Negation in Singapore sign language

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NEGATION IN SINGAPORE SIGN LANGUAGE

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ABSTRACT

This thesis describes strategies of negation employed by Singapore Sign Language (SgSL), a language that has been historically influenced by vastly differing sign languages. These languages of influence are American Sign Language (ASL), a sign language that prefers non-manual negation strategies, and Shanghai Sign Language (SSL), which prefers manual negation strategies. With lacking descriptions of SSL, the present study looks to Hong Kong Sign Language (HKSL), a language related to SSL through historic relations (Sze, Lo, Lo & Chu, 2013). Negation is of interest to SgSL as negation grammaticalizes early in language emergence (Sandler, Meir, Padden & Aronoff, 2005). Thirteen manual negative forms are described in total. Traces of both ASL and SSL are noticeable in these forms, of which, seven forms bear similarities to ASL negators. Therefore, reflecting heavier lexical borrowing from ASL. Furthermore, SgSL uses morphological negation strategies common to East Asian sign languages (Zeshan, 2004) and likewise prefers manual negative strategies (Zeshan, 2006). Despite few manual negative markers of SSL origin, SgSL prefers manual dominant strategies in negation, like its relative sign language, HKSL (Zeshan, 2006). Patterns of negative handshapes and movements were also present in the data.

LISTS OF ABBREVIATIONS AND GLOSSES

Abbreviation	Description
ABSL	Al-Sayyid Bedouin Sign Language
ASL	American Sign Language
Auslan	Australian Sign Language
BIM	Bahasa Isyarat Malaysia; Malaysian Sign Language
BSL	British Sign Language
CLU	Clause-like Units
CSL	Chinese Sign Language
DGS	German Sign Language; Deutsche Gebärdensprache
FinSL	Finnish Sign Language
GSL	Greek Sign Language
HKSL	Hong Kong Sign Language
IPSL	Indo-Pakistani Sign Language
ISL	Israeli Sign Language
nfe	negative facial expressions
NZSL	New Zealand Sign Language
SEE2	Signing Exact English 2
SgSL	Singapore Sign Language
SSL	Shanghainese Sign Language
TISLR12	12th International Conference on Theoretical Issues in Sign Language Research
Signer ID	Description
S1	Male signer in his twenties, informant in pilot study
S2	Female signer in her forties
S3	Female signer in her sixties
I1	Male signer in his twenties, interviewer for pilot study
Gloss	Description
<>	Context of exchange
1SG, 2SG, 3SG	First person, second person, third person singular
CAN'T _{1.I-twist}	Negative modal articulated with a single repeatedly twisting hand in I-handshape
CAN'T _{2.1.down}	Negative modal produced with two-hands, both in 1-handshapes, where one index finger strikes downward and past the other
DON'T _{2.downB-out}	Predicate negative marker articulated with two-hands in B-handshapes facing downward, both hands move apart and outward from the centre of the signer
DON'T-KNOW _{1.B-outward}	Negation of a cognitive predicate, articulated with a single hand in B-handshape that moves outward, away from the signer's temple

DON'T-KNOW _{1.B-twist}	Negation of a cognitive predicate articulated with a single hand in B-handshape twisting at the signer's temple
FOC	Focus
HEARING-NOT-HAVE _{2.B-twist}	Two-handed fused negative modal where the hands are in B-handshapes and move in a twisting motion after contacting the signer's ears, meaning <i>can't hear</i>
hs	The head of the signer moves from one side to another in a headshake
NEG	Negative marker
NO	Clausal negator in SgSL derived from fingerspelling, produced with the thumb, index finger and middle finger extended and coming into contact
NO _{1.B-wave}	single-handed B-handshape waving turn-initial refusal
NO _{2.B-wave}	Two-handed B-handshape waving turn-initial refusal
nod	The chin of the signer moves toward the chest in a nod
NONE _{1.F}	Negative existential clitic articulated with a single hand in F-handshape
NONE _{2.O-out}	Negative Existential articulated with both hands in O-handshapes that move in a single motion outward from the centre of the signer
NONE _{2.O-wave}	Negative Existential articulated with both hands in O-handshapes that move in a repeated waving motion
NOT _A	Clausal negator articulated with a single hand in A-handshape moving from the chin of the signer away from the signer
NOT _{B-wave}	Predicate negator using one or two-hands in B-handshape in a waving motion
NOT-HAVE _{B-twist}	Negative existential predicate using B-handshapes
NOT-YET _{B-flap}	Negative completive articulated with a single or two B-handshape hands dangling from beside the signer who has elbows raised and hands flapping toward the back
NOT-WANT _L	Negative deontic articulated with a single hand in L-handshape waving up and down slightly in front of the signer's chin
OBJ	Object
'oo'	Mouthing in an 'oo' shape
PST	Past
PT	Pointing sign
PU	Palm up marker
REFRAIN _{2.B-wave}	Two-handed B-handshape waving form
Tier Name	Description
comments	This tier is used for the researcher to fluidly include or remove notes for analysis in the present study
r-NonManual	Non-manual features used by the signer on the right of the screen, not including head movement and mouth shape or tension

r-head movement	Head movement by the signer on the right of the screen
r-mouth	Mouthing or mouth tension by the signer on the right of the screen
r-R	Right hand articulations of the signer on the right of the screen
r-L	Left hand articulations of the signer on the right of the screen
r-English	English gloss and suggested clausal boundary of the articulations by the signer on the right of the screen
I-NonManual	Non-manual features used by the signer on the left of the screen, not including head movement and mouth shape or tension
I-head movement	Head movement by the signer on the left of the screen
I-mouth	Mouthing or mouth tension by the signer on the left of the screen
I-R	Right hand articulations of the signer on the left of the screen
I-L	Left hand articulations of the signer on the left of the screen
I-English	English gloss and suggested clausal boundary of the articulations by the signer on the left of the screen

1 INTRODUCTION

The description of a fundamental feature establishes a foundation for appreciating an emerging variety. Halliday (2014) identifies polarity, the system of positive and negative terms in languages, as one of the clearest meanings in natural languages that grammaticalize early. While reporting about Al-Sayyid Bedouin Sign Language (ABSL), a new village sign language, Sandler, Meir, Padden, and Aronoff (2005) identify several basic modifiers in their data. Negative markings in ABSL are amongst these basic modifiers (Sandler, et al., 2005). In a study looking at home signs, which are gestures used by children who are not exposed to a sign language, negation is similarly identified as a characteristic of “minimal sentential syntax” (Franklin, Giannakidou & Goldin-Meadow, 2011, p. 398). These studies reflect the early grammaticalisation of negation in a language and provide confidence for the clear detection of negation in under-documented systems. Through a description of negation, this thesis¹ attempts to provide a sketch of a young sign language – Singapore Sign Language (SgSL).

This introductory chapter will examine negation by first situating it in terms of its functions, before exploring possible forms and the domain of negation in spoken languages and sign languages. Next, the present study will be positioned in relation to the linguistic history of SgSL. The historical account of SgSL will be followed by a section devoted to the typological description

¹ Preliminary findings were presented as a poster at the 12th International Conference on Theoretical Issues in Sign Language Research (TISLR12) in Melbourne on 6 January 2016.

of two major sign languages that have influenced SgSL. This chapter will conclude after specifying the goals of the current research and upon outlining the flow of content in this thesis.

1.1 Functions of negation

Negation is a phenomenon basic to communication. As a fundamental feature of language², a child's early use of a negative such as *no* can serve a variety of functions, including refusal (Spitz, 1957), rejection (Beaupoil, 2013) and non-existence (Cameron-Faulkner, Lieven & Theakston, 2007). From a more generic perspective, Grimes (1975) regards negation as a type of information associating events that did not happen to real events. The use of negation hence provides emphasis to real events (Grimes, 1975). Givón (1979) observes that negatives are used "to correct misguided belief" (p.139) and to convey denial (Givón, 1984). In addition, Hwang (1992) observes that negation can mark "a turning point or a high-tension point at the global level" (p.321). These functions similarly assume that an affirmative assertion present is elevated by the negative.

The Law of Contradiction logically defines negation through the relationship that "formula p and its negation $\neg p$ cannot both be true" (Ladusaw, 1997, p. 321). The positive proposition is referred to as p while its polar negative is

² Negation is only fundamental to natural languages; animal systems of communication do not use negation (Horn & Kato, 2000).

represented as $\neg p$. Functional linguistics similarly identifies negation through polarity. Polarity is recognised in a pair: a negative counterpart and its positive proposition (Miestamo, 2005; Halliday, 2014). Halliday (2014) notes that the positive proposition is typically unmarked in its form, while the negative is recognized by the addition of an element. Assuming functions of negation in spoken languages are similarly applicable in sign languages, many negative markers of interest in this study are investigated because their presence assert negation from a positive proposition in SgSL.

1.2 Forms of negation

Where a negative is detected, its form is investigated. Through the comparison of affirmative-negative pairs, many negative forms have been identified (see examples (1) and (2) below). Despite the difference in medium, there are many parallels between negation in spoken language and in sign languages. In spoken languages, there is a preference for negative particles before the verb, and in terms of affixation in spoken languages, there is a preference for negative suffixes. This is similarly observed in sign languages and will be further demonstrated in the current section.

1.2.1 Negation in spoken languages

The basic negation strategy in a language is referred to as unmarked negation. It is expressed through various constructions in different languages. Dryer (2013a, 2013b) identifies the use of negative particles as the most common marking for unmarked negation amongst 1157 spoken languages. 502 languages use negative particles. Negative affixation follows in spread with 395 languages employing negative affixation (Dryer, 2013b). According to Dryer (2013a), most spoken languages place negation before the verb when employing negative particles. This contrasts with languages encoding negation through affixation, which tend to use negative suffixes (Dryer, 2013b). These strategies differ in whether a negative marker is bound or free, where negative particles are free and negative suffixes are bound to another element in the utterance.

An example of the use of negative particles or negative words are in the following examples taken from Daga:

- (1) **ya** wat agoat mum-en
 NEG help OBJ.FOC.3PL-3
 'He didn't help them.' (cited in Miestamo, 2005:61)
- (2) wat agoat mum-en
 help OBJ.FOC.3PL-3
 'He helped them.' (cited in Miestamo, 2005:61)

The examples above illustrate negation that is expressed because of the presence of the negative particle *ya*. Miestamo (2005) refers to such negation as symmetric negation, where the contrast of the positive proposition and the negative proposition solely differ by the presence of the

negative particle. The present study will not directly contrast the forms of positive and negative polar pairs in SgSL, hence symmetric negation will not be further examined in this paper.

Where negative affixation is preferred, the affix is more commonly expressed as a suffix than a prefix or an infix (Dryer, 2013b). Dryer (2013b) cites an example in Rao:

- (3) gu mə-ndə
1sg eat-neg
'I am not eating.'

Sounds in spoken languages occur in units that can be used to represent negation. For sign languages, negation is expressed visually through the signer's hands, face and body.

1.2.2 Negation in sign languages

A discussion of sign languages requires the fundamental understanding that sign languages utterances involve manual and non-manual elements. The manual elements are produced by the signer's hands, while the non-manual features refer to the signer's body position or facial muscle movement.

In a typological cross-linguistic study of negation, Zeshan (2004) classifies common negation strategies in sign languages into two types: uninflected, manually articulated signs known as negative particles and non-manual forms of negation occurring simultaneously with negated signs. According to Zeshan (2004), negative particles are used extensively across sign

languages. These negative particles are realised in the form of manual negative markers. For example, in Indo-Pakistani Sign Language (IPSL) (example from Zeshan, 2004, p.34):

- (4) CITY GOOD NEG(neutral)
'Cities aren't nice (places).'

Each lexical gloss in signed utterances represents a manual sign. In (4) the sign NEG(neutral) is required to convey negation.

Inflections in sign languages more commonly expressed through manual means³. Zeshan (2013) identifies irregular negation strategies such as negative suppletion and negative derivation occurring in sign language. Negative suppletion is the process in which the negative sign is expressed clearly differing from its positive form, while negative derivation causes negative forms to regularly differ from their positive sign (Zeshan, 2013). Geographically irregular negation strategies are found in many known East Asian sign languages and are less common in other regions (Zeshan, 2006).

The following are examples of negative suppletion and negative derivation respectively. The signs for *GOOD* and *BAD* in Hong Kong Sign Language (HKSL) visibly differ. Therefore, *BAD* in HKSL is an example of negative suppletion.

³ Pfau (2016) also regards the non-manual headshake in German Sign Language or Deutsche Gebärdensprache (DGS) as an affix (p.56).

GOOD

BAD

Figure 1. *GOOD* and *BAD* in HKSL (Tang, 2006, p.206)

An example of negative derivation is the negation strategy referred to in ASL studies as negative incorporation (Woodward & Desantis, 1977).

KNOW

DON'T KNOW

Figure 2. *KNOW* and *DON'T-KNOW* in ASL (Fant & Fant, 2011, p. 70)

Negative incorporation accounts for the difference between the positive manual form *KNOW* and the negative manual *DON'T-KNOW* in ASL (Figure 2) (discussed in Section 3.3). *KNOW* and *DON'T-KNOW* are similarly articulated at the signer's forehead and with the same handshape. *DON'T-KNOW* differs as the sign includes with an outward movement and the twist in the signer's ipsilateral hand. Such a movement is also identified in several other negative signs in ASL. This negation strategy is also present in French

Sign Language. Looking at manual negative strategies, a similar preference for the use of negative particles is evident in both sign languages and spoken languages. Interestingly, among other possibilities of negative affixation, negative suffixation is also more common in sign languages (Zeshan, 2013).

In some sign languages, negatives are not expressed through the manual element. Non-manual negation strategies include facial expression (Yang & Fischer, 2002), head movement (Zeshan, 2006) and mouthing (Meir, 2004). For example, the headshake in Israeli Sign Language (ISL) tends to only accompany the negative manual sign, but mouthings such as 'lo' or 'efes' can accompany the headshake to convey the same negated sense (Meir, 2004). In ISL, the negative is encoded through multiple means. This begs the question of where the negative meaning is crucially expressed. Meir (2004) emphasises non-manual negation strategies as an important feature because a signer can rely on non-manual negation strategies alone to carry across the intended negation in ISL.

Not all languages solely rely on non-manual negation strategies to express a negative. Zeshan (2004) classifies common negation strategies in sign languages with into types: uninflected, manually articulated signs known as negative particles, and non-manual forms of negation occurring simultaneously with negated signs. Manual dominant systems of negation require the presence of a manual negative marker's to be grammatical or identified as a negative utterance (Zeshan, 2006). Sign languages that have non-manual dominant systems of negation require non-manual markings to

be present in negation (Zeshan, 2006). Consider the following comparison of Nederlandse Gebarentaal (Netherlands) (example (5)) and Nihon Shuwa (Japan) (example (6)) respectively.

(5) $\frac{\text{neg}}{\text{INDEX}_1 \text{ OUTSIDE WORK}}$
 'I couldn't work outside.' (taken from Zeshan, 2006:44)

(6) * $\frac{\text{neg}}{\text{WORK FINISH}}$
 *'The work isn't finished.' (taken from Zeshan, 2006:45)

Despite the lack of positive forms in the examples, one can infer that the positive forms are expressed without the non-manual negative markers. The example in (5) represents a sign language where the negative non-manual marking scopes over the relevant utterance to express negation. On the other hand, for a sign language that has a manual dominant negation strategy, the negative non-manual is unable to convey the negation without the manual element (example (6)).

Despite the differences in medium, preferences in negation strategies for spoken languages and sign languages share some similarities. Emphatic negation and negative concord across spoken languages and sign languages will also be explored in Section 5.1. However, the researcher does not claim that direct parallels are present between spoken languages and sign languages. One area of limited similarity is in prosody. For spoken languages, gestures do not directly contribute to an utterance but are of prosodic value. Although non-manual negation can be a dominant strategy for some sign languages, non-manual features also contribute prosodically.

The following section will explore negative markers that contribute prosodically in marking the scope of negation.

1.3 Where does negation start and end?

The semantic effect of a negative marker can be limited to the positive proposition represented by the lexical item or affect an entire utterance. Differing forms of negation may allow negative meanings to be gradable (Lyons, 1995). For example, *friendly* is a positive character trait takes on the sense of an extreme degree of negativity when the negative prefix *un-* is added, as in *unfriendly*. *Not friendly*, however, negates the affirmative proposition *friendly*, but does not connote hostility. Palfreyman (2015) refers to this as psychological negation, which is expressed by lexical items projecting a negative concept, such as *weak* and *sick*.

Psychological negatives are similar to inherently negative lexical items (Givón, 1984), as *weak* and *sick* are representations of *unhealthy*. Payne (1985) also includes inherently negative adverbs, such as *seldom*, in his description of negation. These words seem to be semantically in between a positive and negative proposition. Halliday (2014) likewise regards items between the negative-affirmative polarity of as modality. Despite negation present in the sense of the word, this study will not include such lexical items in the analysis. The present study will focus on constructions that, where present, negate a positive proposition.

Within an utterance, not all elements are affected by a negative marker. Payne (1985) describes the scope of negation to be dependent on “contextual articulation” (p.199), where the elements in an utterance that are ‘contextually bound’ or ‘contextually free’ are determined pragmatically. Negation affects the ‘contextually free’ element in the utterance, semantically placing “the negative element ... at the boundary between contextually bound and contextually free elements” (Payne, 1985, p.199). Therefore, Payne (1985) suggests the performative paraphrase, *I say of X that it is not true that Y*. Lambrecht (1994) illustrates this with the sentence (p.153):

(7) The children didn't go to SCHOOL.

Using Payne’s (1985) diagnostic, this translates to, “I say of the children that it is not true that they went to school.” In (7), the subject noun phrase, *the children*, are not included in the scope of negation. Lambrecht (1994) identifies *the children* as “the contextually bound topic element”, illustrating Payne’s (1985) assertion that only the contextually free elements are affected by negation. The identification of contextually free and bound elements in an utterance comes in useful in the differentiation of negative markers and the scope of negation in the present study.

Another similarity between negation in spoken languages and sign languages is found in co-speech gestures and non-manuals. Harrison (2010) also identifies a correlation between co-speech gestures during

negation and scope. Non-manual features in sign languages are known to convey prosody in addition to being inherent features (Brentari, 1998). Sign language studies have also found a correlation between the scope of negation and non-manual negative markings.

Tang (2006) observes that scope in sign language “may be varied by ... non-manual markings”⁴ (p. 204). In ASL, non-manual markings are used to signal clause boundaries (Liddell, 2003).

- (8) $\frac{\text{WOMAN FOGET PURSE}}{n}$
 ‘It is not the case that the woman forgot the purse.’ (Liddell, 2003:55)

In example (8), the non-manual signal, a headshake illustrated by the scope of n , is used to express the clausal negation. Liddell (2003, p.55) also includes the following example to reflect ungrammaticality where the scope of the headshake is misaligned.

- (9) $\frac{*}{\text{WOMAN FORGET PURSE}} \frac{n}{\text{PURSE}}$
 ‘It is not the case that the woman forgot the purse.’ (Liddell, 2003:55)

Assuming spoken languages and sign languages use negation similarly, the current section has provided a general overview of partial overlaps in preferences of forms and identification of domains across both language mediums. The discussion of sign language forms will be explored in greater depth from Chapter 4 onwards.

⁴ Tang (2006) does not claim that non-manual markings are the only indicators negative scope. She observes that word order permutations can also be used to indicate clause boundaries.

1.4 History of Singapore Sign Language (SgSL)

Moving from a theoretical background of negation, this section serves to contextualise the reader in the sign language of interest, SgSL, through an overview of the history of SgSL. The current section will outline the relationship between SgSL and Hong Kong Sign Language (HKSL), the Malaysian variety of Sign Language known as Bahasa Isyarat Malaysia (BIM), and American Sign Language (ASL).

The first record of manual education in Singapore is traced to Peng Tsu Ying. Peng Tsu Ying graduated from Chun Tok School, the former Hong Kong School for the Deaf in Hong Kong (Tay, 2016: p.27). The next school Peng was enrolled in was the Chung Wah School for the Deaf in Shanghai, where he was first exposed to sign language (Tay, 2016, p.27). In Shanghai, Peng was also trained and qualified to as a teacher (Tay, 2016, p.27). Peng and his wife are credited for establishing the Singapore Chinese Sign School for the Deaf in 1954. The Singapore Chinese School for the Deaf was the first school in Singapore that used sign language as a medium of education. More specifically, lessons were conducted in Shanghainese Sign Language (SSL) (Tay, 2016, p.29). Students flocked to the school which was advertised in the Chinese newspaper (Tay, 2016, p.29). At Peng's school, written Chinese was taught. Peng's students came from various parts of Malaya, revealing some relation between the sign variety of Malaysia, Bahasa Isyarat Malaysia (BIM), and SgSL (Kratochvíl, Ang, Low, Mak & Wang, 2016).

An oral school, that taught written English and taught deaf students to recognise and communicate verbally, also existed around the same time – the Singapore Red Cross oral school. Both schools later combined into the Singapore School for the Deaf in 1963 (The Straits Times, 1963), allowing parents the choice between English or SSL as their preferred medium of education for their children. Despite the merger, both the English classes were conducted on one level while the SSL classes were on another, separating the students although they shared the same compound. The single compound brought students from both types of classes into contact after school hours.

After Singapore's independence in 1965, the Bilingual Education Policy required all students to be educated in English (Kratochvíl, et al., 2016). Although this was not prescribed to the Deaf school, SSL was replaced with ASL. ASL used in the Singapore School for the Deaf was then substituted with a manual code of English, Signing Exact English 2 (SEE2) (Kratochvíl, et al., 2016).

The historical changes in language medium of the educational system for the Deaf has resulted in a community with a range of sign systems. Older, more conservative signers use a variety based in SSL, more active members switch between SSL and ASL, while younger signers use SEE2 or a variety that is regarded a "short-cut" to SEE2. In the third sign variety, signs engineered to represent function words in English are left out in their signing

and interactions are heavily based on an established context. Nonetheless, in the Singapore Deaf community, Tay (2016) notes that “those who use SgSL, SEE and Pidgin Signed English (PSE) were classified as culturally Deaf” (p.6), in contrast to “those who grew up oral and never learned to sign” (p.6). The abovementioned range of sign varieties constitute the repertoire of SgSL today.

With the events in the history of the Singapore Deaf community in mind, SgSL demonstrates links in terms of lexical vocabulary with ASL, BIM, HKSL and CSL (Kratochvíl, et al., 2016). Kratochvíl and colleagues (2016) include the latter two sign languages in the comparison to SgSL due to their historic association to SSL. The influence of these sign varieties in the Singapore Deaf community are also expected to be evident in the negation strategies of SgSL.

As a minority community in a majority hearing society, the Singaporean Deaf Community is often called to conform to needs of the society at large. As an external observer that is interested in a small community with various close-knit groups, sign language researchers seek to establish rapport with their informants while maintaining a professional distance (Singleton, Martin & Morgan, 2015). While the dynamics vary with each researcher (Singleton, Martin & Morgan, 2015), the researcher must balance research interest in the community with contributions to the community. This is best established through contact with representatives or leaders in the community (Singleton, Martin & Morgan, 2015). Moreover, in a prior study, the researcher engaged

one informant from a younger age group through the help of a personal Deaf friend (Ang, 2014), but was unable to contact Deaf informants from other age groups. This greatly limited the pool of data in the pilot study. Through representatives in the community, the researcher is in a better position to connect with informants from different social circles within the community through the help of these community representatives. Therefore, this project was undertaken with the help of two Deaf Coordinators whose roles will be detailed in Section 2.1.

1.5 Characteristics of negation strategies in ASL and HKSL

A cross-linguistic typology of sign language negation was provided by Zeshan (2004, 2006). In Zeshan's typology (2006), two systems of sign negation strategies exist: manual dominant systems of negation and non-manual dominant systems of negation. According to Zeshan (2006), HKSL belongs to the manual dominant system, while ASL belongs to the non-manual dominant system.

In a manual dominant system of negation, a manual negative marker is necessary to convey the negation in HKSL (Tang, 2006). Non-manual negative markers in HKSL include headshakes, frowning, and spread lips. Clause negators in HKSL tend to occur in the clause final position (see example (10) taken from Tang, 2006).

- (10) neg
HOUSE BIG NOT, SMALL
It is not true that the house is big, it is small. (Tang, 2006:217)

Negation in ASL takes place in three main ways: adding NOT pre-verbally (Fischer, 2006), through negative incorporation (Woodward & Desantis, 1977), or non-manually (Fischer, 2006). Negative incorporation refers to the use of an outward twisting movement from the place of articulation of the positive sign. This feature is a negative suffixation to the positive sign. ASL, non-manual negative markers alone can convey negation. More specifically, a headshake can both negate a positive sign string and reinforce the negative already present manually in a sign string. Other non-manual features include frown, brow squint, wrinkling of the nose, and a raised upper lip (Aarons, 1994). The basic syntactic negator, NOT, in ASL tends to occur pre-verbally (Aarons, 1994) as reflected in (11) and (12) (examples taken from Aarons, 1994), where the non-manual marking is articulated with the manual item only or is extended optionally to the end of the clause. Fischer (2006) also observes that NOT can also occur clause finally as in (13).

- (11) neg
JOHN NOT BUY TOMATO
John does not buy tomatoes. (Aarons, 1994:81)

- (12) _____ neg
JOHN NOT BUY TOMATO
John does not buy tomatoes. (Aarons, 1994:81)

- (13) top neg
FATHER SICK NOT
Father isn't sick (though one might think he was). (Fischer, 2006:187)

1.6 Thesis Aims and Structure

The status of SgSL as a variety with its own distinct grammatical repertoire remains under discussion. Currently, the community focuses on lexical features to assert the difference of SgSL against ASL or SEE2 forms. In these perspectives, grammar is seldom considered. Therefore, the present research aims to provide a detailed description of the negation system of SgSL. Through the description, the sign variety and the linguistic influences it has absorbed will be better understood. This paper will look at manual negation strategies, non-manual negation strategies, and multiple negation strategies. These negation strategies will be compared against two major linguistic influences to SgSL – ASL and SSL (represented by a related sign language, HKSL).

The paper will be structured in the following manner:

- Method of data collection in a minority community, annotation method, and method of preparing the sign chunks for analysis
- Describing the manual negative markers in SgSL
- Describing the non-manual negative markers in SgSL
- Discussing the presence of multiple negative markers in the data, productivity and variation in SgSL negative markers, and the depth of linguistic influence from other sign languages that exists in present-day SgSL

- Concluding with key observations and interesting findings, and discussing the limitations and possible extensions of the present study

2 DATA COLLECTION AND THE DEAF COMMUNITY IN SINGAPORE

This chapter will begin with an explanation of the dynamics of the Deaf community, followed by describing the role of the Deaf Coordinators in the present study. These two sections will be followed by the literature informing the data collection. The following sections will provide a description of the informants who provided the data, the procedure undertaken for the data, and the annotation method carried out for the analysis of the data.

2.1 Working with Deaf Coordinators

In this project, two Deaf coordinators, Jessica Mak and May Low, were involved. The Deaf coordinators are Linguistic sub-committee members of the Singapore Association for the Deaf. Through the Deaf coordinators, the informants were selected and contacted. With a notably small Deaf community in Singapore, individuals from different social circles can vary in their linguistic repertoire. The researcher was assisted by the Deaf coordinators in liaising with the Deaf community to allow the community to select its own linguistic representatives. Nonetheless, this selection involved some restrictions informed by past literature and these restrictions will be further elaborated in Section 2.3.

Mak and Low also have prior experience working with linguistic researchers and attending sign language conferences. Being more familiar with methods in linguistic research, Mak and Low were also consultants in checking the annotations made by the researcher. Their participation ensured that the data was glossed appropriately and represented to the Deaf coordinators' satisfaction. The inclusion of the Deaf coordinators in the annotation of SgSL also added to the overall time taken for the data to be annotated.

Mak additionally assisted in facilitating the sociolinguistic interviews conducted with the signers in the present study. Both informants are acquainted with Mak. Her role was to elicit additional naturalistic data while the informants get more comfortable in front of the cameras.

2.2 Methods in sign language studies

Like spoken language studies, sign language research has relied much on recordings of interviews, personal communication with the local community and television programmes for the local community (Zeshan, 2000). A study of negation in Chinese Sign Language also tapped on interview type data, a talk show and classroom interaction (Yang & Fischer, 2002). Pfau's (2008) paper on negation was informed by Deaf signers and their translation of written sentences with negation into German Sign Language (DGS) (Pfau, 2008). As the researcher noted, written to sign elicitation proved problematic (Pfau, 2008). This was also noted in the pilot study conducted

(Ang, 2014) where the male signer's forms in the wordlist elicitation were very much limited while his repertoire of signs proved richer in his storytelling sequences.

In fact, Zeshan (2000) identifies spontaneous conversations to be the most important resource in informing her description of Indo-Pakistani Sign Language. Adhering to Zeshan's (2000) recommendation, the conversation between the two female signers in this study also proved to be richer than the interview data on SgSL negatives. The preference for conversation data will be further discussed in Section 2.4.

2.3 Informants

Three Deaf people who are frequent users of sign in Singapore participated in the present study. The signers included two female signers (S2 and S3) and one male signer (S1). The signers were all from different age groups – S1 is in his twenties, S2 in her forties, and S3 in her sixties. Although age-related differences commonly exist in different language communities, linguistic differences in the Singapore Deaf community is more accurately attributed to the signer's educational background (Kratochvíl, et. al, 2016), as is the case with HKSL (Sze, Lo, Lo, & Chu, 2013). All three signers are also first generation signers born to hearing parents and educated an oral tradition, but are active users of SgSL. Second generation or third generation

signers were unavailable for this study. Nonetheless, the corpus should ideally include input from signers of such linguistic backgrounds over time.

The interviews and the facilitation of conversation involving S2 and S3 were conducted by Mak, one of our two Deaf consultants, while the retellings and interview with S1 was conducted by a Deaf friend who will be referred to as I1. Data from S1 has been included to reinforce the table of distribution for some manual negative forms in Section 5.2.2.

For the study, two Deaf coordinators, Mak and Low, were consulted to verify the accuracy of annotation. Mak was also involved in contacting S2 and S3 and facilitating the session with S2 and S3. She is Deaf and a native signer of BIM. A key difference between Mak and I1 is that I1 was contacted through the researcher's relations in the Deaf community (Ang, 2014). In contrast, Mak joined the study as part of a collaboration effort between the Singapore Association of the Deaf and the Linguistics and Multilingual Studies division of Nanyang Technological University. This means that the local Association for the Deaf sourced participants whom they deemed suitable candidates to represent their variety.

The Singaporean Deaf community is considerably small. Therefore, S2 and S3 had known each other prior to the study, allowing for considerably smooth conversation. These signers were particularly selected due to the difference in their common friendship groups. Such a dynamic was preferred due to observations from the British Sign Language Corpus where signers

with an intimate long term relationship with each other tend not to produce full signs (Schembri, Fenlon, Rentelis, Reynolds & Cormier, 2013). The limitations and lack of shared experiences forced the signers to be articulate fully and clearly where possible. This worked well for the present study as the participants did not know each other's educational experiences, allowing for more elaboration amongst each other and with Mak. Another benefit of having participants from separate friendship circles and from separate age groups, there were accounts of clarification and even miscommunication. Negatives were produced to confirm the accuracy of information between interlocutors.

2.4 Collection method

Participants were first required to respond to an interview regarding their sociolinguistic background. This segment was similarly conducted in both the pilot study involving only S1 (Ang, 2014) and for the current study with S2 and S3. Mak and I1 were briefed regarding the purpose of the sociolinguistic interview, then both signed to the participant in the interview. Negation in this part of the recordings were also included for this study.

In the pilot study, the signs produced during the interview between I1 and S1 were found to be richer and more fluent than in the wordlist elicitation (Ang, 2014). Conversations have found to be a type of data that well informs sign language research by evoking linguistic expressions most comfortable

to the signers (Fenlon, Schembri, Johnston, & Cormier, 2015). The conversational data was used in this study consists of the interview between Mak and S2, the interview between Mak and S3, and a dialogue between S2 and S3 about their experiences in school and their opinions of sign language.

Although retelling narratives have been included in sign language research, Hodge and Johnston (2014) used this type of monologue to describe partially lexical and non-lexical signs. Conversational data has been preferred in sign language corpora because such data evokes linguistic expressions most comfortable to the signer (Fenlon, Schembri, Johnston, & Cormier, 2015). In fact, Payne (1985) observes that “negative sentences are most frequently used to deny propositions which are contextually given” or “contextually bound elements” (p.199), instead of bringing new propositions into the given context. Evidently, for this study, dialogues were preferred over other narratives for the data.

Learning from the experience with S1, where the background was at a location of I1 and S1’s choice (Figure 3), the session with S2 and S3 was conducted at the Singapore Association for the Deaf, where a solid coloured background was prepared. For the session with S2 and S3, three camera angles were prepared (illustrated in Figure 4, Figure 5 and Figure 6).

Figure 3. Central camera capturing the interview between the interviewer, I1 (left), and the signer, S1 (right)

The session with S2 and S3 was very different from the session with S1 in which only one camera was used. The only frame available for the interview between S1 and I1 had both signers at an uncomfortable angle as the camera was positioned too close to both signers (Figure 3). Although the session with S2 and S3 had three cameras instead of one, with two capturing each signer from the front view and one recording the overall interaction with both signers angled, the clips with S2 and S3 still met with technical difficulties. The camera capturing the frontal view of the left signer (Figure 4) constantly overheated and stopped recording. The other camera capturing the frontal view of the right signer (Figure 5) also only recorded half the interview with S2. These technical issues restrict most annotation to the central camera with the overall view (Figure 6).

Figure 4. Right camera angled at the frontal view of S2, seated on the left

Figure 5. Left camera angled at the frontal view of S3, seated on the right

Figure 6. Central camera capturing the overall dialogue with S2 (left) and S3 (right)

2.5 Data

The video clips amount to 74 minutes in total, with 8 minutes of free conversation, 12 minutes of narrative retelling, and 54 minutes of Deaf-to-Deaf Interviews. The 8 minutes of conversation provided the richest pool of negative expressions because the interviews were more restricted to turn-initial negatives. The free conversation additionally included the negotiation of understanding, resulting in expressed negation.

2.6 Annotation

Despite technical difficulties, the data pool consists of a substantial number of negative forms that are clearly identified by the researcher and have been verified by Mak.

The following table places the tier names in the annotation files beside a description of their representations (also found in the Lists of Abbreviations and Glosses on page 2).

Tier Name	Description
comments	This tier is used for the researcher to fluidly include or remove notes for analysis in the present study
r-NonManual	Non-manual features used by the signer on the right of the screen, not including head movement and mouth shape or tension
r-head movement	Head movement by the signer on the right of the screen
r-mouth	Mouthing or mouth tension by the signer on the right of the screen
r-R	Right hand articulations of the signer on the right of the screen
r-L	Left hand articulations of the signer on the right of the screen
r-English	English gloss and suggested clausal boundary of the articulations by the signer on the right of the screen
l-NonManual	Non-manual features used by the signer on the left of the screen, not including head movement and mouth shape or tension
l-head movement	Head movement by the signer on the left of the screen
l-mouth	Mouthing or mouth tension by the signer on the left of the screen
l-R	Right hand articulations of the signer on the left of the screen
l-L	Left hand articulations of the signer on the left of the screen
l-English	English gloss and suggested clausal boundary of the articulations by the signer on the left of the screen

Table 1. Table of tier names and their descriptions

Negative expressions were first identified in the playback and glossed accordingly in ELAN on the tiers l-R, l-L, r-R and r-L. The data was annotated with the manual and non-manual distinction in mind. Manual features in the data were differentiated. Right and left hands were given separate tiers and glosses were marked according to the function and meaning of the signs articulated. These glosses began at the beginning of change of handshape from a previous sign to the stationary position where the sign is fully articulated, before changing into a different handshape. For non-manual

features, different tiers were created to identify mouth tension, brow movement, head and any other non-manual features such as eye gaze. This tier was first included to narrow in on the non-manual features involved in negation.

Figure 7 below reflects that the annotation consists of 6 tiers per signer. The clip with both signers was used for annotation due to the clarity in terms of interaction and context. An additional *comments* tier was also created for the ease of reference and analysis. All tiers are independent tiers to allow fluidity during annotation.

Not all signs were tagged as some strings were irrelevant to the negation and were not within the negative scopes. Moreover, the different types of data recorded and different signers elicited a higher number of particular negative markers. With such biases of frequency in mind, the researcher has also chosen not to provide empirical data for the frequency of the negatives.

Figure 7. Annotation in ELAN

For non-manual signs, descriptions in lower case were provided. Manual signs were labelled in caps with a semantic gloss in English, and a hyphen was used to connect glosses of single signs that required more than a single English word. Fingerspelling was labelled with the representative individual alphabets linked within the same stretch by hyphens. Signs with unknown meanings were tagged but left unlabelled.

Functional signs with vague semantic interpretations were labelled PT for pointing signs, and PU for the palm-up sign. The palm-up sign was regarded as a negative marker in International Sign Language (Supalla & Webb, 1995). However, although this sign frequently occurs in SgSL, it does not function as a negative marker. Instead, PU seems to function as a discourse

particle expressing resignation or a lack of ability to do otherwise and can be used to identify a clause boundary.

This contrast and similarity in form points back to the need for forms to become conventionalised to be used with linguistic significance. Other forms that are less conventionalised but bear a strong gestural commonality with other cultures may become what Hodge and Johnston (2014) identify as partial lexical items. Avoiding to commit to arguable labels in sign language literature, such as pronouns, deixis and discourse particles, generic representations of pointing and palm-up forms, PT and PU, are used.

2.6.1 How sign streams are chunked

Before the annotations were verified by Mak, the signs around the negative marker were glossed. The researcher then added an English translation to the glosses within the scope of negation. The glosses were then verified with Mak, who assisted in clarifying where the negative was conveyed.

During the initial annotation of the data, the researcher relied on semantic, prosodic, and at times manual features to differentiate clauses. Prosodic features include shifts in eye gaze, pauses and the articulation of manual signs in a marked place. Manually, the palm-up (PU) sign tends to be articulated at the end of a clause.

2.6.2 Identifying clitics, affixation and compounding

Differentiating between clitics, affixes and compounds are useful to the present study as several SgSL manual negatives are articulated immediately before and after the predicates they modify (further described in Chapter 3). Hopper and Traugott (1993) describe inflectional affixation in terms of the following grammaticalisation process: “content item > grammatical word > clitic > inflectional affix” (p. 7). Likewise, Zeshan (2004) perceives clitics as free forms that cliticise with accompanying phrases over time. Zeshan (2004) observes a co-existing free form variation alongside clitics, and notes that clitics are comparatively more productive with a form more fully specified than an affix. Furthermore, a clitic tends to mark inflection while affixes mark derivation. For example, “a basket *full* of eggs > a cup*ful* of water > hopeful” (Hopper & Traugott, 1993, p. 7). A clitic is also more likely to function as an independent particle as compared to an affix (Zeshan, 2004).

In terms of form in sign languages, Zeshan (2004) identifies clitics to often consists of two separate reduced movements while an affix and its root combine into a single movement. A clitic is only reduced from its free form and is fully compositional when used with the host sign, and is compositional in meaning as well (Zeshan, 2004). An affix, on the other hand, may assimilate with its root in form and may undergo a change in meaning (Zeshan, 2004). In the following figures, an example of a negative affix is provided in Finnish Sign Language, while an example of a negative clitic is illustrated in Türk İşaret Dili (Turkey).

Figure 8. Negative affix in Finnish Sign Language

(a)

KNOW^NOT

(b)

Figure 9. Negation without and with cliticisation (*Türk İşaret Dili, Turkey*) (Zeshan, 2004, p.46)

Cross-linguistically, Zeshan (2004) observes that negators “are independent signs rather than affixes” (p. 31). Of these negators the most frequent categories are negative existentials, followed by negative modals and negative completives in descending order of occurrences. These

observations will be referred to again in Chapter 3 when describing the negative markers in SgSL. The table below was also provided by Zeshan (2004) to distinguish clitics and affixes in sign languages.

Negative clitic	Negative Affix
Co-existing free form	No co-existing free form
Variation between free form and clitic form	No variation between free and bound form
Comparatively more productive	Comparatively less productive
Form more fully specified	Form less fully specified
Often two separate reduced movements	One main movement
No handshape assimilation	Handshape assimilation possible
Full compositionality of meaning	Changes in meaning possible
No formational changes other than reduction	Formational changes in stem and affix

Table 2. Negative clitic and negative affix (Zeshan, 2004, p.49)

Compounds in sign languages were historically “composed of two signs” (Klima & Bellugi, 1979, p.79). After undergoing assimilation, similar to an affix, the formational combination of both signs becomes an articulation of a single unit (Klima & Bellugi, 1979). In addition, changes in meaning in compounds are more apparent than for affixation. An example of compounding takes place in the sign for INFORM in modern ASL, described in Figure 10 below. The marked formational blend of a negative manual with another sign unit to create a single, negative manual sign will be identified as a negative compound. Manual negative markers that are regularly attached to a positive sign to create a manual negative marker will be identified as signs undergoing negative affixation instead.

(a) KNOW OFFER meaning 'inform' in 1918-ASL
 Figure 10. Compounding of KNOW and OFFER into INFORM in Modern ASL
 (Klima & Bellugi, 1979: 79)

2.7 In-text referencing

The annotations were then represented in this paper. Where headshakes were present, an underline marked *hs* indicated the spread of the headshake. For a tier with nods the same line indicated *nod* instead, and where a mouthing that may contribute to analysis was present, the mouthing shape will be represented on the same line. For example, 'oo' was used for the mouthing shape 'oo' that appears in example (74).

These in-text examples are simplified representations of the annotations and cannot fully represent the complexity of the annotation. Where present, headshakes have been represented in in-text examples since many sign language studies of negation look at headshakes as non-manual features of negation. Illustrating headshakes provide a better comparison across these negation studies. Mouthings were often omitted as the signers in the data seemed to be mouthing most of their signs. With the strong educational influence of SEE2 and the oral tradition, mouthings were not given much

attention in this research. Likewise, nods and other head movements have not been included as they facilitate tone and other aspects of the discourse other than the negation.

The highlighted utterance by S2 in Figure 7 above is illustrated in the following matter:

- (14) _____hs
PT REALLY PT DON'T-KNOW_{1.B-outward} PU
I really didn't know, what else could I do.

Much of signed discourse relies on the context. In many cases, the negation is apparent without the context of the signed sequence. However, in some examples where effect of the negation is most apparent with contextual knowledge, contextual descriptions will be provided in sharp brackets, <>.

The sign glosses were directly imported from the annotation tiers, where each sign was glossed in capital letters and single signs that need a gloss of more than one word were connected with a hyphen. The form of the negative marker was then described in subscript, beginning with how many hands were involved in this articulation, followed by a period and the handshape involved. In the detail about the handshape, the palm orientation may be included, for example, *downB* encodes that the B-handshape was produced with the palm facing down. If the sign includes a movement, its description was then added after a hyphen. Where descriptions do not include the number of hands involved, the researcher refers to the sign in general, instead of referring to a specific single-handed or two-handed variant.

3 FORMS OF NEGATION

This chapter describes negative markers in SgSL first terms of form, comparing it against similar forms in other sign languages. The behaviour of similar forms in other sign languages is then compared to the behaviour of such forms in SgSL. The negative markers will be described according to their handshapes. The first few negative markers described are articulated with an unmarked handshape, the B-handshape. Manual negatives with the O-handshape, will be discussed. The sections that follow will describe more marked handshapes; the I, 1, L, and A-handshapes respectively. This chapter will finally conclude with a negative marker derived from fingerspelling NO. For ease of reference, the table below illustrates the handshapes that will be discussed. The handshapes have been identified following their citation forms as alphabets or numbers.

Handshape	Illustration
B-handshape	(ASL Classifiers, n.d.)
O-handshape	(Gustason & Zawolkow, 1993, p. 1)
F-handshape	(Gustason & Zawolkow, 1993, p. 1)
I-handshape	(Gustason & Zawolkow, 1993, p. 1)
1-handshape	(ASL Classifiers, n.d.)
L-handshape	(Gustason & Zawolkow, 1993, p. 1)
A-handshape	(Gustason & Zawolkow, 1993, p. 1)

Table 3. Table of handshapes present in SgSL manual negation in order of discussion

3.1 B-handshape, waving movement

The B-handshape negative markers are first described in this section. The single outward facing B-handshape is an unmarked negative cross-linguistically amongst sign languages (Zeshan, 2006). Manual negative markers articulated with the B-handshape are found across other sign languages, for example, Flemish Sign Language (Van Herreweghe & Vermeerbergen, 2006), a sign language unrelated to SgSL, and Hong Kong Sign Language (Tang, 2006), a relative of SgSL. Likewise, several SgSL negative markers include both hands in B-handshape.

A similar SgSL negative will be discussed in this first section. It involves both palms of the signer to be in loose B-handshape that wave side to side in front of the signer (Figure 11). The same form has also been articulated with a single hand in similar environments (Figure 12).

Figure 11. B-handshape waving, two-handed

Figure 12. B-handshape waving, single-handed

The double-handed (Figure 11) and single-handed (Figure 12) variants are regarded as different forms of the same negative marker because the following sections will illustrate that both forms are present in the following uses. Where one form is used while the other is not, the gloss will indicate likewise. Four uses of this negative marker will be discussed: turn-initial, with nominal or verbal predicates, a deontic modal sense, and a sense that indicates refrain.

3.1.1 Similar forms in HKSL

NOT

Figure 13. NOT in HKSL (Tang, 2006, p.217)

According to Tang's (2006) paper of negation, HKSL uses a similar form glossed as NOT. NOT in HKSL can be clause-final or preverbal (Tang, 2006). The clause-final NOT in HKSL negates an entire proposition, as in (15).

- (15) neg
 INDEX₃ TOMORROW FLY NOT
 'It is not true that he is flying tomorrow.' (Tang, 2006:217)

NOT in HKSL can occur pre-verbally with high frequency verbs such as EAT and COME. This distribution of NOT is more common among younger signers who seem to be more influenced by spoken Cantonese (Tang, 2006).

3.1.2 NO_{B-wave}

For the first function discussed, the sign in both Figure 11 and Figure 12 will be generically glossed as NO_{B-wave}, compared to NO_{2.B-wave} for the two-handed form and NO_{1.B-wave} for its single-handed variant. This gloss is selected according to its distribution in the data as turn-initial responses while negotiating information in conversation.

<In response to someone present who claims that what is recorded will be used against them>

- (16) NO_{1.B-wave} PT CHIT-CHAT COLLECT ONLY PT
 'No. Our conversation is only going to be part of a collection.'

<When discussing someone else's refusal in their presence>

- (17) NO_{2.B-wave} NOT-WANT_L PT
 "No. I don't want to", he/she says.'

Illustrated in (16), NO_{B-wave} functions as an individual unit. The other signs in the examples reinforce the context set by NO_{B-wave}. Hence, the negative

marker stands alone as a clause. The signs that follow NO_{B-wave} in (16) and (17) are observed to begin a new clause without being within the scope of NO_{B-wave}.

3.1.3 NOT_{B-wave}

When not functioning as indications of a turn-initial response, the forms in Figure 11 and Figure 12 negate nominal and verbal predicates and as such are glossed as NOT_{2.B-wave} or NOT_{1.B-wave} respectively. Either variant of NOT_{B-wave} negates a nominal predicate in examples (18) and (20). In examples (19) and (21), either variant of NOT_{B-wave} negates a verbal predicate. Note that this negative marker seems to be produced in either post-predicate and pre-predicative position, without a strict syntactic position.

- (18) _____hs
 SENTENCE NOT_{2.B-wave}
 'Not (according to English) sentences.'

- (19) SPREAD NOT_{2.B-wave}
 '(Your signed recordings) are not going to be broadcasted.'

<Explaining why there are three cameras>

- (20) SIGN NOT_{1.B-wave}
 '(Good examples from her/him will be extracted) without my signs.'

- (21) _____hs
 PT NOT_{1.B-wave} FAMILIAR PT SIGN
 'I was not familiar with those signs.'

In examples (18), (19) and (20), NOT_{B-wave} is articulated after the nouns SENTENCE and SIGN, or the predicate SPREAD. For such sign strings with the negator being produced immediately after a single manual sign, the syntactic position of the negator is possibly post-predicate or clause final. The researcher regards the position of NOT_{B-wave} as clause final instead of predicate final because of longer sign strings such as the example (22) below. In (22), the negator NOT_{B-wave} is only articulated at the end of the clause.

<Signer explains to interlocutor why several cameras are needed in sign language documentation – to record frontal frames of one signer without the other.>

(22) PT SIGN NOT_{1.B-wave}
Without my signing.

The occurrence of the negative before the stative verb, on the other hand, imitates the order that is also present in English as well as ASL (Pfau, 2016). English is taken into consideration as SEE2 is taught to hearing community members who would like to learn sign (also mentioned in Section 1.4).

(23) _____ (_____hs)
JOHN NOT BUY HOUSE
John is not buying a house. (Neidle, et al., 2000:44 c.f. Pfau, 2016:48)

NOT_{2.B-wave} was also present in expressing embedded refusal. It is not regarded as a negative modal because NOT_{2.B-wave} serves to negate the verbal predicate VIDEO-SELF instead of primarily negating a want. This is illustrated in (24). NOT_{2.B-wave} in Figure 14 differs in location of the hands articulating the sign (compare to Figure 11). The difference in placement of the hands are observed to convey the sign string as reported speech (Figure 14).

- (24) VIDEO-SELF NOT_{2.B-wave}
He/she is refusing to be video recorded. (Lit. He/she's saying, "Don't video me.")

Figure 14. B-handshape waving, two-handed (embedded)

The same form in both SgSL and HKSL (Section 3.1.1) can be glossed similarly. However, the preverbal NOT_{1.B-wave} in SgSL is not restricted to high frequency verbs. Despite also not being able to make generic claims on the use of NOT_{2.B-wave} across generations of signers in Singapore, as HKSL has made with the similar negator (mentioned in Section 3.1.1), our data pool reveals preferences in terms of position of occurrence for NOT_{2.B-wave}. NOT_{2.B-wave} prefers the clause-final position and can be used in combination with other negative markers, as for example, (25).

- (25) PT NOT_{2.B-wave} NONE⁵ LEARN
I didn't get it. (Lit. I didn't learn anything.)

⁵ The sign NONE in this example is first generically labelled as NONE and will be given more detail when mentioned in Section 3.6.

3.1.4 REFRAIN_{2.B-wave}

While negative expressed by the B-handshape held in front of the signer is unmarked, the fourth function relating to the B-handshape waving form expresses refrain, abstaining, or the signer's choice to step back from involvement. It is glossed as REFRAIN_{2.B-wave}. This negative is an inherent lexical negation and hence falls beyond our area of interest. REFRAIN_{2.B-wave} tends to be articulated with less movement and is always articulated with both hands. The non-manual feature that accompanies all articulations of REFRAIN_{2.B-wave} is the pouting of the lower lip. While headshakes are also observed in some articulations of this sign, the extension of the lower lip is consistently present in all articulations of REFRAIN_{2.B-wave}.

- (26) DIFFICULT REFRAIN_{2.B-wave}
It's difficult, so I refrain.

3.2 B-handshape, twisting movement

Zeshan (2004) notes that there is a “striking recurrence of particular forms in negator signs ... irrespective of genetic or geographical association.” (p. 35) One of these formal characteristics is the “repeated wrist twisting” (p.35) movement, which Zeshan (2004) groups with the “repeated side-to-side movement” (p. 35) due to the similarity in the visual impression created by both movements.

This Section will discuss the manual negator articulated with the B-handshape twisting movement. The two-handed movement of this form involves the B-handshape twisting in front of the signer (Figure 15). This is an existential negative gesture common throughout Southeast Asia (Randy LaPolla, p.c., 9 December, 2016).

Figure 15. B-handshape twisting, two-handed

There is a single instance of a single-handed articulation of this sign present in the data. However, it will not be further discussed, as no patterns can be

determined from its presence. It is also a single unit articulated after the clause-final marker of a previous clause (Figure 16) (example (28)).

Figure 16. B-handshape twisting, one-handed

3.2.1 NOT-HAVE_{B-twist}

The two-handed form discussed in the current section is a sign used to express absence. In example (27) below, B-handshape twisting occurs to express the absence of being approached to teach sign. Therefore, this is glossed as NOT-HAVE_{B-twist} in (27). The single-handed variant is produced in a similar environment, provided in example (28).

<The signer is asked if she has taught sign to non-signing friends.>

- (27) I-F ASK-ME NOT-HAVE_{2.B-twist}
(I would,) if anyone asked, but no one has.

<Explaining that the signer's relative did not learn any sign languages.>

- (28) PT PU KNOW-NONE_{1.F}⁶ NOT-HAVE_{1.B-twist}
What can I do, he knows nothing (about sign language); none at all.

There are short pauses between KNOW-NONE_{1.F} and NOT-HAVE_{1.B-twist} in the sign string for (28). The example can be considered to have three

⁶ KNOW-NONE_{1.F} will be discussed in Section 3.7.1.

separate clauses due to the prosodic breaks between the signs. Furthermore, the signer's facial expressions change from having her tongue out between the first two signs, to looking upward, before having eye contact with her interlocutor as she produces NOT-HAVE_{1.B-twist}.

3.2.2 HEARING+NOT-HAVE_{2.B-twist}

In the Deaf community, one's auditory ability is often discussed. Thus, when the signer points to the ears and attaches the clitic, NOT-HAVE_{B-twist}, the sense *can't hear* is expressed in this fused form. This form is regarded as a clitic according to Zeshan's (2004) description (discussed in Section 2.6.2) because the B-handshape twisting segment is produced specifically at the signer's ears to suit the sign reference to one's auditory abilities. The place of articulation of NOT-HAVE_{2.B-twist} is now fixed as a clitic, while its free form is produced at neutral signing space. Marking this cliticisation, the form is glossed as HEARING+NOT-HAVE_{2.B-twist}, following the order of articulation.

Figure 17. HEARING-NOT-HAVE_{2.B-twist}

- (29) FIRST TELL PT HEARING+NOT-HAVE_{2.B-twist}
First, (I would) tell the person that I can't hear.

While this sign is articulated with a similarly unmarked handshape as NOT, there is little cross-linguistic documentation on this negative marker. HEARING+NOT-HAVE_{2.B-twist} is an example of negative cliticisation, identified in section 2.6.2 . Similar to other languages examined in Zeshan (2004), there is a noticeable trend for many negative markers in SgSL to use the B-handshape. This trend will be further discussed in section 0.

3.2.3 DON'T-KNOW_{1.B-twist}

The form discussed in this section is a single-handed sign articulated with the tip of the index or middle finger first coming into contact with the signer's ipsilateral temple. The signer's hand then moves slightly away from the signer's temple, continuing with a twisting of the wrist. This sign may be articulated without the hand moving away from the temple, twisting as the middle or the index finger is in contact with the signer's temple. Refer to Figure 18 for the illustration.

Figure 18. B-handshape, twisting movement, one-handed, index finger contact at temple

This form resembles the forms discussed above in Section 0 in terms of handshape and movement. Like HEARING+NOT-HAVE_{2.B-twist} (Section 3.2.2), DON'T-KNOW_{1.B-twist} is a cliticisation of NOT-HAVE_{1.B-twist} in phonological assimilation to KNOW, which is a single-handed sign articulated at the ipsilateral temple. Cognitive predicates in SgSL are often signed at the ipsilateral temple or at the centre of the signer's forehead.

The sign shown in Figure 18 will be glossed as DON'T-KNOW_{1.B-twist} as it specifically expresses a lack of knowledge. As a clitic, DON'T-KNOW_{1.B-twist} can be labelled KNOW+NOT-HAVE_{1.B-twist} instead. However, the researcher would like to use this gloss to compare against a ASL derived sign that is semantically similar (to be discussed in Section 3.3). DON'T-KNOW_{1.B-twist} differs from HEARING+NOT-HAVE_{2.B-twist} as the latter sign begins with pointing to the signer's ears or with an extended thumb and index finger that touches the signer's ears, followed by a change of handshape into the B-handshape. DON'T-KNOW_{1.B-twist}, on the other hand, is not accompanied by a handshape change and the initial contact with the signer's temple allows for the twisting movement to be incorporated (refer to Figure 19).

Figure 19. Comparison of HEARING+NOT-HAVE_{2.B-twist} (two frames on the left) and DON'T-KNOW_{1.B-twist} (two frames on the right)

DON'T-KNOW_{1.B-twist} tends to occur clause-finally. In (30) the signer tries to reason with her interlocutor that she used to have an impression of her interlocutor being proud or aloof. She then articulates a string bearing DON'T-KNOW_{1.B-twist}, where it is used as a modifier.

<Justifying the interlocutor's seeming arrogance when the interlocutor claims ignorance of being aloof toward the signer.>

- (30) _____hs
PST YOUNG PROUD DON'T-KNOW_{1.B-twist}
You were young and unknowingly aloof.

<Explaining how the signer communicated with family members before being taught a sign language.>

- (31) _____hs
LEARN SIGN PU DON'T-KNOW_{1.B-twist}
(I) didn't know how to sign.

One noticeable pattern in the use of NOT-HAVE_{B-twist} is that the negator is not cliticised with all predicates, reflecting a preference to HEARING and KNOW. These negative clitics attached to their positive signs are regarded as irregular negation. This is of no surprise as Zeshan (2013) identifies that cognitive verbs tend to be expressed with irregular negative forms.

3.3 Bent B-handshape, outward movement, fingers contact at temple (DON'T-KNOW_{B-outward})

The initial position of the signer's hands are B-handshapes bent at the knuckles although all the fingers of the hands are extended. The B-handshapes are bent to make contact with the signer's temples, where the index, middle and ring fingers of each hand touching the temple. The hands then move outward into typical B-handshapes and the fingers spread apart. The movement outward may be accompanied by a twist at signer's wrists, turning the palms outward.

Figure 20. Bent B-handshape, outward movement, two-handed

Figure 21. Bent B-handshape, outward movement, single-handed

Both two-handed (Figure 20) and single-handed (Figure 21) variants are present for this sign, DON'T-KNOW_{1.B-outward}. However, this sign is only used by S2. Like DON'T-KNOW_{1.B-twist} in Section 3.2.3, DON'T-KNOW_{1.B-outward} indicates a negation of cognitive knowledge or ignorance.

<Describing the signer's parents' decision process.>

(32) PT DISCUSS DON'T-KNOW_{2.B-outward}

They discussed and were undecided. (Lit. They discussed and didn't know (what to do).)

<Signer responding when told she seemed aloof.>

(33) PT REALLY PT DON'T-KNOW_{1.B-outward}

I really didn't know.

The similarity between DON'T-KNOW_{1.B-outward} and DON'T-KNOW in ASL (Figure 22) reflects its ASL origins. In ASL research, the outward movement of this sign is also attributed to Negative Incorporation (Woodward & Desantis, 1977), where the outward movement is a negative suffixation. Although this sign is a single-handed sign in ASL, when borrowed and used by SgSL signers, it can be articulated with both the signer's hands. Compared to DON'T-KNOW_{1.B-outward}, DON'T-KNOW_{1.B-twist} appeared more frequently in the data as it is a form used by both S2 and S3, while DON'T-KNOW_{1.B-outward} was only produced by S2.

DON'T KNOW

Figure 22. DON'T-KNOW in ASL (Fant & Fant, 2011, p.70)

3.4 Downward facing B-handshape, outward movement, two-handed (DON'T_{downB-out})

This sign is articulated with both the signer's hands in B-handshape, palms facing downward. Both hands are stacked with the non-dominant hand below the dominant hand. The hands then move from a more central position outward in the direction of the signer's sides along the frontal axis, illustrated in Figure 23.

Figure 23. downward facing B-handshape, outward movement, two-handed

This negative marker is also articulated with a single hand, beginning from a central position in front of the signer's chest area, moving outward, to the side (Figure 24). Additionally, S2 is the only signer who uses the two-handed variant while S3 is the only signer using the single-handed variant.

Figure 24. downward facing B-handshape, outward movement, single-handed

The sign in Figure 23 shares noticeable similarities with one of the signs for NOT in SEE2 (Figure 25) and DON'T in ASL (Fischer, 2006) (Figure 26), only occurring in a pre-predicate position. DON'T, according to Fischer (2006), is articulated with two hands and acts as a prohibitive. In contrast, the sign of similar form in SgSL has more flexibility with the number of hands involved in articulation and the prohibitive function is not borrowed into SgSL. While both ASL and SgSL variants are similar in handshape and orientation, in terms of movement, only the dominant hand of the SgSL signer moves outward while the non-dominant hand remains stationary.

Figure 25. NOT in SEE2 (Gustason & Zawolkow, 1993, p.249)

Figure 26. *DON'T* in ASL (Fischer, 2006, p.190)

The form in SEE2 is likely an old ASL use of the same form. Fischer (2006) describes this form as “the basic negator around 50-70 years ago” (p.189). At that time, NOT was “head-initial, while DON’T was head-final” (p.189). Younger signers in ASL use this form in the manner illustrated in example (34) below.

- (34) (INDEX₁) #BUSY, DON’T BOTHER
 I’m busy; don’t bother me. (Fischer, 2006:189)

The form, DON’T_{downB-out}, in SgSL tends to appear in pre-verbal position (see example (37)). DON’T_{2.downB-out} also seems to be present as a generic predicate negative marker like *not* in English. However, unlike *not*, DON’T_{downB-out} is less frequent in SgSL. It is realised with verbs such as TAKE (in (37)), and accompanies positive propositions of cognition and emotion such as LIKE (in (35)) and UNDERSTAND (in (36)).

<describing the signer's dislike for oral method lessons.>

(35) BUT PT PST TEACHER DON'T_{1.downB-out} LIKE ORAL

But there was an oral (method) teacher (because of whom) I didn't like (the oral method of Deaf education).

<describing the signer's exposure to other sign languages locally.>

(36) _____hs

PT DON'T_{1.downB-out} UNDERSTAND

I don't understand (those signed performances).

(37) OTHER CHINESE PT LESSON PT DEAF MOST

DON'T_{2.downB-out} TAKE CORRECT

While others have Chinese lessons, most (Chinese) Deaf don't take it, right?

3.5 B-handshape facing signer, fingers flap toward signer (NOT-YET_{B-flap})

This sign is manually articulated with the signer's elbows raised, forearms horizontal, and B-handshape dangle from the forearms, fingers fanning as though flapping under the signer's arms. As with the other negative markers above, this sign uses the B-handshape as well. It is also noteworthy that both horizontal and sagittal axes are involved in articulating this form as the sagittal plane is known to express time in SgSL. This form may also be articulated with both the signer's hands (Figure 27) or as a single-handed sign (Figure 28).

Figure 27. B-handshape facing signer, as palms hang from lax wrists while fingers flap toward signer, two-handed

Figure 28. B-handshape facing signer, palm hangs from lax wrist while fingers flap toward signer, single-handed⁷

The sign in Figure 27 and Figure 28 is similar in form to the ASL sign NOT-YET (Figure 29). In ASL, NOT-YET is only articulated with a single hand and with the accompaniment of the non-manual feature where the signer's tongue is sticking out (Fischer, 2006). Additionally, NOT-YET in ASL is can function as a negative completeive or an auxiliary that takes the pre-predicate position (Fischer, 2006) (illustrated in example (38) below).

Figure 29. NOT-YET in ASL (Fischer, 2006, p.189)

⁷ Non-manual tongue out feature will be discussed in Section 4.2.

(38) INDEX₁ NOT-YET FINISH HOMEWORK

I haven't finished my homework. (Fischer, 2006:188)

The sign in Figure 27 and Figure 28 is glossed as NOT-YET_{B-flap}, since it conveys that an event has not happened yet. According to the examples (39), (40) and (41), NOT-YET_{B-flap} negates the existence of an asserted event till the point of time of the utterance, instead of functioning as a negative completive.

NOT-YET_{B-flap} appears in pre-predicate position (refer to (39) and (40)) with the only exception in (41), where the negative is expressed as a separate unit building on the prior clause. In SgSL, NOT-YET_{B-flap} is optionally accompanied by non-manual features such as the sticking out of the signer's tongue.

<Signer describes her lack of experience teaching acquaintances her sign language.>

(39) NOT-YET_{1.B-flap} ASK-ME

No one has asked me yet. / To date, no one has asked me.

<This sign string follows the one in (39).>

(40) hs

NOT-YET_{1.B-flap} PT

That has not happened yet.

<The signer describes her linguistic practices.>

(41) hs

NOT_A S- LEARN S-E-E NOT-HAVE_{2.B-twist} NOT-YET_{2.B-flap}

But not S- (*false start*) I didn't learn SEE, it didn't exist then.

3.6 O-handshape, outward movement or waving movement ($NONE_{O-out}$ / $NONE_{O-wave}$)

After looking at several negative signs involving the B-handshape, this section discusses negative markers with another common handshape, the O-handshape. The O-type handshape has likewise been identified by Zeshan (2004) as a frequent formational characteristic amongst negator signs across sign languages. In SgSL, the O-handshape negators are the second largest group of manual negative markers.

O-type handshape negative markers negate the existence of something. Two different movements are possible, both with palms facing away from the signer. The first movement involves the elbow, where both hands are first crossed and then move out and apart toward the sides of the signer, along the vertical axis (Figure 31). The O-handshape negative marker discussed is signed with either one (Figure 30) or two hands (Figure 31).

Figure 30. O-handshape single outward movement, single-handed

Figure 31. O-handshape single outward movement, two-handed

The second type of movement involves a smaller movement of the wrists, where the hands wave side-to-side repeatedly (Figure 32). As with the O-handshape single outward movement form, this waving form allows for a single-handed variant to be articulated (Figure 33).

Figure 32. O-handshape waving movement, two-handed

Figure 33. O-handshape waving movement, single-handed

The forms of different movement have appeared within the same sign string, and are glossed as NONE_{2.O-out} and NONE_{2.O-wave}. The sign string in (42) conveys emphatic negation with both NONE_{2.O-out} and NONE_{2.O-wave} before and after DEAF. Emphatic negation will be further discussed in Section 5.1.1.

- (42) _____hs
 NONE_{2.O-out} DEAF NONE_{2.O-wave}
No (schools) for the Deaf.

In response to a polar question, NONE_{2.O-out} and its single-handed variant, NONE_{1.O-out} are turn-initial negative responses (in (43)). These forms convey similar negation of quantity, for example, the negation of one's knowledge of sign (in (44)).

<When asked if the signer has been given other sign names.>

- (43) __hs
 NONE_{1.O-wave}
 "No (other sign names)."

- (44) FATHER NONE_{1.O-out} SPEAK⁸
 (His) father (knows) none (of these sign languages), (he) speaks.

⁸ SPEAK in (44) is not part of the same clause as NONE_{1.O-out} because of a prosodic shift, where the signer's gaze shifts from the interlocutor to the ground, and is kept looking at the ground throughout the articulation of SPEAK

3.7 F-handshape suffix, one-handed

The affix with the F-handshape is one of signs regarded by Zeshan (2004) as O-type handshape negators. The F-handshape is considered a suffix as it is not articulated on its own in SgSL. As an O-type handshape negative marker, the F-handshape suffix is a negative existential like with the signs discussed in Section 3.6 above.

Interestingly, an F-handshape negator is used in HKSL (Figure 34) to express NOT-HAVE. With a single articulation of this negator, the presence of the sign discussed in this section cannot be traced back to SSL with certainty without more data.

NOT-HAVE

Figure 34. NOT-HAVE in HKSL (Zeshan, 2004, p.38)

3.7.1 KNOW-NONE_{1,F}

The F-handshape negator is positioned at the signer's forehead with the palm facing the contralateral side and the O-shape of the F-handshape is in

contact with the signer's forehead. In this sense, the sign conveys having no knowledge of the particular subject in one's brain (example (28) repeated below as (45)).

Figure 35. $KNOW-NONE_{1,F}$

<Explaining that the signer's relative did not learn any sign languages.>

(45) PT PU $KNOW-NONE_{1,F}$ ⁹ NOT-HAVE_{1.B-twist}

What can I do, he knows nothing (about sign language); none at all.

3.7.2 Functions of O-type handshape signs

In SgSL, the distribution of $NONE_{O-wave}$, $NONE_{O-out}$ and $NONE_{1,F}$ operate as existential negatives (in (42) repeated as (46)), negative determiners (in (44) repeated as (47)) or negative adverbials (45). The distribution and form of O-type negators in ASL and European sign languages are similar (Fischer, 2006; Quer et al., 2016). In terms of formal similarities, the sign in ASL is articulated with “two “O” hands moving outward from the chest or shoulder level” (Fischer, 2006, p.188) and is glossed as NONE. In fact, NONE in ASL

⁹ $KNOW-NONE_{1,F}$ will be discussed in Section 3.7.1.

can be in sentence initial position or even within a verb phrase (Fischer, 2006). The ability for NONE in SgSL to be in sentence initial position or within a verb phrase is also illustrated in examples (46) and (47) respectively.

(46) _____hs
 NONE_{2.O-out} DEAF NONE_{2.O-wave}
No (schools) for the Deaf.

(47) FATHER NONE_{1.O-out} SPEAK
 (His) father (knows) none (of these sign languages), (he) speaks.

In the COST Manual chapter on Negation, Quer and colleagues (2016) generally regard NONE (grouped with NOBODY and NEVER) as a negative determiner or an adverbial across sign languages in general. The following examples are in Lingua dei Segni Italiana (Italy) and ASL respectively.

(48) _____neg
 CONTRACT SIGN NOBODY
 ‘Nobody signed the contract.’ (taken from Quer et al, 2016:18)

(49) BOB NEVER EAT FISH
 ‘Bob has never eaten fish.’ (taken from Quer et al, 2016:18)

Therefore, the O-handshape negators in SgSL behave similar to ASL and European sign languages. However, NONE_{O-wave} can be used to express an existential negation, while ASL and other European sign languages have not been described to use similar forms in such expressions.

3.8 I-handshape, twisting movement, one-handed

This sign is articulated only with the signer's dominant hand with the pinkie extended. The I-handshape is usually held with palm facing the signer as the wrist twists, creating a repeated wagging motion of the pinkie.

Figure 36. I-handshape, twisting movement, one-handed

3.8.1 I-handshape negators in other sign languages

Figure 37. CAN'T in HKSL (Tang, 2006, p.220)

The I-handshape twisting negative marker shares a distinct similarity to the HKSL sign CAN'T (Tang, 2006), and is also identified in CSL and Thai Sign

Language (Yang & Fischer, 2002). Woll has also suggested a BSL influence from contact between BSL and CSL in Shanghai due to the presence of the extended pinkie as a negative sign in BSL as well (Woll, p.c., May 2007, as cited in Fischer & Gong, 2010). Fischer and Gong (2010) suggest this relation due to existing A and I-handshape contrasts between similar positive and negative pairs like *good/bad* and *hearing/deaf*.

CAN'T in HKSL is a negative modal, “adopted for a range of semantic uses, particularly deontic modality of ability, permission and obligation” (Tang, 2006, p.220). In example (50), CAN'T is articulated clause finally. Tang (2006) also notes a generic negative handshape in HKSL that is used similarly in SgSL. The I-handshape negator is also used as the old form of BAD in SgSL (May Low, p.c., February 2, 2015), revealing the shared historical influence between HKSL and SgSL. As for CSL, the extended pinkie is also identified as a negative handshape. Yang and Fischer (2002) identify this form to be productive as a negative handshape as well as a commonly suffixed form to the point that a sign with the extended pinkie attached to it is considered a negative compound.

- (50) neg
INDEX₃ USE INDEX₁ COMPUTER CAN'T
He can't use my computer. (Tang, 2006:220)

The negative I-handshape marker in HKSL “loses its literal meaning and becomes a negative morpheme” (Zeshan, 2004, p.44). It is illustrated in Figure 38. A similar sign is provided by Low (p.c., February 2, 2015), described in Section 3.8.3.

Figure 38. TASTELESS in HKSL (Zeshan, 2004, p.45)

3.8.2 CAN'T_{I-twist}

CAN'T_{I-twist} in SgSL only operates as a negative modal and often occurs clause-finally (see (51)). In (52), the use of CAN'T_{I-twist} occurs in an environment where the negation affects the judgement of ability of the person discussed to learn or use speech. In contrast to (51), where the referent knows how to lip-read, but was unable to grasp what was being said. CAN'T_{I-twist} is used to convey one's poor or lacking ability in an area, and may signal an absolute absence of ability. These features of CAN'T_{I-twist} in SgSL are similar to CAN'T in HKSL, discussed in Section 3.8.1 above.

- (51) SAY TRY LIPREAD GRASP CAN'T_{I-twist}
I tried to lip-read, but couldn't grasp (what they were saying).
- (52) PT BROTHER CAN'T_A SPEAK CAN'T_{I-twist}
My brother, on the other hand, was (confirmed to be) unable to speak.

3.8.3 Other negators using the I-handshape in SgSL

Although absent in the data, our Deaf consultants were very aware of the productivity of the I-handshape negative marker. Not only is it a lot more generic as a negative modal, negating epistemic as well as dynamic modals, the extended I-handshape in SgSL can be articulated as an enclitic or a suffix. For example, Low would point to her mouth with the index finger of her dominant hand then as her hand moves outward, the 1-handshape would change to an I-handshape (May Low, p.c., February 2, 2015) (refer to Figure 38 for illustration). This cliticisation of the I-handshape meant that something tasted bad. An example of suffixation was also given by Low, where she pointed at someone else's attire with a 1-handshape using her dominant hand, then changed it into I-handshape with the palm facing herself and moved her hand in a waving downward path (May Low, p.c., February 2, 2015). Low explained that this meant that she found her interlocutor's attire old-fashioned or of poor style (May Low, p.c., February 2, 2015). Unlike the prior example of *poor flavour*, the I-handshape negator expressing *poor dress sense* is a negative suffix, since the negative marker is modified in movement and placement in accordance to the reference.

The negative markers of the I-handshape are likely derived from the stationary form BAD (mentioned in 3.8.1), which is also regarded as an older form of sign amongst the Singaporean Deaf community. The stationary I-handshape is still sometimes used for BAD amongst the Deaf in Singapore (May Low, p.c., February 2, 2015).

3.9 1-handshape, downward movement, two-handed

(CAN'T_{2.down1-down})

The 1-handshape negative marker is articulated with the index fingers of both hands extended, palms facing downward. The fingertip of the dominant hand's extended index finger then strikes the fingernail of the stationary non-dominant hand in a downward movement. This negative form is present in SEE2 SEE2 (Gustason & Zawolkow, 1993), used in Singapore's formal manual education (see

Figure 39. CAN'T in SEE2 (Gustason & Zawolkow, 1993, p.64)).

Figure 39. CAN'T in SEE2 (Gustason & Zawolkow, 1993, p.64)

Figure 40. 1-handshape, fingertips striking each other in a downward movement¹⁰

The negative involves both signer's hands in the 1-handshape. It is used to express a negative modal, earning its gloss CAN'T_{2.down1-down}. It tends to occur in pre-predicate position, negating ability and permission. The pre-verbal occurrence of CAN'T_{2.down1-down} is a characteristic similarly found in ASL (Fischer, 2006).

- (53) CAN'T_{2.down1-down} FIND CL:PERSON
They couldn't find the culprit.

The example (54) below shows CAN'T_{2.down1-down} negating permission, producing a sense of prohibition. Knowing that CAN'T_{2.down1-down} tends to occur in pre-predicate position, the syntactic position of CAN'T_{2.down1-down} identifies ANNOUNCE as the negated verbal predicate.

<Assuring the interlocutor of their privacy.>

- (54) ____hs
CAN'T_{2.down1-down} ANNOUNCE
(The researcher is) not allowed to broadcast what we say.

¹⁰ Non-manual tongue out feature will be discussed in Section 4.2.

3.10 L-handshape, waving motion (NOT-WANT_L)

This negative sign is articulated with the dominant hand, holding the thumb and index finger extended as a L-handshape. The signer's palm is facing the signer, positioned at the signer's chin while a waving movement pivoting at the elbow moves the L-handshape up and down the vertical axis.

Figure 41. L-handshape, waving motion, one-handed

HKSL has a sign with a similar form, glossed as DISLIKE. It has not been described in detail but can be found in the Asian SignBank (CSLDS, LIN, CUHK, n.d.).

In SgSL, L-handshape waving operates as a negative deontic. It conveys a refusal to comply, reflecting a conflict between what is required and what is desired, hence is a negative modal. Although the senses of *dislike* and *not wanting to do something* can be similar, NOT-WANT_L did not appear during discussions of preference and aversion.

- (55) _____nod
 NOT_{1.B-wave} NOT-WANT_L PT
 He/she (is saying), "No. I don't want to."

<Explaining why that the signer has not taught the signer's co-workers to sign.>

- (56) NOT-WANT_L FORCE
 I don't want to force (them).

While this sign can be associated to Shanghainese sign roots, there is currently no literature specifically detailing the L-handshape waving form or its distribution in other sign languages. Moreover, the data was not conducive for eliciting repetitive expression of not wanting to do something.

3.11 A-handshape, outward movement, one-handed (NOT_A)

This sign is articulated with the dominant hand in an A-handshape held under the signer's chin. The thumb brushes against the chin in a straight, outward movement.

Figure 42. A-handshape, outward movement, one-handed

This form is present both in ASL (Figure 43) and in SEE2 (Figure 44). In ASL, NOT is “the basic syntactic negator” (Fischer, 2006, p.186), occurring in either pre-verbal or clause final position “when the rest of the sentence has been topicalised” (p.186).

Figure 43. NOT in ASL (Fischer, 2006, p.187)

Figure 44. NOT in SEE2 (Gustason & Zawolkow, 1993, p.249)

In SgSL, A-handshape moving outward serves to negate the noun or verb that follows the negator. The form in Figure 42 is glossed as NOT_A because it is articulated with an A-handshape. The SgSL use of this borrowed form continues to adhere to the negation patterns of the same form in ASL. Such adherence is not always the case across borrowed manual negators. For example, the next manual negative, NO (discussed in Section 3.12), does not completely align to its language of origin, ASL.

- (57) PT IN INDONESIA NOT_A SINGAPORE
That was in Indonesia, not Singapore.

<Discussing an observation of attitudes toward accommodating signers of a different variety.>

- (58) NO_{1.B-wave} NOT_A PT WILLING
No, not all of them are willing (to change).

3.12 Fingerspelling: NO

This sign only involves one hand. It involves the index and middle finger extended before contact is made with the thumb. This form is derived from a fingerspelling of N and O.

Figure 45. NO

Another reason for the gloss, NO, is due to its use in ASL and SEE2. As noted by Fischer (2006), this form is derived from fingerspelled loan signs and are still prevalent in ASL. SEE2 uses this form of the manual NO to code the turn initial negative marker, equivalent to spoken English (Gustason & Zawolkow, 1993).

Figure 46. NO in SEE2 (Gustason & Zawolkow, 1993, p.247)

(59) INDEX₁ WANT GO-TO MOVIE TITLE [fs]ARMAGEDDON,
MOTHER #NO, MUST FIRST CLEAN ROOM
I wanted to go to the movie “Armageddon”, but my mother refused me
permission, saying that I had t to clean my room first.
(Fischer, 2006: 170)

$$(60) \quad \text{mod}^{11}$$

No (you're wrong) I am going. (Fischer, 2006: 171)

¹¹ (60) is the unusual case of a head nod (a positive non-manual marker) over a negation.

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<In support of interlocutor's suggestion that the interlocutor's perspective of the signer differed from what the signer was feeling.>

(61) NO

No. (It was not the case from my perspective.)

<When signer is asserting confidentiality of the recording.>

(62) PT NO PUBLIC

This is not made public.

<Signer explains why she mostly uses sign variety when communicating with friends.>

(63) REALLY MOST PT LIPREAD NO PU

It's really because most of them don't lipread.

<In response to a claim that the signer was arrogant in the past.>

(64) ALSO NO FEEL ARROGANT NO

And, I really wasn't acting out of arrogance.

3.13 Summary of Negators

The forms discussed above are summarised into Table 4 below by their morphological make-up and in their order of discussion. Table 5 provides an overview of the order in which the negative markers are produced in a sign string. An overall description of the manual negators and their syntactic characteristics compared against other sign languages is presented in Table 6.

Zeshan's (2013) observation of the preference for negative particles in manual negation strategies is reinforced in SgSL. Table 4 reflects an overwhelming preference for negative particles in SgSL. On the other hand, clitics and affixes are restricted. Zeshan (2013) also observes that verbs of cognition, emotional attitudes, modals, possession or existential, tense or aspect and evaluative judgement amongst domains of negatives that tend to be expressed irregularly. This is consistent with the data of the present study as three out of five of the affixed or cliticised forms are associated to cognition, while the other two are negative modals.

Morphological make-up	Particle	Clitic	Affix
Negative			
NO _{B-wave}	Y		
NOT _{B-wave}	Y		
REFRAIN _{2.B-wave}	Y		
NOT-HAVE _{B.twist}	Y		
HEARING+NOT-HAVE _{2.B.twist}		Y	
DON'T-KNOW _{1.B-twist}		Y	
DON'T-KNOW _{B-outward}			Y
DON'T _{downB-out}	Y		
NOT-YET _{B-flap}	Y		
NONE _{O-wave} / NONE _{O-out}	Y		
KNOW-NONE _{1.F}			Y
CAN'T _{I-twist}	Y	Y	Y
CAN'T _{2.down1-down}	Y		
NOT-WANT _L	Y		
NOT _A	Y		
NO	Y		

Table 4. Table of manual negatives and their morphological make-up

Across manual negative markers in SgSL, most manual negators above can be produced clause finally. The modals all occur in pre-verbal position. These preferences in SgSL are in contrast to spoken languages, as Dryer (2013a) identified a preference for pre-verbal negative particles. However, SgSL, like spoken languages, seems to prefer negative suffixation where affixes are articulated.

Syntactic positions	Negators
Turn-initial	NO _{B-wave} , NOT-YE _{B-flap} , NONE _{O-out} / NONE _{O-wave} , CAN'T _{I-twist} , NO
Pre-verbal	DON'T _{downB-out} , CAN'T _{2.down1-down} , NOT-WANT _L ,
Pre-nominal	NOT-WANT _L , NOT _A
Pre-predicate	NOT _{B-wave} , NOT-YET _{B-flap} , NO
Before the clause	NOT _A
Clause-final	NOT _{B-wave} , NOT-HAVE _{2.B-twist} , DON'T-KNOW _{B-twist} , DON'T-KNOW _{2.B-outward} , NOT-YET _{B-flap} , NONE _{O-out} / NONE _{O-wave} , CAN'T _{I-twist} , NO

Table 5. Table of negators and their possible syntactic positions

A summary of characteristics of SgSL that are unique or similar to ASL or HKSL is provided in the following table. Manual negative markers in SgSL seem to share substantial similarity with ASL than with HKSL. This is expected as SEE2 and ASL are more recent varieties that are used in local manual education. Furthermore, lexical borrowing in spoken languages occur easily, while prosodic features tend to be omitted in borrowing between two languages with different prosodic systems (Matras, 2009). The heavy borrowing of manual ASL negative forms may be attributed to the manual encoding of sign language lexicon. Likewise, non-manual features in SgSL seem to be closely associated with prosody. Hence, borrowing does not seem to occur with the non-manuals in ASL or SSL. In turn, because the borrowing of prosodic features happens through extensive and intense language contact, the lack of borrowing in the non-manuals reflect that the contact between the pre-SgSL varieties and ASL is not extensive or intensive enough to facilitate such borrowing.

Properties Negative marker	Unique properties	Similar to ASL or SEE2	Similar to HKSL or other Asian SLs
NO _{B-wave}	Single unit		
NOT _{B-wave}		Preverbal NOT (different form) exists in English and ASL	Similarly preverbal or clause final
REFRAIN _{2.B-wave}	Lexical negative		
NOT-HAVE _{B.twist}	Common form in SLs, no found similarity with documented ASL or HKSL negators		
HEARING+ NOT-HAVE _{2.B.twist}	Not described in other SLs		
DON'T-KNOW _{1.B-twist}	Not described in other SLs		
DON'T-KNOW _{B-outward}	Possibly articulated with two hands	Borrowed form from ASL/SEE2.	
DON'T _{downB-out}		Borrowed form from ASL/SEE2.	
NOT-YET _{B-flap}	Not negative completeive	articulated with optional tongue out non-manual, signed before the clause	
NONE _{O-wave} / NONE _{O-out} / KNOW-NONE _{1.F}	Functions as an existential negative	Functionally and syntactically like ASL and European sign languages	
CAN'T _{I-twist}			Deontic modal, clause final, I-handshape negator is similarly productive
CAN'T _{2.down1-down}		Form is found in SEE2 and occurs pre-verbally, like negators in ASL	
NOT-WANT _L			Similar in form to DISLIKE in HKSL
NOT _A	Articulated before the clause		
NO	More frequently a clausal negative	Same form present in ASL and SEE2	

Table 6. Summary of negative forms, syntactic features and functions

4 NON-MANUALS IN SgSL NEGATION

This section will describe non-manual features, namely the most commonly researched – headshakes. A discussion of negative facial expressions (nfe) in SgSL will be provided as well, elaborating on the necessity and spread of non-manuals across a clause and the use of nfe in the data. Harrison's (2010) findings that co-speech gestures are related to scope set further expectation on non-manuals in SgSL to correspond to negative scope.

In SgSL, several non-manual features participate in discourse during the simultaneous articulation of manual negatives. These non-manual features include frowning, squinting, backward head tilting, pouting, mouthing negative words in English, downward angling lips, as well as the more well studied feature – headshakes. The presence of tongue protrusions during some sign articulations, such as NOT-YET_{B-flap} in SgSL, have been regarded grammatical for other sign languages like ASL (Valli & Lucas, 2000, p. 21). With a variety of non-manuals mostly accompanying negative manual markers, the presence of non-manual features in SgSL may be perceived as partially conventionalised due to borrowings from ASL.

4.1 Headshakes

A tier was dedicated to headshakes because headshakes are a grammatical feature of negation in ASL (Fisher, 2006; Zeshan, 2006). However, headshakes in SgSL did not happen every time a manual negator was produced. Headshakes were optionally present with all the manual negators discussed in Chapter 3, except NO and NOT-WANT_L. In fact, manual negatives are necessary for a negative expression to be conveyed. Consider the example (39), repeated as (65), in contrast to (66). Both sign strings only differ with the presence of a headshake in one and an absence of the same feature in another, yet convey the same thing. The examples reflect an optionality to headshakes.

<Signer describes her lack of experience teaching acquaintances her sign language.>

(65) NOT-YET_{1.B-flap} ASK-ME

No one has asked me yet. / To date, no one has asked me.

(66) NOT-YET_{1.B-flap} hs

ASK-ME

No one has asked me yet. / To date, no one has asked me.

4.1.1 Spread of headshake

Where headshakes occurred in the data, they were seldom restricted to being articulated within the duration of articulating the manual negative (refer to examples (30) and (54) repeated as (69) and (70) respectively). Few headshakes spread beyond the manual negative, as illustrated in (67). Most

frequently, headshakes were articulated prior to the articulation of the manual negative (illustrated in (68)).

- (67) _____hs
 WATCH NOT_{1.B-wave} NONE_O¹³ BOTHER DROP
 I will look (at signed exact sentences), not bother (with the whole line),
 taking and dropping (selected elements in them).

<Describing the signer's ability to lipread hearing family members.>

- (68) _____hs
 MOTHER GRASP PT CAN'T_{I-twist}
 For mother, I can't grasp (what she says).

<Justifying the interlocutor's seeming arrogance when the interlocutor claims ignorance of being aloof toward the signer.>

- (69) _____hs
 PST YOUNG PROUD DON'T-KNOW_{1.B-twist}
 You were young and unknowingly aloof.

<Assuring the interlocutor of their privacy.>

- (70) _____hs
 CAN'T_{2.down1-down} ANNOUNCE
 (The researcher is) not allowed to broadcast what we say.

4.1.2 Headshake and negative scope

Example (68) is interesting because of the discussion in Section 1.3, where the headshake was identified as clause marker in ASL (Liddell, 2003). Expectations on the headshake. The example (10) repeated here as (71) is ungrammatical because the scope of the headshake is not aligned with the entire span of the clause.

¹³ In this sign string, as soon as the O-handshape of NONE_O was formed, the signer changed into the B-handshape for BOTHER.

(71) * n
WOMAN FORGET PURSE
'It is not the case that the woman forgot the purse.' (Liddell, 2003:55)

Example (42) repeated as (72) below is one of the uncommon instances in the SgSL data where the headshake extended across the entire sign string. The extended headshake conveys emphasis. What can be observed from the example is that emphatic negation is conveyed through multiple strategies to highlight the negative sense in the clause (further discussed in Section 5.1.1).

(72) _____hs
NONE_{2.0-out} DEAF NONE_{2.0-wave}
No (schools) for the Deaf.

Another interesting spread of headshakes was in the sign string (73) below. The headshakes accompany the manual negative markers at first, then spread across the negated nouns into the topic of the supplementary clause. The disjointed articulation of headshakes in (73) are contrary to findings of headshakes corresponding to negative scope in ASL (Fischer, 2006), as well as in HKSL (Tang, 2006). Interestingly, in (73), the signer began to lean forward after producing NOT_A to convey the intended emphasis. The signer stopped leaning toward the other signer only when articulating NOT-HAVE_{2,B-twist}.

<Describing how the signer used to communicate with family members before being exposed to a sign language.>

(73) $\frac{\text{hs}}{\text{HEARING+NOT-HAVE}_{2.B\text{-twist}}}$ $\frac{\text{hs}}{\text{NOT}_A \text{ SIGN WORD}}$
 $\frac{\text{hs}}{\text{MEANING NOT-HAVE}_{2.B\text{-twist}}}$
 I could neither hear nor sign, (since) words had no meaning (to me).

As with many other manual dominant sign languages, SgSL data did not contain negative sign strings containing headshakes without corresponding manual negators. Similarly, the headshake arguably “does not bear any lexical or grammatical properties in HKSL because it is not obligatorily co-extensive with the manual negation marker, neither does its extent have any scope properties” (Lee, 2005 cited from Tang, 2006, p.222). Headshakes in SgSL were commonly used in isolation as feedback in conversation, but were not compulsory in negative sign strings. Most of the information remained dominated by the manual negatives makers. Therefore, the researcher believes that headshakes in SgSL serve a more pragmatic rather than grammatical function.

4.2 Negative facial expressions (nfe)

Negative facial expressions are optional features of SgSL negation. An initial attempt to focus on nfes articulations in SgSL to identify negation proved difficult. One cannot rely on negative nfe to identify negation. Nfe present in SgSL data are frowning, squinting, backward head tilting, pouting, mouthing negative words in English, and downward angled lips.

ASL is classified as a non-manual dominant sign language (Zeshan, 2006) despite only having a few negative facial expressions accompanying specific manual negators. With the influence of ASL in SgSL, the data did reveal some some instances of borrowing ASL non-manuals along with the manual negatives. negatives. In Section 3.5, NOT-YET in ASL is identified to be articulated with the signer's tongue sticking out. This is referred to as the tongue out feature. In Figure 28 (repeated as Figure 47), our SgSL informant, S3, articulates NOT-YET_{1.B-flap} with the tongue out feature. Where both hands were involved, the feature was not present. This variation may have been present to maintain a certain level of visibility of the sign and would require more data for further claims. Furthermore, the S3 articulates CAN'T_{2.down1-down} in

Figure 40 (repeated as Figure 48) with her tongue out. The tongue out nfe is not known to accompany the similar form of CAN'T in ASL. With the optional articulation of the tongue out nfe in NOT-YET_{1.B-flap} and the unexpected articulation of it in CAN'T_{2.down1-down}, the tongue out nfe is likely substitutable or may be used prosodically.

Figure 47. B-handshape facing signer, palm hangs from lax wrist while fingers flap toward signer, single-handed (NOT-YET_{1.B-flap})

Figure 48. 1-handshape, fingertips striking each other in a downward movement (CAN'T_{2.down1-down})

Tang (2006) asserts that in HKSL, negation requires a manual negator to be present and negation cannot be performed solely by non-manual marking. The necessity of having a manual negative present was especially obvious when Mak identified a single frame of B-handshapes held out in front of the signer as a negative manual (illustrated in example (74)). A headshake was not present in the sign string. Furthermore, the manual negative was not obvious to the researcher as NOT_{2.B} was articulated without the wave or twist feature. The signer was also observed to be briefly mouthing 'oo' as

the negative was produced. Some negative markers are optionally articulated with a specific non-manual feature, such as the tongue out feature with NOT-YET_{B-flap}. However, the non-manual ‘oo’ mouthing does not regularly appear with the negative manual marker, NOT_{2.B}. Likewise, the non-manual features that accompany NOT_{2.B} and NOT_{2.B} may range from headshakes, pouts and mouthings, illustrating that non-manual negatives are optional.

<Illustrating possible perspectives of older Singaporean signers using a different sign variety >

(74) PT STRONG REMAIN-IN-THEIR-BELIEFS NOT_{2.B}¹⁴ ^{‘oo’} CHANGE
 ... they remain adamant of their views. (Lit. ...they remain unchanging in their beliefs.)

Although the present study has not undertaken a grammaticality judgment segment, Mak’s persistence on manual negative markers point SgSL to having a similar dependence on manual negators as HKSL.

SgSL provides an interesting mix combining the necessary presence of a manual negator from HKSL and optionally including ASL non-manual markers. As a sign language identified to adopt non-manual dominant negation strategies, ASL’s dominant negation strategies such as obligatory headshakes and the tongue out feature when articulating NOT-YET are not borrowed into the SgSL system of negation. Instead, SgSL seems to share more similarities to HKSL beyond sharing a parent variety.

¹⁴ In this example, the signer did not wave her hands in B-handshape, but held them together in front of herself without movement.

5 DISCUSSION

5.1 Where more than one negative appears

The database contains multiple negative markers within the same clause-like unit. The presence of multiple negative markers in a clause is not uncommon and is a feature that occurs cross-linguistically for various purposes (Quer, 2012; Zeshan, 2006). Quer (2012) identifies doubling that does not change the polarity of a clause to express emphatic negation or for focus, and as negative concord. Negative concord is where more than one negative element is present, yet only a single negative sense is conveyed (Zeijlstra, 2004). Although functions of doubling are not unified across sign languages, doubling is restricted to “a single double per clause, be it matrix or embedded” (Quer, 2012, p. 330). The restriction stated by Quer is exemplified in ASL below.

- (75) $\frac{\text{neg}}{\text{ANN CAN'T READ CAN'T}}$
Ann CAN'T read. (Petronio, 1993: 134 cited from Quer, 2012: 330)

In this definition, Quer (2012) does not consider the presence of non-manuals with a manual negative or the repetition of movement during a single articulation of a manual sign as doubling. Zeshan (2006), in contrast, regards the presence of both manual and non-manual signs as a type of double marking (for example in Svenska Teckenspråket (Sweden) below).

- (76) a. $\frac{\text{top}}{\text{F-R-E-D}} / \frac{\text{neg}}{\text{CAN NOT SWIM}}$
 Fred can't swim.
- b.* $\frac{\text{top}}{\text{F-R-E-D}} / \frac{\text{neg}}{\text{CAN SWIM}}$
 (Bergman, 1995: 87 cited from Zeshan, 2006: 44)

The present study will use Quer's (2012) definition of doubling, treating the repeated presence of the same manual negative marker or non-manual marker as doubling. The presence of multiple differing negative markers will not be considered as doubling in this paper.

This chapter provides an account of the frequent occurrence of multiple manual negative markers and of non-manual negative marking accompanying manual negative markers. This Section serves to address the presence of multiple articulations of a single negator, or articulation of multiple negative markers in a single clause. These will be discussed in terms of function within the current chapter, focusing on emphatic negation (Section 5.1.1) and negative concord (Section 5.1.2). Before diving into emphatic negation through the use of multiple negative markers, the following subsection will describe various features of emphasis in sign language.

5.1.1 Emphatic negation

Emphasis can be conveyed in a variety of ways, one of which is in terms of movement. Some sign languages use non-manual features to produce emphasis. For example, the backward head movement in NZSL "signals

intense negation” (McKee, 2006, p. 83). Similarly, a head tilt accompanied by a headshake in Greek Sign Language (GSL) emphasises the negation (Antzakas, 2006, p. 265). The optionality of the non-manual features in SgSL poses the question whether similar non-manual means of emphasis exist in this variety. No noticeable differences were found between comparable pairs of negation that differed on having non-manual features.

As noted in chapter 4, non-manual negative expressions in SgSL are produced as discourse particles rather than grammatical features. Moreover, emphasis in SgSL negative is conveyed through doubling. For example (77) below, emphasis is not conveyed by the combination of the manual negative markers and the headshake, but by the repetition of the sign TEA.

<Clarifying that the sign articulated was TEA.>

(77) _____hs
TEA NOT_{1.B-wave} TEA
“Tea”, no, “tea”.

The criteria Quer (2012) uses restricts that “doubling structures always feature heads and never phrases” (p. 329). However, contrary to Quer’s (2012) assertion, doubling in SgSL can feature phrases, as illustrated in (64), repeated here as (78). Doubling occurs in this example as the same negative, NO, is repeated. The second articulation of NO does not nullify the initial articulation to produce the meaning *it is not true that I was not feeling arrogant*. It is clear, that the repeated presence of the same negative emphasises the negative sense provided by the pre-predicate negative.

<In response to a claim that the signer was arrogant in the past.>

(78) ALSO NO FEEL ARROGANT NO

And I really wasn't acting out of arrogance.

Example (73) repeated below as (79) provides an interesting example of the combination of multiple negative non-manual markers to convey emphasis. The headshakes are articulated each time with a different argument across the sign string and negative coordination takes place. As described in Section 4.1.2, the emphasis is conveyed by the signer leaning toward the interlocutor. During the lean, a headshake was articulated simultaneously. In the data, doubling in non-manual features was only observed to occur once.

(79) $\overbrace{\text{HEARING+NOT-HAVE}}^{\text{hs}}_{2.B\text{-twist}} \text{NOT}_A \overbrace{\text{SIGN WORD}}^{\text{hs}}$

$\overbrace{\text{MEANING NOT-HAVE}}^{\text{hs}}_{2.B\text{-twist}}$

I could neither hear nor sign, (since) words had no meaning (to me).

In conclusion of this Section, emphatic negation takes place in SgSL through doubling manually or doubling non-manually. More specifically, emphatic negation through doubling in SgSL involves any two of the same negative markers, or when headshaking is accompanied by leaning forward.

5.1.2 Negative concord

Negative concord refers to a characteristic in some languages where negation in a clause is unchanged despite the presence of multiple negative markers in it (Quer, 2012). Quer (2012) identifies two types of concord in sign languages, one between the manual negative marker and a non-manual negative marker, and another where two manual negatives are

present but do not negate each other. The two types of negative concord described by Quer (2012) are respectively illustrated in examples (80) and (81) below, reflecting that the presence of multiple negative markers “does not yield a positive reading” (p.334). The multiple in both sign languages and spoken languages, “negative concord is not a uniform phenomenon but rather shows parameters of variation” (Quer, 2012, p.334). Taking these features of negative concord into consideration, negative concord is of interest to this study to better understand the optional presence of the non-manual accompanying the main manual negative marker in SgSL.

- (80) IX_1 SMOKE $\overline{\text{hs}}$ NO
I do not smoke. [Catalan Sign Language (cited in Quer, 2012:333)]

- (81) INDEX DISLIKE SEE $\overline{\text{nfe}}$ NO
I don't like to watch it.
[Chinese Sign Language (cited in Quer, 2012: 334)]

Negative concord can be thought of as a process of a negative losing its asserted negative, requiring another negative marker to be present to fully convey its assertion (Zeijlstra, 2004). More intuitively, the presence of two manual negatives often signals emphasis (Horn, 1989). However, negative concord occurs where a negative marker loses its strength when present alone (Horn, 1989). An SgSL example closer to varieties of English with

negative concord was provided in example (25), repeated here as **Error! Reference source not found.**

- (82) PT NOT_{2.B-wave} NONE LEARN
I didn't get it. (Lit. I didn't learn nothing.)

Similarly, for the example in (83), emphasis is conveyed by the multiple clausal negatives present in the string, and the negative of the single proposition *election* is brought into focus with the presence of both NOT_A and NO.

- <*The signer clarifies that what she signed was not ELECTION.*>
(83) NOT_A ELECTION NO
Not 'election'!

With clauses such as the example in (83), negative concord is “characterised as encoding emphatic or strong negation” at times (Quer, 2012, p.334). Attention should be given to the strength and polarity of the assertion, where multiple negative markers appear. In SgSL, it is possible that no emphasis is conveyed although multiple negators are present. For example, (41) repeated below as **Error! Reference source not found.**, contains three negative markers but the clause does not convey an emphasis of the negative senses. The example in **Error! Reference source not found.** is treated as a single clause as the signer maintains her gaze at the same space from NOT_A until S-E-E, where she blinks then makes eye contact with the interlocutor while articulating NOT-HAVE_{2.B-twist} and NOT-YET_{2.B-flap}. Although the prosodic cues break the two manual negators from the signer's description of learning SEE2, both manual negative markers at the end of the example negate a reference within the clause prior to their articulation.

<The signer describes her linguistic practices.>

has a strong enough negative value, only one manual negative marker is present.

<Describing how the signer used to communicate with family members before being exposed to a sign language.>

(85) _____hs _____hs
HEARING+NOT-HAVE_{2.B-twist} NOT_A SIGN WORD
_____hs
MEANING NOT-HAVE_{2.B-twist}
I could neither hear nor sign, (since) words had no meaning (to me).

<Signer explaining her proficiency of verbal communication.>

(86) _____hs _____hs
NOT_A ALL ONE-HUNDRED PERCENT IMPOSSIBLE
"It's impossible to master (the) oral (method of communication)."

5.2 Productivity and variation in negative markers

In the SgSL data, certain handshapes were observed to be likely present in negation. The frequency of these handshapes can be attributed to either of two processes: productivity and variation. Productivity refers to the combination of a feature to other signs, producing new meanings. Variation, on the other hand, refers to the flexibility of a form to be articulated in a different manner yet convey the same sense. Productivity can be observed in the preference of certain negative handshapes to attach themselves to a manual proposition, and for certain movements to be observed in negation. Variation takes place in SgSL where a sign can be articulated with some variation in the number of hands involved, a sign can be produced with a single hand or with both hands. Variation across signers are also be observed in terms of distribution and function of the negative marker.

Chapter 3 includes a description of several manual negative markers, of which many seem similar to each other. This chapter will provide a description of productivity observed in the negative markers described (Section 5.2.1) and account for variation in the negative markers (Section 5.2.2). The details in the current chapter serves to explain why some negators are regarded as variations of the same form while others are perceived as different negators with similar forms.

5.2.1 Productivity in negative markers

Discussed in Section 2.6.2, lexical signs that undergo change to produce a negative sense, can be modified through a range of expressions. The range begins with negative particles that are signed as single units without or with minimal formational change. The movement of some free forms can be reduced and attached to other sign units as clitics. Negative affixes are forms that are reduced to the point of being unidentifiable with free forms, yet repeatedly appear with various sign units. Where a negative sign is reduced and markedly combined with another sign unit as a single unit, this paper identifies such sign units as negative compounds. Therefore, the range of how free a manual negative marker is, can be represented as negative particle > negative clitic > negative affix > negative compound.

When differentiating clitics from affixes, the presence of the free form is a clear criterion. For example, in SgSL, NOT-HAVE_{2.B-twist} is identifiable as the free form of the negative clitic in HEARING+NOT-HAVE_{2.B-twist}. However, the most productive I-handshape negative (Section 3.8) can combine with a property in a single movement, when describing someone with a bad sense of fashion. In this manner, the I-handshape negator displays features of suffixation or compounding. There is insufficient data to provide a confident assertion that the sign reflects negative suffixation or compounding.

The other example of productivity involving the I-handshape negator to express bad taste of flavour seems to display cliticisation instead because there is minimal reduction of meaning and movement. The I-handshape

negative is very productive as it can function alone as a negative sign, BAD, it can negate modality with CAN'T, and can even modify a stative predicate such as TASTE-BAD (May Low, p.c., February 2, 2015). The sign of similar form in CSL is similarly productive. Therefore, the I-handshape is considered a negative handshape that can function as a negative particle, a negative clitic, and a negative affix. The productive I-handshape negative, traced to SSL roots, has possibly remained in the SgSL system for a longer period as compared to the ASL forms.

Negative affixation is identified in three manual negators in SgSL, namely KNOW-NONE_{1.F}, DON'T-KNOW_{B-outward}, and the I-handshape negative marker. A possible pattern of cognition or ability arises in the negative affixation of the O-type negators. In Section 3.7.1, the F-handshape is identified to attach a reduced articulation of KNOW, through contact between the signer's middle finger and the forehead, to the O-type handshape, F, expressing KNOW-NONE_{1.F}. Interestingly, present in the data was a single production of a O-handshape sign by the Deaf coordinator, Mak, glossed as KNOW-NONE_{1.O} in Figure 49 below. KNOW-NONE_{1.O} was also used to express the lack of knowledge to communicate in a language. The presence of KNOW-NONE_{1.O}, KNOW-NONE_{1.F} and DON'T-KNOW_{B-outward} reflect the preference for negative affixation to take place in SgSL when the negated proposition is one of cognition. Such a preference does not come as a surprise as Zeshan (2013) includes verbs of cognition, emotional attitudes and evaluative judgement amongst domains of negatives that tend to be

expressed irregularly. Many SgSL negative markers that undergo affixation fall under these domains.

Figure 49. KNOW-NONE_{1.0}

5.2.2 Variation in articulating negative markers

Variation in sign articulation often takes place where a more frequently two-handed sign is at times articulated as a single-handed sign or vice versa. Two handed signs such as B-handshape twisting (Section 0), the B-handshape facing downward moving outward (Section 3.4), and O-handshape shaking movements (Section 3.6) can be produced as single-handed signs in the SgSL data. The flexibility of signing with a single hand instead of both hands is identified as a feature known as Weak Drop (Padden & Pearlmutter, 1987; Brentari, 1998). Weak Drop occurs in many sign languages and was described in ASL as a feature of language change (Klima & Bellugi, 1979, p. 73). Klima and Bellugi (1979) describe the process of originally two-handed signs becoming one-handed instead. For example,

CAT in ASL (Figure 50) was initially signed with two hands. Weak Drop resulted in the sign now being articulated with a single hand. Such displacement of signs can be motivated by several reasons, such as increasing the visibility of the signer's face (Klima & Bellugi, 1979), symmetry (Battison, 1974), alternation, contact, and the phonetic environment of signs prior to the sign that undergoes Weak Drop (Nishio, 2009).

Figure 50. The old ASL sign for CAT (left image) is now more commonly signed with one hand (right image) (ASL CAT signs, n.d.)

Variation can also work in the reverse: Klima and Bellugi (1979) also describe a tendency of some one-handed signs to become symmetrical. For example, the sign NOT_A in Figure 42 is observed to be produced with two A-handshapes as the non-dominant hand changes its handshape along with the dominant hand, even though it is not involved in articulating the negative marker. The additional addition of the A-handshape due to phonological assimilation is identified as Weak Prop. In this process, many one-handed signs articulated below the signer's neck become two-handed (Klima & Bellugi, 1979). One example in SgSL can be seen in Section 3.2.3 This increases the visual acuity of signs articulated below the neck (Klima & Bellugi, 1979). Nishio (2009) more recently finds that the sign prior to the

Weak Prop or Weak Drop affects the number of hands used in the articulated sign. In SgSL, however, this effect is not as apparent and frequent as Weak Drop.

A separate example of these processes in SgSL is the sign, GOOD. The signer can choose to produce a single A-handshape (Figure 51) or produce a two-handed sign that is used in SEE2 as well (Figure 52). In Figure 53, the signer allows the sign GOOD to undergo Weak Prop, while in Figure 54, the signer allows the sign GOOD to undergo Weak Drop. In Figure 53 the typically one-handed sign is articulated with both hands in A-handshapes, and in Figure 54 the sign that typically is articulated with two B-handshapes is produced only with the signer's moving dominant hand; the non-dominant B-handshape is dropped.

Figure 51. GOOD_{1,A}

GOOD

Palm-in fingers on chin, fingers together, drop to palm of left hand
(see INDEED)

Figure 52. GOOD in SEE2 (Gustason & Zawolkow, 1993, p.163)

Figure 53. GOOD_{2,A}

Figure 54. GOOD_{1,B}

Variation in the position of the negative marker is not uncommon in SgSL. One such negative form is NOT_{B-wave} in Section 0, where the location of the negative can be used to express reported speech. Another source of variation is observed in possible Weak Drop or Weak Prop processes taking place in the articulation of HEARING+NOT-HAVE_{2.B-twist} (Section 3.2.2) and DON'T-KNOW_{1.B-twist} (Section 3.2.3). Focusing on the cliticisation, DON'T-KNOW_{1.B-twist} can be glossed as KNOW+NOT-HAVE_{1.B-twist} instead. In both NOT-HAVE_{B-twist} clitics, the use of two-hands for HEARING+NOT-HAVE_{2.B-twist} and a single hand for KNOW+NOT-HAVE_{1.B-twist} is attributed to the phonological assimilation of the clitic to the positive stem – HEARING is a two-handed sign while KNOW is articulated with one hand. As a result, the place of articulation is assimilated to the place of articulation for KNOW and HEARING.

The distribution of variation across signers is illustrated below is an update compiling the data presented above as well as from the poster (Ang, 2016). The F-handshape clitic and HEARING+NOT-HAVE_{2.B-twist} are not included in this table as these forms are not individual negative particles. In addition, REFRAIN_{2.B-wave} is not included as it is an inherently negative lexical item.

Function Negative marker	Existential	Turn-initial	Nominal predicate	Verbal predicate	Epistemic	Deontic	Dynamic	Cognitive
NOT-HAVE _{B.twist} ¹⁵	▲■		■	◆■				▲
NO _{1.B-wave} ^{15,16}		◆■	■	◆■				
NOT _{2.B-wave} ^{7,17}		■	■	◆■				
NOT _A ¹⁸			▲◆■	▲◆■			■	
DON'T _{downB-out}				◆■				■
NOT-YET _{B-flap} ¹⁹	■	■	■					
DON'T-KNOW _{1.B-twist} ²⁰			▲◆■	◆■				▲◆■
DON'T-KNOW _{B-outward} ²¹			◆					◆
CAN'T _{I-twist} ²²				▲◆■	◆■		▲◆■	
CAN'T _{2.1.down} ²³				▲■	◆■	▲■	◆■	
NO ²⁴	▲	◆■	▲◆■	◆				
NOT-WANT _L ²⁵						▲◆■		
NONE _{O-wave} / NONE _{O-out} ²⁶	▲◆■	◆	▲◆■	▲◆			◆■	◆

Table 7. Distribution of Independent Negative Markers

¹⁵ Represented as NEG in poster

¹⁶ Represented as NOT in poster

¹⁷ Includes both two-handed and one-handed variants.

¹⁸ Represented likewise as NOT_A in poster

¹⁹ Represented as NOT-YET in poster.

²⁰ Represented as DON'T-KNOW in poster.

²¹ Represented as DON'T-KNOW_A in poster.

²² Represented as CAN'T in poster.

²³ Represented as CAN'T_A in poster.

²⁴ Also represented as NO in the poster.

²⁵ represented as NOT-WANT in poster.

²⁶ Collectively represented as NONE in poster.

5.3 Comparing negation in HKSL and ASL to SgSL

The historic influence of ASL and SSL on SgSL remains a part of Singaporean signers' repertoire today. Tay (2016) observes, during her interview with Peng, that "he frequently used ASL signs in English word order" (p.25). Since SgSL includes both ASL and HKSL features, comparing SgSL is necessary to identify the extent of influence from these differing sign varieties. The comparison also allows the identification of negation strategies that are unique SgSL. Discussed in Section 1.5, HKSL and ASL negation strategies differ greatly: negation in CSL and HKSL is manual dominant, while ASL is non-manual dominant in employing negative strategies (Zeshan, 2004). The following comparisons will rely on the characteristics identified in Zeshan's (2006) typology of negation strategies in sign languages.

HKSL and SgSL share several clear similarities. Both sign languages rely on manual negators to convey negation, sharing B-handshapes for NOT and the I-handshape negative modal. In addition, the I-handshape negative marker is very productive in both SgSL and HKSL. Furthermore, the sign NOT-HAVE in HKSL (Figure 34 repeated below as Figure 55) uses the same negative F-handshape to the F-handshape suffix in KNOW-NONE_{1.F} (described in Section 3.7). HKSL and SgSL expressions are also similar in that both cannot be negated by non-manual negative markers alone.

NOT-HAVE

Figure 55. NOT-HAVE in HKSL (Zeshan, 2004, p.38)

Conversely, as a sign language that has non-manual dominant negation strategies, ASL can rely on non-manual markings alone to express negation. In this manner, despite the borrowing of ASL non-manual negative markers in SgSL, the non-manual markers are optional in SgSL. Considering that ASL influence is more recent in Singapore than SSL, many manual negative markers from ASL are present in SgSL. However, ASL negative forms seem less productive than the forms in SgSL of SSL origin.

The relationship between SgSL, ASL and HKSL is complex, considering presence of forms that seem semantically similar from both ASL and SSL. This is further complicated by SgSL users using synonymous negators interchangeably. The researcher asserts that the common knowledge of different sign varieties shared by SgSL signers allow the flexible use of signs from either SSL or ASL origin.

Cross-linguistically, many manual negators in SgSL are similar to common negators identified by Zeshan (2004). In terms of form, SgSL negators similarly tend to use the B-handshape, F-handshape and the O-handshape. Many SgSL signs similarly either have the repeated wrist twisting or repeated side to side movement, or the single sideways movement moving outward from the centre of the signer (Zeshan, 2004, p. 35-36).

Although headshakes and non-manual features are present in conversation, these non-manual negative markers are not the main feature in expressing the negative. Negation is not articulated by non-manual markers alone. In addition, non-manual features in SgSL negation are not strictly associated to negative scope or clause boundaries. This differs from the expectations set by co-speech gestures (Harrison, 2010) and other sign languages such as ASL (Liddell, 2003; Tang, 2006). Zeshan (2006) also points out that many sign languages with manual dominant type negation have an optional presence of non-manual features. SgSL takes this optional feature further as negative facial expressions seem to vary pragmatically instead of the semantically or grammatically.

In Zeshan's (2006) table of characteristics of manual dominant type negation in sign languages, the manual negative determines the type of non-manual marker present. This is identified in articulations of negatives such as NOT-YET_{B-flap} in SgSL, where specific negative facial expressions optionally

accompany particular manual negatives. An overview of the characteristics in all three negation systems are summarised in Table 8²⁷.

	ASL (Non-Manual Dominant)	HKSL (Manual Dominant)	SgSL
Non-manual negation	Compulsory (Optional manual negator)	Optional (Requires manual negator)	Optional (Requires manual negator)
Non-manual clausal negation	Acceptable	Ungrammatical	Likely ungrammatical
Choice of non-manual negator	Independent of manual productions	Determined by manual clause negator (where more than one non-manual negator is applicable)	Possibly determined by discourse
Spreading of non-manuals	Free spreading across the clause	Spreading is limited to or closely tied to the manual negator	Spreading dispersed across the utterance, often articulated with or close to the manual negator

Table 8. Characteristics of ASL, HKSL compared to SgSL (derived from Zeshan, 2006, p.43)

The agreement between the features of SgSL negation to manual dominant systems in Zeshan's (2006) list of features bring the researcher to a clear conclusion that SgSL has a manual dominant system of negation. This further reflects the similarity between SgSL and HKSL as both are similarly manual dominant systems of negation. The compatibility of negation features in SgSL negative strategies to Zeshan's (2006) list provides further reinforcement for the list as sound typology for negation systems in sign languages.

²⁷ Adapted table modified from poster presented at TISLR12.

5.4 SgSL as a product of multiple linguistic influences

Contextualising a language historically is beneficial in several aspects of describing the language. The historic basis of SgSL provides insight to the status of the variety. This chapter will account for the presence of multiple negative markers for the same functions and discuss the linguistic status of SgSL as a variety.

SgSL is observed to adopt many ASL manual negators. Kratochvíl et al. (2016) find that 40% of lexical signs that express nominal concepts from Woodward's (1993) modified Swadesh list is traceable to ASL. Similarly, of the manual negators discussed in this study, seven out of thirteen canonical forms discussed are of ASL origin. In terms of word order, many forms can be placed before the noun, predicate, or clause. These characteristics suggest heavy ASL influence in SgSL.

However, it is not uncommon either for manual negative markers to be present clause-finally. Furthermore, SgSL is more inclined to manual dominant type negation strategies. Zeshan (2006) notes the preference for manual dominant negation to be the trend across non-Western sign languages. In addition to geographic and historic trends, another possible reason for the manual dominance in SgSL negation is the salience of manual negative forms that allow signers across educational upbringing to identify negatives and disagreements easily.

SgSL users use the sign language amongst other signers of SgSL. However, SgSL is not the medium of education in schools for the Deaf. Deaf students can be taught to recognise speech and articulate verbally through oral education, or are currently taught SEE2 in classrooms that use a manual medium of education. This disparity is further affected as older generations are taught other sign languages in school (as discussed in Section 1.4). When Singaporean signers with different sign varieties come together, their signed variety should be clear enough to convey their intended message regardless of the interlocutor's linguistic background. Therefore, the signing community's use of multiple manual negatives are possibly reflecting a strategy of accommodation for signers of different sign varieties. Likewise, a convergence of linguistic patterns from ASL and SSL is identified in SgSL.

6 CONCLUSION

This chapter will round off the observations made in the present study, highlighting important findings and accounting for current limitations. This chapter will conclude with areas of interest that were not within the scope of the analyses or methods in this study for future descriptions of SgSL.

Negative forms in this study have been identified through their effect on a proposition. Negation, scoping over contextually free elements has allowed the researcher to clearly segment sign strings. The scope of negation in SgSL, unlike many other sign languages, is dependent on manual negative markings.

Aligned with the trend Zeshan (2004) observes across sign languages, SgSL too relies on its large repertoire of manual negative particles for negation. In this study, twelve negative particles, three clitics and three suffixes were described. Many of the manual negative forms are of ASL origin. Despite fewer manual negative forms of SSL origin, traits belonging to a HKSL, a sign language related to SSL, remain. One of these traits is the reliance on manual strategies of negation.

Non-manual negatives in SgSL are observed to be partially conventionalised from ASL. Non-manual negatives such as headshakes and negative facial expressions may correspond to particular manual negators, but remain optional in discourse. The spread of headshakes in SgSL do not correspond

to scope. Instead, they appear to function as pragmatic or prosodic features and can appear in anticipation of a manual negative marker.

Emphatic negation in SgSL is found to occur with doubling of the same manual negative marker or with the repetition and combination of multiple non-manual markers. Whether a particular non-manual marker can be solely responsible for emphasis remains open to future research.

Contextualising SgSL in its education history is useful as the investigation of contact languages or source languages inform the research about influences that permeate the current variety of SgSL. Nonetheless, the current status of SgSL remains unclear. Based on Zeshan's (2004; 2006) manual and non-manual dominant typology, SgSL is easily identified to use manual dominant negation strategies. Within the manual dominant group of sign languages is HKSL, another sign language historically related to SSL. Many SSL originated negative forms in SgSL are similarly productive in HKSL. Despite the more recent adoption of ASL, characteristics of SSL pervade negation in SgSL. Not only are manual negative HKSL forms found in SgSL, most negative particles can occur clause-finally.

6.1 The usefulness of categorising sign languages as manual or non-manual dominant in negation

Knowing historical languages of influence has proven useful in accounting for characteristics in SgSL negation. This includes the forms present in SgSL, possible nses, as well as the asymmetrical aspect of many SgSL negators. SgSL also displays features easily grouping it with other manual dominant sign languages in Zeshan's (2004; 2006) typology of sign language negation.

Zeshan (2006) also points out the salience of manual negatives and the preference for manual negation across non-western sign languages. With these cross-linguistic trends supplementing Zeshan's (2004; 2006) typology of sign language negation, the inclination toward manual negation strategies in SgSL come as no surprise. Despite variation and the size of the data pool, SgSL can be clearly categorised as a manual dominant sign language in negation. This in turn reinforces the usefulness of Zeshan's classification even for a sign language that has been heavily influenced by sign languages with differing dominance in negation.

6.2 Similarities amongst SgSL negative markers

The findings suggest a preference for certain unmarked handshapes such as the B-handshape and the O-handshape. Just as some sign languages have suggested that the I-handshape in various sign languages is a negative handshape (Yang & Fischer, 2002; Tang, 2006). The resemblance between the B-handshape negative markers - in particular the B-handshape negative markers with twisting or waving movements - point to a common pattern of movement among negatives in SgSL.

As discussed in Section 5.3, these movements are not distinct to SgSL. Zeshan's (2004) provides a table of common formational features of negative markers cross-linguistically (p. 37), in which she identifies the following six features: repeated twist of the wrist, side-to-side movement with outward palm orientation, single sideways movement, O-handshape with single movement, side-to-side movement with outward palm orientation and O-handshape, and O-handshape with circular movement. These movements have also been observed in what Woodward and Desantis (1977) regard as Negative Incorporation. With cross-linguistic tendency for particular movements and handshapes, Zeshan (2004) attributes this to the influence of gestures from hearing communities. While such a claim is possible for the Singaporean Deaf community because it is surrounded by a majority of hearing people, further exploration of iconicity in negation and negative gestures used in hearing communities would generate a more insightful discussion.

6.3 Irregularities in SgSL negation

SgSL is unique in several ways, ranging from its characteristics in negation to the features specific to its negative forms. In terms of negation strategies, SgSL employs both morphological negation and negative particles. This combination in SgSL negation strategies characterises SgSL within its geographic region. Morphological negation has been identified as a common characteristic amongst East Asian sign languages, despite not being the main negative strategy in these sign languages (Zeshan, 2013). Zeshan (2013) identifies domains in which irregular negation tends to take place. Furthermore, some suppletive negative markers used in SgSL are likely present due to borrowing.

Irregularity in negative forms is observed in many SgSL negators that can be articulated with some variation. For example, phonological assimilation results in signs undergoing Weak Prop or Weak Drop. Cliticisation takes place with particular verbs and not with others as illustrated with HEARING+NOT-HAVE_{2.B-twist} in Section 0 and DON'T-KNOW_{1.B-twist} in Section 3.2.3.

In SgSL, multiple negative markers may be present to negate a single predicate in a single clause. The presence of multiple negative markers may serve to indicate emphasis or as negative concord. Negative concord can take place in SgSL with two different negators although each negator is sufficient to express the intended negation alone. Furthermore, the presence

of a manual negative before the clause and after the clause can serve to coordinate the negation of multiple arguments between them.

The presence of multiple synonymous glosses is attributed to historic linguistic influences on SgSL. Variation in the choice of manual negators used allow entirely different sign forms with the same effect be substitutes of the other (Section 5.3). Nonetheless, variation in negatives reflect the need to describe negatives with the consideration of their historic origins, phonological context, and function.

6.4 Methodological improvements

This study draws from methodological lessons learnt from literature, reinforced by a pilot study (Ang, 2014) conducted with a single male participant, referred to as S1 in this paper. Improvements were made to the methodology as the data from the pilot study contained obvious differences in signing style due to the data types requested from the signer.

In the pilot study, S1 was asked to sign three different data types, recorded in four video files – the sociolinguistic background interview, a modified Swadesh wordlist written English, and two storytelling narratives. The signer's signing style varied vastly, from expressionless signs in the wordlist to gestural enactments in the narratives. Moreover, narratives tend to be interspersed with partially lexical items and non-lexical items (Hodge and Johnston, 2014). Conversational data was preferred as such data includes linguistic expressions most comfortable to the signer (Fenlon, Schembri, Johnston, & Cormier, 2015). In addition, conversational data containing personal experiences would contribute to the building of the SgSL corpus both linguistically and culturally.

Nonetheless, the present study recognises some limitations in terms of time taken to annotate the data. The process of consulting Deaf coordinators during annotation is tedious for the coordinator and the verification process extends the time needed for each annotated sign sequence. This has resulted in a seemingly small data pool for the present study.

Furthermore, in conversational data, particularly interview data, positive parallels to negative constructions are often unavailable. Polarity pairs, as discussed in Section 1.2.2, allow a contrast between constructions with a negation and similar positive constructions. Further research with grammaticality judgements would be needed to identify impossible structures in SgSL. Furthermore, the present research does not cover the production of negative imperatives as negative imperatives were not present in the data. Hence, a combination of elicited signing with conversational data will serve to reinforce the current findings on negation.

6.5 Suggestions for further research

The distribution of the negative markers can be further examined. While the current research describes the forms present in the data, future research focusing on the frequency and distribution of various negative markers between participants or specific groups of signers. The group membership and identity markers of signers is of interest as SEE2 is taught to the hearing community and ASL is a sign language used by many other Deaf individuals. Consequently, the use of HKSL negative forms may have taken on the function of an in-group identity marker.

Additionally, the significance in varying the place of articulation and the flexibility of these variations can be explored. As briefly mentioned with NO_{2.B-wave} in Section 0, the use of space by the signer serves to facilitate the discourse in a different manner. Exploring the details of such features in discourse will also add to future research using conversational data.

REFERENCES

- Aarons, D. (1994). *Aspects of the syntax of American Sign Language*. Doctoral Dissertation, Boston University.
- Ang, M. (2014). *Exploring Topics in Singapore Sign Language: A Pilot Study*. (BA Final Year thesis, Nanyang Technological University, Singapore)
- Ang, M. (2016). *Negation in Singapore Sign Language*. Poster presented at the 12th International Conference on Theoretical Issues in Sign Language Research (TISLR12), Melbourne, Australia, 4-7 January.
- Antzakas, K. (2006). The use of negative head movements in Greek Sign Language. In: Zeshan, U. (ed.), *Interrogative and negative constructions in sign languages*. Nijmegen: Ishara. (pp. 258-269)
- ASL CAT signs [Online image]. Retrieved December 29, 2016, From <http://www.lifeprint.com/asl101/pages-signs/c/cat.htm>
- ASL Classifiers [Online image]. Retrieved January 19, 2017, From <http://www.lifeprint.com/asl101/pages-signs/classifiers/classifiers-main.htm>
- Battison, R. (1974). Phonological deletion in American Sign Language. *Sign Language Studies*, 5, 1–19.
- Beaupoil, P. (2013). A multimodal and corpus-based approach to children's expression of refusal and rejection. Paper presented at the *International Conference of the AFLiCO Empirical Approaches to Multi-modality and to Language Variation*, 15–17 May, Lille.
- Brentari, D. (1998). *A Prosodic Model of Sign Language Phonology*. Cambridge, MA: MIT Press.
- Cameron-Faulkner, T., Lieven, E., & Theakston, A. L. (2007). What part of no do children not understand? A usage-based account of multiword negation. *Journal of Child Language*, 33: 251–282.
- Centre for Sign Linguistics and Deaf Studies (CSLDS), Department of Linguistics and Modern Languages (LIN), The Chinese University of Hong Kong (CUHK). (n.d.). *Asian SignBank*. Accessed 10 February, 2016, from <http://cslds.org/asiansignbank/>
- Dryer, M. S. (2013a). Negative Morphemes. In: Dryer, Matthew S. & Haspelmath, Martin (eds.) *The World Atlas of Language Structures Online*. Leipzig: Max Planck Institute for Evolutionary Anthropology. Retrieved, 3 Oct 2015, from <http://wals.info/chapter/112>
- Dryer, M. S. (2013b). Order of Negative Morpheme and Verb. In: Dryer, Matthew S. & Haspelmath, M. (eds.) *The World Atlas of Language*

Structures Online. Leipzig: Max Planck Institute for Evolutionary Anthropology. Retrieved, 3 Oct 2015, from <http://wals.info/chapter/143>

Engberg-Pedersen, E. (2002). Gestures in signing: the presentation gesture in Danish Sign Language. In Schulmeister, R. & Reinitzer (eds.) *Progress in sign language research: In honour of Siegmund Prillwitz*. Hamburg: Signum. (pp. 143-162)

Fant, L., and Fant, B. B. (2011). *The American Sign Language Phrase Book with DVD*. United States of America: McGraw Hill.

Fenlon, J., Schembri, A., Johnston, T., and Cormier, K. (2015). Documentary and Corpus Approaches to Sign Language Research. In: Orfanidou, E., Woll, B. & Morgan, G. (eds.) *Research Methods in Sign Language Studies: A Practical Guide*. Chichester, UK: John Wiley & Sons. (pp. 156-172)

Fischer, S. (2006). Questions and negation in American Sign Language. In: Zeshan, U. (ed.), *Interrogative and negative constructions in sign languages*. Nijmegen: Ishara. (pp. 165-197)

Fischer, S. and Gong, Q. (2011). Marked Hand Configurations In Asian Sign Languages. In Channon, R., van der Hulst, H. (Eds). *Formational Units in Sign Languages*. Sign Language Typology Series Vol. 3. (pp. 19-42) Nijmegen / Berlin: Ishara Press / Mouton de Gruyter.

Franklin, A., Giannakidou, A., and Goldin-Meadow, S. (2011). Negation, questions, and structure building in a homesign system. *Cognition*, 118: 398–416.

Givón, T. (1979). *On Understanding Grammar*. New York: Roy Publishers.

Givón, T. (1984). *Syntax: A Functional-Typological Introduction 1*. Amsterdam: John Benjamins.

Grimes, Joseph E. (1975). *The thread of discourse*. The Hague: Mouton.

Gustason, G., and Zawolkow, E. (1993). *Signing Exact English*. California: Modern Signs Press.

Halliday, M.A.K. (2014). *An introduction to functional grammar. 4th Edition*. London: Edward Arnold.

Harrison, S. (2010). Evidence for node and scope of negation in coverbal gesture. *Gesture*, 10: 29–51

Hodge, G., and 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). *Australian Journal of Linguistics*, 34: 262–291.

- Hopper, P., and Traugott, E. C. (1993). *Grammaticalization*. Cambridge: Cambridge University Press.
- Horn, L. R. (1989). *A Natural History of Negation*. Chicago: University of Chicago Press.
- Horn, L. R. and Kato, Y. (eds). (2000). *Negation and Polarity. Syntactic and Semantic Perspectives*. Oxford: Oxford University Press.
- Hwang, S. J. J. (1992). The functions of negation in narration. In: S. J. J., Hwang, and W. R., Merrifield (Eds.), *Language in Context: Essay for Robert E. Longacre*. Summer Institute of Linguistics and the University of Texas at Arlington Publications in Linguistics. (pp. 321–337)
- Klima, E., and Bellugi, U. (1979). Historical Change: From Iconic to Arbitrary. *The Signs of Language*. Cambridge: Harvard University Press. (pp. 68-83)
- van der Kooij, E., Crasborn, O., and Ros, J. (2006). *Manual prosodic cues: Palm-up and pointing signs*. Poster presentation at the 9th Conference on Theoretical Issues in Sign Language Research, Florianopolis, Brazil, December 2006.
- Kratochvíl, F., Ang, M., Low, J. M., Mak, J. and Wang, L. (2016). *Language Contact-induced Layering of the Basic Vocabulary in Singapore Sign Language*. Poster presentation at the 12th International Conference on Theoretical Issues in Sign Language Research, Melbourne, Australia, January 2016.
- Ladusaw, W. (1997). Negation and Polarity Items. In Lappin, S. (ed.), *The handbook of contemporary semantic theory*. Oxford, UK; Malden, USA: Blackwell Publishing.
- Lambrecht, K. (1994). *Information Structure and Sentence Form: Topic, Focus, and the Mental Representations of Discourse Referents*. Cambridge: Cambridge University Press.
- Liddell, S. (2003). *Grammar, gesture and meaning in American Sign Language*. Cambridge, UK: Cambridge University Press
- Lyons, J. (1995). *Linguistic Semantics: An Introduction*. Cambridge, UK: Cambridge University Press.
- Matras, Y. (2009). *Language contact*. (Cambridge Textbooks in Linguistics). Cambridge: Cambridge University Press.
- Meir, I. (2004). Question and Negation in Israeli Sign Language. *Sign Language and Linguistics*, 7: 97-124

- Miestamo, M. (2005). *Standard Negation: The Negation of Declarative Verbal Main Clauses in a Typological Perspective*. Berlin: Mouton de Gruyter.
- Nishio, R. (2009). *Corpus-based analysis of Weak Drop and Weak Prop in German Sign Language (DGS)*. Paper presented at the workshop Sign language corpora: Linguistic issues, London.
- Padden, C., and Perlmutter, D. (1987). American Sign Language and the architecture of phonological theory. *Natural Language and Linguistic Theory*, 5: 335-375
- Palfreyman, N. (2015). *Sign language varieties of Indonesia: A linguistic and sociolinguistic investigation* (Doctorial thesis, University of Central Lancashire, Preston.)
- Payne, J.R. (1985). Negation. In T. Shopen (ed.), *Language typology and syntactic description. Volume 1: Clause structure*, 197-242. Cambridge: Cambridge University Press.
- Pfau, R. (2008). The Grammar of Headshake: A Typological Perspective on German Sign Language Negation. *Linguistics in Amsterdam*, 1: 37-74
- Pfau, R. (2016). A featural approach to sign language negation. In P. Larrivé & C. Lee (eds.), *Negation and polarity: Experimental perspectives*. Switzerland: Springer. (pp. 45–74)
- Quer, J. (2012). Negation. In: R. Pfau, M. Steinbach & B. Woll (eds.), *Sign language – An international handbook*. Berlin: De Gruyter Mouton. (pp. 316-339)
- Quer, J., Cecchetto, C., Donati, C., Geraci, C., Kelepir, M., Pfau, R., and Steinbach, M (scientific directors). (2016). *SignGram Blueprint: A guide to sign language grammar writing*. Berlin: De Gruyter Mouton (open access online publication).
- Sandler, W., Meir, I., Padden, C., and Aronoff, M. (2005). The emergence of grammar: Systematic structure in a new language. *Proceedings of the National Academy of Sciences*, 102: 2661–2665
- Schembri, A., Fenlon, J., Rentelis, R., Reynolds, S., and Cormier, K. (2013). Building the British Sign Language corpus. *Language Documentation and Conservation* 7, 136–154.
- Singleton, J., Martin, A., and Morgan, G. (2015). Ethics, Deaf-friendly research, and good practice when studying sign languages. In Orfanidou, E., Woll, B. & Morgan, G. (eds.). *Research methods in sign language studies: a practical guide*. West Sussex: John Wiley & Sons. (pp. 7-20)

- Spitz, R. A. (1957). *No and yes: On the genesis of human communication*. New York: International Universities.
- Supalla, T., and Webb, R. (1995). The grammar of International Sign: A new look at pidgin languages. In K. Emmorey & J. Reilly (Eds.). *Language, gesture, and space* (pp. 333-352). Mahwah, NJ: Lawrence Erlbaum Associates.
- Sze, F., Lo, C., Lo, L., and Chu, K. (2013). Historical Development of Hong Kong Sign Language. *Sign Language Studies*, 13: 155-185.
- Tang, G. (2006). Questions and Negation in Hong Kong Sign Language. In U. Zeshan (ed.), *Interrogative and Negative Constructions in Sign Languages*. Nijmegen: Ishara Press. (pp. 198-224)
- Tay, P. (2016). A Historical Account of The Singapore Deaf Community. (Summer Internship Research Oversight, Nanyang Technological University, Singapore).
- Valli, C., and Lucas, C. (2000). *Linguistics of American Sign Language: An Introduction (3rd Ed.)*. Washington, DC: Clerc Books.
- van Herreweghe, M., and Vermeerbergen, M. (2006). Interrogatives and Negatives in Flemish Sign Language. In U. Zeshan (ed.), *Interrogative and Negative Constructions in Sign Languages*. Nijmegen: Ishara Press. (pp. 225-256)
- Woodward, J., and Desantis, S. (1977). Negative Incorporation in French and American Sign Language. *Language in Society*, 6: 379-388
- Yang, J. H., and Fischer, S. D. (2002). Expressing Negation in Chinese Sign Language. *Sign Language & Linguistics*, 5: 167-202
- Zeijlstra, H. H. (2004). *Sentential negation and negative concord* (Doctoral thesis, University of Amsterdam, Amsterdam). Retrieved from <http://dare.uva.nl/document/2/30354>
- Zeshan, U. (2000). *Sign Language in Indo-Pakistan: A description of a signed language*. Amsterdam: Benjamins.
- Zeshan, U. (2004). Hand, Head and Face – Negative Constructions in Sign Language. *Linguistic Typology*, 8: 1-57
- Zeshan, U. (ed.). (2006). *Interrogative and negative constructions in sign languages*. Nijmegen: Ishara Press.
- Zeshan, U. (2013). Irregular Negatives in Sign Languages. In: Dryer, Matthew S. & Haspelmath, Martin (eds.) *The World Atlas of Language Structures Online*. Leipzig: Max Planck Institute for Evolutionary Anthropology. Retrieved, 5 Oct 2015, from <http://wals.info/chapter/139>

Newspaper Articles

N. A. (1963, November 25). First lady opens school for deaf. *The Straits Times*. Retrieved from <http://eresources.nlb.gov.sg/newspapers/Digitised/Article/straitstimes19631125-1.2.21.aspx>