay & Gabrielle Hodge. 2018. Language as description, indication, and depiction. *Frontiers in Psychology* 9. 716.

Ferrara, Lindsay & Trevor Johnston. 2014. Elaborating who's what: A study of constructed action and clause structure in Auslan (Australian Sign Language). *Australian Journal of Linguistics* 34(2). 193–215.

Finnish Association of the Deaf, Institute for the Natural Languages of Finland, Virpi, Thurén, Pia Tales, Päivi Mäntylä & Kaisa Alanne. 2010. Language policy programme for the national sign languages. In *Language policy programme for the national sign languages in Finland*. Helsinki: Finnish Association of the Deaf & Institute for the Natural Languages of Finland.

Finnish Museum of the Deaf. 2023. Kuurotietoisuus ja yhteisön tavoitteet [Deaf awareness and community objectives]. http://www.kuurojenmuseo.fi/?p=1556&lang=fi (accessed 25 April 2023).

Finnish National Agency of Education. 2023. Finnish education system. https://www.oph.fi/en/education-system/basic-education (accessed 25 April 2023).

Friedner, Michele & Annelies Kusters (eds.). 2015. *It's a small world: International deaf spaces and encounters*. Washington, DC: Gallaudet University Press.

Friedner, Michele & Annelies Kusters. 2020. Deaf anthropology. *Annual Review of Anthropology* 49. 31–47.

Goodwin, Charles. 2000. Action and embodiment within situated human interaction. *Journal of Pragmatics* 32(10). 1489–1522.

Haualand, Hilde. 2007. The two-week village: The significance of sacred occasions for the Deaf community. In Benedicte Ingstad & Susan Reynolds Whyte (eds.), *Disability in local and global worlds*, 33–55. Berkeley: University of California Press.

Haugen, Einar. 1972. *The ecology of language: Essays*. Stanford, CA: Stanford University Press.

Hill, Joseph C. 2017. The importance of the sociohistorical context in sociolinguistics: The case of Black ASL. *Sign Language Studies* 18(1). 41–57.

Hodge, Gabrielle, Danielle Barth & Lauren Reed. 2023. Auslan and Matukar Panau: A modality-agnostic look at quotatives. *Language Documentation & Conservation* 12. 85–125.

Hodge, Gabrielle & Onno Crasborn. 2022. Best practices in annotation. In Jordan Fenlon & Julie A. Hochgesang (eds.), *Signed language corpora*, 46–89. Washington, DC: Gallaudet University Press.

Hodge, Gabrielle & Lindsay Ferrara. 2014. Showing the story: Enactment as performance in Auslan narratives. In Lauren Gawne & Jill Vaughan (eds.), Selected papers from the 44th conference of the Australian linguistic society, 372–397. Melbourne: University of Melbourne.

Hodge, Gabrielle, Lindsay Ferrara & Benjamin Anible. 2019. The semiotic diversity of doing reference in a deaf signed language. *Journal of Pragmatics* 143. 33–53.

Hodge, Gabrielle & Sara A. Goico. 2022. Natural and elicited: Sign language corpus linguistics and linguistic ethnography as complementary methodologies. *Journal of Sociolinguistics* 26. 126–136.

Hodge, Gabrielle & Della Goswell. 2021. Deaf signing diversity and signed language translations. *Applied Linguistic Review* 14(5). 1045–1083.

Hoffrén, Noora. 2019. *Kuvailevien viittomien ja konstruoidun toiminnan yhteispeli* [The co-occurrence of depicting signs and constructed action]. Jyväskylä: University of Jyväskylä MA thesis.

Hothorn, Torsten, Kurt Hornik & Zeileis Achim. 2006. Unbiased recursive partitioning: A conditional inference framework. *Journal of Computational & Graphical Statistics* 15(3). 651–674.

Humphries, Tom. 2008. Talking culture and culture talking. In H-Dirksen L. Bauman (ed.), *Open your eyes: Deaf studies talking*, 35–41. Minneapolis: University of Minnesota Press.

Jaeger, Hanna. 2019. "Not like them": New Signers' narrative constructions of the authentic signer. *Ampersand* 6. 100048.

Jantunen, Tommi. 2016. Clausal coordination in Finnish Sign Language. *Studies in Language* 40(1). 204–234.

Jantunen, Tommi. 2017. Constructed action, the clause and the nature of syntax in Finnish Sign Language. *Open Linguistics* 3. 65–85.

Jantunen, Tommi. 2022. What is showing in language? *Finnish Journal of Linguistics* 35. 169–184.

Jantunen, Tommi, Danny De Weerdt, Birgitta Burger & Anna Puupponen. 2020. The more you move, the more action you construct: A motion capture study on head and upper-torso movements in constructed action in Finnish Sign Language narratives. *Gesture* 19(1). 72–96.

Johnston, Trevor. 1996. Function and medium in the forms of linguistic expression found in a sign language. In William H. Edmondson & Ronnie B. Wilbur (eds.), *International review of sign linguistics*, vol. 1, 57–94. Mahwah, NJ: Lawrence Erlbaum.

Johnston, Trevor. 2010. From archive to corpus: Transcription and annotation in the creation of signed language corpora. *International Journal of Corpus Linguistics* 15(1). 106–131.

Johnston, Trevor. 2012. Lexical frequency in signed languages. *Journal of Deaf Studies and Deaf Education* 17(2). 163–193.

Kanto, Laura. 2022. The development of childhood multilingualism in languages of different modalities. In Anat Stavans & Ulrike Jessner (eds.), *The Cambridge handbook of childhood multilingualism*, 38–57. Cambridge: Cambridge University Press.

Kusters, Marieke. 2017. Intergenerational responsibility in deaf pedagogies. In Annelies Kusters, Maartje De Meulder & Dai O'Brien (eds.), *Innovations in deaf studies: The role of deaf scholars*, 241–262. Oxford: Oxford University Press.

Kusters, Annelies. 2017a. "Our hands must be connected": Visible gestures, tactile gestures and objects in interactions featuring a deafblind customer in Mumbai. *Social Semiotics* 27. 394–410.

Kusters, Annelies. 2017b. Gesture-based customer interactions: Deaf and hearing Mumbaikars' multimodal and metrolingual practices. *International Journal of Multilingualism* 14(3). 283–302.

Kusters, Annelies. 2021. International Sign and American Sign Language as different types of global deaf lingua francas. *Sign Language Studies* 21(4). 391–426.

Kusters, Annelies, Maartje De Meulder & O'Brien Dai. 2017b. *Innovations in deaf studies: The role of deaf scholars*. Oxford: Oxford University Press.

Kusters, Annelies, Mara Green, Erin Moriarty & Kristin Snoddon (eds.). 2020. *Sign language ideologies in practice*. Berlin & Boston: Mouton de Gruyter.

Kusters, Annelies & Lynn Hou. 2020. Linguistic ethnography and sign language studies. *Sign Language Studies* 20(4). 561–571.

Kusters, Annelies & Ceil Lucas. 2022. Emergence and evolutions: Introducing sign language sociolinguistics. *Journal of Sociolinguistics* 26(1). 84–98.

Kusters, Annelies, Max Spotti, Ruth Swanwick & Elina Tapio. 2017a. Beyond languages, beyond modalities: Transforming the study of semiotic repertoires. *International Journal of Multilingualism* 14. 219–232.

Leeson, Lorraine, Jordan Fenlon, Johanna Mesch, Carmel Grehan & Sarah Sheridan. 2019. The uses of corpora in L1 and L2/Ln sign language pedagogy. In Russell S. Rosen (ed.), *The Routledge handbook of sign language pedagogy*, 339–352. Routledge.

Liddell, Scott K. & Melanie Metzger. 1998. Gesture in sign language discourse. *Journal of Pragmatics* 30(6). 657–697.

Lilja, Nina & Arja Piirainen-Marsh. 2019. Connecting the language classroom and the wild: Re-Enactments of language use experiences. *Applied Linguistics* 40(4). 594–623.

Lillo-Martin, Diane. 2012. Utterance reports and constructed action in sign and spoken languages. In Roland Pfau, Markus Steinbach & Bencie Woll (eds.), *Sign language: An international handbook*, 365–387. Berlin & Boston: De Gruyter.

Lucas, Ceil, Robert Bayley, Valli Clayton, Mary Rose & Alyssa Wulf. 2001. Sociolinguistic variation. In Ceil Lucas (ed.), *The sociolinguistics of sign languages*, 61–112. Cambridge: Cambridge University Press.

Mayer, Mercer. 1969. *Frog, where are you?* New York: Dial Press.

McNeill, David.. 1992. *Hand and mind: What gestures reveal about thought*. Chicago: University of Chicago Press.

Metzger, Melanie. 1995. Constructed dialogue and constructed action in American Sign Language. In Ceil Lucas (ed.), *Sociolinguistics in deaf communities*, 255–271. Washington, DC: Gallaudet University Press.

Mitchell, Rose E. & Michael A. Karchmer. 2004. Chasing the mythical ten percent: Parental hearing status of deaf and hard of hearing students in the United States. *Sign Language Studies* 4(2). 138–163.

Mudd, Katie, Connie de Vos & Bart de Boer. 2020. The effect of cultural transmission on shared sign language persistence. *Palgrave Communications* 6. 102.

Murray, Joseph J. & De Meulder Maartje & Delphine le Maire. 2018. An education in Sign Language as a human right? The sensory exception in the legislative history and on-going interpretation of article 24 of the UN convention on the rights of persons with disabilities. *Human Rights Quarterly* 40. 37–60.

Niemelä, Maarit. 2010. The reporting space in conversational storytelling: Orchestrating all semiotic channels for taking a stance. *Journal of Pragmatics* 42. 3258–3270.

Nordlund, Sanna. 2019. Agent defocusing in two-participant clauses in Finnish Sign Language. *Glossa: A Journal of General Linguistics* 4(1). 82.

Puupponen, Anna. 2018. The relationship between the movements and positions of the head and the torso in Finnish Sign Language. *Sign Language Studies* 18(2). 175–214.

Puupponen, Anna. 2019. Towards understanding nonmanuality: A semiotic treatment of signers' head movements. *Glossa: A Journal of General Linguistics* 4(1). 39.

Puupponen, Anna, Laura Kanto, Tuija Wainio & Tommi Jantunen. 2022. Variation in the use of constructed action according to discourse type and age in Finnish Sign Language. *Language & Communication* 83. 16–35.

Quinto-Pozos, David & Sarika Mehta. 2010. Register variation in mimetic gestural complements to signed language. *Journal of Pragmatics* 42. 557–584.

R Core Team. 2023. *R: A language and environment for statistical computing*. Vienna: R Foundation for Statistical Computing. http://www.R-project.org/ (accessed 13 April 2023).

Rainò, Päivi. 2021. *Viittomakielibarometri 2020 – tutkimusraportti* [Sign Language barometer 2020 – research report]. Oikeusministeriön julkaisuja, Selvityksiä ja ohjeita [Publications of the Ministry of Justice, Reports and guidelines] 2021:4. Available at: http://urn.fi/URN:ISBN:978-952-259-860-8.

Rampton, Ben. 2007. Neo-Hymesian linguistic ethnography in the United Kingdom. *Journal of Sociolinguistics* 11(5). 584–607.

Salmi, Eeva & Mikko Laakso. 2005. *Maahan lämpimään. Suomen viittomakielisten historia* [To a warm land. The history of Finnish Sign Language people]. Helsinki: Finnish Association of the Deaf.

Salonen, Juhana. 2021. *I sign therefore I am [English translation of Finnish original]*. Helsinki: Books on Demand.

Salonen, Juhana, Maria Andersson-Koski, Karin Hoyer & Tommi Jantunen. 2022. Building the corpus of Finland-Swedish Sign Language: Acknowledging the language history and future revitalization. In Jarmo Harri Jantunen, Johanna Kalja-Voima, Matti Laukkarinen, Anna Puupponen, Margareta Salonen, Tuija Saresma, Jenny Tarvainen & Sabine Ylönen (eds.), *Diversity of methods and materials in digital human sciences: Proceedings of the digital research Data and human sciences DRDHum conference 2022, December 1–3, Jyväskylä, Finland*, 187–199. Jyväskylä: University of Jyväskylä.

Salonen, Juhana, Antti Kronqvist & Tommi Jantunen. 2020. The Corpus of Finnish Sign Language. In *Proceedings of the 9th workshop on the representation and processing of sign languages*, 197–202. Paris: ELRA.

Schembri, Adam, Jordan Fenlon, Kearsy Cormier & Trevor Johnston. 2018. Sociolinguistic typology and sign languages. *Frontiers in Psychology* 9. 200.

Schembri, Adam & Ceil Lucas. 2015. Introduction. In Adam Schembri & Ceil Lucas (eds.), *Sociolinguistics and deaf communities*, 1–4. Cambridge: Cambridge University Press.

Schönström, Krister. 2021. Sign languages and second language acquisition research: An introduction. *Journal of the European Second Language Association* 5(1). 30–43.

Sivunen, Nina. 2019. An ethnographic study of deaf refugees seeking asylum in Finland. *Societies* 9(1). 2.

Sivunen, Nina & Elina Tapio. 2022. "Do you understand (me)?" Negotiating mutual understanding by using gaze and environmentally coupled gestures between two deaf signing participants. *Applied Linguistics Review* 13(6). 983–1004.

Snoddon, Kristin. 2022. Writing as being: On the existential primacy of writing for a deaf scholar. *Qualitative Inquiry* 28(6). 722–731.

Stamp, Rose, Adam Schembri, Jordan Fenlon, Ramas Rentelis, Bencie Woll & Kearsy Cormier. 2014. Lexical variation and change in British Sign Language. *PLoS One* 9. e94053.

Stone, Christopher. 2009. *Toward a deaf translation norm* (Studies in Interpretation 6). Washington, DC: Gallaudet University Press.

Streeck, Jürgen. 2008. Depicting by gesture. *Gesture* 8(3). 285–301.

Sutton-Spence, Rachel. 2017. Constructing visual images in creative sign language in solo and collaborative performance: Space and embodiment. *African Studies* 76(3). 360–380.

Swanwick, Ruth. 2017. Translanguaging, learning and teaching in deaf education. *International Journal of Multilingualism* 14(3). 223–249.

Takkinen, Ritva, Tommi Jantunen & Outi Ahonen. 2015. Finnish Sign Language. In Bakken Jepsen Julie, Goedele De Clerck, Sam Lutalo-Kiingi & Willaim B. McGregor (eds.), *Sign languages of the world: A comparative handbook*, 253–272. Berlin: Mouton De Gruyter.

Takkinen, Ritva, Jarkko Keränen & Juhana Salonen. 2018. Depicting signs and different text genres: Preliminary observations in the Corpus of Finnish Sign Language. In *Proceedings of the 8th workshop on the representation and processing of sign languages: Involving the language community*, 189–194. Paris: ELRA.

Takkinen, Ritva, Karoliina Nikula & Juhana Salonen. 2023. *Suomen viittomakielten käyttäjien osallisuus ja haavoittuvuus 1850-luvulta nykypäivään* [Participation and vulnerability of Finnish Sign Language users from the 1850s to the present day]. In Jenny Paananen, Meri Lindeman, Camilla Lindholm & Milla Luodonpää-Manni (eds.), *Kieli, hyvinvointi ja haavoittuvuus – Kohti kielellistä osallisuutta [Language, wellbeing and vulnerability: Towards linguistic inclusion]*, 56–72. Helsinki: Gaudeamus.

Tapio, Elina. 2013. A nexus analysis of English in the everyday life of FinSL signers: A multimodal view on interaction. Jyväskylä: Jyväskylä University PhD dissertation.

Tapio, Elina. 2019. The patterned ways of interlinking linguistic and multimodal elements in visually oriented communities. *Deafness & Education International* 21(2–3). 133–150.

Tapio, Elina & Ritva Takkinen. 2012. When one of your languages is not recognized as a language at all. In Jan Blommaert, Sirpa Leppänen, Päivi Pahta & Tiina Räisänen (eds.), *Dangerous multilingualism: Northern perspectives on order, purity and normality*, 284–308. Basingstoke: Palgrave Macmillan.

Vandenitte, Sébastien. 2022a. Making referents seen and heard across signed and spoken languages: Documenting and interpreting cross-modal differences in the use of enactment. *Frontiers in Psychology* 13. 784339.

Vandenitte, Sébastien. 2022b. Showing where you stand: The depictive potential of the lexical sign LS in LSFB conversations about language attitudes. *Belgian Journal of Linguistics* 36(1). 46–72.

Winston, Elizabeth. 1992. Space and involvement in an American sign language lecture. In Jean Plant-Moeller (ed.), *Expanding horizons: Twelfth national convention of the registry of interpreters for the deaf*, 93–105. Silver Spring, MD: Registry of Interpreters for the Deaf.