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台灣手語自然對話中的否定形式

Negation in Naturally Occurring Taiwan Sign Language

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Abstract

The study aims at investigating the negative construction in Taiwan Sign Language (TSL) free conversation data. TSL is used by the deaf in Taiwan, mostly come from three Deaf Schools in Taipei, Taichung and Tainan. Several studies about TSL negation have been done by Tai, Chang, Tsay, and Su (in preparation), and Ke (2006). Also, Zeshan (2006) provides a typological research on negative and interrogative constructions in different sign languages. Based on those researches, the study investigates TSL negative construction in the free conversation data.

Instead of elicitation method used by previous works, the data collected in this study is free conversation between two signers without any hearing researcher involved. The informants were instructed to talk freely for at least 30 minutes, and they were not told about the purpose of the study, so that the most natural expressions might be expected to occur. After collecting the data, the negative utterances were extracted and analyzed by using ELAN software. Based on the transcription of the negative sentence, we can observe the natural pattern of manual negators and the nonmanual expressions used in the negative sentences.

Another aim of the study is to define the grammatical status of nonmanual expressions in TSL negation. The nonmanual expressions focus on the head movements and the facial expressions. There are three head movements observed in the data: side-to-side headshake, head tilt, and single sideward head turn. As for other facial expressions, they are eyebrow movements and the mouth actions. The signers may lower the eyebrows (frown) or the lip corner while expressing negative sentences.

In sum, to compare with the previous researches of negation, the study collected some interesting negation patterns from the free conversation data and thus complements the previous studies of TSL negation using elicitation method.

中文摘要

本論文旨在探討台灣手語自然語料中的否定結構。台灣手語的使用族群主要是住在台灣的聾朋友，他們大部分是從台北、台中以及台南三所啟聰學校求學期間發展出用來互相溝通的自然手語。先前已有一些針對台灣手語中否定形式的相關研究 (Tai, Chang, Tsay, and Su , in preparation, and Ke 2006)。再者，Zeshan (2004)發表關於各國手語中否定結構的類型學研究。根據以上這些研究，本論文將否定形式的探討延伸至台灣手語自然語料中的呈現。

本論文的語料來源不同於以往的釣取方法，而是採用兩位聾朋友間的自由對話，當中沒有任何的聽人研究者介入。我們要求參與本論文的手語使用者隨意自由交談至少 30 分鐘，其中並沒有告知他們本論文的研究目的，期望這樣的方式能收集到最自然的語料。收集完語料之後，再由聽人研究員用 ELAN 這套編譯軟體將自然對話中的否定句標記出來，加以分析。根據這些標記後的否定句，本論文的第一個議題是再進一步的歸納出手部的否定詞項和非手部動作的否定表達。

第二個議題是針對台灣手語中非手部動作的否定表達加以定義。非手部動作的探討包含頭部的動作和臉部的表情。從這些語料中，我們觀察到否定表達中的頭部動作有三種：搖頭、側頭和轉頭；至於臉部表情，主要有眉毛和嘴部動作，參與本論文的手語使用者在否定句中多以皺眉或是嘴角下垂的表情來表達否定的意涵。

總括來說，與之前以調取方法收集到的台灣手語中否定形式的研究相較，本論文進一步觀察了台灣手語自然語料中否定形式的呈現。另外，本論文也將如何不同調取否定句語料的經驗以及最後選用自然語料的原因做了詳盡的說明，以供日後的手語研究做參考。

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Notation Conventions

Notation	Indication
SIGN	Words in capital letters represent English glosses for TSL signs.
SIGN-SIGN	Glosses connected by hyphens are used when they need to translate into one single sign, e.g. NOT-BE.
SIGN ^ SIGN	Glosses connected by circumflex represent TSL compound signs.
neg SIGN	A line over a gloss indicates the spreading of negative nonmanual feature.
nonmanual signals SIGN	A line over a gloss indicates the spreading of nonmanual features. 'hs' is the abbreviation of the headshake. 'm' indicates the nonmanual expressions on the mouth.

Chapter 1

Introduction

This study represents an investigation of how negation is constructed in Taiwan Sign Language (TSL) free conversation data. Negation is universal for all the languages, both in spoken languages and signed languages. Negative construction in signed languages is particularly interesting, due to the involvement of manual signals accompanied by facial expressions. Unlike spoken languages, signed languages are performed via simultaneous visual-gestural movements while spoken languages are articulated through sequential vocal-audio modality. Researches about TSL negation have been done in the past few years (Ke 2006, Tai, Chang, Tsai, and Su, in preparation) by elicitation of negative sentences. This study uses naturally occurring data to observe negation in TSL. In TSL free conversation data, not only the manual negative signs in TSL but also co-occurring nonmanual expressions will be better observed and analyzed. Before the discussion of the negative construction in TSL, the definition of negation and the background of the TSL community need to be introduced.

1.1 What is Negation?

Negation is generally taken as a universal category, which means that negative constructions can be found in all languages of the world be spoken or signed languages. A lot of researches have been conducted about spoken language negation (Dhal 1979, Payne 1985, Hovdhaugen and Mosel 1999, for the typological negation studies; Kilma 1964, Chen 2000, Givon 2001, and Tang 2002 for the semantic negation analyses). For negation in signed languages, Zeshan (2006) presents a typological research about negative construction in sign languages, and 10 out of 37

sign languages have been chosen in the volume "Interrogative and Negative Constructions in Sign Languages." The typological survey has made us more aware of the problems of negation in sign languages. In order to continue the research of negative construction in languages, first we have to define what negation is and why people use it for. In general, negative sentences are often used to change the polarity of the proposition; in another word, they are used to deny an earlier statement made by other participant in the conversation or the assumption shared by the speaker and hearer. Negative expressions convey a concept of denial and disavowal, and from the semantic points of view, negation simply functions as the operator to change the true value of the proposition. However it's easy to get confused between negative expressions and the sentence with negation. Take English for example. Some words themselves have 'negative' meaning within, e.g., *disappointed, sad, hate, angry*, etc. The sentence "*I am disappointed in you*" is positive while "*I am not disappointed in you*" is the negation of the former sentence. When someone says "*Mother is not angry*," he/she means that the proposition "*Mother is angry*" is false. Negation in natural languages can be expressed in various ways: lexically, morphologically, or prosodically. In spoken language negation, Dahl (1979) presents a typological study of sentence negation which covers approximately 240 languages in about 40 language families. He concludes that in spoken languages, there are two major negative constructions, morphological and syntactic negation. In morphological negative construction, affixation is commonly used in most languages, like "*dis-*", "*un-*" in English. Cases of prefixation and suffixation can be found while there's no example of infixation in Dhal's research. For the syntactic evidence of negation, using uninflected negative particles is the simplest construction and the most common way to make a negative sentence as well. Take English "*not*" for example. *Peter is not tall* is the straightforward way to form a negative sentence. Likewise, both morphological

and syntactic negative constructions are expected to present in sign languages. This study aims at investigating the negative construction in Taiwan Sign Language (TSL) by observing the naturally occurring data from the native TSL signers in Taiwan.

1.2 TSL History and Community

Taiwan Sign Language (TSL) is used by the Taiwanese deaf community, the great majority of this community was educated in the three deaf schools in Taiwan[1], and the rest are the hearing people who learn TSL for communicating with the deaf in Taiwan. TSL is considered as a member of Japanese Sign Language family, which includes TSL, Japanese Sign Language (JSL), and Korean Sign Language (especially South Korea)[2]. Dialectical differences of TSL were carried over to form some lexical variations between North TSL and South TSL[3]. Contrary to general misconception, not all the deaf or hearing impaired people in Taiwan know TSL. Some of them never learn any sign language; they are encouraged to learn how to speak instead. The deaf school provides an educational environment for the hearing-impaired students to learn and use TSL for communication in their daily life. Most of the teachers in the deaf schools are hearing people who don't know any TSL until getting an offer from the deaf schools. In order to improve students' Chinese comprehensive ability, however, the teachers use a signed system, called Signed Chinese ('*wenfa shouyu*' in Mandarin Chinese), invented by Ministry of Education to teach. *Wenfa shouyu* adopts Chinese grammar, which is very different from the grammar of TSL. Because of the reasons mentioned above, TSL is often considered as a minority language, and susceptible to influence from the spoken Chinese. TSL data in this study is collected from two kinds

[1] The three deaf schools in Taiwan are Taipei Deaf School, Taichung Deaf School, and Tainan Deaf School.
[2] See Smith (2005)
[3] For example, see Taiwan Sign Language Online Dictionary (http:// tsl.ccu.edu.tw//), 2nd Edition, Institute of Linguistics, National Chung Cheng University, Taiwan.

of native TSL signers. One is natives who acquired TSL from the deaf parents, and the other is near-natives who acquired TSL after entering the deaf community. They both used TSL as their daily language.

1.3 Aims of the Study

Despite previous researches on negation in TSL by Tai at al. (in preparation) and Ke (2006), to the best of my knowledge, we simply do not know much about the usage of negation in TSL, especially in the free conversation data. Ke (2006) classified 37 negative lexical items into two groups: one is called basic clause negator, and other clause negators. Then, she turns to focus on discussing the phenomenon and the syntactic distribution of negation *mei-you* 'NOT-HAVE' and *bu* 'NOT' in TSL from the syntactic and semantics perspectives. The first aim of this study is to investigate the negation strategies used in TSL free conversation and to reflect on Ke's (2006) observations. The data presented by 8 different native or non-native signers would be included in this study.

In addition to manual signs, Ke (2006) also points out that for TSL users, negative lexical signals are commonly accompanied by the nonmanual expressions, including head movements and facial expressions. However, there is only one particular case of nonmanual expressions showed in her study. So far, we haven't had a full vision about the nonmanual expression in Taiwan Sign Language research. So, another aim of the study is to examine whether or not the nonmanual marking of negation collected from this study is consistent to what has been found in previous study (Ke 2006, Tai at al. in preparation). Also, the methodology of collection will be emphasized in this study as well since the explanation about how to elicit the data of negation from the signers is scarce in the previous study in TSL as well as in Zeshan's

(2006) questionnaires used for her typological project on negation in signed languages.

1.4 Organization of the Study

The study consists of five chapters. Chapter 1 introduces the introductory part of the study, including a brief introduction about the background of the TSL community and the aims of the study. The researches about negation in other sign languages will be presented in Chapter 2. Section 2.1 focuses on the manual negation while Section 2.2 reviews the representation of the nonmanual marking of negation in different sign languages. Chapter 3 is the methodology used for collecting the data, and also including the information of the signers participated and the source of the data in this study. The analysis of negation in TSL free conversation data will be presented in Chapter 4. Section 4.1 consists of the data of manual negation in TSL while Section 4.2 is the data of nonmanual marking of negation. For Section 4.3, the interaction between manual negation and nonmanual markers will be discussed in detail. Chapter 5, the last chapter, concludes this study.

Chapter 2

Literature Review

In recent year, some interesting issues about differences and similarities between sign languages have been noted, and the sentential negation in sign languages is one of them. It is mentioned repeatedly in the previous studies that the sign language negation prefers the combination of a manual negator with the nonmanual marker, i.e. the headshake. Some researchers have argued that from the typological point of view, double or even multiple negations is extremely common in sign languages, and the clause still remains negative as a whole. These sign languages use double negation where one element is a negative particle and the other is nonmanual negative markers (Pfau 2008, Zeshan 2004, 2006, Hendriks 2007, Pfau and Quer 2007, and Gokgoz 2011). All sign languages mentioned in this chapter seem to allow this kind of structure, and in many cases, it is the most common use of expressing negation.

In this chapter, sign language researches from different areas around the world will be brought up, including in Australia: New Zealand Sign Language (NZSL), in Asia: Japanese Sign Language (JSL), Turkish Sign Language (TID), Hong Kong Sign Language (HKSL), Chinese Sign Language (CSL), Jordanian Sign Language (LIU), in America area: American Sign Language (ASL). and in Europe: Finnish Sign Language (FinSL) in Finland, Flemish Sign Language (VGT) used in French, Greek Sign Language (GSL), German Sign Language (DGS), Catalan Sign Language (LSC), and British Sign Language (BSL). Most of the literatures (8 out of 12) in this chapter come from the research project made by Zeshan (from 1999 to 2005), which is considered as the first attempt at a systematic large-scale investigation of interrogative and negative structures across sign languages. The methodology of elicitation is clear and well-organized by using a detailed questionnaire designed to elicit information of

negative and interrogative structures in the target languages. This means the data in those researches are reliable from the comparative perspective. In order to make this study more solid, the review of the negative construction of other sign languages is necessary and important. Section 2.1 discusses the structure of manual negation in other sign language researches. In section 2.2, the focus will be on the review of nonmanual negation presented in other sign languages and also the relationship between manual and nonmanual negation in sign languages. Lastly, the previous work in TSL negation will be described and reviewed in section 2.3.

2.1 Manual Negation in Sign Languages

There are various ways to negate a sentence in sign languages. The most common way is to use a manual negative sign. The signs that are used to negate a whole clause rather than a particular constituent are called **clause negators**. The signers usually use the form of independent particles to express negation in sign languages. A negative particle 'not' is considered as a *basic clause negator* which is simply used to reverse the polarity of the clause in many sign languages. And the position of those manual negative signs in the clause may differ from sign language to sign language. For some sign languages, the position of negative element may be influenced by the basic word order. Take SOV languages for example. If the word order of the language is SOV, there is a strong tendency that the manual negator might appear at the post-verbal position. This section focuses on describing the manual negative signs and how they are used in different sign languages. Zeshan (2006) presents a typological survey of negative constructions across sign languages. She concludes that the dominant negation strategy might be the independent negative particles, as the manual signs are concerned. Despite the negative particle 'not', the

negative existential particles are also prominently found in many sign languages. Also, in most sign languages, irregular negations are commonly seen. To express negatives, signers may use suppletion, cliticisation, affixing, or internal modification of a sign. In addition to the basic negators, there are other clausal negators that have special functions such as negative completive 'not yet', emphatic negators, negative imperatives, and negative modals, etc (Zeshan 2004).

A basic clause negator is the most common negative strategy used in sign language negation. In Zeshan's typological survey, there are 36 out of 37 sign languages that have at least one such a basic negative particle. Finnish Sign language is the only one in her study that lacks a basic clause negator; however, the nonmanual negative headshake seems to undertake the function of being a basic clause negator in this sign language. The second common one is the negative existential particles (29 out of the 37 sign languages). Those negative existential particles are used to express the 'non-existence' or 'non-possession' while the functions between existential and possessive meaning are relatively intimate. There are sometimes more than one sign in the negative category and their formation, which is observed from the unrelated sign languages of Zeshan's work, are composed by the O-like handshape (American Sign Language, Finish Sign Language, New Zealand Sign Language, Hong Kong Sign Language, and also Indo-Pakistan Sign Language).

Other two common clause negators are negative modals and negative completive. Negative modals such as 'cannot', 'may not', 'need not' and 'should not' are used to indicate the lack of ability, possibility, necessity, or obligatory. 'Cannot' is considered as the most common negative modal. A negative imperative 'don't' is sometimes difficult to distinguish from a negative modal. However, compared with negative modals, the negative imperatives are relatively less common across sign languages.

As to the negative completive particle 'not-yet', it is by far the most used in the negative aspectual category. It usually contrasts with a positive completive aspect.

An emphatic negation is a stronger type of negation, such as ' not at all', 'absolutely not'. Most of the sign language can achieve this strong negation without a manual sign. The intensification of the nonmanual feature co-occurring with a basic negator is mostly used across sign languages to convey the emphatic negation, so the manual emphatic negative particle is considered less common.

In general, negation can be expressed with a combination of a manual sign and a nonmanual marker. However, the sign languages in the Western area, like Europe and America, seem to have different tendency of the manual and nonmanual use from the sign languages in the Eastern area. Next, the negative structure of sign languages from different areas will be briefly introduced, and then the differences and the similarities of those sign languages from different regions will be discussed later in this section.

American Sign Language (ASL) is considered the most-studied and longest-investigated in the field of sign language research. It is probably a common first reference for many linguists who come to the research of sign language negation for the first time. ASL is under a SVO word order, and NOT is considered the basic negator. It occurs in the pre-verbal position or at the end of the clause when the rest of the sentence is topicalised, as in examples (1) and (2):

(1) _____ neg
FATHER NOT SICK

'Father isn't sick.' (Zeshan 2006: 148)

(2) _____ top neg
FATHER SICK NOT

'Father isn't sick.' (one might think he was) (Zeshan 2006:149)

There are also other clause negators such as negative existential NONE, negative completive NOT-YET or LATE, prohibitive DON'T (also considered as negative imperative), negative modals CAN'T and WON'T. It is noted that there's no negative conjunction in ASL, but only a number of negative modals. In addition to the syntactic negation, some morphological negative derivations are used in ASL. A small set of the predicates can be negated by reversing the hand orientation or changing the downward movement into outward, and vise versa.

As to the New Zealand Sign Language (NZSL), the most common way is the addition of NOTHING to a predicate, either in pre-verbal or post-verbal position. The example is given in (3). Clause-final position of NOTHING is very common in New Zealand Sign Language, even if the clause contain another negator in the clause. NOTHING is also used to express negative existential and possession. Other negators, including an incomplete aspect, NOT-YET, exclamations of disavowal, NOT-ME and NOTHING-ME, negative imperatives, and negative replies, are used in the expression of New Zealand Sign Language negation as well.

(3) WILL-neg 'Won't'

(Zeshan 2006: 84)

Similar negative structure can be found in both German Sign Language (DGS) and Catalan Sign Language (LSC). The word order of both sign languages is SOV. The manual NEG signs follow the verb (post-verbal). It is not possible for German Sign Language and Catalan Sign Language to negate a sentence by a manual negative sign only, that is, a side-to-side headshake is required in the negative contexts. Sentential negation is expressed by a combination of an optional manual sign and an obligatory nonmanual marker. With respect to the negative modals, the manual sign is

obligatory, unlike other negated lexical verbs, i.e. modal verbs in German Sign Language and Catalan Sign Language cannot be negated by a headshake only.

For the British Sign Language (BSL), there are many negative signs that can be used to convey negative meanings. However, the nonmanual marker is much more salient than the manual negative sign in the syntactic negation. In British Sign Language, a manual negative signs is not sufficient to negate a clause, i.e. a manual negative element has to be accompanied by the nonmanual marking in the most cases. Just like German Sign Language and Catalan Sign Language, the nonmanual negative marker, like a side-to-side headshake, is obligatory while a manual negator is option in British Sign Language negation.

Same phenomenon can be seen in Finnish Sign Language (FinSL) and Flemish Sign Language (VGT). The negation in both sign languages can be expressed with a combination of a manual negative sign and a nonmanual marker, and most of the time, the manual part is optional. Interestingly to see that Finnish Sign Language seems to lack a neutral negative particle 'not' which has not been seen in other sign languages. As to Flemish Sign Language, the regional and age-related variation has to be taken into account while discussing the manual negator. Another negative pattern in Flemish Sign Language is the negative incorporation of modal auxiliaries. Flemish Sign Language negation is allowed to be incorporated into verb signs, and usually is in a topic-comment structure where the negative auxiliaries are placed to the comment position.

As far as Asian sign languages are concerned, the negative strategy which is different from European sign languages, Asian sign languages, like Turkish Sign Language (TID), Japanese Sign Language (JSL), Hong Kong Sign Language (HKSL), Chinese Sign Language (CSL), and Jordanian Sign Language (LIU), adopt the manual-dominant system of negation. Which means the manual sign is the primary

negator while the nonmanual marker is optional. Therefore, for those non-Western sign languages, they seem to have wide range of negative particles.

In the five Asian sign languages mentioned above, they all adopt the negative NOT as the basic negator, and it usually occurs in the clause-final position. It is worth to note that the basic clause negator in Turkish Sign Language is often used as a clitic, according to Zeshan's observation, which is usually not commonly seen in other sign languages. Jordanian Sign Language also has this kind of morphological manual negation. Hendriks (2007) proposes that Jordanian Sign Language has a suffix which appears to be an abbreviated form of the one-hand negative existential, and it usually attaches to adjectives and verbs, but not to nouns.

As for the morphological negation of Japanese Sign Language, numerous pairs of signs that have opposite meaning usually have relative formation. For example, the opposite pairs like affirmative and negative sign pairs usually involve the reverse in the motion component. Like the sign KNOW with upward movement would simply reverse the meaning and become negative sign NOT-KNOW in Japanese Sign Language. The same morphological formation can be seen in TSL as well. For Hong Kong Sign Language and Chinese Sign Language, the sign pairs usually involve the handshape. A handshape with extended thumb carries positive meaning while a handshape with an extended pinky finger would reverse the positive into negative meaning.

Western sign languages under the word order of SVO, usually allow the negative particle appear in the pre-verbal position. The negative particles of the non-Western sign languages, which are under the SOV word order, have a tendency for post-verbal or clause-final position. Also, manual negative particles are considered as a basic clause negator in most of the Asian (non-Western) sign languages while the Western sign languages, especially those in Europe regions, prefer the combination of a

manual sign and a nonmanual marker, and most of the time allow nonmanual negation only, in the sentential negation.

2.2 Nonmanual Marking of Negation in Sign Languages

Like the intonation in spoken languages, non-manual features in sign languages are considered to be suprasegmental and their scope can either minimize to a small constituent, like a single manual sign, or spread over a phrase, and more, a whole clause if necessary (Zeshan 2004). To examine the nonmanual negative expression in sign language, it is important to distinguish the linguistic use of nonmanual expressions from the affective facial expressions. Baker-Shenk (1983) and Reilly and Anderson (2002) have suggested certain distinguishing criteria by observing the scope and the timing of linguistic nonmanual behaviors, which are linguistically constrained relative to the manual signs they co-occur with while the affective facial expressions are not. As far as the facial expressions are concerned, a face can be divided into two groups: the upper and the lower face. The upper face consists of the movements of forehead, eyebrows and eyelids, and the lower face consists of the movements of nose, cheeks, mouth and chin. From the linguistic point of view, the nonmanual signals in the upper face occur with higher syntactic constituents, i.e. the clause or sentence, while the nonmanual signals of the lower face are used with specific lexical signs or phrases to provide adverbial and adjective information. the facial expressions are commonly combined together in a sentence.

2.2.1 Facial components: eyebrows and mouth

Some facial expressions may co-occur with the negative lexical items. For the upper face, the furrowed eyebrows commonly occur in negative expressions, while

the lower face has more components involved, such as wrinkle nose, flat mouth, and lowered lip corner. As far as the role of the mouth is concerned, it seems to have more morphological functions than being just a phonological attachment. Braem and Sutton-Spence (2001) distinguish two different types of lexical mouth patterns:

(1) *Mouthing* is derived from a corresponding spoken word of a surrounding language.

(2) *Mouth gesture* is not borrowed from or influenced by a spoken language.

Pfau and Quer (2010) point out that obviously, the use of mouthing may imply a signer's proficiency to the spoken language. Also, there is a strong tendency called *echo phonology* for nonmanual markers to be synchronized with the manner of the sign. For example, when the manual sign is under a path movement, usually the corresponding head movement will occur. An opening or closed handshape movement might go with an opening or closed mouth movement. Since the previous studies about TSL negation have mentioned several mouth movements that might have connection with negative expressions, including lips and tongue; therefore, an observation of mouth movements in negative expression will be included in this study. The details will be discussed in chapter 4.

2.2.2 Head movements

In addition to the nonmanual signals on the face, head movements are mainly used as negative nonmanual markings in negative clauses in many sign languages. According to Zeshan's (2006) typology study of sign languages, the status of facial expressions as instances of grammatical nonmanual marking is often uncertain. In addition, head movements commonly co-occur with other facial expressions just like

negative manual signs. As for the usage of the signers, there are three different types of head movements had been found to be used in negative sentences:

(1) a repeated side-to-side of the head (i.e. headshake)

(2) a single sideward head turn

(3) the backward head tilt

According to Zeshan (2004, 2006), a side-to-side headshake is considered as the most common negative nonmanual marker across sign languages. Ke (2006) also found that in TSL, the nonmanual markers usually co-occur with the negative lexical signs and then last to the end of the sentences. Many linguists of ASL have indicated that nonmanual behaviors can also function as the manual signals to express grammatical meanings (Stokoe 1960, Bellugi & Fischer 1972, Liddell 1977).

As far as headshake is concerned, it seems to play an important role as a grammatical marker in some sign languages. Head movements can function as manual parameter like handshape, movement, and location. Those head movements commonly co-occur with negative sign to fulfill the phonological function, that is, the head movements are attached on the manual sign only without any spreading. Take NOT for instance. American Sign Language and German Sign Language have different manual sign for NOT/NO; however, a single sideward head movement co-occurs with the manual sign NOT in both sign languages, which proves that some certain head movements may have a phonological function in this respect.

Despite lexically specified head movements, negative headshakes also fulfill the syntactic function. Stokoe (1960) observed a side-to-side headshake in American Sign Language as a signal marking negation on the syntactic level. Although American Sign Language has a sign commonly glossed NOT, a very common way of negating the sentences for the American Sign Language signers is by shaking the head. (Bullugi & Fischer 1972). Also, Liddell (1977) claimed the negative headshake has to

be accompanied with certain facial expressions, functioning just as other manual signs, and moreover, a headshake may occur without any lexical help to negate the sentence. In British Sign Language (BSL), negation can be also indicated by a complex of nonmanual behaviors, including headshakes, furrowed eyebrows, narrowed eyes, and flat-closed mouth, and most importantly, negation in British Sign Language can be expressed by head and facial action only (Atkinson et al. 2004). Unlike American Sign Language, British Sign Language signers seem to treat nonmanual expressions, like headshake, as an obligatory feature of negation, and manual negation is optional in this respect.

2.3 Review: TSL negation

The previous studies of negative structure in TSL will be reviewed in detail in this section. The basic word order in TSL is probably SVO (Smith 1998), since the subject normally precedes the verb. However, when it comes to the negative structure, TSL normally adopts the SOV word order, as in (4a), and the subject is frequently omitted if the subject is first-person (4b).

(4) a. IND_1 MONEY NOT-HAVE

' I don't have money.'

b. MONEY NOT-HAVE (The subject can be omitted.)

' (I) don't have money.'

Generally, TSL has wide range of negative signs, of which NOT and NOT-HAVE are considered as basic clause negators. In the previous studies, the syntactic distribution of clause negators NOT and NOT-HAVE has been investigated

and fully discussed. Based on Vendler's classification of four verb types, Ke (2006) investigates the interaction between negative signs NOT-HAVE and NOT with different verb types. A negative sign NOT-HAVE is usually used with adjective, nouns, and verb, while the negative sign NOT is restricted with the verb. In spoken Mandarin, the negative word '*mei-you*' can be collocated with achievement verbs and accomplishment verbs to indicate the event happened but hasn't finished yet. Hsieh (2001) points out that in Mandarin, '*mei-you*' is used to negate the dynamic event while '*bu*' is used to negate the stative events including adjectives, stative verbs, and modal auxiliaries. As TSL negative signs NOT-HAVE and NOT are concerned, Ke (2006) proposes that stative verbs can only be negated by NOT-HAVE, as in (5). It is ungrammatical for TSL to negate a stative verb by using NOT.

a. NOT-HAVE b. NOT

Figure 1. Still pictures of NOT-HAVE and NOT in (5).

(5) neg

a. IND_3 HUNGRY NOT-HAVE

' He is not hungry.'

neg

b. *IND_3 HUNGRY NOT

' He is not hungry.' (Ke 2006: 53)

Activities are the events that go on for a time, but do not necessarily terminate at any given point. They can be negated by both NOT-HAVE and NOT, but with different meaning of negation. All four types of verbs can be negated by NOT-HAVE, but NOT is restricted with only Activities and Accomplishments. Table 1 provides the collocation of negative sign NOT-HAVE and NOT with different verb types.

Verb type / Negator	'NOT-HAVE'	'NOT'
Activities	√	√
States	√	×
Accomplishments	√	√
Achievements	√	×

Table 1.Collocation of negative signs with different verb types.

TSL is similar to Japanese Sign Langauge (JSL) in negative word formation. As identified in Ke (2006), three different strategies are used in the formation of negative signs. The first one and two are affixal negations. The TSL signers would either change the direction or open the handshape of the positive signs to make a negative lexical item. Figure 2 shows that the movement is changed from downward to upward to reverse the positive meaning KNOW into negative NOT-KNOW. Figure 3 presents the second affixal negation. An open handshape at the end of a positive sign changes the positive meaning SAME into negative DIFFERENT. The third type of the negative lexical signs is considered as an irregular form, which is arbitrary and has nothing in common to the related positive lexical items. See in Figure 4. In TSL, there

are still some negative signs that only have negative forms but no corresponding positive signs, as shown in Table 2[4].

a. KNOW b. NOT-KNOW

Figure 2. The opposite movement of a handshape to form positive and negative signs

a. SAME b. DIFFERENT

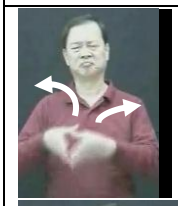
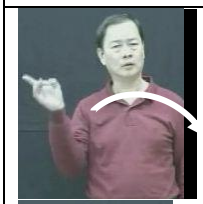
Figure 3. a positive sign with an open handshape to form the opposite negative sign

a. MAY b. MAY-NOT

Figure 4. related positive and negative sign with irregular form

Negative signs that don't have corresponding positive signs

[4] Thanks to TSL Online Dictionary for providing these pictures and descriptions. (Tsay, Jane, James H.-Y. Tai, Hsin-Hsien Lee, Yijun Chen and Qiong-Yi Yu. 2009. *Taiwan Sign Language Online Dictionary*. 2nd Edition. Institute of Linguistics, National Chung Cheng University, Taiwan. http://tsl.ccu.edu.tw/web/browser.htm)

 KNOW-NOTHING-ABOUT	The middle finger of one hand touches the nose.
 CAN'T-DO	The thumb and the middle finger flick repeatedly at the nose.
 NOT-CARE	One open hand with palm facing outward moves forward from the back of the ear.
 DO-NOT-HAVE-TO	The thumbs and fingers touch in front of the body, making a diamond shape. Then they flatten together and pull apart.
 NEVER	The thumb and middle finger touch and open repeatedly and the hand moves down repeatedly in an arc motion.

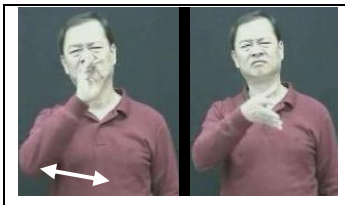
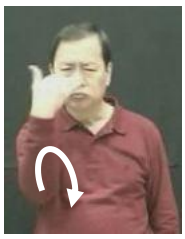
 DISDAIN	The thumb and the middle fingers of one hand connect together, the index finger extends and touches the side of the nose and then moves forward with the thumb and middle finger open.
 BLURRY	An open hand, palm facing down and fingers spread apart, shakes back and forth in front of the eyes.
UNABLE-TO-RECALL	The five fingers of one hand bend then turn forward at the temple.
DISREGARD	One open hand touches the top of the opposite shoulder, then turns outward as if brushing off something in disregard.

Table 2. Negative signs without related positive signs (Taken from TSL browser).

In TSL, negative lexical signs are commonly accompanied by the nonmanual expressions, including head movements and facial expressions. According to Ke (2006), the head movements of TSL are headshake and lateral head turn. As to the facial expressions, the movement of eyes, tongue, and mouth actions are involved while expressing negative meanings. Furthermore, in sentential negation of TSL, Ke also points out that the nonmanual expressions usually come earlier than the negative lexical items and last to the end of the sentence. Some example could be seen while the nonmanual expressions continued from the beginning to the end of the negative

sentence. Headshake in TSL can co-occur with other nonmanual expressions. Stokoe (1960) observed a side-to-side headshake as a signal marking negation on the syntactic level. Also, according to Liddell (1977), he made an important observation that if a negative lexical item is accompanied by the negative headshake, the headshake won't change the polarity of the sentence, which means that one function of headshake in sign languages might be the intensification of the sentence negativity. Compared with ASL, the nonmanual expressions in TSL seem to be optional in that they rarely occur to express negative meaning without any negative lexical item (Ke 2006). However, the data of Ke's analysis was collected from only one signer. The nonmanual representation of other signers needs to be further discussed to conclude the general usage of nonmanual negative expressions by TSL signers.

Based on Ke's conclusion, the study will now focuses on three parts. First, the natural occurrence of the negative expressions in TSL free conversation would be collected and discussed in details. Secondly, the study would turn to examine the syntactic distribution of negation in TSL free conversation, and see if the collocation patterns of negative signs with different types of verbs are consistent with her findings. At last, the nonmanual negative expressions of more TSL signers are another concern of the study. The observation of the nonmanual signals will be focus on the head movements, eyebrows, and mouth actions which are used in the negative utterances.

Chapter 3

Methodology

In this chapter, we first describe different try-out methods, as well as the participants from whom the data were elicited. Section 3.1 provides the background information of the signers participated in this study. The methods that have been used for the purpose of eliciting negative expressions and the reason why the naturally occurring data were chosen in this study will be given in section 3.2. It is worth noticing that the study adopts the naturally occurring data instead of questionnaires or particular tasks. The purpose of choosing naturally occurring data is to see the most natural way of the TSL signers to express negation, and then make a comparison between the TSL negative structure defined by Ke (2006) and the real use of negation in the dialogue. As for eliciting negative expressions from the informants, several pilot methods have been tried out in this study, like picture-describing task, questions-and-answers task, or sentence-making task, etc.. However, eventually the outcome turns out to be lacking for the purpose. In principle, using questionnaires prepared by the investigators has some potential advantages (Zeshan 2006). However, there are major shortcomings when participants are asked to translate negative sentences from spoken or written language (Mandarin Chinese) into TSL. Also, eliciting negative expressions by using pictures and animations have some drawbacks since it's not easy to distinguish the signing of informants from the imitation of the action in the pictures or animations to the natural way of expressing the idea in their sign language. The ineffectiveness of those tasks will be discussed in detail in section 3.2, and the data source and the method of data transcription will be described in section 3.3.

3.1 Participants

Eight TSL signers' free conversation data were collected in this study. Each set of conversation includes two informants participated in. Table 1 provides background information on the eight TSL participants. There are three kinds of sex combination: set 1 consists of two female informants, set 2 consists of one female and one male informants; and set 3 and 4 both have two male informants in the conversation. The two informants in set 1 are sisters while the relationships between the informants in other three sets are friends. All of them are deaf and acquire TSL at deaf school from the age of 7 years till high school. Three participants learn TSL from Tainan Deaf School (ys, sl, qj)[5], one from Taichung Deaf School (kp), and other four get the education of TSL from Taipei Deaf School (xb, fr, js, wh). Two female signers in set 1 probably have earlier exposure to TSL, since their parents are also deaf. They are considered as **native** users of TSL because they have learned TSL as their first language with their parents before going to Deaf School while others are marked as **near native** signers since they might have missed the period of acquiring TSL as their first language. The ages of the signers in the study are from 20 to 60, which cover young generation and the elders. The informants use TSL as their main language for communication in their daily life.

[5] ys, sl, qj, kp, xb, fr, js, and wh stand for the abbreviation of the informants' names.

set	Participants	Sex	City	Status
1	ys	F	Tainan	Native
	sl	F	Tainan	Native
2	xb	F	Taipei	Near native
	kp	M	Taipei	Near native
3	qj	M	Chiayi	Near native
	fr	M	Taipei	Near native
4	js	M	Taipei	Near Native
	wh	M	Taipei	Near Native

Table 3. Background information of the signers in the study

3.2 Materials and Design

From the very beginning, three pilot studies have been used in this data collection. First one is *Narration task*. The informants first saw the pictures or a series of pictures, then they were told to describe the pictures in their sign language. The second method is *Questions-and-answers task*. All three tasks mentioned above were constructed by conversation between hearing researcher and the informants. The third one is *Sentence-making task*. The hearing researcher gave a sign (like NOT-HAVE in TSL) to the informants, and they were instructed to make a sentence which contained that sign.

In the first pilot study, well-organized materials consistent of pictures, series of pictures, and the simple animations, like TV commercial or short stories. The pictures were culled from sources on the Internet and modified for elicitation purpose, that is, the pictures which were chosen contain negative signals (see Figure 5 to 8). Pictures presented in Power-Point style one slice at a time. When they saw a prohibitory sign (Figure 5), the imperative negation, like *bu ke yi* (MAY-NOT), is expected to be elicited. As for the pictures like Figure 6 and 7, informants were told to describe the events in TSL as detailed as possible after seeing the pictures or the series of pictures.

Those pictures were well-chosen by the researcher for the purpose of eliciting negative expressions. Questions-and-answers task was constructed by one deaf informant and one hearing researcher. After informants saw the continuous pictures like Figure 8, follow-up questions “What do you see in the pictures?" or “What happened in the pictures?" were raised by the hearing researcher. For Figure 9a, the follow-up question would be: “What’s the difference between these two boys?" or “what is the characteristic of the boy in the right side?". About Figure 9b, follow-up question would be like: "Which boy is taller?" After being instructed by the questions, some negative sentences, like "The bowl is empty." (Figure 8), "The boy in the right side doesn't wear glasses." (Figure 9a), or “The boy without a hat is taller." (Figure 9b), might be expected to perform by the informants.

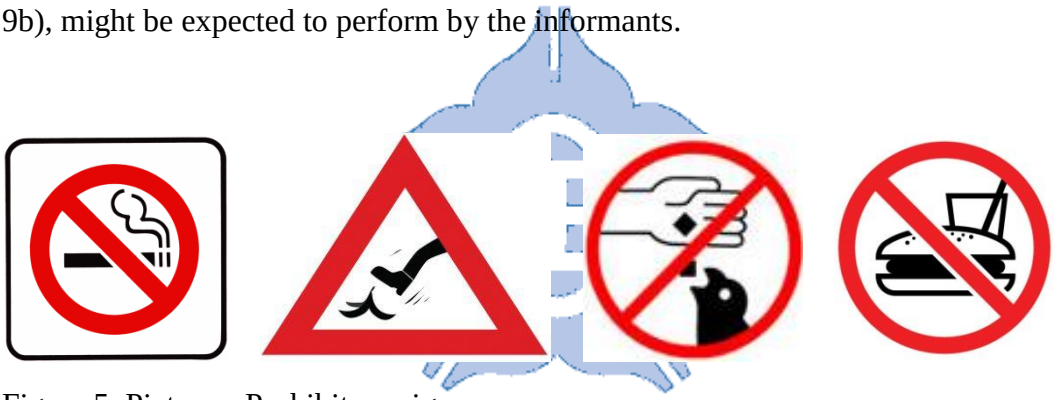


Figure 5. Pictures: Prohibitory sign

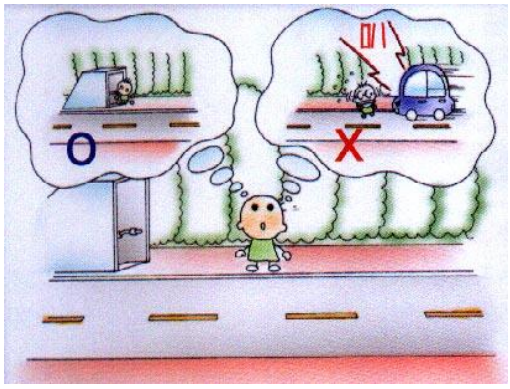


Figure 6. Picture: Describing situation

Figure 7. Picture animation: Brief narration about the event in the pictures.

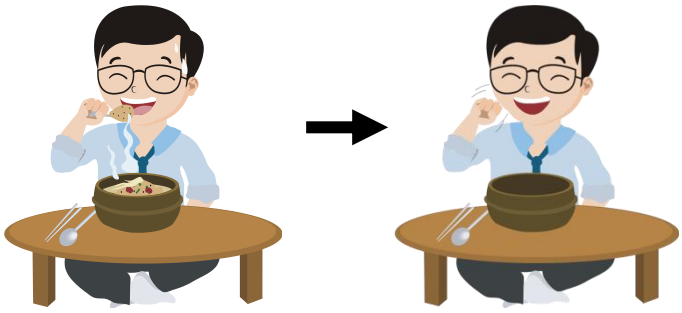
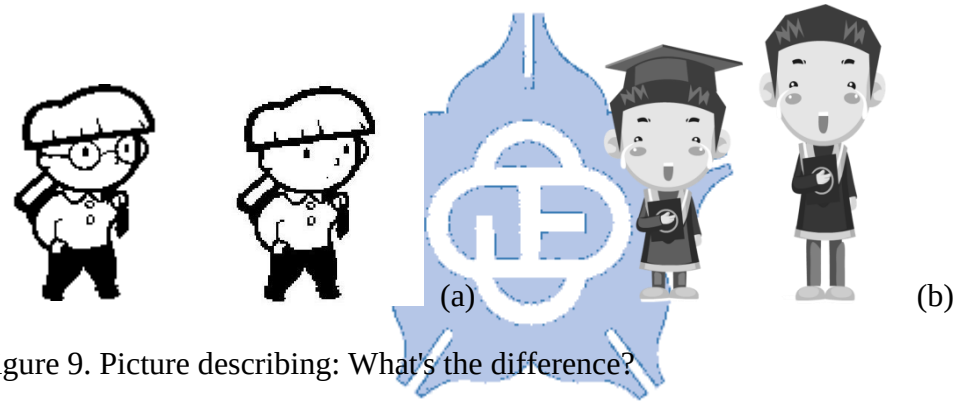


Figure 8. Series of pictures: Describing events



(a) (b)

Figure 9. Picture describing: What's the difference?

However, the results fail short of our expectation. There are individual differences in their ability of understanding and performing the tasks. Not every informant in this elicitation knows how to read pictures and then describe them. And the major drawback of the first two tasks is the presenting of the pictures. Almost every informant in the study uses pointing instead of answering a full TSL sentence. At the time when informants received the instructions, they would simply point the picture on the screen to show the answer. Take Figure 6b for example. Informants pointed directly to the right boy on the screen when they saw the follow-up question signed by the researcher, rather than answered with a TSL sentence. Also, people

usually use an incomplete sentence to answer a question. Some words would be omitted for the sake of the convenience. For example, when the informants saw the prohibitory sign in Figure 5, most of them just pointed to the picture and signed “THIS MAY-NOT", instead of signing "It's not allowed to feed the birds".

For the sentence-making task, two different style of presenting the signs had been tried out: one is written Chinese by using Power-point slices, and the other one is signing by the researcher. As mentioned in the beginning of this chapter, there are some disadvantages of translating negative sentences from spoken or written Chinese into TSL. The written sentences are out of context and arranged under a certain word order, which might be different from the sign language they use. The informants might have some unintended word-by-word translation. Even if the informants are aware of the difference between spoken Mandarin from TSL, the data elicited under this condition turn out to be distorted. The elicited sentences end up like the written stimulus sentences, which are under the word order of spoken Chinese, and the informants may be lack of facial expressions while translating sentences into sign language. To avoid the 'word-by-word' translation, another way of presenting the sign had been tried out. The informants would see the word signing by the researcher, and then they were asked to make a sentence based on the signing. Unfortunately, the outcome of the method raised another problem. The informants have difficulties of making sentences on their own. Most of the time they just answered “I have no idea how to make a sentence by using that word," or” I don't know how to do it," after being instructed by the researcher.

The ultimate elicitation method is the free conversation between two informants, without any hearing researcher get involved. Two informants formed a group and were instructed to talk freely. They can choose any topic they like or are interested in. Since the informants in a group are relatives or friends, there's no awkward feeling for

both of them during the talking. It is worth pointing out that during the data collection, no hearing researchers participated in, except for the instruction. The informants were recorded by three cameras during the whole conversation, and the videos were transferred to computers for transcription. The data source including the each and total number of the recording time and the software used for data transcription will be elaborated in the next section.

3.3 Data Source and Method of Data Transcription

The data source comes from the project *Modality Effects on Linguistic Structure of Sign Language and their Implications for Language Universals (I)(II)(III)* (Project No.: NSC98-2811-H194-004). Eight informants were invited to participate in the study. They were divided into four groups, and each group contained two people interacting with each other. The recording time for each group was set from 30 to 45 minutes. The total number of the recording time in this study is 171 minutes. Table 4 provides the details about the recording time of each group.

Set	Participant	Recording time
1	ys & sl	35 minutes
2	xb & kp	46 minutes
3	qj & fr	48 minutes
4	js & wh	42 minutes
	Total Number:	**171 minutes**

Table 4. Details of recording time

3.3.1 *ELAN Coding*

The naturally occurring data were transcribed by ELAN annotation software. ELAN is a linguistic annotation tool that was designed for the creation of text

annotation for audio and video files of language use (Brugman & Russel 2004). Annotations are grouped into different "tiers". The annotator can define the attributes of each tier for different study purposes. Figure 10 shows a typical screen display in this study.

Figure 10. A typical screen display of ELAN.

ELAN allows multiple videos clips to co-occur at the same time. For the purpose of the study, both manual and nonmanual annotations are required in the data transcription. The *Gloss Tier* consists of manual signs produced by informants. A free translation of the signing is provided on *the Translation Tier*. For the nonmanual annotation, three tiers are listed: *the Head Tier*, *the Eyebrows Tier*, and *the Mouth Tier*. The manual annotation is typed in Chinese while the nonmanual annotation focuses on the description of the movements.

Chapter 4

Negation Observed in Collected TSL Conversations

In previous studies of negation in sign languages, there are three main mechanisms of forming negation have been identified. First, by morphological change, signs can change their phonological parameters to show negation. For example, in TSL, KNOW / DO-NOT-KNOW are articulated by the same handshape but have the opposite movement. DISLIKE is modified by LIKE plus an open handshape.[6] Second, syntactically, negation uses negative signs to negate a sentence or an utterance, such as NOT or NOT-HAVE in TSL. Third, nonmanual markers in negation are also documented in many sign languages, including the movements of head, eyebrows, nose and mouth.

Zeshan (2006) provides a systematic typological survey on negation in many sign languages. NOT is reported as a basic negator in these different sign languages, and the analysis focuses on the syntactic position and co-occurring nonmanual marking of the negator NOT. Just like all other sign languages, TSL has quite a few manual signs that are used to negate a phrase or a sentence. This chapter is going to present the data of negation collected from TSL free conversation. The focus of section 4.1 will be on the morphological formation and the syntactic distribution of manual negators collected from TSL free conversation.

As for the nonmanual expressions of negation, a side-to-side head movement is considered a common nonmanual marker across sign languages to represent the negative expressions. Other nonmanual components include frown and furrowed eyebrows, narrowed eyes and squinted, wrinkled nose, and spread lips. Most researchers of sign languages would take a side-to-side headshake as the most

[6] Some lexical signs themselves contain negative meaning, like FAIL or DISAPPOINTED.

fundamental representation as a co-occurring nonmanual expression with manual negators. Section 4.2 will present the nonmanual expressions used in negative sentences collected from the free conversation. In addition to the negative headshake, some nonmanual expression such as frowning, and some particular mouth movements were observed to be associated with negation in TSL.

Some sign languages, like American Sign Language and British Sign Language, have reported negative structures in the absence of a manual negator, which means in those cases, nonmanual expressions are sufficient and obligatory to mark negation. As in many sign languages, such as Chinese Sign Language, Hong Kong Sign Language, Japanese Sign Language, etc., the negative facial expressions frequently occur simultaneously with manual negative signs. In section 4.3, the discussion of the interaction between manual signs and nonmanual expressions in TSL free conversation will be elaborated. As observed from the collected data, nonmanual expressions themselves might not be sufficient to negate a sentence in TSL. The discussion of section 4.3 will focus on the spreading of the nonmanual expressions, as well as their relative position with manual negative signs.

4.1 Data: Manual Negation

There are 30 negative signs collected from this study, as shown in Table 5. The first column shows the representative pictures of negative signs with the glosses, as well as their tokens, and the second column gives the sign descriptions and the examples collected in the free conversation data. 7 negative signs are considered to be used most frequently in the paradigm, NOT-HAVE (over 60 tokens), NOT (26 tokens), NOT-BE (24 tokens), CANNOT (22 tokens), NO-WAY and CAN'T-DO (18 tokens), and KNOW-NOTHING-ABOUT (15 tokens).

Representative pictures / Negators (Tokens)	**Sign Descriptions / Examples**
 NOT-HAVE (60)	The hand, with fingers pointing upward, opens and closes. MONEY **NOT-HAVE** 'I don't have money.'
 NOT (26)	An open hand, palm facing outward, waves back and forth. NOW ECONOMY NOT-GOOD / CHANGE JOB **NOT** 'The economy is not good, so don't change the job.'
 NOT-BE (24)	The thumb and index are extended in an L handshape, quickly rotating repeatedly from side to side. SIGN-LANGUAGE **NOT-BE** 'It's not sign language.'
 DIFFER (11)	The palm of each hand faces down with the thumb and index connect as a circle and the other fingers holding tight. Then the palm turns to face up and the two connected fingers open. HEARING DEAF CULTURE **DIFFER** 'The culture of hearing people and the deaf are different.'
 DO-NOT-WANT (5)	The fingertips of two open hands, palms facing inward, touch in front of the chest. Then the hands open outward, as if pushing something away. STUDY **DO-NOT-WANT** 'I don't want to study.'

NOT-ENOUGH (5)

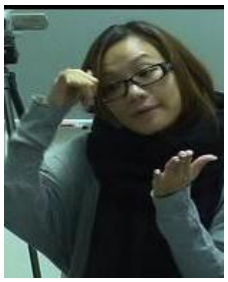
The thumb and index of one hand connect to form a circle. Then the back of the hand rubs inward on the other palm quickly and then the hand opens.

TIME **NOT-ENOUGH**
'There's no enough time.'

DO-NOT-MATCH (2)

The thumb and index finger of both hands are extended in an L handshape with the palms facing inward. The index finger of one hand glances off that of the other hand.

STUDY **DO-NOT-MATCH**
'(She) is not suitable for studying.'



DO-NOT-UNDERSTAND (2)

The thumb and pinky finger of one hand extend with the palm facing downward. The thumb touches the signer's temple and the pinky finger wriggles repeatedly.

STUDY **DO-NOT-UNDERSTAND**
'I can't read.'

DO-NOT-KNOW (8)

The fist of one hand, with the palm facing outward, moves left and right repeatedly.

ASSOCIATION WHERE INDEX$_1$ **DO-NOT-KNOW**
'I don't know where the association is.'

INCORRECT (2)

The index of one hand, palm facing down, swipes down and off the index of the other hand, which is palm facing up.

THINK **INCORRECT**
'(I) don't think so.'

DISLIKE (2)

The fingers touch together and rest at the side of the mouth. The hand then opens as it moves forward, the palm turns to face upward.

INDEX$_3$ **DISLIKE** ENGLISH **DISLIKE**
'They don't like English.'

UNABLE (6)

One hand rubs inward on the back of the other hand

HEARING SIGN-LANGUAGE **UNABLE**
'Hearing people don't know sign language.'

NOT-DARE (1)

The fingers of one open hand pat on the nose repeatedly.

IF LEARN NOT-HAVE / **NOT-DARE**
'If (I) don't learn, (I) wouldn't dare (to do it).'

UNCLEAR (4)

Two open hands, palms facing upwards, change positions. One moves forward while the other moves back as the fingers close together.

INDEX$_3$ **UNCLEAR**
'This is not clear.'

BLURRY (2)

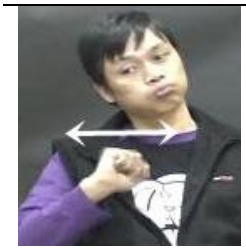
An open hand, palm facing down and fingers spread apart, shakes back and forth in front of the eyes.

RAIN **BLURRY**
'It's raining, (I) can't see clearly.'

NOT-GOOD (7)

The fingers of one hand meet together, then move across the mouth as if throwing away something awful.

INDEX$_3$ GRADES **NOT-GOOD**
'His grades are not good.'



CANNOT (22)

The fist of one hand, with the palm facing outward, moves left and right repeatedly.

SIGN-LANGUAGE PROHIBIT **CANNOT**
'Sign language cannot be prohibited.'

DO-NOT-NEED (7)

The thumbs and fingers touch in front of the body, making a diamond shape. Then they flatten together and pull apart.

INDEX$_3$ EXPLAIN MORE
DO-NOT-NEED
'He doesn't have to explain too much.'

NO-WAY (18)

The index finger wiggles in front of the chest.

DEAF COMMUNICATE **NO-WAY**
'The deaf are unable to communicate.'

CAN'T-DO (18)

The thumb and the middle finger of one hand flick repeatedly at the nose.

MAKE-A-LOT-OF-MONEY **CAN'T-DO**
'(You) can't make a lot of money.'

KNOW-NOTHING-ABOUT (15)

The middle finger of one hand touches the nose.

DRIVE **KNOW-NOTHING-ABOUT**
'I know nothing about driving.'

NEVER (2)

The thumb and middle finger touch and release repeatedly as the open hand, palm facing outward, moves down repeatedly in an arc motion.

SON **NEVER** LEARN AMERICA SIGN-LANGUAGE
'(My) son has never learned American Sign Language.'

ZERO (2)

The thumb and fingers touch to form a zero.

GIVE-MONEY **ZERO**
'(They) don't pay the money.'

NOT-YET (7)

One open hand is held palm facing the chest. The wrist rotates up and down repeatedly causing the hand to swipe up and down.

DECIDE **NOT-YET**
'(The company) hasn't decided yet.'

INDEFINITE (6)

This is derived from the sign for DEFINITE, where the fingers would be clamped together. In this sign, the hands separate repeatedly, one moving up and the other down.

ENGLISH NOT-HAVE / FRENCH **INDEFINITE**

'There is no English (version), but French (version) is not sure.'

NOT-HAVE ^METHOD (5)

NOT-HAVE:

The hand, with fingers pointing upward, opens and closes.

METHOD:

Two hands, palms facing one another with fingers pointed forward, move up and down together as they move across from one side to the other.

$INDEX_1$ $TELL_{1P\rightarrow 3P}$ **NO-WAY**

'I tell him " No way".'

NOT-GOOD + Verb (5)

NOT-GOOD:

The fingers of one hand meet together, then move across the mouth as if throwing away something awful.

IF BIG RAIN **NOT-GOOD+PLAY**

'If it is raining, it's not fun.'

   USELESS (3)	NOT-HAVE: The hand, with fingers pointing upward, opens and closes. USE: The thumb and index of one hand connect, and then brush forward on the open palm of the other hand. INDEX$_1$ TELL$_{1P\rightarrow 3P}$ **USELESS** 'I told him it's useless.'
 Verb + EMPTY (7)	EMPTY: One hand with the thumb, index and middle fingers wave repeatedly. INDEX$_1$ **SAY+EMPTY** 'I have nothing to say.'
 I-NOT-HAVE (10)	Both hands, with fingers pointing toward signer's chest, opens and closes repeatedly away from the signer's body, **I-NOT-HAVE** 'I didn't do it.'

Table 5. Negative signs used by TSL signers in TSL free conversation.

4.1.1 Morphological Negation in TSL

Like most sign languages around the world, TSL possesses numerous pairs of signs that have opposite meanings. More significantly, they have opposite word formations. They thus form pairs of affirmative and negative signs. In the case of TSL negation, those pairs are often considered affirmative and negative sign pairs. The word formation of negation usually involves a change in motion component of the positive sign. In TSL, Ke (2006) classified three negative word formation strategies:

negative incorporation, negative compounds, and negative suppletion. Here, the discussion focuses on the negative compounds that need to be updated by the free conversation data collected from the study.

There are two major formations of negative compounds: sequential compounds and simultaneous compounds. Compounds integrate two morphemes from two separated signs. NOT-HAVE is commonly used as a negative morpheme to form a negative compound. The combination can be NOT-HAVE ^ sign (See in Figure 11) or sign ^ NOT-HAVE (Figure 12). Those signs can be nouns, like METHOD in Figure 11, or verbs, like BE-ENOUGH in Figure 12. In the TSL online dictionary, there are still other two signs that allow this kind of combination. They are NOT-HAVE ^ PROBLEM, and NOT-HAVE ^ AFFAIR, but those two signs hasn't been seen in this study. Another combination found in this data collection is not usually seen. Not like the first combination, the negative sign NOT-HAVE is performed after the verb. As seen in Figure 13, the signer first performs the sign STUDY, and then one hand closes rapidly as signing NOT-HAVE to form a new compound STUDY^NOT-HAVE. The sentence is shown in (6).

NOT-HAVE METHOD

Figure 11. NOT-HAVE^METHOD = NOT-HAVE + METHOD

a. BE-ENOUGH + NOT-HAVE b. BE-ENOUGH^ NOT-HAVE

Figure 12. ENOUGH + NOT-HAVE = ENOUGH^NOT-HAVE

(6) MOTHER STUDY^NOT-HAVE

'Mother isn't educated.'

a. MOTHER b. STUDY^NOT-HAVE

Figure 13. STUDY^NOT-HAVE = STUDY + NOT-HAVE

Another morpheme that is used to form a negative compound is EMPTY '*kong*' (Figure 14). Signer adopts the handshape of EMPTY with the location of THINK or SAY to express ' I have no idea' or ' I don't know what to say' (Figure 15).

Figure 14. EMPTY

a. THINK^EMPTY

b. SAY^EMPTY

Figure 15. Verb ^ EMPTY

Except for NOT-HAVE and EMPTY, LOUSY '*lan*' is also adopted to form a negative compound. For example, EAT + LOUSY becomes NOT-DELICIOUS, LUCK + LOUSY becomes UNLCUKY, etc. As seen in the data, only NOT-HAVE can attach to nouns or verbs either at the preceding or postponing position of nouns and verbs. EMPTY and LOUSY can only attach to the verbs to form a compound, and allow only the post-verbal attachment.

The other two examples are considered as Signed Chinese. Signers use NOT and NOT-GOOD to form a compound word that doesn't exist in the TSL vocabulary. Figure 16 to 18 are the examples of NOT-compound. Take Figure 18 for example. The signer wants to express the meaning that many people are not satisfied, so they don't come to work (Example 7c). However, there is no corresponding sign in TSL. The signer then would turn to use signed Chinese in order to make his or her expressions more precise. Another type is NOT-GOOD-compound is presented in Figure 19. In addition to NOT, the signers would also choose another negative sign NOT-GOOD to form a compound word. The meaning of these signs usually relate to spoken Chinese '*bu-hao*', such as NOT-GOOD + FIND means ' not easy to find', and NOT-GOOD + PLAY means 'not funny'.

(7)

neg

a. MONEY STILL FREE **NOT^USE**

'It's still free. (You) don't need to (pay for it).'

b. CHUNG-HUA CELLPHONE APPLY ALL-YOU-CAN-CALL

neg

NOT^ROW^COUNT

'It is not economical to apply all-you-can-call package of Chung-hua Telecom.'

neg neg

c. MANY NOT ^ ADMIRE ^ AIR / COME NOT WORK

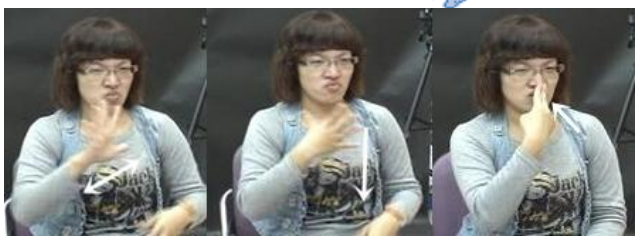
'Many (people) are unwilling to submit. (They) don't come to work.'

a. NOT ^ USE '*bu-yong*'

Figure 16. 'Do not need to' in 7a

b. NOT ^ ROW ^ COUNT '*bu-hua-suan*'

Figure 17. 'Not economical' in 7b



c. NOT ^ ADMIRE ^ AIR '*bu-fu-chi*'

Figure 18. 'Not satisfied.'

(8) neg

$TELL_{3\rightarrow1}$ $INDEX_3$ NOT-GOOD FIND WORK

' (People) keep telling me that it is not easy to find a job there.'

a. NOT-GOOD + FIND b. WORK

Figure 19. 'not easy to find a job.'

4.1.2 Sentence Negators in TSL

The negative signs used to negate a sentence are called sentence negators. As observed in our data, no signers use morphological negation as a general negative strategy. They use uninflected negative particles as clause negators instead. There are basic sentence negators and other negators in many sign languages, including TSL. The function of the basic negators is to reverse the polarity of the sentence, while other clause negators have more particular functions in addition to negation. (Zeshan 2004). As far as other negators are concerned, they convey various functions in the data. Those negators are independent signs rather than affixes. In addition to basic sentence negators, there are several negative categories in TSL: negative modals (CANNOT), negative completive (NOT-YET), emphatic negatives (NEVER), and negative responses. Due to the meaning of negative responses might have other pragmatic functions, the discussion of simple negative responses 'no' will be ruled out in the study.

According to Ke (2006), two basic negators, NOT-HAVE '*mei-you*', and NOT '*bu*', are used in TSL to negate a sentence in TSL. As shown in Figure 20, the sign NOT-HAVE is articulated by one hand or two, with fingers pointing upward, open and close repeatedly. The other sentence negator NOT, shown in Figure 21, is articulated by an open handshape 'FIVE' with a waving motion.

Figure 20. NOT-HAVE

Figure 21. NOT

Semantically, in Mandarin, *Bu* is used to deny the true value of a proposition, like the sentence 'It's not true that P' (P for proposition) in English. In addition to *Bu*, the sentences with *Mei-you* also express the negative meaning in Mandarin. From the perspective of different event structures, the negation *Bu* chooses stative events as a complement while negation *Mei-you* with dynamic events (Hsieh 2001, Lin 2003). Stative events include Will, Future, and Habit. Dynamic events, including the change of the situation, according to Vendler's (1967) classification, are Activities, Accomplishment, and Achievement. The examples of *Bu* and *Mei-you* are presented in (9) and (10).

(9) *Ta* ***bu*** *kai xing*. 'He is not happy.'

(10) *Wo zuo-tian* ***mei-you*** *qu xue-shao.* 'I didn't go to school yesterday.'

TSL signers also prefer using NOT-HAVE (*mei-you*) and NOT (*bu*) while expressing negation. In both Mandarin and TSL, NOT-HAVE *mei-you* can express 'not exist' or 'not have' . The data in the study also shows that it's common for TSL signers to adopt NOT-HAVE to negate the possession of entities (nouns) or the existence of the states (verbs or events) (11 and 12). There are over 60 (out of 300) negative sentences with NOT-HAVE in the data.

(11) neg
MONEY NOT-HAVE (non-possession of entities)

' (I) don't have money.'

(12) neg
BIG RAIN NOT-HAVE (non-existence of states)

' It doesn't rain heavily.'

The sentences with NOT may be used to mean NOT-BE (*bu-shi*), as in example (13), and DO-NOT-NEED (*bu-yong*), as in example (14).

(13) neg
TAICHUNG CITY NOT / BEFRORE WU-RI

' It's not Tai-chung City. It's (the one) before (it), Wu-ri.'

a. TAI-CHUNG CITY b. NOT

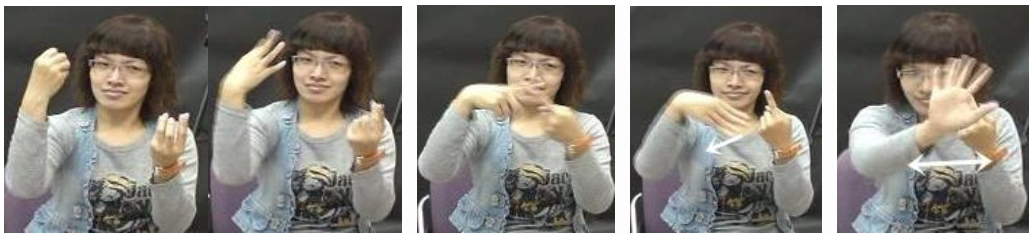
c. BEFORE d. WU-RI (BLACK + SUN)

Figure 22. Still pictures of example 13.

(14) neg neg
IF FEW / CALL NEW PERSON COME NOT

' If (the order) become less, tell the new staff not to come.'

a. IF b. FEW c. CALL



d. NEW e. PERSON f. COME g. NOT

Figure 23. Still pictures of example 14.

Based on the negative sentences observed in this study, NOT-BE (*bu-shi*) is used to deny the truth of a proposition. From this point of view, NOT-BE seems to be more likely as a basic negator in TSL rather than NOT (*bu*). See in (15) and (16).

(15) _____neg
INDEX$_1$ ANGRY NOT-BE

'I am not angry.'

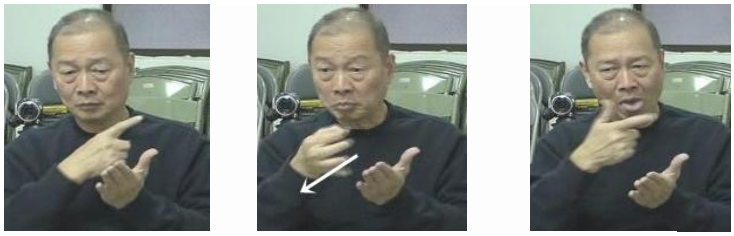
a. INDEX$_1$ b. ANGRY c. NOT-BE

Figure 24. Still pictures of example 15.

(16) neg

INDEX$_3$ PAY-MONEY NOT-BE

'They don't pay the money.



a. INDEX$_3$ b. PAY-MONEY c. NOT-BE

Figure 25. Still pictures of example 16

Previous studies have proposed that the syntactic position of negative signs in TSL is on the sentence final position (Smith 1998, Ke 2006). The evidence can be seen in the data as well. See example (17) and (18). TSL signers do prefer negative signs placed at the end of the sentences. However, some counterevidence has been found in the free conversation data, as shown in (19) and (20).

(17) neg

TELL$_{3\rightarrow1}$ NOT-HAVE

'(he) didn't tell me.'

a. TELL$_{3\rightarrow1}$ b. NOT-HAVE

Figure 26. Still pictures of example 17.

(18) neg

WASH-CAR MAY / INSIDE NOT

'You can wash the outside of the car, but not the inside.'

a. WASH-CAR b. MAY c. INSIDE d. NOT

Figure 27. Still pictures of example 18

(19)

INDEX$_1$ NOT-HAVE BE-USED-TO MORNING PUNCH NIGHT PUNCH

' I don't get used to punch in the morning and night.'

a. INDEX$_1$ b. NOT-HAVE c. BE-USED-TO d. INDEX$_1$

e. MORNING f. PUNCH g. NIGHT h. PUNCH

Figure 28. Still pictures of example 19.

(20)

BECAUSE INDEX$_1$ NOT HAPPY

'Because I am not happy.'

a. BECAUSE b. INDEX$_1$ c. NOT d. HAPPY

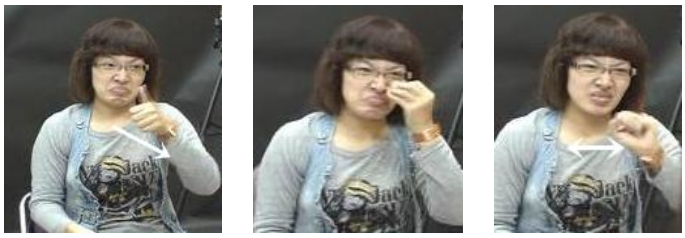
Figure 29. Still pictures of example 20.

Examples (19) and (20) show that the word order of negative signs might not be restricted to the sentence final position. It's worth noting that the number of sentence-final NOT-HAVE (49 out of 60 tokens) is much more than that of preverbal NOT-HAVE (11 out of 60 tokens). The data indicates the strong tendency for negative particles in the sentence final position (over 80%); therefore, the syntactic position of negative sign in the sentence-final position can be confirmed in the free conversation data. The acceptable pre-verbal placement of negation is only the acceptable position.

Another type of sentence negators is negative modals. They are used to indicate modals, such as possibility, permission, desire, and ability. The negative modal CANNOT '*bu-neng*' (Figure 32) is adopted commonly in expressing the prohibition, such as (21). The signer asserts that the place is not allowed for visiting. (22) is concerned with the lack of the ability, where the signer asserts the inability of doing something on his own.

(21) _____neg
GO VISIT CANNOT

'(People) cannot go visit (the place).'



a. GO b. VISIT c. CANNOT

Figure 30. Still pictures of example 21.

(22) _____neg
INDEX$_3$ DO CANNOT

'He cannot do (it).'

a. INDEX$_3$ b. DO c. CANNOT

Figure 31. Still pictures of example 22.

UNABLE '*bu-hui*' (Figure 33) is another negative modal used to denote the lack of the ability, as in (23), UNABLE can either be the main verb of the sentence which the signer use to asserts someone don't know sign language, or be the auxiliary verb to modify the whole event. As in (24), the negative modal UNABLE becomes more like WON'T in this case because the sign is used to deny the possibility of occurrence of some certain events in the future. KNOW-NOTHING-ABOUT '*yi-qiao-bu-tong*' (Figure 34) is similar to the meaning of UNABLE but reinforces the expression of the inability (25). If the signer wants to emphasize someone's incapacity of doing something, he/she would use KNOW-NOTHING-ABOUT instead of UNABLE.

Figure 32. CANNOT

Figure 33. UNABLE

Figure 34. KNOW-NOTHING-ABOUT

(23) neg

IF HEARING SIGN-LANGUAGE UNABLE CAN'T-DO FORGET-IT

'If hearing person doesn't know sign language, can't (communicate with the deaf), just forget it .'

a. IF b. HEARING c. SIGN-LANUGUAGE d. UNABLE

e. CAN'T f. FORGET-IT

Figure 35. Still pictures of example 23.

(24) neg
UNABLE HAPPEN FIGHT UNABLE[7]

' The fight won't happen.'

a. UNABLE b. HAPPEN

c. FIGHT d. UNABLE

Figure 36. Still pictures of example 24.

[7] The doubling pattern of negative signs in (16) will be discussed more in 4.1.2.

(25)

BUS INDEX$_1$ DRIVE KNOW-NOTHING-ABOUT

'I know nothing about driving a bus.'

a. BUS b. INDEX$_1$ c. DRIVE d. KNOW-NOTHING-ABOUT

Figure 37. Still pictures of example 25.

Negative modals CAN'T-DO '*zuo-bu-cheng*' (Figure 38) and NO-WAY '*mei-ban-fa*' (Figure 39) seem to form a synonymous pairs in TSL. Like CANNOT, they are also adopted for TSL signer to express the inability. See in (26) a and b. Both sentences convey the inability of communication. The signer points out that if the deaf students only learn spoken language, they still can't have a smooth communication with the hearing people. If they don't learn TSL, they will also be unable to communicate with the deaf. In this case, changing CAN'T-DO into NO-WAY doesn't result in the difference of meaning.

Figure 38. CAN'TDO

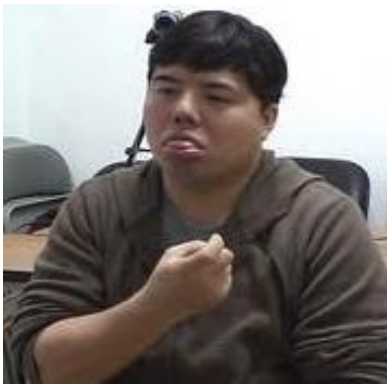


Figure 39. NO-WAY

(26)

a. HEARING COMMUNICATE CAN'T-DO /

'(They) can't communicate with the hearing people'

<u>neg</u>

b. DEAF COMMUNICATE NO-WAY

'(They) can't communicate with the deaf.'

a. HEARING b. COMMUNICATE c. CAN'T-DO

d. DEAF e. COMMUNICATE f. NO-WAY

Figure 40. Still pictures of example 26.

As to the negative completive, TSL signers adopt NOT-YET '*hai-mei*' (Figure 41), which is considered as the most common negation with an aspectual function, to indicate the incompletion of events, as in (27). It usually contrasts with a positive completive aspect particle FINISH '*wan-le*' (Figure 43). As in (27b), the completive particle FINISH can also be negated by adding NOT-YET at the end of the clause.

Figure 41. NOT-YET

Figure 42. FINISH

(27) neg
a. GRADUATE INDEX$_3$ NOT-YET

'She hasn't graduated yet.'

neg
b. FATHER STUDY ELEMENTARY SECOND-GRADE FINISH NOT-YET

'Father hasn't finished studying second-grade in the elementary school.'

a. GRADUATE b. INDEX$_3$ c. NOT-YET

Figure 43. Still pictures of example 27a.

FATHER

STUDY

ELEMENTARY

SECOND-GRADE

FINISH

NOT-YET

Figure 44. Still pictures of example 27b.

Emphatic negators convey a stronger expression of negation. Most of the negative signs can be emphatic by increasing the nonmanual features accompanying the manual negative signs. NEVER '*cong-lai-mei-you*' (Figure 45) is considered as a separate emphatic negator in TSL. Example of NEVER is given in (28).

Figure 45. NEVER

(28) $INDEX_3$ ORDINARY HEARING TEACHER NEVER TEACH SIGN-LANGUAGE HANDICAPPED NEVER

'Those hearing teachers have never taught sign language and the disabled.'[8]

a. $INDEX_3$ b. ORDINARY c. HEARING d. TEACHER

e. NEVER f. TEACH g. SIGN-LANGUAGE

[8] The doubling pattern of negative signs in (28) will be discussed more in 4.1.3.

h. HANDICAPPED i. NEVER

Figure 46. Still pictures of example 28.

A particular emphatic negation I-NOT-HAVE '*wo-mei-you*' is collected in this study. As in Figure 47, the signer uses this sign to emphasize ' I didn't do it.' The sign I-NOT-HAVE adopts the handshape and the movement of the sign NOT-HAVE, but only changes one morpheme, the orientation toward the signer himself, to indicate that he is the subject of the verb NOT-HAVE.

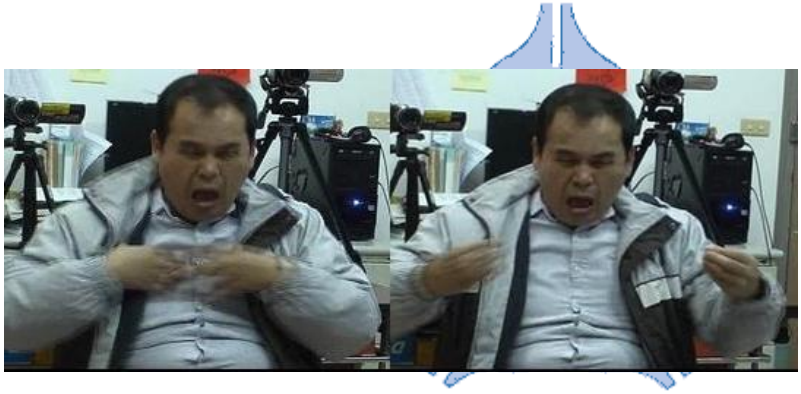


Figure 47. I-NOT-HAVE

In Mandarin, two negative words can change the polarity of the utterance or sentence into positive. For example, the negator *mei-you* in *wo mei-you bu kai-xing* negates the proposition *wo bu kai-xing*. 'It is not true that I am not happy.' However, the two negative signs co-occurring in the utterance won't change the polarity of the sentence in TSL. See in (29). They would be taken as another emphatic strategy for the TSL signer to reinforce the negativity of the utterance. Still pictures of (29) are given in Figure 48 and 49.

(29)

a. IF NOT-SUITABLE /

neg

INDEX$_3$ TELL$_{3\rightarrow1}$ INDEX$_2$ EYE-SURGERY **NO-WAY** **CANNOT**

'If (I) am not suitable, he will tell me that (I) can't (do the surgery).

neg

b. FATHER STUDY KNOW-NOTHING-ABOUT UNABLE

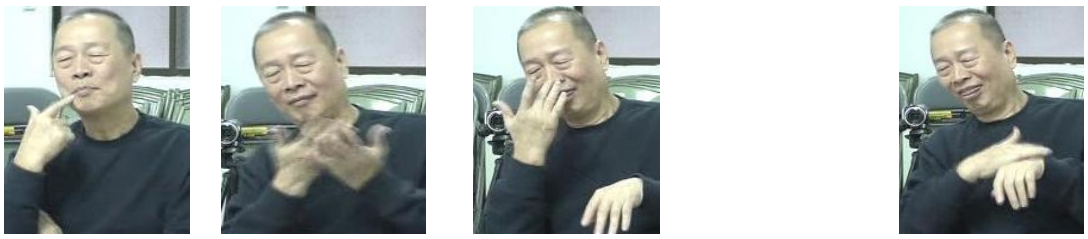
'Father doesn't know how to read.'

a. IF b. NOT-SUITABLE c. INDEX$_3$

d. TELL$_{3\rightarrow1}$ e. INDEX$_2$ f. EYE-SURGERY

g. NO-WAY h. CANNOT

Figure 48. Still pictures of example 29a.



a. FATHER b. STUDY c. KNOW-NOTHING-ABOUT d. UNABLE

Figure 49. Still pictures of example 29b.

4.1.3 Doubling Constructions

Doubling construction is an interesting pattern in sign languages. Like (30), the negative sign NEVER appear repeatedly in two different positions in the sentence without changing negative meaning of the sentence. This kind of doubling constructions seems to be shared by the signers in Taiwan. Although it is not an obligatory pattern, this doubling construction is used in negation for almost every signer participated in the study, as shown in (30).

(30) a. **CANNOT** INDEPENDENT **CANNOT**

' (Taiwan) cannot be independent.'

b. $INDEX_1$ **UNABLE** ACCEPT **UNABLE**

'I won't accept (it).'

c. COMPANY SAY **NOT-HAVE** DECIDE **NOT-HAVE**

'The company says it hasn't decided.'

d. $INDEX_3$ **NOT-BE** TAIWAN SIGN-LANGUAGE **NOT-BE**

'That is not Taiwan Sign Language.'

The first assumption for the doubling negation is the emphatic use. However, this doubling construction is not only used in the negative signs but also some other signs, as in (31). As we can see, the negative sign CAN'T-DO is not doubled in example (31a). If we assume that signers may double the negative sign for emphasis, then those examples are failed to fulfill the assumption. Also, this doubling construction is commonly used in TSL questions, as seen in examples (32) to (34). According to Chen's observation (to appear), the doubling construction can be seen in all three types of questions: polar questions, alternative questions, and content questions.

(31) Doubling the verbs

a. **SPEAK** CAN'T-DO **SPEAK**

'(They) can't speak.'

b. $INDEX_3$ SCHOOL **HAVE** SIGN-LANGUAGE INTERPRETER **HAVE**

'The school there has sign language interpreters.'

c. BUT **CHANGE** ALL **CHANGE** NO-WAY

'But (you) can't change all of them.'

(32) Doubling construction in Polar question

gaze=
tilt right| down| up| hold=
pre| AU4|pre|AU1+2|ret
$INDEX_3$ ALIVE **$INDEX_3$**

'Is he alive?'

(33) Doubling construction in Alternative question

gaze| blink|gaze=
down|forward| hold| back=
EXPENSIVE CHEAP **EXPENSIVE**

'(Is that) expensive or cheap?'

(34) Doubling construction in Content question

gaze|blink|gaze=
tilt left| hold=
HOW-MANY **HOW-MANY-YEARS** STUDY FINISH **HOW-MANY-YEARS**

'How many years (do you need) to finish the course?'

In addition to the negative sentences and questions, the declarative sentences also allow using the doubling construction, as seen in example (35).

(35) Doubling construction in Declarative sentences

a. BUT **INDEX$_3$** STRANGE **INDEX$_3$**

'But it is strange.'

b. **INDEX$_3$** BORN FRANCE PERSON **INDEX$_3$**

'He was born in France.'

Not only in the free conversation data, there are some examples of doubling construction in the eliciting sentences collected by Tai at al. The examples given in (36) are from the Reference Grammar (Tai at al. in preparation).

(36) Doubling construction in eliciting data

a. **INDEX$_3$** EAT FULL **INDEX$_3$**

'He should be full.'

b. **DAWN** ALMOST **DAWN**

'It's almost dawn.'

To sum up, the doubling construction can be used in different types of sentences, like negations, questions, and declarative sentences. The doubled signs can be negative signs (example 30), verbs (example 31), question words (example 34), nouns (example 36b), and pronouns (examples 32, 35, 36a). There are still some data observed in other sign languages that also have these doubling constructions, as shown in examples 37 to 40. The examples in other sign languages are consistent to the data collected in this study. This doubling construction may not be unique for negation only. The doubling in different sentence types may serve different functions. By observing the data in this study, a hypothetical assumption can be made: the doubling construction in negative sentences might be considered as an emphatic

negation since the signers are trying to reinforce the addressee's attention on the doubled negative signs. The functions of doubling construction in sentence types, like questions or declarative sentences, and different part of speech, such as verbs, nouns, and pronouns, still need a further investigation to generalize those patterns.

(37) Austrian Sign Language

pol-q

INDEX$_3$ DEAF **INDEX$_3$**

'Is she deaf?'

(Schalber 2006:138)

(38) New Zealand Sign Language

cont-q

WHERE ROOM **WHERE**

'Where is the room?'

(McKee 2006:75)

(39) New Zealand Sign Language

nod

INDEX$_3$ SHY HAVE **INDEX$_3$**

'She is shy.'

(McKee 2006:88)

(40) Australian sign language

ALL STUDENT **CAN** GO **CAN**

'All the students can go, they can.'

(Johnston and Schembri 2007)

This section describes the various negative signs that are used as clause negators in TSL. In addition to the basic negator NOT '*bu*', the sign NOT-HAVE negates the possession of entities (with nouns) or the existence of the states (with verbs or events). Another sign NOT-BE, which is taken as another basic negator in this study, is simply used to deny the true value of the proposition. Negative modals, like CANNOT and NO-WAY, are adopted to indicate certain the semantic functions of the modality, such as inability, prohibition, or possibility. As to emphatic negation, some particular signs are taken as the enhanced version of the original negative word, like NOT-HAVE / NEVER, DON'T-KNOW / KNOW-NOTHING-ABOUT. Also, the doubling construction used in negative sentences can be taken as emphatic negation. The signer doubled the negative signs while they are trying to emphasize them.

4.2 Data: Nonmanual Negation

This section focuses on the description of the nonmanual components that are used by the 8 signers while expressing negative utterances. The nonmanual expressions are collected from the free conversation data and focused on the negative utterances. Each nonmanual component was chosen under the condition of correct production and without hesitation. The baseline of the face was first set up for each signer, and then the negative nonmanual expressions were presented as following (Figure 50 to 57):

a. baseline b. NEG face

Figure 50. Negative facial expression of signer YS

a. baseline b. NEG face

Figure 51. Negative facial expression of signer SL

a. baseline b. NEG face

Figure 52. Negative facial expression of signer XB

a. baseline b. NEG face

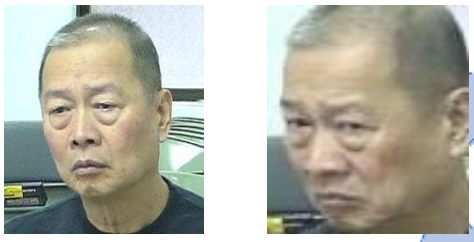
Figure 53. Negative facial expression of signer FR

a. baseline b. NEG face

Figure 54. Negative facial expression of signer WH

a. baseline b. NEG face

Figure 55. Negative facial expression of signer QJ



a. baseline b. NEG face

Figure 56. Negative facial expression of signer KP

a. baseline b. NEG face

Figure 57. Negative facial expression of signer JS

Those NEG facial expressions were extracted from the video clips which the signers were performing negative signs during the conversation. Based on those

nonmanual components, some particular nonmanual signals can be considered as the form of nonmanual negation, including head, eyebrows, and mouth movements.

4.2.1 Head movements

As far as head movements are concerned, there are three different types can be found in the data. A repeated side-to-side head movement is the most common nonmanual marker accompanying the manual negation. The negative headshake is used by all the signers in our data. The headshake can either co-occur or start before the negative manual sign and spread to the end of the sentence. As seen in (40), there are two headshakes in the sentence. The first one consistent to the negative manual sign CANNOT while the second one starts at the verb GO and lasts to the end of the sentence. Same pattern can be seen in (40b). The headshake starts before the sign SAME and then spread to the end of the sentence. The reason why the accompanying headshake with the manual sign SAME doesn't change the meaning of SAME into negative DIFFERENT might be the spreading of the headshake. The headshake doesn't correspond to the sign SAME only but spread to two signs. On the contrary, there are two examples showing that the simultaneous headshake with the manual sign can change the polarity of a positive sign to express the negative meaning. In (41), the signer shakes her head while signing WORRY to express the meaning of 'not to worry'. As for (42) the signer performs the positive sign DEFINITE with a simultaneous headshake to negate the sentence.

(40) _____hs _____hs

a. IF CANNOT AGREE / $INDEX_1$ GO NO-WAY

'If (the visa) is not passed, I can't go.'

hs

b. $INDEX_3$ HAVE ORAL SAME NO-WAY

'They can speak and still cannot (understand).'

a. IF b. CANNOT c. AGREE

d. $INDEX_1$ e. GO f. NO-WAY

Figure 58. Still pictures of example 40a.

a. $INDEX_3$ b. HAVE c. ORAL d. SAME e. NO-WAY

Figure 59. Still pictures of example 40b.

hs

(41) $INDEX_3$ MALE WORRY

'He doesn't have to worry.'

(42) IF $INDEX_1$ PASS $INDEX_3$ $INDEX_1$ DEFINITE WITHDRAW /

hs

$INDEX_1$ DEFINTIE

'If I pass (the school) there, I will definitely withdraw. I definitely (don't want).'

a. $INDEX_3$ b. MALE c. WORRY

Figure 60. Still pictures of example 41.

a. IF b. $INDEX_1$ c. PASS d. $INDEX_3$

e. $INDEX_1$ f. DEFINITE g. WITHDRAW h. $INDEX_1$ i. DEFINTIE

Figure 61. Still pictures of example 42.

Another head movement which is also as frequently used as the negative headshake is called a head tilt (Figure 62). Almost every signer in the study have different sideward of head tilts while performing negative signs. In many cases, the head tilt is regularly accompanied by the lip corner lowered.

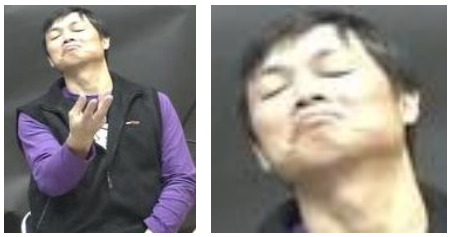


Figure 62. NOT-HAVE with a right backward head tilt

The third type of negative head movement is a single sideward head turn, as shown in Figure 63. This kind of head movement is not a regular use for every signer in this study. Only two out of eight signers use head turn while expressing negative meanings. Of the three head movements described above, the single sideward head turn is considered the least use. This result is consistent with Zeshan's conclusion, ' the single sideward head turn is the most problematic to assess and also the least documented negative nonmanual (2004),' and it might be taken as a reduced form of the side-to-side headshake in some sign languages.

Figure 63. CANNOT with a single head turn

Also, the head tilt and head turn cannot negate a sentence by themselves, but a side-to-side headshake for some signers is sufficient to negate a sentence by itself. As in example (43) and (44). Figure 64 and 65 show that the signers allow the headshake at the sentence final position to negate the sentences without any negative signs.

(43) _____hs

OUT HAVE DOCTOR THREE BUT

'There are three other doctors, but (I don't want them).'

a. OUT b. HAVE c. DOCTOR d. THREE

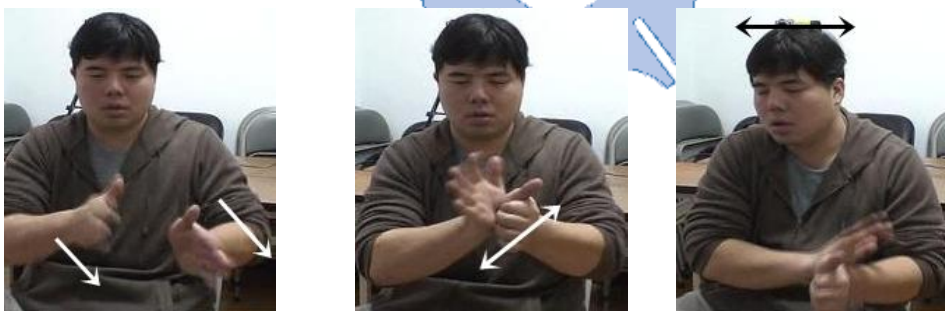
e. BUT f. (headshake only)

Figure 64. Still pictures of example 43.

hs

(44) WITH-RESPECT-TO SERVICE

'(I) don't focus on service.'



a. WITH-RESPECT-TO b. SERVICE c. (headshake only)

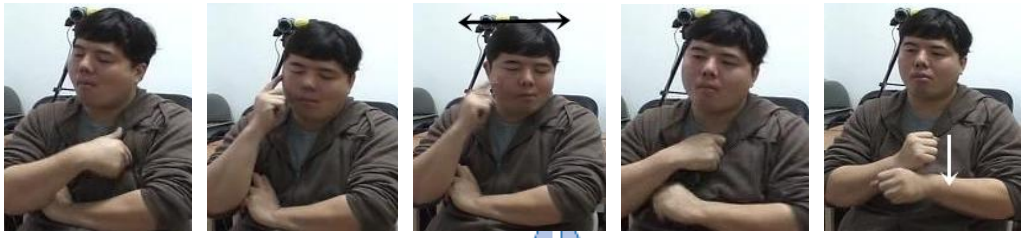
Figure 65. Still pictures of example 44.

Example (45) shows another usage of headshake in our data. The signer uses headshake preceding the main verb to turn the polarity of the sentence into negation. Previous researches on TSL negation agree that the combination of headshake and positive sign with either sequential or simultaneous order is not allowed by the TSL

signers to change the positive sign into negative. However, example 43 to 45 indicate that some signers take headshake as a nonmanual negator, which can perform sequentially or simultaneously with the positive sign to express the negative meaning.

	hs	'm'puff
(45)	$INDEX_1$ THINK WANT DO / $INDEX_1$ QUIT $INDEX_1$ CHANGE	

'I think I don't want to work. I want to quit and change (the job).'



a. $INDEX_1$ b. THINK c. (headshake) d. WANT e. DO

f. $INDEX_1$ g. QUIT h. $INDEX_1$ i. CHANGE

Figure 66. Still pictures of example 45.

4.2.2 Facial expressions

In addition to head movements, TSL signers also have other nonmanual expression while expressing negative meanings. From the data, we observe other facial expressions, such as frown and lip corner lowered, that are used by the signers when they perform a negative signs. Figure 67 presents the negative facial expressions in the upper face, and Figure 68 shows the negative expression in the lower face. As for the eyebrows, signers usually frown while negating an utterance. However, the negative expression in the lower face, especially on the mouth

movements, has various performances of expressing negation. The most common mouth movement is considered as the lowered lip corner (Figure 68b). It's adopted by all the signers in the data and occurred simultaneously with the negative signs.

Figure 67. Frown performed by different signers

a. flat lip b. lowered lip corner c. pouting

Figure 68. Negative expressions in the lower face

There are other mouth movements adopted by most of the signer from the study. According to Ekman's (2002) description, it's called tongue show, which indicates that the tongue can be seen and protrudes beyond the boundaries of the teeth. As seen in Figure 69, the signers in the study have tendency to show their tongue mostly with negative signs NO-WAY and NOT-HAVE. There is another interesting pattern called tongue show. The signers would have their tongue protrude or wave while signing the negative sign NOT-HAVE. The tongue is usually shown with a side-to-side movement.

a. with NO-WAY b. with NOT-HAVE

Figure 69. The representation of tongue show

Example (46) is a particular example showing that the nonmanual itself is sufficient to express the meaning in TSL. The signer asks a negative question without any lexical signal but using only the nonmanual components (Chen 2012), and the addressee have no problem to response the signer's question. But it is a rare and uncommon case in our data. In sum, some signers have the tendency of using tongue show with the negative sign NOT-HAVE. Therefore, in this case, the manual sign NOT-HAVE is omitted, and left only the nonmanual component, tongue show to express the meaning of NOT-HAVE. The raised eyebrows (AU1+2) indicate the utterance is a question (Figure 70).

(46) = gaze=
pre| AU1+2[9] |ret
tongue out

(You don't have a year-end bonus?)

Figure 70. The tongue show with negative meaning NOT-HAVE

[9] The term Action Unit (AU) is used to describe facial muscular movements in the Facial Action Coding System (FACS) developed by Ekman, Friesen, and Hager (2002) Each AU is identified by a number and a name arbitrarily. AU1 represent the Inner Brow Raiser while the AU2 is the Outer Brow Raiser. A complete discussion of questions in TSL conversation can be seen in Chen (2012).

Mouthing is considered as another common usage while signers are performing the negative signs. In addition to the tongue show, signers in the data have a strong tendency to produce the visual syllable while signing. This kind of production is called mouthing. See in Figure 71. The mouthing in Figure 71 (b) corresponds to the spoken Chinese *mei-you*, 71 (d) corresponds to the spoken Chinese *bu-shi*, and 71 (f) corresponds to the spoken Chinese *bu-hao*.

a. NOT-HAVE b. Mouthing of *mei-you*

c. NOT-BE d. Mouthing of *bu-shi*

e. NOT-GOOD f. Mouthing of *bu-hao*

Figure 71. Mimetic of the mouth gesture

This section provides the nonmanual expression adopted by the signers in the study. There are three types of head movements accompanying negative signs: a side-to-side headshake, a head tilt, and a single sideward head turn. As for the nonmanual component in the upper face, a frown is commonly adopted with a

negative sign. For the lower face, there are various mouth actions co-occurring with negative signs. Lowered the lip corner seems to be mostly used for the signers in our data. Another pattern is mouthing while signing. The mouthing corresponding to the visual syllables of the negative sign is often used for TSL signers. The next section will focus on the discussion of the grammaticality of nonmanual markers and the relationship between manual and nonmanual negation.

4.3 Interaction Between Manual Negation and Nonmanual Cues

Negative construction has been investigated by Tai et al. (in preparation) and Ke (2006). However, the presentations of the nonmanual expressions come from only one signer, which is not sufficient to conclude the general usage of nonmanual negation. This section focuses on the relationship between nonmanual expressions within the corresponding manual signals. The head movement and other facial expressions will be discussed separated with respect to the different grammatical status. As mentioned in section 4.2, a negative headshake at the end of the sentence is sufficient to negate the whole sentence (See example 43 and 44). In Hong Kong Sign Language, a headshake can negate a clause by itself, but it is restricted to the sentence-final position only. This particular pattern can also be seen in TSL data as well. As to other facial expressions, they tend to be less obligatory and more variable than the negative headshake. Example 47 to 49 also indicate that the negative headshake (hs) is consistent with the start and end of the manual negative signs.

hs

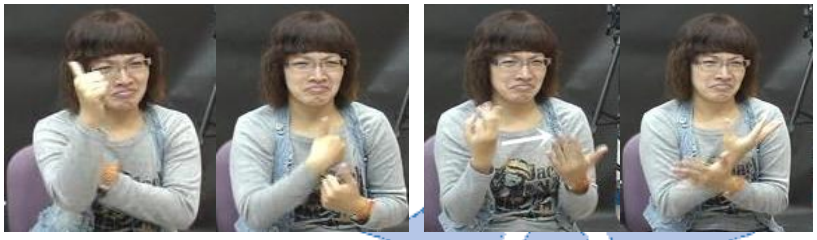
frown

lip corner lower

(47) INDEX$_1$ CELLPHONE N **NOT-HAVE** FUNCTION NOT-ENOUGH

'My cell phone is N (Nokia), don't have functions, and it's not enough.'

a. INDEX$_1$ b. CELLPHONE c. N d. NOT-HAVE



e. FUNCTION f. NOT-ENOUGH

Figure 72. Still pictures of example 47.

(48) hs

INDEX$_1$ TELL$_{1\rightarrow3}$ NOT-HAVE^METHOD

'I told him no way.'

a. INDEX$_1$ b. TELL$_{1\rightarrow3}$ c. NOT-HAVE^METHOD

Figure 73. Still pictures of example 48.

(49)

IF DON'T-MATCH $INDEX_3$ $TELL_{3\rightarrow2}$

hs hs

$INDEX_2$ EYE-SURGERY CANNOT NO-WAY

'If (you) don't match, he will tell you that (you) can't do the eye surgery.'

a. IF b. NOT-SUITABLE c. $INDEX_3$

d. $TELL_{3\rightarrow1}$ e. $INDEX_2$ f. EYE-SURGERY

g. NO-WAY h. CANNOT

Figure 74. Still pictures of example 49.

In most sign languages, the occurrence of the intermediate headshakes has been reported to be not permitted. However, this kind of pattern is found in our data, as seen in example (45) (re-written below).

hs

(45) $INDEX_1$ THINK WANT JOB /

'm'puff

$INDEX_1$ QUIT $INDEX_1$ CHANGE

'I think I don't want to work. I want to quit and change (the job).'

The negative headshake intruded in the middle of the sentence, and is taken as the only negator to express the negative meaning DON'T WANT. Usually, the headshake will continue to the end of the sentence no matter where it starts. This interesting pattern might indicate that for some signers, the negative headshake can function as a sentence negator to change the polarity of the sentence. The negative meaning of the intermediate headshake with a positive sign can be confirmed by the utterance afterward. In the second utterance of (45), the signer indicates that he wants to quit and change the job, therefore, the meaning of the former utterance must be negative in this case. According to the data in the study, the scope of the negative headshake might be restricted to the manual negative signs, and TSL seems allow the non-final headshake, as in (45). However, if other negative facial expressions are used in the same utterance, the facial expressions (with a frown and the lowered lip corner, see example 47) do continue to the end of the sentence. This particular pattern may lead us to the conclusion that the scope of a negative headshake can be independent from the scope of a negative facial expression.

4.4 Summary

This chapter describes the manual negators and the nonmanual expressions which have been performed by the signers in the free conversation data. Because the signers are naive about the purpose of the study, those negative utterances are

considered as the most natural way of expressing negation. The first issue of this chapter focuses on the manual negation. There are over 300 utterances with negators collected from the data. Based on the different purposes, those negators are classified into several categories, basic negators, negative modals, and emphatic negatives. After that, some morphological strategies of forming a negative sign are also introduced by presenting the real usage of the signers. Once the negative utterances were selected, the corresponding facial expressions are extracted and described in details. The nonmanual components of negation are related to the head movements and other facial expressions, typically involved eyebrow lower (frown) or the lip corner lower. The third part of the chapter focuses on the discussion of the relationship between the manual negators and the nonmanual markers. TSL signers have a tendency to use headshake at the clause-final to negate the utterance. As to other facial expressions, their usage is variable and tends to be less obligatory than the negative headshake.

Chapter 5

Conclusion

Due to the lack of evidences of negation in the free conversation data, the study presents the observation of TSL negation in the collected naturally occurring TSL data of 8 TSL signers. The first aim of the study is to compare and investigate the use of the negative expressions with the former researches (Tai at al, in preparation, and Ke 2006). In chapter 2, some researches of other sign languages are introduced to show the general negative construction with a typological perspective.

Secondly, the study provides an overall elicitation methodology. Sign language researcher may have faced some problems while eliciting the data. Several pilot studies have been tried out, and we can still get some negative signs from the pilot elicitation. However, there are some drawbacks first, the participants of the study may sign differently while the hearing researchers involved. Those signing might not be the most natural use. Second, by using the wordless pictures, the possibility of mimicking the actions or the items in the picture cannot be ruled out. We don't know those signings are the real use of TSL or just the mimetic gestures when the participants see the pictures. Put all the obstacles into concern, the final choice in the study is the free conversation between two TSL signers. The conversation occurs naturally without any hearing researcher get involved and the use of the signing might be taken as the most natural use because the informants are naive about the purposes of the study, and also the intervention of the spoken Chinese can be avoided by this method.

The discussions in the study can be divided into manual negative signs and the nonmanual components used in negative sentences. Manual negation focuses on the syntactic structure and morphological formation while the discussion of the

nonmanual negation focuses on their distribution and their interaction with manual negation. There are 30 negative sign collected in this study, and the syntactic position of negative signs in TSL is on the sentence final position. However, there is counterevidence presented in chapter 4 showing that the TSL signers also allow the pre-verbal negation, which is similar to the word order of spoken Chinese. Those pre-verbal negations may be considered as the evidence of the language contact with the majority of spoken Chinese. Even if the pre-verbal placement of the negative sign occurs in the data, the TSL signers still show a strong tendency for the negative signs occur in the sentence final position.

In addition to manual signs, negative lexical signals are commonly accompanied by the nonmanual expressions, including head movements and facial expressions. There are three kinds of head movements collected in this study: a repeated side-to-side headshake, a head tilt, and a single sideward head turn. In the data, the side-to-side headshake is considered as the most common nonmanual marker in negative sentences. Other facial expressions, like frown and lowered lip corner are also used frequently while the signer is expressing negative meanings. The negative expression in the lower face, especially on the mouth movements, has various performances of expressing negation. An interesting pattern called tongue show is found in the data. Usually, the tongue show co-occurs with the negative sign NOT-HAVE, but it is not obligatory. Mouthing is another pattern co-occurring with the negative manual signs. In conclusion, there are three logic possibilities for the interaction of the manual and nonmanual expressions of negation. First, the signer uses manual sign only without any nonmanual marker in the negative sentences. Second possibility is to use nonmanual expressions simultaneously with the manual negators. The third one is use only nonmanual markers to express the negative meanings. All three possibilities are found in our data, however, for most informants,

the combination of the manual and nonmanual expressions is preferred. There are plenty of nonmanual expressions in negative sentences. As presented in our data, the onset and offset of the nonmanual components are not consistent to the manual negative signs, especially the eyebrow and mouth movements. The head movements in the negative sentence are more identical than other facial expressions. A side-to-side headshake is found consistently with the onset and offset of the negative signs. However, the headshake doesn't have a particular pattern in the syntactic level, since the headshake is not consistent to the syntactic constituent. As observed in the free conversation data, several conclusions can be made. First, TSL adopt the manual-dominant system of negation. Which means the manual sign is the primary negator while the nonmanual marker is optional. Second, even though the nonmanual expressions are not obligatory, the TSL signers still have a strong tendency of using them while expressing negative meanings. Third, unlike the former studies in TSL negation, the free conversation data has been documented in the study. So far, the nonmanual expressions are not a linguistic pattern in TSL; however, it is worth mentioning that for some signers in the data, the nonmanual expressions are already sufficient to negate the sentences, which may lead us to an assumption that the nonmanual expressions, especially the head movements, are now under the process of grammaticalization. The data in the study can be considered as a reference for the further conversational analysis of the nonmanual expressions in TSL.

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