

**This is a self-archived version of an original article. This version may differ from the original in pagination and typographic details.**

**Author(s):** Puupponen, Anna; Kanto, Laura; Wainio, Tuija; Jantunen, Tommi

**Title:** Variation in the use of constructed action according to discourse type and age in Finnish Sign Language

**Year:** 2022

**Version:** Published version

**Copyright:** © 2021 The Authors. Published by Elsevier Ltd.

**Rights:** CC BY 4.0

**Rights url:** <https://creativecommons.org/licenses/by/4.0/>

**Please cite the original version:**

Puupponen, A., Kanto, L., Wainio, T., & Jantunen, T. (2022). Variation in the use of constructed action according to discourse type and age in Finnish Sign Language. *Language and Communication*, 83, 16-35. <https://doi.org/10.1016/j.langcom.2021.11.006>

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

# Language & Communication

journal homepage: [www.elsevier.com/locate/langcom](http://www.elsevier.com/locate/langcom)

## Variation in the use of constructed action according to discourse type and age in Finnish Sign Language

Anna Puupponen\*, Laura Kanto, Tuija Wainio, Tommi Jantunen

Sign Language Centre, Department of Language and Communication Studies, University of Jyväskylä, Finland

### ARTICLE INFO

Article history:

Keywords:

Constructed action  
Sign languages  
Variation  
Age  
Discourse type

### ABSTRACT

This paper presents a study of the use of constructed action (CA) in the stories and conversations of adult Finnish Sign Language (FinSL) signers of different ages. CA is defined here as a type of depiction in which a signer enacts the actions, feelings, thoughts and utterances of discourse referents with different parts of their body. Most studies on CA in sign languages have been done on the basis of signed storytelling, and little is known about how the use of CA varies in different discourse types. The use of CA has also been noted to vary between individual signers, but we do not yet know much about the socio-individual phenomena that may be linked to this variation. In the present study, we investigate whether the use of CA is different in the stories and the conversations of adult FinSL signers, and whether younger (18–39) and older (50–79) adult signers use CA differently in stories and conversations. The study is based on the manual annotation of video data recorded for the Corpus of Finnish Sign Language (Corpus FinSL) and the analysis includes frequency descriptions and statistical analysis. The data show that there is a statistically significant difference in the use of CA in stories and conversations, and that in storytelling, older adults use significantly more CA than younger adults. This difference between the two age groups is particularly evident in the overt uses of CA. The work presented here points toward the need for more investigation of CA in non-narrative discourse contexts and in the language use of signers of different ages.  
© 2021 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

### 1. Introduction

The topic of this paper is the depictive discourse strategy referred to as *constructed action* (CA) and how it is used in Finnish Sign Language (FinSL). CA is defined here as a type of depiction in which a signer enacts the actions, feelings, thoughts and utterances of discourse referents with different parts of their body (see e.g. [Liddell and Metzger, 1998](#); [Cormier et al., 2013, 2015](#); [Jantunen et al., 2020b](#)). In sign language linguistics, the enactment of referents has been approached from varying theoretical starting points. This can be seen in the diverse terminology with which this type of enactment has been referred to in the research literature (e.g. *role shift*, *reference shift*, *point of view predicate*, *transfert personnel*, *surrogate blending*; see e.g. [Padden, 1990](#); [Lillo-Martin, 1995](#); [Sandler and Lillo-Martin, 2006](#); [Cuxac 2000](#); [Liddell, 2003](#)). We see CA as a type of enactment that is multimodal linguistic action (e.g. [Cormier et al., 2013](#); [Hodge and Cormier, 2019](#)) with varying degrees of intensity and semiotic complexity ([Dudis, 2004](#); [Cormier et al., 2015](#); [Ferrara and Hodge, 2018](#)), and which can occur with or without simultaneous lexical signs (e.g. [Liddell and Metzger, 1998](#); [Cormier et al., 2013](#)).

\* Corresponding author. Sign Language Centre, Department of Language and Communication studies, University of Jyväskylä, Seminaarinkatu 15 (P.O. Box 35), FI-40014, Finland.

E-mail addresses: [anna.m.puupponen@jyu.fi](mailto:anna.m.puupponen@jyu.fi) (A. Puupponen), [laura.m.k.kanto@jyu.fi](mailto:laura.m.k.kanto@jyu.fi) (L. Kanto), [tuija.wainio@jyu.fi](mailto:tuija.wainio@jyu.fi) (T. Wainio), [tommi.j.jantunen@jyu.fi](mailto:tommi.j.jantunen@jyu.fi) (T. Jantunen).

CA is a frequent and well-known phenomenon in sign language (SL) discourse, and it has been discussed in the field of sign language linguistics since the late 1970s. Some scholars have paid a lot of attention especially to the enactment of referents' thoughts and utterances (also referred to as *quotative CA*, *constructed dialogue*, *constructed discourse*, *direct quotation*, *direct report*, *attitude ascription*) and whether this can be used for indirect reported speech as well as for direct quotation (for a review, see e.g., Lillo-Martin, 2012; Cormier et al., 2013; Quer, 2018). These approaches have emphasized the comparison between bodily enactment in SLs and conventionalized quotative strategies in spoken language syntax.

Others, on the other hand, have paid more attention to the enactment of other types of actions than utterances and thoughts and, following Tannen (1989), they have defined enactment of both language events and other types of actions as *constructed action* (also referred to as *action role shift*) (e.g. Metzger, 1995; Liddell and Metzger, 1998; Cormier et al., 2013). These approaches emphasize the cognitive and functional processes involved in enactment, and the similarities between the bodily enactment of signers and the vocal and kinesic enactment of speakers. The theoretical approach in the current study follows this latter tradition and we define both quotative and non-quotative enactments as CA.

To date, data-driven studies on CA have been carried out primarily on the basis of signed stories, and little is known about how the use of CA varies between different discourse types. Moreover, the use of CA has been noted to vary between individuals (e.g. Ferrara and Johnston, 2014; Jantunen, 2017a) but we do not yet know much about the socio-individual phenomena that may be connected to this variation, such as the age or gender of the signer (e.g. Hodge and Ferrara, 2014; Smith and Cormier, 2014). In the current study, we seek to contribute to these discussions by investigating whether adult FinSL signers use CA differently in different discourse types, and whether the age of adult signers affects the use of CA in these discourse types. More specifically, the objectives are to find out whether (i) the use of CA is different in the stories and conversations of adult FinSL signers; and (ii) whether younger adults (18–39) and older adults (50–79) use CA differently in stories and conversations. The study is based on the manual annotation of recorded video data of adults' FinSL use. The analysis includes frequency descriptions and statistical analysis.

In this endeavor, the current study uses a framework proposed by Cormier et al. (2015), according to which CA has different degrees, that is, *subtle*, *reduced* and *overt* types. Non-enacting stretches of discourse we refer to as *non-enacting signing*. We investigate how different degrees of CA and non-enacting signing occur in two different discourse types and by signers of different ages. This work is done within the usage-based cognitive-functional framework and it is based on the view that language is a part of humans' physiological, cognitive and social activity, and therefore that language is inherently connected to other types of human action (see, e.g., Hopper, 1998; Bybee and Beckner, 2010; Diessel, 2017). Language is also viewed as including both gradient and non-conventionalized, as well as discrete and conventional elements, and iconic and indexical semiotic strategies as well as symbolic strategies are seen as important for meaning-making with language (Jantunen, 2017a; Puupponen, 2019). For more on this view see, for example, Cormier et al. (2012), Kendon (2014), Hodge and Johnston (2014), and Ferrara and Hodge (2018).

The current study is the first corpus-based investigation into socio-individual variation in FinSL. As age has been found to be a significant variable in sociolinguistic studies of several sign languages (see e.g. Bayley et al., 2015), and as basic education has been quite different for different generations of FinSL signers, age was considered to be a relevant factor in a study of variation in the use of CA in FinSL. In the future, our aim is to compare the results of the current study with the use of CA by children acquiring FinSL (Kanto et al., 2021), and to study further other socio-individual factors that may influence the use of CA in FinSL, such as gender, regional background or signers' linguistic environment during their basic education.

## 2. Constructed action in sign languages

### 2.1. Approaches to constructed action in sign languages

Although it is a relatively understudied topic, in SL linguistics, there is already a significant body of literature that discusses – on one level or another – the specific type of bodily enactment that we refer to in this paper as *constructed action* (CA). In constructed action, a signer enacts a discourse referent so that different parts of the signer's body represent different parts of the referent's body, and the enactment is done as if showing the event through the perspective of the referent (Fig. 1).



**Fig. 1.** An example of the use of CA in FinSL (marked in bold): "Well, then [the snowman] went to test the stove and turned it on using the knobs. [The stove] was radiating heat. [The snowman] was startled and **pulled back from the heat** because he was afraid of melting."

In more traditional approaches to SL grammar, this type of enactment has been referred to as *role shift* or *referential shift* and a distinction has been made between the enactment of utterances and the enactment of other types of actions (e.g. Padden, 1990; Sandler and Lillo-Martin, 2006; see also Lillo-Martin, 2012). Categorical differentiation between enacting utterances and enacting other types of actions is based on the view that signers' enactment of non-linguistic action and all kinds of speakers' kinesic enactment are paralinguistic phenomena, whereas signers' enactment of utterances is a linguistic phenomenon comparable to reported speech in written and spoken sentences (e.g. Emmorey, 2002; Pfau and Quer, 2010). Behind this distinction is another metatheoretical distinction, that of language being a system that is separate from other human activities such as gesticulation. Speakers' kinesic or vocal enactment are seen as "paralinguistic" parts of communication, and the enactment of referents' non-linguistic actions, which does not include conventionalized lexical signs, is seen as a parallel paralinguistic phenomenon. On the other hand, some traditional approaches have not made such a categorical distinction between these different uses of enactment. Some, for example, have gone around the gesture-language dichotomy by explaining the enactment of non-linguistic actions through the linguistic concept of a *classifier* and call these tokens of CA *body classifiers* (e.g. Supalla, 1986, 2003; Morgan and Woll, 2003; Davidson, 2015) – a view that has been both supported and disputed.<sup>1</sup>

According to another view, the enactment of utterances and the enactment of other types of actions are quite closely related, but still distinct. This distinction is justified by the ways in which signers are said to refer to the 1st person: when CA enacts a language event, signers point towards themselves in order to refer to the enacted "self" whereas these pointing actions do not occur in CA that enacts nonlinguistic action (Lillo-Martin, 2012). However, this argumentation has been questioned, as there are instances of CA that enact language events but do not include any index-finger pointing actions referring to the enacted self (Quer, 2018). In other words, in some cases, the difference between these two types of CA lies only in their contextually created and interpreted meaning and function (see e.g. Cormier et al., 2015; Hodge and Cormier, 2019). There are no systematic formal criteria that distinguish between them, only the fact that CA may emerge without any co-occurring lexical signs, whereas the enacting of uttered or thought propositions inherently includes these.

Due to this, not all approaches have differentiated between the enactment of utterances and other actions in the previously mentioned ways. According to another view, enactments of discourse referents – whether involving language events or non-linguistic actions – are always signers' *constructions* of the events they enact. This means that a constructed event (enactment in Fig. 1) is always a creation of the signer which is detached from the original event (the event in a story in which 'a snowman is pulling back from a hot stove' re-enacted in Fig. 1; see e.g. Tannen, 1989; Günthner, 1999), and which includes, for example, the signer's own interpretations of the original event, and the signer's own communicational aims in the discourse context in which the enactment is produced (e.g. Winston, 1992; Metzger, 1995; Liddell and Metzger, 1998; Cormier et al., 2013; Ferrara and Johnston, 2014, see also Lillo-Martin, 2012). According to this view, it is sometimes very difficult, or even impossible, to distinguish between CA that quotes language events and CA that quotes non-linguistic actions, as both of these may emerge in a single enactment (see e.g. Cormier et al., 2013, 120; Hodge and Cormier, 2019). This approach underlines the fact that sequences of CA are found in both signers' and speakers'<sup>2</sup> multimodal communication and that in both cases they are *demonstrations* that *depict* rather than *describe* referents (see e.g. Clark and Gerrig, 1990; Streeck, 2002; Ferrara and Hodge, 2018). That is, a speaker's vocal enactment of a referent's speech or speaker's/signer's bodily enactment of another type of referent's action are all examples of depicting rather than describing. Enacting a stretch of discourse does not make it "more linguistic" or less depictive than enacting other types of actions.

Finally, there are also conflicting views on whether particular signals from the signer's body are to be considered as a part of the enactment of a referent in CA or as part of conventionalized SL grammar and morphosyntax. One quite well-known example of such a discussion is that of the signer's eye gaze and its use for CA versus grammatical agreement (for an overview of these competing views, see e.g. Cormier et al., 2015 & Schembri et al., 2018).

## 2.2. Degrees of constructed action

In the theoretical discussion of CA, it has also been noted that not all parts of the signer's body are necessarily engaged in the enactment. It is possible that a part of the signer's body is engaged in CA while at the same time another part of the body is engaged in non-enacting signing (Liddell and Metzger, 1998; Dudis, 2004). This well-known feature associated with CA has been referred to as *body partitioning* (Dudis, 2004). In an utterance that involves body partitioning, a signer may enact a referent with, for example, the position of their upper body, their facial expression and their eye gaze while their hands produce lexical or partly lexical signs<sup>3</sup> describing or depicting the event that is being discussed and/or the participant(s) in this event. The end result of this multilayered articulation is a semiotically complex utterance which includes several *viewpoints*: the character perspective (also referred to, e.g., as *participant viewpoint*) shown by enactment, as well as the observer perspective (also referred to as, e.g., *global viewpoint*) conveyed by lexical and partly lexical signs (see also e.g. Emmorey et al.,

<sup>1</sup> For differing views on the use of the concept '(body) classifier' in SL linguistics, see e.g. Supalla (1986, 2003); Morgan and Woll (2003); Zwitserlood (2012); Davidson (2015); Engberg-Pedersen (1993, 1995); Cogill-Koez (2000); Liddell (2003b); Schembri (2003); Slobin et al. (2003).

<sup>2</sup> The use of CA has also been found in speakers' communication and it has been referred to with terms such as *demonstration*, *body quotation*, (*mimetic*) (*re-*) *enactment* and *depiction* (e.g. Clark and Gerrig 1990; Cameron 1998; Streeck 2002; Enfield, 2009; Park 2009; Clark 2016; Ferrara and Hodge 2018; Lilja and Piirainen-Marsh 2019).

<sup>3</sup> With 'lexical' we refer to signs that are fully conventionalized to the lexicon of a SL and with 'partly lexical' to signs that include more conventionalized elements as well as more context-dependent indicative and/or depictive elements (see e.g. Liddell 2003; Johnston and Schembri 2010; Johnston 2012).

2000; Dudis, 2004; Perniss, 2007; Cormier et al., 2012; Quinto-Pozos and Parrill, 2015; Ferrara and Ringsø, 2019). Character perspective has generally been associated with the life-sized conceptual scene surrounding the signer, who is positioned inside it and may move inside it. Observer perspective, on the other hand, has been associated with the conceptual scene that is the topographical space in front of the signer, who is positioned at a static point outside of it (Perniss, 2007; Ferrara and Ringsø, 2019, 584). Recently it has been noted that this division is less clear-cut than may have been thought, and that some spatial language involves so-called *mixed vantage points*; that is, external viewpoints may be mobile as well as static, and internal viewpoints may be static as well as mobile (Ferrara and Ringsø, 2019; see also Perniss and Özyürek, 2008).

The ideas of body partitioning and co-occurring viewpoints can be seen in some theoretical-methodological treatments of CA that include the idea that enactment may emerge in different degrees in SL discourse. Cormier et al. (2015) have presented a data-driven framework for the investigation of CA, according to which the degree of CA may be analyzed through detailed multichannel annotation of articulators' engagement in CA combined with intuition-based evaluation of the strength of the enactment.<sup>4</sup> The framework includes annotations for enacting articulators (hand(s), eye gaze, head, face, torso), the viewpoint of the signer (narrator, character), and the prominence of that viewpoint (full, partial). This process of description and analysis results in a classification of CA into three gradient prototype categories, *overt* (Fig. 2a), *reduced* (Fig. 2b) and *subtle* CA (Fig. 2c). According to Cormier et al. (2015, 193) these prototypes are “points along a continuum of overtness” of CA.

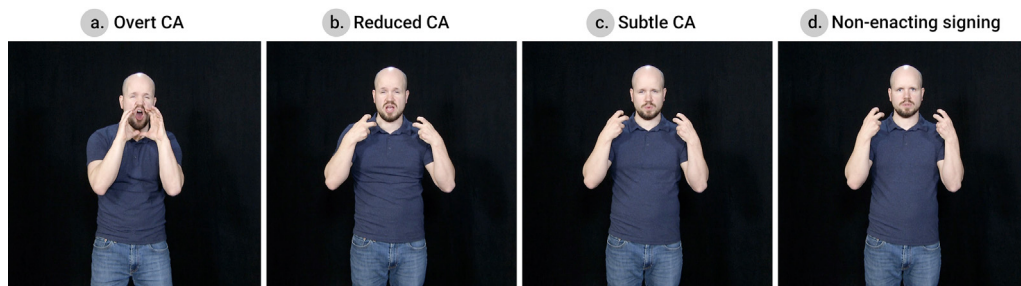


Fig. 2. Examples of the three CA types and non-enacting signing in FinSL. All four examples signify or represent ‘screaming’.

In overt CA, a relatively high number of articulators are involved in the enacting and the signer is fully in the role of a character (i.e., the depiction is done from the character’s internal viewpoint). In Fig. 2a the signer is engaged in overt CA, so different parts of the signer’s body, including the hands, represent the enacted referent, a person screaming, not those of the narrator. In reduced CA, quite a lot of articulators are still engaged in the enactment but the character viewpoint is only partial, that is, the signer takes the roles of both the character and the narrator. In the example in Fig. 2b, most of the activity of the signer is still portraying ‘a person screaming’, while the signer’s hands are producing a lexical sign SCREAM, which depicts the events from the narrator’s external viewpoint. In subtle CA, only a few articulators are engaged in the enactment, and the event is depicted only partially from the character’s viewpoint. This is demonstrated in the utterance in Fig. 2c, in which most of the visible activity is that of the signer-narrator, including the lexical sign SCREAM, and it is only the depictive activity of the face (i.e. the eyes and the eye brows) that represent some features of the character’s viewpoint, ‘a person screaming’.

When approaching CA as an articulatorily or intensity-wise holistic phenomenon (e.g. Ferrara and Johnston, 2014; Jantunen, 2017a.), different studies may base their conclusions about the use of CA on observations done on different articulator(s) (e.g., observing only the movements of the body or only facial expression/eye-gaze; see Cormier et al., 2015). In addition, in a holistic approach some conclusions on CA may be based only on overt CA while others are based on non-overt CA, or the most subtle instances of CA may not be taken into account at all. These issues may partly explain the different findings of studies on CA and the conclusions reached on the linguistic nature of CA (see Cormier et al., 2015).

Above we have given a short review of different approaches to CA in sign language linguistics. The theoretical approach of the current study has its origins in the approach of Winston (1992), Metzger (1995), and Liddell and Metzger (1998) and their followers. We define CA as a specific form of enactment in which the actions of a speaker’s or signer’s body represent the actions, thoughts, feelings or utterances of referents in discourse. Following Metzger (1995) and Cormier et al. (2015), we see the enactment of language events and the enactment of non-linguistic action as different types (which do not necessarily need to be distinguished from each other) of the same discourse strategy, constructed action, in which a signer/speaker depicts a constructed event. This type of depiction is a more gradient and non-conventionalized way of meaning-making than expressing meaning with conventionalized lexical signs, for example. However, it may include different degrees of conventional or semi-conventional elements, such as lexical signs when enacting utterances, or delexicalized forms of signs<sup>5</sup> when enacting other types of action. In this study, we have applied Cormier et al.’s (2015) framework of CA types for the study of FinSL discourse, as is described in Section 3. Utterances involving overt CA are considered to include more non-conventionalized and gradient features while utterances involving subtle CA are considered to include more conventional

<sup>4</sup> For other treatments of degrees of CA, see e.g. Lentz (1986) and Quinto-Pozos and Mehta (2010).

<sup>5</sup> With ‘delexicalized forms’ we refer to tokens of signs that are conventionalized parts of a lexicon of a SL but that are “taken back” to their iconic and mimic roots in discourse (e.g. Johnston and Ferrara 2012; Cormier et al., 2012).



and discrete features (see Ferrara and Hodge, 2018; Jantunen et al., 2020b). We use the notion of role shift only to describe the punctual transition between character roles within constructed action or the points at which a signer returns from constructed action to non-enacting signing (Cormier et al., 2015).

### 2.3. Many functions of constructed action

CA has been found to be multifunctional; it is associated with different semiotic and discourse-oriented functions. Firstly, CA has a referential function: it is used to re-enact events and the participant(s) in these events (e.g. Cormier et al., 2013; Hodge and Ferrara, 2014). These events may include the participant's or participants' actions, thoughts or sayings, or their emotions, reactions or attitudes. Since sequences of CA depict whole events, they inherently include information about the participants in these events and indicate semantic roles, that is, who does what to whom (e.g. Liddell, 2003; Cormier et al., 2013). Due to this semiotic complexity, in syntactic analysis, some scholars have viewed a CA sequence as forming a unit that involves a clause-like quantity of semantic content, and that connects to other syntactic sequences through coordination and chaining (Jantunen, 2017a). Others have seen sequences of CA as corresponding to core arguments and predicates in clauses (Hodge and Johnston, 2014). The referents depicted with CA are usually animate but may also be inanimate, especially in discourse types such as fictional stories and poetry (see e.g. Sutton-Spence et al., 2005). A referent in CA may, further, be either clearly visible ('the snowman' in Fig. 1) or a so-called invisible surrogate ('the hot stove' in Fig. 1), that is, "a chunk of space [that] becomes semiotically activated via the coordination of one or more ostensive indexical acts" (Hodge et al., 2019, 48).

In discourse, CA is used especially for maintaining reference rather than for introducing new referents (e.g. Cormier et al., 2013; Hodge et al., 2019). This means that CA is one of the discourse strategies that are used for reference tracking in SLs: it is used for maintaining and reintroducing referents in a spatially cohesive manner. The functions of CA are connected to many discourse-level communicative aims and to the features of specific discourse types, such as making the content that is being signed more exciting, engaging the interlocutor(s), or for artistic effect, for humor, and so on (e.g. Sutton-Spence and Müller de Quadros, 2005; Quinto-Pozos and Mehta, 2010; Sutton Spence and Napoli, 2010; Kaneko and Mesch, 2013; Sutton-Spence, 2017). Finally, according to a recent study, CA is particularly useful and effective in non-narrative discourse contexts such as elicitation tasks that aim at maximally efficient information transmission (Slonimska et al., 2020).

### 2.4. Variation in the use of constructed action

It has been observed that how frequently CA is used varies between different signers as well as according to the information structure and event structure of a narrative (Ferrara, 2012; Cormier et al., 2013; Hodge and Ferrara, 2014; Ferrara and Johnston, 2014). For example, it has been noted that CA is used more by some signers than others when retelling stories in Auslan (Ferrara, 2012; Hodge and Ferrara, 2014; Ferrara and Johnston, 2014). Hodge and Ferrara (2014) hypothesized that this variation may be the result of personal idiosyncrasy, of experience in storytelling, of signers' age, education and other socio-individual factors, of the degree of social intimacy between the interlocutors, as well as of the signer's feelings and attitudes during the discourse. It has also been observed that the types of constructions that precede or embed CA are connected to whether the utterance involves introducing and re-introducing referents (with NP), or maintaining them (without NP) (Cormier et al., 2013). The occurrence of CA has, further, been found to vary according to the level of animacy of the referent (see e.g. Hodge et al., 2019).

The effect of different discourse contexts on the use of CA has not been looked at in depth, and studies investigating CA in non-narrative contexts are rare. Ferrara (2012) reported that in Auslan corpus data, the use of CA was considerably less frequent in conversations than in storytelling: CA was shown to be six times more likely to appear in storytelling than in conversations (see also Fenlon et al., 2014). However, this study approached CA as an articulatorily holistic phenomenon, and it may be that subtle CA was not taken into account in the analysis. Ferrara and Ringsø (2019) showed that CA may occur but is very infrequent in Norwegian sign language conversations involving spatial language, such as routes from one place to another or travel itineraries. Slonimska et al. (2020), on the other hand, showed that in a director-matcher game context, utterances that may encode a lot of information simultaneously, such as those including CA, increase and become more semiotically complex as the information that has to be conveyed increases. Apart from such individual studies, the investigation of CA in different non-narrative contexts is only in its early steps. This will, however, presumably change in the near future, as SL corpus data now offer us new ways of carrying out comparative and crosslinguistic studies on SL depiction (e.g. Ferrara et al., 2020). Finally, it should be noted that free conversations may include spontaneous narratives of, for example, personal experiences.

Variation in the use of CA according to the age of the signer is also an understudied topic. Some studies have reported on how CA is used by children acquiring a sign language (Loew, 1984; Schick, 1987; Lillo-Martin and de Quadros, 2011; Morgan 2002, 2006; Smith and Cormier 2014). It has been shown that although children as young as three years of age do use CA (Loew, 1984; Schick, 1987; Lillo-Martin and de Quadros, 2011), younger children (4–6 years) may use it in ways that lead to referential ambiguity, for example when introducing new referents. In general, it has been suggested that the use of CA is a skill that is acquired and mastered gradually. The overlapping of several viewpoints and the coherent use of CA at the level of discourse have been found to emerge later (11–13 years and above) in children's language (Morgan, 2006).

The effect of adult signers' age on their use of CA has not yet been studied. However, in general, different sociolinguistic studies have shown that signers' age may be a significant variable related to variation in SLs. It has been reported that in South African (Njeyiyana and Huddleston, 2020), American (Bayley et al., 2000) and British (e.g. Stamp et al., 2014) Sign Languages, for example, some signs used by most elderly signers are becoming increasingly rare in the language use of younger age

groups. For example, Stamp et al. (2014) found that elderly signers of British Sign Language (BSL) tended to use traditional regional lexical sign variants for colors, countries and numbers more than younger BSL signers, especially if at the time of the study they were living in the region in which they had been educated, and had deaf parents. Older BSL signers have also been found to use two-handed variants of number signs much more frequently than younger BSL signers (Stamp et al., 2015; see also Woll, 1981). In other sign-language contexts, it has been found that younger signers of American Sign Language and Auslan (Lucas et al., 2001; Schembri et al., 2009) are more likely than older signers to produce lowered forms of signs (i.e. sign forms produced at a lower location than in the dictionary form). In Italian Sign Language, it has been reported that signers over 55 years of age and with relatively low levels of education produce interrogative signs more frequently before predicates in interrogative clauses than those under the age of 55 and with relatively high levels of education (Geraci et al., 2015). For FinSL, the investigation of variation and its relation to possible social variables has started only recently and has not been done using corpus data. It has been shown, however, that elderly FinSL signers use the specific lexical variants of signs for months significantly more frequently than younger signers do, and that some of these variants are entirely absent from the data collected from the youngest FinSL signers (18–35 years) (Kronqvist, 2018).

## 2.5. Constructed action in FinSL

Reports on and mentions of the use of enactment in FinSL began in the early 1990s (Rissanen, 1992; Jantunen, 2007, 2008; Lukasczyk, 2008). Lukasczyk (2008), for example, found that signers' facial expressions, manual movements, eye-gaze, and head and body movements and positions enact the actions, thoughts and utterances of referents in FinSL narratives. Luckasczyk also found body partitioning as well as chains of up to four consecutive sequences of CA. After Lukasczyk (2008), the use of enactment has come up in different studies on the structure of FinSL. These include the acknowledgment of how enactment contributes to the omission of lexical core arguments in clauses (Jantunen, 2013, 2017b); to how the agent is expressed and defocused in clauses (Ala-Sippola, 2012; Nordlund, 2019); to how the coordination of conjoined clauses is indicated (Jantunen, 2016); and to how different non-manual articulations/signals occur and coincide (Puupponen, 2018, 2019). Although none of these studies focused on enactment per se, it is an issue that is discussed, or at least mentioned, in relation to the subject matters of these studies.

The first study specifically focusing on CA (as we define it in the current paper) in FinSL is Jantunen (2017a), a syntactic study on the relation between clauses and CA in signed stories, introduced in Section 2.3. The study shows that syntax (in sign languages) may be seen as a set of features distributed on a continuum between a more categorical-conventional syntactic organization of clauses – with hierarchical clausal linkages (i.e. subordination, embedding), without CA, and with a preference for fully lexical and partly lexical indicating verbal signs – and more gradient-non-conventionalized syntactic organization – with primarily flat linkages (i.e. coordination & chaining), extensive use of CA, and preference for the use of partly lexical depicting verbal signs. This was followed by another study (Hoffrén, 2019), also based on signed narratives, on the connections between different types of depicting signs (Liddell, 2003) and different degrees of CA (Cormier et al., 2015) in FinSL. According to Hoffrén (2019), there are differences in the combinatorics of depicting signs and CA that depend on the type of the depicting sign and the degree of CA. In her data, signs that depict or draw sizes and shapes occurred mostly without CA, and when occurring with CA, the enactment was never overt; signs that depict a person's hand<sup>6</sup> usually occurred with overt CA; and signs that depict whole entities<sup>7</sup> occurred both with and without CA almost equally.

Finally, research on CA in FinSL has recently been augmented with two phonetic studies on FinSL based on synchronized video, Motion Capture and eye-tracking recordings (Jantunen et al. 2020a, 2020b). In the data used in both studies, the signers depict cartoon strips to an interlocutor. Sequences of CA have been identified from these data according to their degree following Cormier et al.'s (2015) methodology. According to the first study (Jantunen et al., 2020a), the order in which different parts of the signer's body engage in enactment when transitioning from non-enacting signing to overt CA seems to involve a pattern in which the head and eyes of the signer tend to engage in the enactment first, followed by the chest area and the dominant hand, although the data showed a lot of variation according to the individual and the discourse context. According to the second study (Jantunen et al., 2020b), in overt and reduced CA the head and the body of the signer move on a larger area (in relation to the floor), and more rapidly than in subtle CA and non-enacting signing. As regards the kinematics of how the signer's head and body move, reduced CA does not differ significantly from subtle or overt CA in the data. The statistically significant differences in the kinematics of the movements are between the extremes: non-enacting signing and reduced/overt CA or subtle CA and overt CA.

The work described above shows, among other things, that CA occurs in different discourse contexts in FinSL such as storytelling (Jantunen, 2017a; Puupponen, 2018, 2019; Hoffrén, 2019), elicited sentences (Jantunen, 2007) or pre-structured texts translated into FinSL from Finnish (Ala-Sippola, 2012; Nordlund, 2019). Furthermore, we know that storytelling is likely to include more enactment than other types of discourse, a presupposition that was strengthened in a comparison of the frequency of CA in Lukasczyk's (2008) storytelling data with Nordlund's (née Ala-Sippola, 2012, 2019) description of CA in her data, a sample from a Finnish-to-FinSL translation of a text on SL policy. Luckasczyk's 6-min data included altogether 70 instances of CA whereas Nordlund found CA to be rare in the 11-min data she analyzed in the study.<sup>8</sup> However, we do not yet have research that affirms that the use of CA is actually *different* in different discourse types in FinSL. The corpus-based studies

<sup>6</sup> These include both handling and non-handling actions, e.g. rubbing one's hands together.

<sup>7</sup> These include signs with handshapes that depict instruments.

<sup>8</sup> It should be noted, however, that Ala-Sippola did not systematically annotate CA, as the focus of the study lay elsewhere.

on CA in FinSL have all been done on the basis of signed narratives. Nor do we have research that shows *how* this use is different in different discourse contexts. In Nordlund's (née Ala-Sippola, 2012, 2019) data, CA, when it occurred, was more subtle than overt, which indicates that overt CA is less frequent in more formal, non-narrative contexts. However, we do not know whether this is the case in informal conversations, for example.

Another finding already reported in the existing research literature on FinSL is that the use of CA varies considerably between different individuals. The description of variation has until now focused mainly on frequency: we know that some signers use much more CA than others when signing stories (Jantunen, 2017a; Puupponen and Jantunen, 2017). Although this variation has been shown to occur, it has not been examined in much detail so, for example, we do not yet know much about how the use of different CA types differs between individuals, or the reasons why these differences emerge: no studies have yet been done that compare the CA (or anything else, for that matter) of, for example, signers of different ages or genders. The current study aims to contribute to the findings described above by investigating how different types of CA are used in different situations and by different signers in FinSL.

### 3. Data and method

#### 3.1. Participants and data

In the study, the use of CA was investigated using a subset of materials from *Corpus FinSL* (Salonen et al., 2020). The data comprise narrative and dialogue materials from 12 adult FinSL signers aged between 18 and 79, and the overall duration of the materials is 2 h and 30 min. The signers, 6 female and 6 male, are all deaf L1 users of FinSL. At the time of the data collection, the signers were living in various parts of the administrative regions of Western & Inland Finland, and Eastern Finland. In order to analyze signers' use of CA according to different age groups, the signers were divided into two groups: younger adults (18–39 years old,  $n = 6$ ) and older adults (50–79 years old,  $n = 6$ ). The data include stories and conversations shared between the adult signers in a dialogue setting (altogether 6 pairs). The elicitation materials used when collecting their signed stories were textless picture books, *Frog, where are you* (Mayer, 1969)? ( $n = 6$ ) and *Snowman* (Briggs, 1978) ( $n = 6$ ). Each of the two interlocutors was given one of the two picture books before the recording so that they had time to go through the storyline in full. After this, the interlocutors signed the stories to each other without looking again at the elicitation material. In the conversations the signers discussed their work, hobbies or other areas of interest, as they chose. All data except the conversation materials of three signers are publicly available in the Language Bank of Finland, which is a part of the FIN-CLARIN consortium (University of Jyväskylä, Sign Language Centre, 2019).

#### 3.2. Annotation procedure

The Corpus FinSL materials used in the current study have been annotated in ELAN (*Eudico Linguistic Annotator*; Crasborn and Sloetjes, 2008) for signs, translations and CA. The annotations for signs and translations were created during the processing of the Corpus FinSL (Salonen et al., 2020) following the Corpus FinSL annotation guidelines (Salonen et al., 2019). In the current study, the materials were complemented with annotations for subtle, reduced and overt CA, according to the guidelines presented in Cormier et al. (2015). A summary of the annotation tiers in our data is presented in Table 1.

**Table 1**

The ELAN tiers used in the annotation of signs, translations, CA (see Cormier et al., 2015; Jantunen et al., 2020b) and non-enacting signing in the current study.

Tier name	Description (and annotation cell values)
Translation	Sentence-level translation into Finnish.
Gloss	A gloss identifying the sign in Finnish.
NS	Non-enacting signing, i.e., no constructed action.
CA-type	The type of constructed action based on the annotations on the constructed action summary and role tiers (overt, reduced, subtle).
Quotation	A stretch of discourse in which constructed action includes enactment of the utterances or thoughts of a referent.
Role1	The primary role the signer is taking when using constructed action (narrator, character).
Role2	The secondary role the signer is taking when using constructed action (none, narrator, character).
CA-summary	A stretch of discourse in which constructed action is continuously used with one or more articulators to represent the same referent (i.e. within the same character role) (enacting).
CA-eye gaze	Break of eye gaze with addressee for purpose of enacting the referent (enacting).
CA-head	Signer's use of his/her head to represent the referent's head movement or posture (enacting).
CA-face	Signer's use of his/her facial expression to represent the referent's face (enacting).
CA-torso	Signer's use of his/her torso to represent the referent's torso movement or posture (enacting).
CA-dom-arm/hand	Signer's use of his/her dominant arm/hand to represent the referent's arm/hand (enacting, instrument).
CA-ndom-arm/hand	Signer's use of his/her non-dominant arm/hand to represent the referent's arm/hand (enacting, instrument).
Story	The duration of one whole continuous stretch of discourse of a signer



In the annotation process, enacting articulators were first identified and annotated on altogether six independent tiers: *eye gaze*, *head*, *face*, *torso*, and *dominant* and *non-dominant hand*. If one of these articulators was engaged in enactment, an annotation cell with the value *e* (i.e. enactment) was created for the appropriate tier with a duration that matched the duration of the articulation of the enactment. When a signer's hand did not enact the actions of a referent's hand, but instead enacted an instrument with which or to which something was done, the annotation cell was given the value *i* (i.e. hand as instrument). It should be noted that the value *e* was added to annotation cells in the tier *eye gaze* when the signer's eye gaze was enacting a referent's eye gaze. However, the tier *face* was used for annotations in cases in which the signer's eyes enacted other actions of the eyes than a gaze, such as the closing, opening or squinting of the eyes, for example in a situation in which the signer was enacting a 'reaction to a very bright light' by closing their eyes and changing the orientation of their head. Those stretches of discourse where CA included enactment of the utterances or thoughts of a referent were annotated in the tier *Quotation*.

After the first step, the viewpoint of the signer (i.e. the narrator or the character), referred to henceforth as the *role*, and its *prominence* (i.e. full, partial) were determined on the basis of the annotations of the enacting articulators (Cormier et al., 2015). Following Cormier et al. (2015), this was done using two tiers: one tier for the *primary role* and another for the *secondary role*. Cormier et al.'s (2015) data included a maximum of two simultaneous roles per signer. This was the case also with the majority of CA sequences in our data. However, in some cases ( $n = 6$ ), when a storyline included two characters who were doing or experiencing the same thing simultaneously, it was impossible to distinguish whether the signer's face and body enacted only one referent or both of them. In these cases, the utterances were annotated with only one character role annotation cell with both roles marked inside it. The data also included one highly complex utterance in which the signer is simultaneously enacting the actions of two referents with different parts of her body (two internal viewpoints of two characters) while producing a partly lexical sign (an external vantage point of the narrator). This utterance was annotated as including altogether three simultaneous roles.

The annotations for overt, reduced and subtle CA types emerged from the articulatory and role annotations, as explained in Cormier et al. (2015) and Jantunen et al. (2020b). In overt CA, a relatively high number of articulators was always engaged in the enactment, and the primary role was always that of a character. Exceptions were those instances in which a signer was enacting a static state of a referent (e.g. the character 'stares at something in a torpid or perplexed manner'), in which several articulators may not be activated but the end result is a clearly overt enactment of the action. In overt CA there was no secondary narrator role and no lexical signs were produced during it. CA that enacted language events (marked as *quotation*) was annotated as overt CA if it involved manual actions that re-enact lexical and partly lexical signs uttered by the referent, or the referent's thoughts, and if no narrator role was assigned for that CA sequence. In reduced CA, slightly fewer articulators were annotated as enacting than was the case in overt CA, although not as few as in subtle CA. The primary role in reduced CA was that of a character and the secondary role that of the narrator. In reduced CA the signer produced lexical sign(s). In subtle CA, the number of articulators annotated as enacting was relatively low and the narration was done mostly by using lexical and partly lexical signs. The primary role in subtle CA was always that of the narrator and the secondary role that of a character (See also Jantunen et al., 2020b).

For the sake of clarity, we will demonstrate this process through the series of expressions in Fig. 2. The expression in Fig. 2a is annotated so that the enacting articulators include the hands, eye gaze, head, face and torso, which all represent a character screaming; the primary role is 'character' and there is no secondary role of a narrator. The expression in Fig. 2b is annotated so that the enacting articulators include the head and face. The enactment is produced with a slow movement of the head (raising the chin), a mouth action, and an eye-brow movement, all representing screaming. The enactment is so prominent that the primary role in the expression is 'character'. The secondary role is 'narrator', which can be seen in the fact that, during the enactment, the signer produces the lexical sign SCREAM from the external viewpoint of the narrator. The expression in Fig. 2c is annotated so that the enacting articulator is the face. However, the enactment produced with the face is not very prominent: it can be seen mainly in the area of the eyes and eye-brows while the mouth action is non-enacting (mouthing 'huu', representing the Finnish word 'huutaa' meaning 'to scream'). As most of the articulators are not engaged in the enactment and the prominent viewpoint is of the narrator (including the hands that produce the sign SCREAM), the primary role is 'narrator' and the secondary role is 'character'.

If a signed utterance did not include any CA, there were no annotations on articulatory tiers and the primary role was always that of the narrator. In these utterances, no secondary role was assigned and they were defined as non-enacting signing. Following the methodology of Jantunen et al. (2020b), we annotated non-enacting signing automatically with ELAN's *Create annotations from gaps* function on the basis of the *CA summary* tier, which identified continuous stretches of discourse representing the same character. The criteria for determining the constructed action types and the lack of constructed action are summarized in Table 2, following Cormier et al. (2015).

Finally, annotations for the overall duration of the signing of a particular signer were made in the *Story* tier. The *Story* tier annotations were used to calculate the relative share of CA in the signer's story or of the signer's engagement in the conversation. In signed stories, the whole narration of a signer was given one continuous *Story*-level annotation cell (*Story 1*). In conversations, each continuous turn – a sequence during which a signer continuously holds the floor for longer than for a mere response or reaction to their interlocutor's signing – was given a *Story*-level annotation with an individual identifier according to the order in which it occurred in the data (*Story 1*, *Story 2* etc.). The sum of the duration of all of these story annotations was considered to be the total duration of the engagement of one signer in a conversation. The story-level annotations were used for calculating the share of CA in the stories and conversations of each signer.

**Table 2**

The method used to determine CA types and non-enacting signing according to the presence of roles (Cormier et al., 2015; Jantunen et al., 2020b).

CA type	Primary role	Secondary role	Description
none	narrator	none	Narration with no elements of constructed action (i.e. regular narration). Native signer intuition: out of character.
overt	character	none	Clear use of constructed action (strong/many articulators), possibly simultaneous quotation of an utterance of the character. Native signer intuition: fully in character.
reduced	character	narrator	Some use of constructed action (use of articulators for constructed action between overt and subtle), possibly simultaneous quotation of the character's utterance. Native signer intuition: mostly in character.
subtle	narrator	character	Some elements of constructed action (weak/few articulators), possibly simultaneous quotation of the character's utterance. Native signer intuition: mostly out of character but also a bit in character.

### 3.3. Quantitative analysis

After the annotation phase of the study was completed, we calculated the frequency of CA in each story and conversation on the basis of the duration of the tokens of different types of CA. In order to do this, the duration of the annotations referring to subtle, reduced and overt CA in each story and conversation were added together, extracted from ELAN and gathered in Excel. Additionally, the duration of all those instances in each story or conversation that did not include any CA were added together, gathered in Excel and classified as non-enacting signing. Finally, the overall duration of each signed story was extracted from ELAN and gathered in Excel according to the duration of the annotation cells on the Story tiers. The same was done for the conversations by adding together the duration of all the annotation cells on the Story tier for each continuous turn in conversation by each signer. This total duration describes the active participation of a signer in a story or conversation. The share of CA in each signer's contribution to the story and conversation was calculated by converting into percentages the duration of the CA annotations in relation to the duration of the Story annotations.

On the basis of the above information, we established the proportion of CA in each story and conversation – overall, and according to different types of CA. These data were created according to the research questions of the study. The data included information on the distribution of non-enacting signing and subtle, reduced and overt CA according to each signer in both discourse types.

After establishing the distribution of different types of CA, statistical analysis was done to evaluate the significance of the results we had found. For this purpose, tests were done to investigate whether there was a statistically significant difference in the *overall use of CA* and in the *use of CA types* between the signers' stories and conversations (research objective i). In order to do this, the stories and conversations were treated as related samples, and the *Wilcoxon signed-rank test* was used to evaluate whether the observed difference in the use of CA between the samples was statistically significant. The nonparametric Wilcoxon signed-rank test compares whether the population mean ranks of the two samples differ. The test was chosen because it does not presume that the difference between the means of the two samples is normally distributed.

Statistical tests were also done to investigate whether signers' *overall use of CA* and their *use of CA types* was statistically different in stories and conversations according to their age (research objective ii). In order to do this, the signers were divided into two groups that were treated as independent samples: younger adults (aged 18–40) and older adults (aged 50–79). Following this, the differences between the use of CA in the two samples were analyzed with the *Mann-Whitney U test* for independent-samples. The Mann-Whitney *U test* is a similar nonparametric test to the Wilcoxon signed-rank test in that it does not presume a normal distribution for the tested variables in the population. Both tests are good choices if the studied population is quite small ( $\leq 30$ ).

All of the statistical tests were done in SPSS. As the overall duration of the signed stories and conversations varied according to the individual signers, the absolute duration of CA would not be a reliable measure unit for the statistical tests. For this reason, the tests were done on the basis of relative shares (percentages) of CA and its types in the materials. The percentage shares of CA types and non-enacting signing in each story/conversation were calculated, transferred from Excel to SPSS, and used for the statistical analysis.

## 4. The use of CA in the stories and conversations

In this study we set out to investigate (i) whether the use of CA is different in the storytelling and conversations of adult FinSL signers and (ii) whether FinSL signers use CA types differently in storytelling/conversations according to their age. The results of the study for question (i) are presented in Sections 4.1–4.2 and for question (ii) in Section 4.3.

### 4.1. The overall use of CA in signed stories and conversations

The data of the current study show, firstly, that the signing of both the stories and the conversations of adult FinSL signers include constructed action. Secondly, the results show that the stories include a lot more CA than the conversations. Approximately 39 percent ( $Md$  37,1;  $SD$  14,6) of the duration of an average story included CA whereas only approximately 5 percent ( $Md$  3,7;  $SD$  4,2) of the duration of an average conversation included CA. The relative share of CA in the stories and conversations are shown in Fig. 3 for each signer. The dark grey bars demonstrate the relative share of CA in each story and the light grey bars the relative share of CA in each conversation (how much each signer uses CA in a conversation). The figure

demonstrates the variation between individuals in the use of CA in both discourse types. Although the signers' turns in conversation included an average of only approximately 5 percent CA, four of the twelve signers used much more CA, 7–13 percent, during their turns in conversation. Fig. 3 also shows the overall difference between the frequency of CA in the two discourse types, signed stories and conversations. In the statistical analysis we set out to test whether the difference in the overall use of CA between adult signers' stories and conversations is statistically significant. The Wilcoxon signed rank test showed a very significant difference ( $p = 0.002$ ).

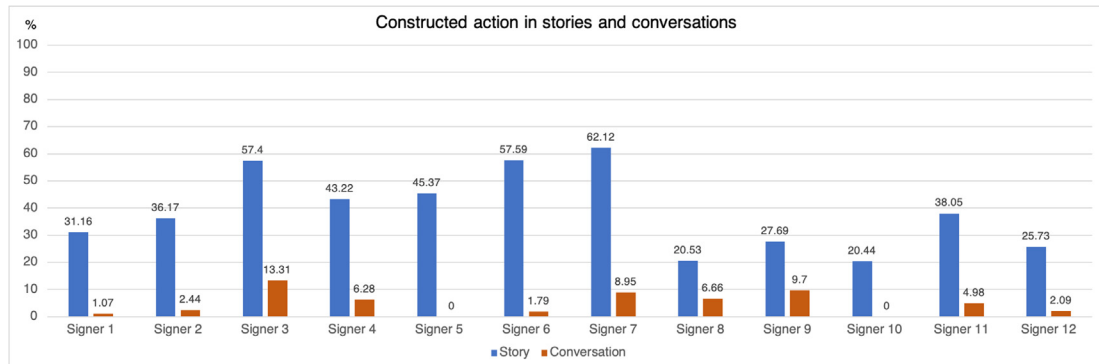


Fig. 3. The relative share of CA in the stories and conversations of adult FinSL signers.

#### 4.2. The use of CA types in signed stories and conversations

In the statistical analysis we also set out to test whether there is a statistically significant difference between the stories and conversations of adult signers in terms of the use of subtle, reduced and overt CA types. The Wilcoxon signed rank test showed a very significant difference between the stories and conversations in the use of all three CA types ( $p = 0.002$  all three types). That is, the share of subtle, of reduced, and of overt CA are all significantly different in the two discourse types.

When we look at the results according to the distribution of the CA types and non-enacting signing in stories and conversations, the data show that overt CA seems to be the most frequent CA type in both stories and conversations (Figs. 4 and 5). As we can see from the figures, non-enacting signing is the dominant strategy in 9 of the 12 signed stories and in all 12 conversations. Although overt CA is the most frequently occurring CA type in both stories and conversations, it seems that in conversations the difference between the share of overt CA and the share of reduced and subtle CA is slightly smaller than in signed stories.

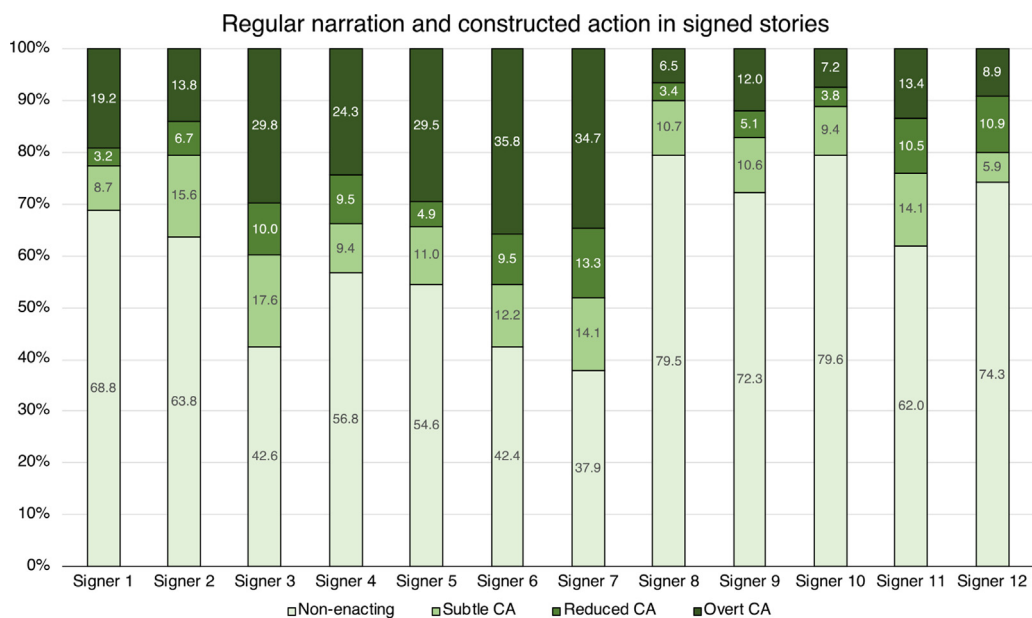
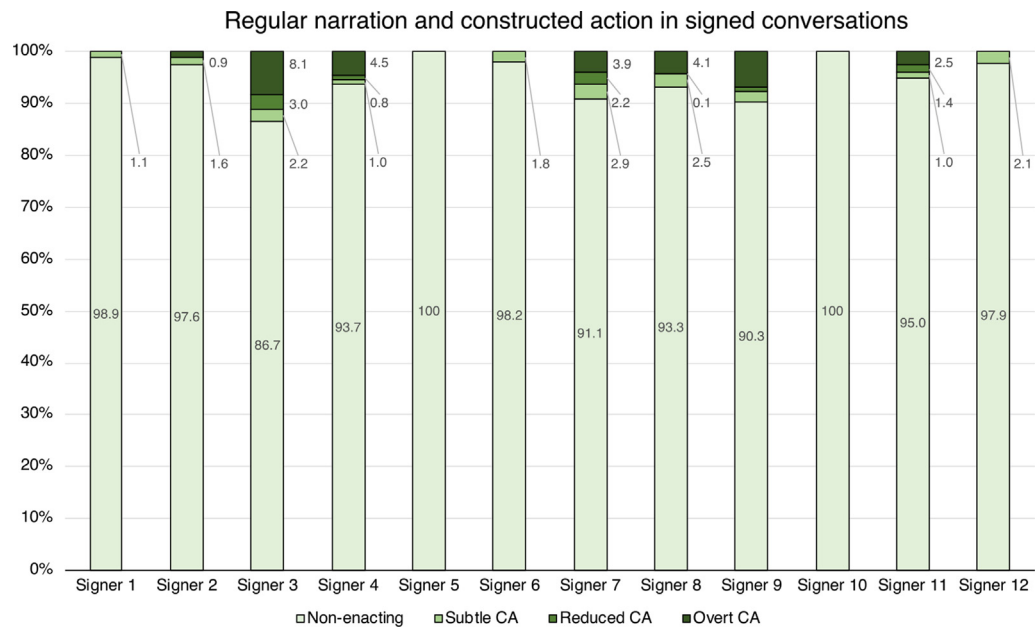


Fig. 4. The distribution of subtle, reduced and overt CA and non-enacting signing in the stories of adult FinSL signers.



**Fig. 5.** The distribution of subtle, reduced and overt CA and non-enacting signing in the conversations of adult FinSL signers.

When we look at the relative distribution of CA types in the statistical descriptions presented in [Tables 3 and 4](#), we see that in both the average story and the average conversation, overt CA constitutes the largest share, that of subtle CA is smaller, and the share of reduced CA is the smallest. However, in the average conversation, the difference between the share of overt CA and the share of subtle CA is much smaller than in the average story. That is, in stories, adult signers clearly use overt CA much more than the other CA types, whereas in conversations they use overt CA only slightly more than other CA types. These differences are demonstrated in the boxplots in [Fig. 6](#). In the boxplots, the whisker below the box displays the minimum value, the bottom of the box the first quartile, the line inside the box the median (i.e. second quartile), the top of the box the third quartile, and the whisker above the box the maximum value.

**Table 3**

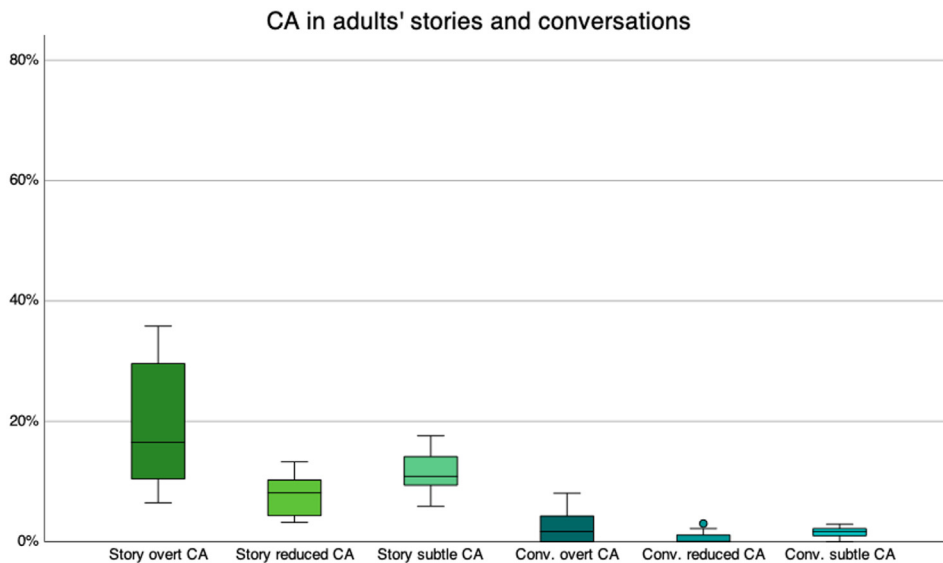
Descriptive statistics for the relative share of CA types in the stories of adult FinSL signers.

	Minimum %	Maximum %	Mean %	Median %	Std. Deviation %
Overt CA	6.48	35.84	19.59	16.52	10.81
Reduced CA	3.21	13.29	7.58	8.15	3.45
Subtle CA	5.91	17.61	11.62	10.84	3.27

**Table 4**

Descriptive statistics for the relative share of CA types in the conversations of adult FinSL signers.

	Minimum %	Maximum %	Mean %	Median %	Std. Deviation %
Overt CA	0	8.07	2.56	1.71	2.88
Reduced CA	0	3.02	0.69	0.04	1.02
Subtle CA	0	2.91	1.53	1.68	0.93

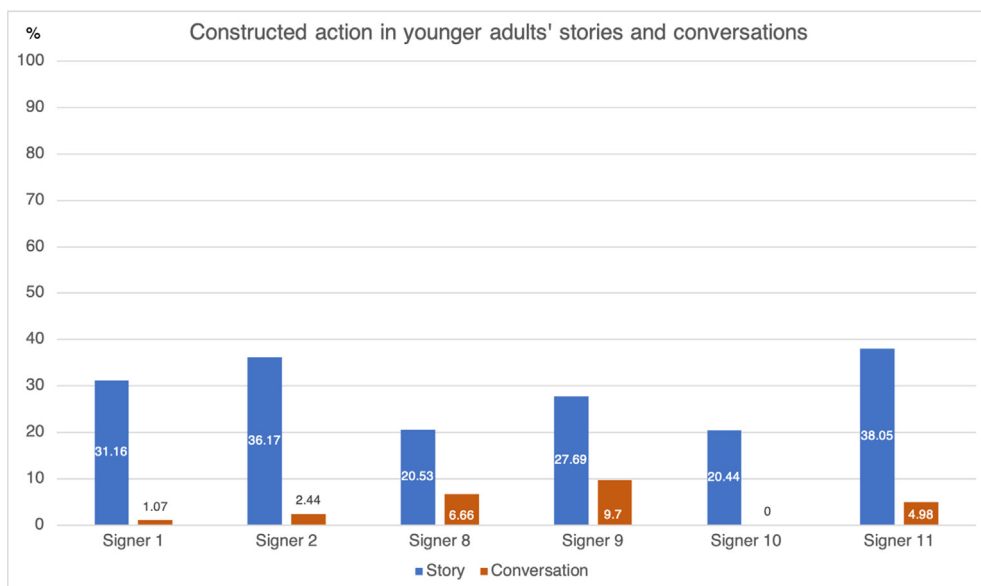


**Fig. 6.** Boxplots of the relative share of CA types in the stories and conversations of adult FinSL signers. The scale is exceptionally set to 80 percent in order to demonstrate the statistical differences.

4.3. The use of CA in the signed stories and conversations of younger and older adult signers

In addition to comparing two different discourse genres, the current study set out to investigate whether younger and older adults use CA types differently in signed stories and conversations (ii). Figs. 7 and 8 present the relative shares of CA in the stories and conversations of younger adults (18–39 years old) and older adults (50–79 years old), respectively.

As can be seen from the blue bars in Figs. 7 and 8, the use of CA is clearly more common in the stories of older signers than in the stories of younger adult signers. Three of the six older signers produce stories that include around 60 percent of CA, whereas among the younger adult signers the maximum share of CA in a story is slightly under 40 percent. With regard to the conversations, demonstrated in the figures with red bars, there is no evident difference between younger and older adults, as both age groups seem to use CA quite little. In fact, one older signer did not use CA at all in a conversation.



**Fig. 7.** The relative share of CA in the signed stories and conversations of younger adults.



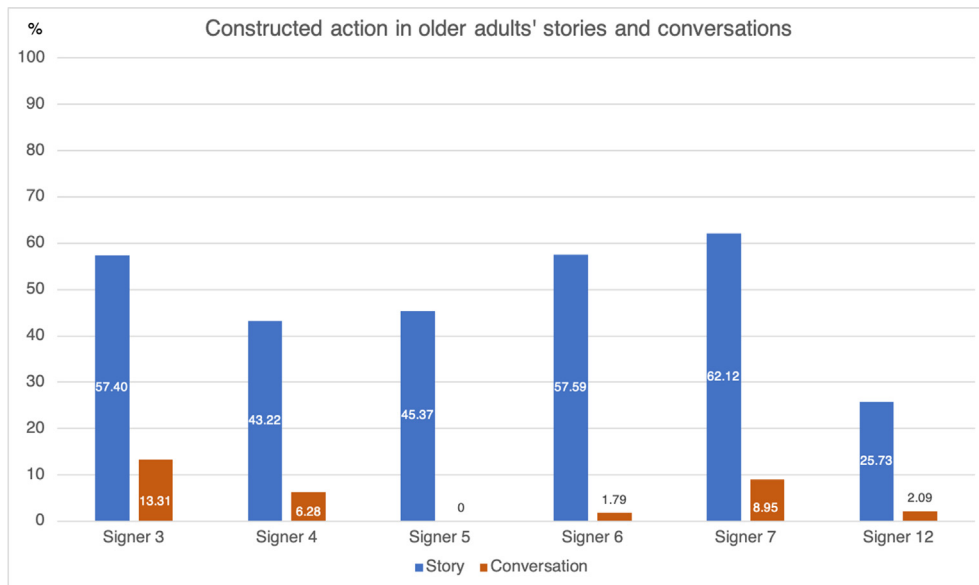


Fig. 8. The relative share of CA in the signed stories and conversations of older adults.

In the statistical analysis we set out to test whether this difference between younger and older signers' use of CA in stories and conversations is statistically significant. The results of the Mann-Whitney  $U$  test showed that the difference is, indeed, statistically significant ( $p = 0.026$ ) when it comes to signed stories, but a statistically significant difference was not found between the conversations of younger and older adults ( $p = 0.818$ ). The descriptive statistics for the use of CA in younger and older adults' stories and conversations are presented in Tables 5 and 6, respectively.

Table 5

Descriptive statistics for the relative share of CA in the stories of younger and older adults.

	Minimum %	Maximum %	Mean %	Median %	Std. Deviation %
CA younger	20.44	38.05	29.00	29.43	7.55
CA older	25.73	62.12	48.57	51.39	13.44

Table 6

Descriptive statistics for the relative share of CA in the conversations of younger and older adults.

	Minimum %	Maximum %	Mean %	Median %	Std. Deviation %
CA younger	0	9.7	4.14	3.71	3.67
CA older	0	13.31	5.40	4.19	5.08

As Tables 5 and 6 show, 29 percent of the average story of a young adult includes CA, whereas for an older FinSL signer the figure is almost 50 percent ( $M = 48.6$ ;  $Md = 51.4$ ). To summarize, the data of the current study show that FinSL signers' overall use of CA varies according to their age in stories but not in conversations.

As we found a statistically significant difference between younger and older adult signers in the stories but not in the conversations, we further investigated the distribution of CA types and non-enacting signing in stories, and whether this distribution was different according to the signer's age. The distribution of CA types and non-enacting signing in younger adults' and older adults' stories is shown in Figs. 9 and 10, respectively.

Figs. 9 and 10 show that in younger adults' stories overt CA is the most frequent CA type only in two cases, whereas in older signers' stories overt CA is the most frequent CA type in all but one case. This observation is supported by the results of the Mann-Whitney  $U$  test, which shows that in signed stories the difference in the use of overt CA by younger and older adults is statistically significant, whereas a statistically significant difference was not found in the use of reduced and subtle CA. The descriptive statistics for the use of CA types according to age are presented in Tables 7 and 8.

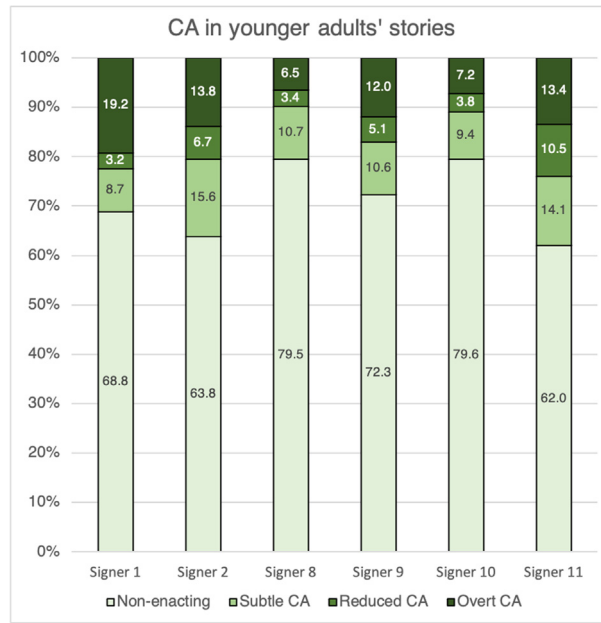


Fig. 9. The distribution of subtle, reduced and overt CA and non-enacting signing in the stories of young adult FinSL signers.

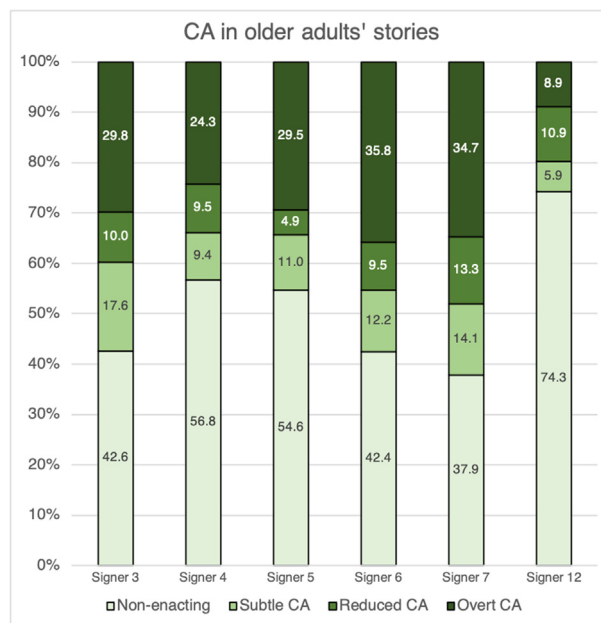


Fig. 10. The distribution of subtle, reduced and overt CA and non-enacting signing in the stories of older FinSL signers.

As we see in Tables 7 and 8, the average stories of younger adults include a similar share of subtle and reduced CA to those of older adults. However, the share of overt CA is over twice as large in older signers' stories as in younger signers' stories.

**Table 7**

Descriptive statistics for the relative share of subtle, reduced and overt CA in the stories of younger adults.

	Minimum %	Maximum %	Mean %	Median %	Std. Deviation %
Subtle CA younger	8.75	15.58	11.53	10.63	2.72
Reduced CA younger	3.21	10.5	5.46	4.47	2.80
Overt CA younger	6.48	19.19	12.02	12.69	4.70

**Table 8**

Descriptive statistics for the relative share of subtle, reduced and overt CA in the stories of older adults.

	Minimum %	Maximum %	Mean %	Median %	Std. Deviation %
Subtle CA older	5.91	17.61	11.71	11.61	4.01
Reduced CA older	4.89	13.29	9.70	9.785	2.74
Overt CA older	8.91	35.84	27.16	29.62	9.86

## 5. Discussion

### 5.1. Differences between stories and conversations

In the current study we set out to investigate (i) whether the use of CA is different in the stories and conversations of adult FinSL signers and (ii) whether age affects the difference in CA usage in these two different genres. Regarding (i), the results of our analysis showed, firstly, that FinSL signers include constructed action in both signed stories and conversations, and, secondly, that there is much more CA in signed stories than in conversations. These findings are in line with findings on the sparseness of CA in Ferrara's (2012) and Ferrara and Ringsø's (2019) conversational data on Auslan and Norwegian Sign Language, as well as with Ala-Sippola's (2012) report of the sparseness of CA in a translated, pre-structured text in FinSL. The difference between stories and conversations was significant and substantial despite the large variation among individual signers in the frequency of use of CA (see Fig. 3; cf. Hodge and Ferrara, 2014; Ferrara and Johnston, 2014; Jantunen, 2017a). Moreover, the result corresponds to anecdotal evidence – based on the intuition and experiences of FinSL signers – that non-narrative discourse involves less enactment than does storytelling. However, although less frequent, CA still *was* used in conversations by 10 of the 12 adult signers in the data. Three of these 12 signers used CA from 9 to 13 percent of their turns in conversation. This is a clear indication that CA is a natural part of SL discourse in non-narrative contexts, albeit a less frequent and more variable one.

The results of the current study also showed that the difference in the frequency of CA between stories and conversations holds for all three CA types: subtle, reduced and overt CA are all used significantly more in stories than in conversations. When looking more closely at the distribution of the three types of CA, overt CA was found to be the most frequent CA type in both stories and conversations. However, in stories, the signers clearly used overt CA much more than reduced and subtle CA, whereas in conversations this difference was smaller and they used overt CA only slightly more than other CA types. This means that, according to our data, the relative share of reduced and subtle CA is larger in conversations than in storytelling in FinSL. This result is in line with Nordlund's (2019) observations of the subtlety of CA in another non-narrative discourse context, a translated pre-structured text in FinSL. It may well be that non-narrative contexts include relatively more subtle and reduced CA, and that if one approaches CA as an articulatorily holistic phenomenon (e.g. Ferrara and Johnston, 2014; Jantunen, 2017a) while studying non-narrative language use, the more subtle enactments may be overlooked and the view of the frequency of enactment in these discourse contexts may become biased (see also Cormier et al., 2015). Conversations are, however, different in their communicational foundations from other non-narrative discourse types, such as Nordlund's (2019) formal signed text. Moreover, conversations are not always necessarily “non-narrative”, as signers may use longer turns of continuous signing to describe, for example, their past experiences. In our future work, we plan to investigate further how frequently tokens of CA emerge in these types of contexts in conversations.

As mentioned in the beginning of this section, the share of CA in both stories and conversations was shown to vary, which supports the earlier observations of, for example, Ferrara (2012), Hodge and Ferrara (2014) and Ferrara and Johnston (2014). The share of CA in stories varied between 20 and 62 percent. This variation was found regardless of which storybook was used for elicitation (that is, both *Frog, where are you* and *Snowman* stories showed a lot of variation). In conversations, the share of CA varied between 0 and 13.3 percent. Three of the twelve signers did not use CA at all, or used it less than 1 percent of the time during their turns in conversation.

We can see from the discussion above that the frequency of CA in FinSL seems to be connected to the type of discourse signers engage in. Both discourse-oriented factors such as genre-specific features of language use and signers' communicational aims affect what types of discourse strategies are chosen at any given moment. Signed stories are continuous stretches of discourse with little interaction between the participants. Storytelling as a discourse context invites signers to liven up the content that is being signed and get the interlocutor engaged in the storytelling. In addition, in storytelling, the same referents are carried through the story for longer stretches of time. These factors naturally lead to language use that includes, for example, the chaining of syntactic and discourse level units (guided by the event structure of the story), the

omission of overt core arguments, and the use of CA (e.g. Jantunen, 2017a,b). As the content of the stories was relatively fixed, the variation found between the signed stories of different signers are more likely to have been caused by socio-individual characteristics, such as preferences and experience in storytelling, education or age, as well as the social distance/intimacy between the interlocutors (see also Hodge and Ferrara, 2014). In the future, complementing corpus-based frequency analysis with interviews with signers on their possible reasons for using or not using CA in different contexts might be fruitful.

Especially in conversations, the requirements of the interaction and the topic that is being discussed play a significant role. The topics of the conversations in our data were freely chosen by the interlocutors, as long as they were related to their work, hobbies or other significant activities in their everyday lives. This means that the frequency of CA may correspond to the topic of discussion, in addition to the discourse type and possible socio-individual effects. For example, as the level of animacy has been reported to have an effect on the use of CA (Hodge et al., 2019), we hypothesize that when the topic of discussion is related to the actions of animate beings, the probability of a higher frequency of CA increases. Relevant here, too, is an observation made in Slonimska et al. (2020), that CA may be useful especially in situations which require efficiency in the information transmission. A topic for future investigation could be whether the event structure of a story or topic in a conversation, and the complexity of simultaneous information (e.g. the number of simultaneous actions) at a particular point in the discourse, correlate with the frequency of CA. After all, CA is a semiotically complex structure in which a signer may convey simultaneously organized information involving several articulators and simultaneous viewpoints. Further research into the correspondence between discourse topics, event structure and the share of CA in the data would also be very interesting. However, what is evident is that, regardless of the variety of topics, the use of CA in the data of the current study was significantly less frequent in all conversations than in storytelling.

To conclude this discussion: although the type of communicative situation plays a significant part in how much and what kind of CA emerges in the discourse, we also presume that some of the most significant factors affecting the use of CA are the signers' semiotic objectives in language use, that is, what the signers wish to say. We hypothesize here that the referential functions of CA – the type of action and participant(s) it refers to – may be connected to whether overt, reduced or subtle form is used. In other words, we presume that the meanings signers wish to convey have an effect on how CA is used.

For example, conversations may include the reporting of preceding, potential or fictional events that include dialogue. Therefore, the signed conversations in our data may involve relatively more CA that enacts utterances than the signed stories, as the stories were produced on the basis of textless story books that do not involve overt dialogue (although this difference is not clear-cut, as signers may add uttered or thought propositions to a story even when they are not present in the elicitation material). Following the chosen theoretical-methodological framework, we did not analyze utterance-enacting tokens of CA separately but tagged them and included them in our overall sample of CA tokens. However, a comparison of the frequency of utterance-enacting CA between signed stories and conversations is an interesting topic that we plan to investigate further in our future work. The same applies for CA that has other referential functions, such as the enactment of feelings, attitudes, physical reactions and other non-linguistic actions.

When looking at all the instances of CA that were tagged as enacting language events in the stories and conversations ( $n = 191$ ), only a few were annotated as reduced ( $n = 8$ ) or subtle ( $n = 16$ ). In these cases, the CA involved only the non-manually signaled quotation of thoughts or utterances, not the manual lexical and partly lexical signs that re-enact utterances or thoughts by a referent. It may well be that the method of annotating those tokens of CA that enact language events overemphasizes their overtness: when hands produce quotations of lexical and partly-lexical signs, the CA token is always annotated as overt, regardless of the prominence of the enactment in other articulators. In addition to being manually biased, this methodological solution may affect the results on the share of overt CA found in the conversational data: some tokens of utterance-enacting CA might be considered non-overt if the occurrence of manual lexical quotations did not automatically make them overt. In our future work, we plan to further investigate the prominence of enactment and CA type in tokens of CA that quote language events. All in all, discovering whether the referential function of CA connects to its degree (overt, reduced, subtle) is an important task for future SL studies. In order to get a more comprehensive understanding of the role of CA in different discourse contexts, it would also be useful to compare FinSL signers' use of CA with non-signing Finnish speakers' use of CA (see e.g. Ferrara and Hodge, 2018), and with the use of CA by children and adults acquiring FinSL.

## 5.2. Differences in the stories and conversations of younger and older FinSL signers

Regarding (ii), the results of our study showed clearly that the overall use of CA is more common in the signed stories of older adults (50–79 years) than in those of younger adults (18–39 years). However, this kind of difference was not found between younger and older adults' conversations, in which both age groups seemed to use CA quite little (as is evident from the discussion above). According to our data, in the case of storytelling, older signers' preference for enacting discourse strategies is clearly stronger than younger signers'.

When looking more closely at the distribution of different types of CA, the results also showed that the difference between older and younger adults is especially significant in the use of overt CA. The average stories of younger and older adults include relatively similar shares of subtle and reduced CA, but older signers use, on average, twice as much overt CA as young adults. This indicates that if young signers use CA, they tend to use it together with partly or fully lexical signs.

These findings are in line with the intuitions, experiences and concerns of members of the FinSL community that the FinSL storytelling of the younger generations is becoming "less lively". In the future, including more data in the analysis will show

whether the significance of this difference holds when looking at a sample of FinSL materials that includes even more individual variation. The results are also in line with the observation that in the FinSL community, older FinSL signers' articulation is often considered both to be somehow larger and to include more engagement of the whole body. As presented in Section 2.4, studies investigating the sociolinguistic variation in SLs have shown that older signers of, for example, BSL may use more two-handed forms of signs than one-handed forms, and that younger signers of ASL or BSL may produce articulatorily lowered signs more frequently than older signers (Stamp et al., 2015; Lucas et al., 2001; Schembri et al., 2009). An interesting follow-up question for future cross-linguistic investigation is whether the differences in the use of CA of younger and older adults presented in this study are specific to FinSL or whether other sign languages show similar features as well.

There are several issues that may explain the differences between the younger and older signers' use of CA, described above. As has been noted in the research literature on SL sociolinguistics (e.g. Lucas et al., 2001; Schembri and Lucas, 2015), the changing educational practices of deaf children and young adults during the last few decades may be having an important effect on the variation found in SLs. The changes in Finnish deaf education (i.e. the disappearance of vocational schools & their language practices) has had an impact on the intergenerational transmission patterns of FinSL. This has most probably affected the structure and use of FinSL on many different levels. As Lucas et al. (2001, 95) argue:

*'Age as a sociolinguistic variable may have different effects on linguistic variation, because of the differences in language policies in Deaf schools in the twentieth century. Thus, while differences in the signing of older and younger people may appear to be due either to age group differences or to natural language change (such as occurs in all languages), these differences may also be the result of changes in educational policies, like the shift from oralism to "total communication" (i.e. manualism) that occurred in the USA, or from total communication to a bilingual-bicultural approach.'*

Due to differences in the educational settings of deaf people in Finland, the availability of interpreting services and the advances in and affordability of information and communications technology, many children acquiring a sign language face a different linguistic environment from that found in, for example, the vocational schools that followed the oralist paradigm during a large part of the 20th century. Nowadays, becoming acquainted with different aspects of the FinSL lexicon may happen at an earlier stage in young people's lives (assuming that the child's right to and need for SL teaching and interpreting services is met), whereas in the past much of the discourse emerged from (and might have been restricted to) their lives in the vocational school environment. There are also factors such as individual preferences and personality, or the amount of contact with the Finnish language and other aspects of multilingualism in the language environment. There may also be differences in experience and skills in storytelling between the older and younger generations of FinSL signers which could affect the frequency of use of CA. For example, the role of the narrative "oral" tradition in signers' lives – flourishing in the vocational schools and traditional deaf clubs – may now be changing, in much the same way as regional dialects have been noted to be diminishing due to changes in deaf people's linguistic environments (Stamp et al., 2015). On the other hand, the possibilities that have emerged from, for example, recent developments in communications technologies have been said to carry potential for language maintenance (Fenlon and Wilkinson, 2015) and to offer platforms for new "oral" SL traditions. It should also be noted that due to the aforementioned generational differences, advances in technologies and differences in experiences of entertainment, signers of different ages may have differing levels of interest in or different attitudes toward the more traditional picture-based retelling task used in this study.

Finally, one interesting question for future research would be whether the difference in the share of CA between younger and older signers' stories is connected to the sociolinguistic effects of the replacement of old signs with new ones in SL lexicons. Hoyer (2007) and Mckee and Mckee (2011), for example, have discussed the possibility that younger generations of signers may be moving away from indigenous, more context-dependent signs and signs conceived as more "gestural" and instead may be starting to use new signs (e.g. loan signs) with more conventionalized formational features that may be thought to be more prestigious. Sandler et al. (2011), Sandler (2012), Sandler (2016) and Dachkovsky et al. (2018) have suggested that earlier stages of a sign language involve more holistic use of the body and, as the language develops, signals from different body parts are used and combined in more semiotically complex ways. Can these suggested tendencies in the development of the lexicon and structure of sign languages be rooted in the same place as the young signers' discourse-level preference or tendency to use less overt enactment in our data? When looking at a larger data set with more signers and more token enactments, would the data show a tendency for younger generations of signers to use less overt CA? Should subtle and reduced CA be considered as *more complex* structures than overt CA, and how is this defined as regards articulation, the combining and organization of articulations, information, compositionality, diagrammaticity, modal affordances and processing (see e.g. Karlsson et al., 2008)? In order to discuss the aforementioned issues, more comparative studies are needed of younger and older signers' language use, with more extensive samples of data than is used in the current study.

## 6. Conclusion

In this paper, we have presented a study on the use of constructed action in the storytelling and conversations by younger and older FinSL signers. The results of the study show that stories include significantly more CA than conversations, and that the most frequent type of CA in both discourse contexts is overt CA. However, according to the data, when a signer does use CA in a conversation, the chance of its being reduced or subtle is greater than it is in stories. In addition, the share of CA in both the stories and conversations of individual signers was shown to vary. The current study points toward the need for investigation of the functions of CA and discourse-oriented factors, such as the genre-specific features of language use, and the



communicational aims of signers, and of how these affect the types of CA that are used or not used at a given moment. Especially in conversations, the requirements of the interaction and the topic that is being discussed play a significant role. For example, we hypothesize that when the topic of discussion is related to the actions of animate beings, the discussion is more likely to include a higher frequency of CA (see Hodge et al., 2019).

The results of the study also show that, in storytelling, young adult FinSL signers use significantly less CA than older FinSL signers. Especially the use of overt CA – in which the signer's whole body is engaged in the enactment – is less frequent in young adults' signed stories, and young adults use relatively more subtle and reduced degrees of CA – in which the signer's hand(s) produce(s) lexical or partly lexical signs of FinSL simultaneously with the enactment. In conversations, no such difference was found between the two age groups. Studies with more extensive samples of data are needed for us to discover whether these tendencies can be generalized to involve the whole FinSL community, whether they are related to changes in the language environments of signers of different ages, and whether this affects how FinSL changes over time.

## Acknowledgements

The authors wish to thank Eleanor Underwood for checking the English of the paper. The financial support of the Academy of Finland under the grant 339268 is also gratefully acknowledged.

## References

- Ala-Sippola, S., 2012. Agentin Ilmaiseminen Suomalaisella Viittomakielellä Tuotetussa Asiatekstissä [Expressing Agent in an Informational Text in FinSL]. MA Thesis. University of Helsinki, Helsinki.
- Bayley, R., Lucas, C., Rose, M., 2000. Variation in American sign language: the case of DEAF. *J. SocioLinguistics* 4, 81–107.
- Bayley, R., Schembri, A., Lucas, C., 2015. Variation and change in sign languages. In: Schembri, A., Lucas, C. (Eds.), *Sociolinguistics and Deaf Communities*. Cambridge University Press, Cambridge, UK, pp. 1–4.
- Briggs, R., 1978. *The Snowman*. Hamish Hamilton, London.
- Bybee, J.L., Beckner, C., 2010. Usage-based theory. In: Heine, B., Narrog, H. (Eds.), *The Oxford Handbook of Linguistic Analysis*. Oxford University Press, Oxford, pp. 827–856.
- Cameron, R., 1998. A variable syntax of speech, gesture, and sound effect: direct quotations in Spanish. *Lang. Var. Change* 10, 43–83.
- Clark, H., 2016. Depicting as a method of communication. *Psychol. Rev.* 123 (3), 324–347.
- Clark, H., Gerrig, R., 1990. Quotations as demonstrations. *Psychol.* 66, 764–805.
- Cogill-Koez, D., 2000. Signed language classifier predicates: linguistic structures or schematic visual representation? *Sign Lang. Linguist.* 3, 153–207.
- Cormier, K., Quinto-Pozos, D., Sevcikova, Z., Schembri, A., 2012. Lexicalisation and delexicalisation processes in sign languages: comparing depicting constructions and viewpoint gestures. *Lang. Commun.* 32, 329–348.
- Cormier, K., Smith, S., Zwets, M., 2013. Framing constructed action in British Sign Language narratives. *J. Pragmat.* 55, 119–139.
- Cormier, K., Smith, S., Sevcikova, Z., 2015. Rethinking constructed action. *Sign Lang. Linguist.* 18, 167–204.
- Crasborn, O., Sloetjes, H., 2008. Enhanced ELAN functionality for sign language corpora. In: *Proceedings of the 3rd Workshop on the Representation and Processing of Sign Languages. Construction and Exploitation of Sign Language Corpora*, pp. 39–43.
- Cuxac, C., 2000. *La Langue des Signes Française. Les Voies de l'Iconicité*. Ophrys, Paris.
- Dachkovsky, S., Stamp, R., Sandler, W., 2018. Constructing complexity in a young sign language. *Front. Psychol.* 9, 2202.
- Davidson, K., 2015. Quotation, demonstration, and iconicity. *Ling. Philos.* 38 (6), 477–520.
- Diessel, H., 2017. Usage-based linguistics. In: Aronoff, M. (Ed.), *Oxford Research Encyclopedia of Linguistics*. Oxford University Press, New York.
- Dudis, P.G., 2004. Body partitioning and real-space blends. *Cognit. Ling.* 15 (2), 223–238.
- Emmorey, K., 2002. Language, Cognition, and the Brain: Insights From Sign Language Research. Erlbaum, Mahwah, NJ.
- Emmorey, K., Tversky, B., Taylor, H., 2000. Using space to describe space: perspective in speech, sign, and gesture. *Spatial Cognit. Comput.* 2 (3), 157–180.
- Engberg-Pedersen, E., 1993. Space in Danish Sign Language. Signum Press, Hamburg.
- Engberg-Pedersen, E., 1995. Point of View Expressed through Shifters. In: Emmorey, K., Reilly, J. (Eds.), *Language, Gesture & Space*. Lawrence Erlbaum Associates, Hillsdale, NJ, pp. 133–154.
- Fenlon, J., Wilkinson, E., 2015. Sign Languages in the World. In: Schembri, A., Lucas, C. (Eds.), *Sociolinguistics and Deaf Communities*. Cambridge University Press, Cambridge, pp. 5–28.
- Fenlon, J., Schembri, A., Rentelis, R., Vinson, D., Cormier, K., 2014. Using conversational data to determine lexical frequency in British Sign Language: the influence of text type. *Lingua* 143, 187–202.
- Ferrara, L., 2012. *The Grammar of Depiction: Exploring Gesture and Language in Australian Sign Language (Auslan)*. A PhD Dissertation. Department of Linguistics, Macquarie University, Sydney, Australia.
- Ferrara, L., Hodge, G., 2018. Language as description, indication, and depiction. *Front. Psychol.* 9, 716.
- Ferrara, L., Johnston, T., 2014. Elaborating who's what: a study of constructed action and clause structure in auslan (Australian sign language). *Aust. J. Ling.* 34 (2), 193–215.
- Ferrara, L., Ringso, T., 2019. Spatial vantage points in Norwegian sign language. *Open Ling.* 5, 583–600.
- Ferrara, L., Anible, B., Hodge, G., Jantunen, T., Leeson, L., Mesch, J., Nilsson, A.-L., 2020. A cross-linguistic comparison of reference across different signed languages. In: *A Paper Presented at the 14th Conference of the High Desert Linguistic Society (HDLS 14)*, November 20–22, 2020. University of New Mexico, Albuquerque, New Mexico.
- Geraci, C., Bayley, R., Cardinaletti, A., Cecchetto, C., Donati, C., 2015. Variation in Italian sign language (LIS): the case of wh-signs. *Linguistics* 53, 125–151.
- Günthner, S., 1999. Polyphony and the 'Layering of Voices' in Reported Dialogues: an analysis of the use of prosodic devices in everyday reported speech. *J. Pragmat.* 31, 685–708.
- Hodge, G., Cormier, K., 2019. Reported speech as enactment. *Linguist. Typol.* 23 (1), 185–196.
- Hodge, G., Ferrara, L., 2014. Showing the story: enactment as performance in Auslan Narratives. In: Gawne, L., Vaughan, J. (Eds.), *Selected Papers From the 44th Conference of the Australian Linguistic Society*, pp. 372–397.
- Hodge, G., Johnston, T., 2014. Points, depictions, gestures and enactment: partly lexical and non-lexical signs as core elements of single clause-like units in auslan (Australian sign language). *Aust. J. Ling.* 34 (2), 262–291.
- Hodge, G., Ferrara, L., Anible, B., 2019. The semiotic diversity of doing reference in a deaf signed language. *J. Pragmat.* 143, 33–53.
- Hoffrén, N., 2019. *Kuvailevien Viittomien Ja Konstruoidun Toiminnan Yhteispeli*. [Cooperation of Depicting Signs and Constructed action.]. MA Thesis. University of Jyväskylä, Jyväskylä.
- Hopper, P.J., 1998. Emergent grammar. In: Tomasello, M. (Ed.), *The New Psychology of Language: Cognitive and Functional Approaches to Language Structure*. Erlbaum, Mahwah, NJ, pp. 155–175.

- Hoyer, K., 2007. Albanian Sign Language: Language Contact, International Sign, and Gesture. In: Quinto-Pozos, D. (Ed.), *Sign Languages in Contact*. Gallaudet University Press, Washington, D.C., pp. 195–234.
- Jantunen, T., 2007. On Topic in Finnish Sign Language (Unpublished manuscript. [http://users.jyu.fi/~tojantun/articles/JAN\\_topic\\_ms.pdf](http://users.jyu.fi/~tojantun/articles/JAN_topic_ms.pdf)).
- Jantunen, T., 2008. Fixed and free: order of the verbal predicate and its core arguments in declarative transitive clauses in Finnish Sign Language. *SKY J. Linguist.* 21, 83–123.
- Jantunen, T., 2013. Ellipsis in Finnish sign language. *Nord. J. Ling.* 36 (3), 303–332.
- Jantunen, T., 2016. Clausal coordination in Finnish sign language. *Stud. Lang.* 40 (1), 204–234.
- Jantunen, T., 2017a. Constructed action, the clause and the nature of syntax in Finnish Sign Language. *Open Ling.* 3, 65–85.
- Jantunen, T., 2017b. Finnish Sign Language. In: van Craenenbroeck, J., Temmerman, T. (Eds.), *The Oxford Handbook of Ellipsis*. Oxford University Press.
- Jantunen, T., Puupponen, A., Burger, B., 2020a. What comes first: combining motion capture and eye tracking data to study the order of articulators in constructed action in sign language narratives. In: *Proceedings of the Twelfth International Conference on Language Resources and Evaluation (LREC 2020)*, ELRA, Paris, pp. 6005–6009.
- Jantunen, T., De Weerd, D., Burger, B., Puupponen, A., 2020b. 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. To appear in. *Gesture* 19 (1), 72–96.
- Johnston, T., 2012. Lexical frequency in sign languages. *J. Deaf Stud. Deaf Educ.* 17 (2), 163–193.
- Johnston, T., Ferrara, L., 2012. Lexicalization in signed languages: when is an idiom not an idiom?. In: *Selected Papers from UK-CLA Meetings*, 1, pp. 229–248.
- Johnston, T., Schembri, A., 2010. Variation, lexicalization and grammaticalization in signed languages. *Language Soc.* 131, 19–35.
- Kaneko, Mesch, 2013. Eye gaze in creative sign language. *Sign Lang. Stud.* 13 (3), 372–400.
- Kanto, L., Puupponen, A., Jantunen, T., 2021. The use of constructed action in the narrative tasks of Adult FinSL signers and children acquiring FinSL [Manuscript, to be submitted in May 2022].
- Karlsson, F., Sinnemäki, K., Miestamo, M., 2008. Introduction: the Problem of Language Complexity. In: Karlsson, et al. (Eds.), *Language Complexity: Typology, Contact, Change*. John Benjamins Publishing Co, Amsterdam.
- Kendon, A., 2014. Semiotic diversity in utterance production and the concept of ‘language’. *Philosophical Transactions of the Royal Society B* 369 (1651), 20130293.
- Kronqvist, A., 2018. Kuukausiviittomien Foneettinen Ja Leksikaalinen Variaatio Suomalaisessa Viittomakielellä [The Phonetic and Lexical Variation of Sign for Months in Finnish Sign Language]. MA Thesis. Department of Language and Communication Studies, University of Jyväskylä, Finland. <http://urn.fi/URN:NBN:fi:jyu-201808293948>.
- Lentz, E.M., 1986. Teaching role shifting. In: Padden, C.A. (Ed.), *Proceedings of the fourth national symposium on sign language research and teaching*. Silver Spring, MD: NAD, pp. 58–69.
- Liddell, S.K., 2003. *Grammar, Gesture, and Meaning in American Sign Language*. Cambridge University Press, Cambridge.
- Liddell, S.K., 2003b. Sources of meaning in asl classifier predicates. In: Emmorey, K. (Ed.), *Perspectives on Classifier Constructions in Sign Languages*. Lawrence Erlbaum Associates, Mahwah, NJ, pp. 199–220.
- Liddell, S.K., Metzger, M., 1998. Gesture in sign language discourse. *J. Pragmat.* 30 (6), 657–697.
- Lilja, N., Piirainen-Marsh, A., 2019. Connecting the language classroom and the wild: Re-enactments of language use experiences. *Applied Linguistics* 40 (4), 594–623.
- Lillo-Martin, D., 1995. The point of view predicate in American Sign Language. In: Emmorey, K., Reilly, J. (Eds.), *Language, Gesture, and Space*. Lawrence Erlbaum Associates, Hillsdale, NJ, pp. 155–170.
- Lillo-Martin, D., 2012. Utterance reports and constructed action in sign and spoken languages. In: Pfau, R., Steinbach, M., Woll, B. (Eds.), *Sign Languages. An International Handbook*, Berlin: Mouton, pp. 365–387.
- Lillo-Martin, D., de Quadros, R.M., 2011. Acquisition of the syntax–discourse interface: the expression of point of view. *Lingua* 121, 623–636.
- Loew, R., 1984. Roles and Reference in American Sign Language: a Developmental Perspective. PhD dissertation. University of Minnesota.
- Lucas, C., Bayley, R., Valli, C., Rose, M., Wulf, A., 2001. Sociolinguistic variation. In: Lucas, C. (Ed.), *The Sociolinguistics of Sign Languages*. Cambridge University Press, pp. 61–112.
- Lukaszczuk, U., 2008. Sanottua, Ajateltua Ja Tehtyä. Referointi Kolmessa Suomalaisella Viittomakielellä Tuotetussa Fiktiivisessä Kertomuksessa [Said, Thought, and Done: Referencing in Three Fictive FinSL Narratives]. MA Thesis. Jyväskylä: University of Jyväskylä. <http://urn.fi/URN:NBN:fi:jyu-201209192438>.
- Mayer, M., 1969. *Frog, where Are You?* Dial Press, New York.
- McKee, R., McKee, D., 2011. Old signs, new signs, whose signs? Sociolinguistic variation in the NZSL lexicon. *Sign Lang. Stud.* 11 (4), 485–526.
- Metzger, M., 1995. Constructed dialogue and constructed action in American sign language. In: Lucas, C. (Ed.), *Sociolinguistics in Deaf Communities*. Gallaudet University Press, Washington, DC, pp. 255–271.
- Morgan, G., 2002. Children’s encoding of simultaneity in British sign language narratives. *Sign Lang. Linguist.* 5, 131–165.
- Morgan, G., 2006. The development of narrative skills in British sign language. In: Schick, B.S., Marschark, M., Spencer, P. (Eds.), *Advances in the Development of Sign Language by Deaf Children*. Oxford University Press, Oxford, pp. 314–343.
- Morgan, G., Woll, B., 2003. The development of reference switching encoded through body classifiers in British sign language. In: Emmorey, K. (Ed.), *Perspectives on Classifier Constructions in Sign Languages*. Lawrence Erlbaum Associates, Mahwah, NJ, pp. 297–310.
- Njeyiyana, S., Huddleston, K., 2020. Lexical variation and change in South African sign language: a case study of a western cape school-lect. In: A paper presented at the 14th biennial conference of the high desert linguistic society (HDS14) at the university of New Mexico, albuquerque, New Mexico on November 20–22, 2020.
- Nordlund, S., 2019. Agent defocusing in two-participant clauses in Finnish Sign Language. *Glossa: J. Gen. Ling.* 4 (1), 82.
- Padden, C., 1990. The relation between space and grammar in ASL verb morphology. In: Lucas, C. (Ed.), *Sign Language Research: Theoretical Issues*. Gallaudet Press, Washington, D.C., pp. 118–132.
- Park, Y., 2009. Interaction between grammar and multimodal resources: quoting different characters in Korean multiparty conversation. *Discourse Stud.* 11 (1), 79–104.
- Perniss, P., 2007. Achieving spatial coherence in German Sign Language narratives: the use of classifiers and perspective. *Lingua* 117 (7), 1315–1338.
- Perniss, P., Özyürek, A., 2008. Representations of action, motion, and location in sign space: a comparison of German (DGS) and Turkish (TID) sign language narratives. In: Quer, J. (Ed.), *Signs of the Time*. Selected Papers from TISLR 8. Signum Press, Hamburg.
- Pfau, R., Quer, J., 2010. Nonmanuals: their grammatical and prosodic roles. In: Brentari, D. (Ed.), *Sign Languages: A Cambridge Language Survey*. Cambridge University Press, Cambridge, pp. 381–402.
- Puupponen, A., 2018. The relationship between the movements and positions of the head and the torso in Finnish Sign Language. *Sign Lang. Stud.* 18 (2), 175–214.
- Puupponen, A., 2019. Towards understanding nonmanuality: a semiotic treatment of signers’ head movements. *Glossa: J. Gen. Ling.* 4 (1), 39. <https://doi.org/10.5334/gjgl.709>.
- Puupponen, A., Jantunen, T., 2017. Head movements, body movements and constructed action in FinSL narratives. In: A paper presented at the Language as a form of Action conference. Rome, Italy, June 21–23, 2017.
- Quer, J., 2018. On categorizing types of role shift in Sign languages. *Theor. Ling.* 44 (3–4), 277–282.
- Quinto-Pozos, D., Mehta, S., 2010. Register variation in mimetic gestural complements to signed language. *J. Pragmat.* 42, 557–584. <https://doi.org/10.1016/j.pragma.2009.08.004>.
- Quinto-Pozos, D., Parrill, F., 2015. Signers and co-speech gesturers adopt similar strategies for portraying viewpoint in narratives. *Topics in Cognitive Science* 7, 12–35.

- Salonen, J., Puupponen, A., Takkinen, R., Jantunen, T., 2019. Suomen Viittomakielten Korpusta Rakentamassa. [Building a Corpus of Finland's Sign Languages]. In: Jantunen, J., Brunnin, S., Kunnas, N., Palviainen, S., Västi, K. (Eds.), *Proceedings of the Research Data and Humanities (RDHum) 2019 Conference: Data, Methods and Tools*. *Studia Humaniora Ouluensia*. <http://urn.fi/urn:isbn:9789526223216>.
- Rissanen, T., 1992. Näkökulman vaihtamisesta suomalaisessa viittomakielessä. [On perspective shift in Finnish Sign Language.]. In: Itkonen, E., Pajunen, A., Haukioja, T. (Eds.), *Kielitieteen kentän kartoitusta*. Publications of the Department of Finnish and General Linguistics, 12. University of Turku, Turku, Finland, pp. 23–32.
- Salonen, J., Kronqvist, A., Jantunen, T., 2020. The Corpus of Finnish Sign Language. In: *Proceedings of the 9th Workshop on the Representation and Processing of Sign Languages: Sign Language Resources in the Service of the Language Community, Technological Challenges and Application Perspectives (LREC2020)*. ELRA, Paris, pp. 197–202.
- Sandler, W., 2012. Dedicated gestures in the emergence of sign language. *Gesture* 12, 265–307.
- Sandler, W., 2016. What comes first in language emergence? In: Enfield, N.J. (Ed.), *Dependencies in Language: on the Casual Ontology of Linguistic Systems*. Language Science Press, Berlin, pp. 67–86.
- Sandler, W., Lillo-Martin, D., 2006. *Sign Language and Linguistic Universals*. Cambridge University Press, Cambridge.
- Sandler, W., Meir, I., Dachkovsky, S., Padden, C., Aronoff, M., 2011. The emergence of complexity in prosody and syntax. *Lingua*. International review of general linguistics. *Rev. Int. Linguist. Gen.* 121, 2014–2033. <https://doi.org/10.1016/j.lingua.2011.05.007>.
- Schembri, A., 2003. Rethinking “Classifiers” in Signed Languages. In: Emmorey, K. (Ed.), *Perspectives on Classifier Constructions in Sign Languages*. Lawrence Erlbaum Associates, Mahwah, NJ, pp. 3–34.
- Schembri, A., Lucas, C., 2015. Introduction. In: Schembri, A., Lucas, C. (Eds.), *Sociolinguistics and Deaf Communities*. Cambridge University Press, Cambridge, UK, pp. 1–4.
- Schembri, A., McKee, D., McKee, R., Johnston, T., Goswell, D., Pivac, S., 2009. Phonological variation and change in Australian and New Zealand sign languages: the location variable. *Lang. Var. Change* 21, 193–231.
- Schembri, A., Cormier, K., Fenlon, J., 2018. Indicating verbs as typologically unique constructions: reconsidering verb ‘agreement’ in sign languages. *Glossa: A J. Gen. Ling.* 3 (1), 1–40, 89.
- Schick, B.S., 1987. *The Acquisition Of Classifier Predicates In American Sign Language*. PhD Dissertation. Purdue University.
- Slobin, D., Hoiting, N., Kuntze, M., Lindert, R., Weinberg, A., Pyers, J., Anthony, M., Biederman, Y., Thurmann, H., 2003. A cognitive/functional perspective on the acquisition of “classifiers”. In: Emmorey, K. (Ed.), *Perspectives on Classifier Constructions in Sign Languages*. Lawrence Erlbaum Associates, Mahwah, NJ, pp. 271–296.
- Slonimska, A., Özyürek, A., Capirci, O., 2020. The role of iconicity and simultaneity for efficient communication: the case of Italian Sign Language (LIS). *Cognition* 200, 104246.
- Smith, S., Cormier, K., 2014. In or out? Spatial scale and enactment in narratives of native and non-native signing deaf children acquiring British Sign Language. *Sign Lang. Stud.* 14, 275–301.
- Stamp, R., Schembri, A., Fenlon, J., Rentelis, R., Woll, B., Cormier, K., 2014. Lexical variation and change in British sign language. *PLoS One* 9 (4), 94053.
- Stamp, R., Schembri, A., Fenlon, J., Rentelis, R., 2015. Variation and change in British Sign Language number signs. *Sign Lang. Stud.* 15 (2), 151–181.
- Streeck, J., 2002. Grammars, words, and embodied meanings: on the uses and evolution of *so* and *like*. *J. Commun.* 52 (3), 581–596.
- Supalla, T., 1986. The classifier system in American sign language. In: Craig, C. (Ed.), *Noun Classes and Categorization*. Benjamins, Amsterdam, p. 181214.
- Supalla, T., 2003. Revisiting visual analogy in ASL classifier predicates. In: Emmorey, K. (Ed.), *Perspectives on Classifier Constructions in Sign Languages*, pp. 249–257 (Mahwah, NJ).
- Sutton-Spence, R., 2017. Constructing visual images in creative sign language in solo and collaborative performance: space and embodiment. *Afr. Stud.* 76 (3), 360–380.
- Sutton-Spence, R., Müller de Quadros, R., 2005. Sign language poetry and deaf identity. *Sign Lang. Linguist.* 8, 177–212.
- Sutton-Spence, R., Napoli, D., 2010. Anthropomorphism in Sign Languages: a look at poetry and storytelling with a focus on British sign language. *Sign Lang. Stud.* 10, 442–504.
- Sutton-Spence, R., Ladd, P., Rudd, G., 2005. *Analysing Sign Language Poetry*. Palgrave Macmillan, Basingstoke.
- Tannen, D., 1989. *Talking Voices: Repetition, Dialogue, and Imagery in Conversational Discourse*. Cambridge University Press, Cambridge.
- University of Jyväskylä, Sign Language Centre, 2019. *Corpus of Finnish Sign Language*. Kielipankki [The Language bank of Finland]. <http://urn.fi/urn:nbn:fi:lb-2019012321>.
- Winston, E., 1992. Space and involvement in an american sign language lecture. In: Plant-Moeller, J. (Ed.), *Expanding Horizons: Twelfth National Convention of the Registry of Interpreters for the Deaf Silver Spring, MD: Registry of Interpreters for the Deaf*, pp. 93–105.
- Woll, B., 1981. Borrowing and Change in BSL. Paper Presented at the Linguistics Association of Great Britain Autumn Meeting. University of York.
- Zwitzerlood, I., 2012. Classifiers. In: Pfau, R., Steinbach, M., Woll, B. (Eds.), *Sign Language: an International Handbook*. Mouton de Gruyter, Berlin, pp. 158–185.