

**A Study of Lexical Variation, Comprehension and Language
Attitudes in Deaf Users of Chinese Sign Language (CSL) from Beijing
and Shanghai**

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Ph.D. in Psychology and Language Science

I, Yunyi Ma, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

The ethics for this project have been approved by UCL's Ethics Committee (Project ID Number: EPI201503).

Signed:

Abstract

Regional variation between the Beijing and Shanghai varieties, particularly at the lexical level, has been observed by sign language researchers in China (Fischer & Gong, 2010; Shen, 2008; Yau, 1977). However, few investigations into the variation in Chinese Sign Language (CSL) from a sociolinguistic perspective have previously been undertaken. The current study is the first to systematically study sociolinguistic variation in CSL signers' production and comprehension of lexical signs as well as their language attitudes. This thesis consists of three studies. The first study investigates the lexical variation between Beijing and Shanghai varieties. Results of analyses show that age, region and semantic category are the factors influencing lexical variation in Beijing and Shanghai signs. To further explore the findings of lexical variation, a lexical recognition task was undertaken with Beijing and Shanghai signers in a second study looking at mutual comprehension of lexical signs used in Beijing and Shanghai varieties. The results demonstrate that Beijing participants were able to understand more Shanghai signs than Shanghai participants could understand Beijing signs. Historical contact is proposed in the study as a possible major cause for the asymmetrical intelligibility between the two varieties. The third study investigated signers' attitudes towards regional varieties of CSL and Signed Chinese via a questionnaire. The findings demonstrate that older signers tended to have a conservative attitude towards their comprehension of regional signs of CSL, and that participants of both regions tended to ascribe high solidarity to their own varieties and high social status to Signed Chinese. This study has expanded our knowledge of sociolinguistic variation in Beijing and Shanghai signing varieties, and lays the groundwork for a future comprehensive study of the regional varieties in CSL. This study may also serve as a useful reference for official sign language planning in China including such issues as promoting a standardised lexicon across China and offering qualifications for CSL learners and interpreters.

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Impact Statement

This research investigated the sign language used by deaf people in China from a sociolinguistic perspective. The use of lexical signs, comprehension of regional signs, and attitudes towards the varieties among the signers were found to vary along social and linguistic factors. It is hoped that the findings obtained from the research will have an impact on linguistic studies of sign languages, language policy and public awareness of the deaf people in China.

The study of Chinese Sign Language (CSL) as a language started relatively late compared with work on other sign languages. The current study is the first systematic investigation of sociolinguistic variation of lexical signs in CSL, with data collected from deaf signers in Beijing and Shanghai. The study thus lays the groundwork for future research on a comprehensive study of regional varieties in CSL. The results from this research will be written up for publication, to disseminate both across China and abroad, and to serve as reference materials for teachers in deaf schools, sign language interpreters and sign language researchers.

Another benefit arising from the current research is the potential for contributing to language policy making on sign language in China. Until recently, language policies on Chinese Sign Language in China have placed the focus on promoting a standard sign variety, while possibly neglecting the variation in natural signing used within the deaf community. With the increasing amount of research that has been carried out on natural sign languages in recent decades, this tradition is now undergoing some changes. The current study thus can serve as relevant reference for language planning on issues such as implementing a standardised lexicon across China, and the data collected for the study can be shared to CSL learners and sign language interpreters as learning materials.

Finally, the research helps promote to the public the language used by the deaf community of China. Deaf people in China are socially marginalised and are seen by many as just disabled individuals. This is reflected by the overall negative attitudes towards deaf people in public.

This research, which explores the signing used by deaf signers in China, aims to see the deaf community in China as a cultural and linguistic group and hopes to contribute to the public awareness of deaf community in China.

In summary, this research has demonstrated that Beijing and Shanghai signers' production and comprehension of regional signs and their language attitudes are systematically related to the social and linguistic factors of the users. It is hoped that the findings of this research will have real impacts both immediately and incrementally in the future.

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Acronyms

ASL	American Sign Language
Auslan	Australian Sign Language
BSL	British Sign Language
CSL	Chinese Sign Language
DSL	Danish Sign Language
HKSL	Hong Kong Sign Language
JSL	Japanese Sign Language
LIS	Italian Sign Language
LSF	French Sign Language
LSFB	French Belgian Sign Language
LSM	Mexican Sign Language
NGT	Sign Language of the Netherlands
NZSL	New Zealand Sign Language
SgSL	Singapore Sign Language
TibSL	Tibetan Sign Language
TSL	Taiwan Sign Language
VGT	Flemish Sign Language
ZS	<i>Zhongguo Shouyu</i>

Glossary

Terms	Descriptions
Pinyin signs	Signs which include the use of handshapes in the Pinyin manual alphabet system
Character signs	A type of borrowing in CSL which depicts or traces Chinese characters
Chinese pronunciation pun signs	In pun signs, the form represents a different concept which can be represented in written Chinese with the same character.
Initialised signs	Signs in which the handshape corresponds in form to the first letter in the Pinyin (Romanised) spelling of a Chinese word
Loan translations	A type of borrowing in which there is a sign-for-morpheme translation from the spoken language
Signed Chinese	A signing variety which follows the syntax of Mandarin and favours the use of Pinyin signs and signs borrowed from Chinese characters
Traditional regional signs	The signs preferred by older signers in a region
Non-traditional regional signs	Signs used by younger and middle-aged signers rather than older signers in a region
<i>Zhongguo Shouyu</i> signs / ZS signs	The signs adopted in the official book <i>Zhongguo Shouyu</i>

Notation Conventions

In this thesis, alphabetic letters are presented in-between two hyphens (e.g., -t-); the Romanised forms of Chinese words are presented in italics (e.g., *Zhongguo Shouyu*); and the English translations of Chinese words and sentences are presented within quotation marks (e.g., *Wenfa Shouyu*, “grammar signing”).

The additional glossing conventions are used throughout the thesis. Following the conventions used in the British Sign Language Project (Cormier et al., 2012), glosses for the concepts investigated are presented in capitals (e.g., MORNING); glosses for lexical variants are presented in small capitals (e.g., MORNING01); and glosses for phonological variants are indicated with alphabetic letters following the lexical variants (e.g., MORNING01A).

Part 1. Introduction: Sign Language in China

Chinese Sign Language (CSL) is the language of the Chinese deaf community. Linguistic research on Chinese Sign Language began in the late 1970s, with Yau (1977) analysing the phonological parameters of lexical signs in CSL and investigating the formation of name signs used by deaf people in China (1989). The book *Longren Shouyu Gailun* (in English “*An Introduction to the Deaf Sign Language*”), written by Fu and Mei (1986), was the first to address the morphological and syntactic structures of CSL. It was not until recent decades that research on CSL has begun to flourish, with most of the published work focusing on theory-based approaches to the linguistics of CSL (for example, see Yang & Fischer (2002) for the analysis of morphological and syntactic features of negation; Zhang & Zhao (2010) for the phonological study of CSL). The sociolinguistics of CSL, however, remains under-examined. The current thesis aims to provide a preliminary description of sociolinguistic variation in Beijing and Shanghai varieties of CSL. The overarching research question addressed in the thesis is: How do sociolinguistic factors affect the production and knowledge of, and attitudes towards, the lexical signs used by Beijing and Shanghai deaf signers, and how do these three aspects relate to each other?

To answer this research question, three studies have been carried out, looking at lexical variation (Part 2), lexical comprehension (Part 3) and language attitudes (Part 4). Specific research questions for each of the three studies are addressed under the each of the three parts.

To explain the motivation behind these research questions, Part 1 (i.e., Chapter 1 - Chapter 4) provides background information on CSL, deaf education, deaf community, and language policies in four separate chapters. Chapter 1 describes early use of the term *Zhongguo Shouyu* (“Chinese Sign Language” in English) and how it is perceived by different groups of people. Chapter 2 introduces deaf education in China by looking at some of the earliest deaf schools

established by foreign missionaries and the manual systems used to facilitate oral learning by deaf students. Chapter 3 provides a description of the deaf community in China, with two subsections introducing the regional varieties of CSL and language attitudes towards Chinese deaf people and their language respectively. The final chapter in Part 1 describes the language policy implemented by Chinese authorities to promote a standardised lexicon via a book *Zhongguo Shouyu* designed for general use by deaf and hearing people in China. As a part of the outcomes of that policy, sign language interpreting on television is also described in a subsection of Chapter 4.

Chapter 1. Chinese Sign Language (CSL)

Chinese Sign Language is called *Zhongguo Shouyu* in Chinese, where *Zhongguo* means ‘China’ and *Shouyu* refers to ‘hand language’. Traditionally, the term *Shouyu* not only comprises the signing used in the Chinese deaf community, but also includes gestures and mimes used among the hearing. Callaway (2000) suggests that the term *Shouyu* deflects attention from other essential components of communication in signs, such as mouthing and facial expressions.

This chapter is grouped into three sections revolving around *Zhongguo Shouyu*. The origin of *Shouyu*, together with its historical records is presented in Section 1.1, and a description of how the term was perceived by different groups of people is presented in Section 1.2, followed by an introduction in Section 1.3 about Signed Chinese, which is sometimes equated with *Zhongguo Shouyu* by the hearing community.

1.1 Ancient records of signing in China

Mentioned in Fu and Mei (1986), the earliest record of *Shouyu* appeared around 618-907 AD in a martial hero romance named *Negrito Slave* (*Kunlun Nu* in Chinese), in which the term *Shouyu* originally referred to a form of communication used by hearing people. The book narrated that the heroine, who had been forced to join the harem of a court official, used *Shouyu* to secretly communicate with the hero who then managed to help her to escape with the aid of his slave.

The record of natural signing in China first appeared as ‘*Zhihui*’ in a book named *ShiJi* (in English “*Record of the Grand Historian*”) written by Sima Qian from around 104 to 91 BC. In the ancient Chinese prose of that period, the signing used by deaf people was referred to as ‘*Zhihui*’, ‘*Shoushi*’, or ‘*Zhihua*’ instead of ‘*Shouyu*’. The term ‘*Zhihui*’ was used in a chapter in *ShiJi* called ‘the Biography of *Huaiyin Hou*’ to refer to deaf people’s signing:

“Better a wasp bent on stinging than a hesitant tiger; better an old nag plodding safely along than a hobbling thoroughbred; better a common man determined to act than the bravest hero vacillating! You may be as wise as Shun and Yu, but if you mumble and do not speak out, you are less use than a deaf mute making gestures!” (translated by Watson, 1971:227)

Another early description of a deaf person using signing to communicate with his family and neighbours was found in a biography of a deaf man living in Qing dynasty (from 1644 to 1911). The biography describes how the deaf man communicated with his hearing mother and neighbours through home signs, facial expressions and gestures. Many signs in the biography, such as the signs for BREAD and FISH, are still in use today (Yang, 2008). Gao and Gu (2003) identify two types of lexical signs in ancient Chinese signing. The first type is what people normally call ‘signs’, i.e., gestures of hands and bodies with their own meanings; the second type is called ‘drawing signs’ (in Chinese *Shukong*), where the signer used the index finger of one hand (usually the dominant hand) to draw a Chinese character on the palm of the other hand, and the character-mimicking and tracing signs used by the deaf people today are claimed to be extensions from these drawing signs.

1.2 The term ‘Chinese Sign Language’

Although the term ‘Chinese Sign Language’ (CSL) has been well accepted internationally as the sign language used in the Chinese deaf community, its Chinese equivalent, ‘*Zhongguo Shouyu*’, has been used with several different meanings. For many Chinese linguists, the term refers to the natural sign language of Chinese deaf people (Gong & Fischer, 2012; Piao, 1996; Yang & Fischer, 2002); it has also been used as an umbrella term to cover all signing systems, regional varieties, and manual alphabetic systems used by deaf people and hearing signers (Yang, 2015; 2016); for many hearing teachers in deaf schools, the term refers to Signed Chinese (see Gong & Fischer, 2012:500; and see Section 1.3 for the description of Signed

Chinese); finally, it is equated by many hearing people with the official standardised lexicon, which is also called *Zhongguo Shouyu*.

The term *Zhongguo Shouyu*, with the meaning of ‘Chinese Sign Language’, was first used in 1988 when a revised edition of the official book *Longyaren Tongyong Shouyu Tu* (in English “*Illustrations of Signs for Common Use among the Deaf and Mute*”), published by the Chinese Deaf and Blind Association in 1979, was renamed as *Zhongguo Shouyu*. The name was used in the next three revised editions (see Section 4.1). The use of this title for the official book has caused confusion to the public as the lexical signs adopted in this book did not fully represent the natural signs used by Chinese deaf people (Shen, 2008). The division between the standardised signs introduced in the book *Zhongguo Shouyu* and the signs used by deaf people thus has been blurred, since this book has been used as the textbook for many CSL learners, particularly hearing CSL learners. To distinguish *Zhongguo Shouyu* signs from natural signs, the term ‘deaf people’s *Shouyu*’ is sometimes used when referring to the signing of deaf people. In 2018, a new title *Guojia Tongyong Shouyu* (“*National Common Sign Language*”) was used for the latest edition of the standardised lexicon to replace the former title *Zhongguo Shouyu* (Ministry of Education of the People’s Republic of China, 2018).

The current thesis adopts the definition of CSL used by most CSL researchers, i.e., CSL refers to the natural sign language of deaf people in China, which is distinguished from the contact signing influenced by spoken Chinese, including Signed Chinese and the *Zhongguo Shouyu* lexicon. The standardised signs (i.e., the signs introduced in the book *Zhongguo Shouyu*), are labelled as *Zhongguo Shouyu* signs (abbreviated as ZS signs) in this thesis.

1.3 Signed Chinese

Signed Chinese, or sign-supported Chinese (Callaway, 2000), *Wenfa Shouyu* (“grammar signing”, Wu, 2005), *Guiyue Shouyu* (“conventional signing”, Wang, 2003), *Jiaoxue Shouyu* (“teaching signing”, Ha, 2002), *Tongyong Shouyu* (“common signing”, Gu, 2017), refers to signing which uses the same word order as Mandarin, and is often produced at the same time as spoken Chinese during teaching (Lytle, Johnson, & Yang, 2005).

Most deaf people are bilingual in a hearing-dominated society, and therefore are fluent to a greater or lesser extent in a spoken language and a sign language (Ann, 2001). Schembri et al. (2013) noted that in the British deaf community, all members have varying degrees of fluency in two languages: BSL and English. They proposed a cline for the mixing varieties, which features BSL self-conscious style and Spoken English at opposite ends, and ‘vernacular BSL’, ‘contact signing’ and ‘sign supported English’, observed to be commonly used by deaf signers with a high degree of fluency in both English and BSL, as located in between (see Table 1). As for the signing used in the Chinese deaf community, Signed Chinese can be compared to the category of contact signing or sign supported English on a parallel cline to that proposed for BSL.

Deaf people with different degrees of fluency in sign language and spoken language would use contact signing differently. For example, according to Sutton-Spence and Woll (1999), someone who is fluent in both English and BSL will use sign supported English differently from someone who is fluent in BSL but knows only a little English, or someone who is fluent in English but knows only a little BSL. Conversational partner also influences choice of variety: a deaf person who is fluent in both Chinese and CSL may use Signed Chinese to a greater or lesser extent. For example, when communicating with hearing people who are not fluent in CSL, he may use Signed Chinese; when chatting with a deaf friend, he may use more CSL.

STYLE	BSL self-conscious style	Vernacular BSL	Contact signing	Sign supported English	Spoken English
CHARACTERISTICS	Little or no English influence	English code-mixing, but BSL is the dominant language	Code-mixing between English and BSL with neither as dominant language	Signs are produced alongside spoken or mouthed English	Little or no BSL influence

Table 1: The cline of language mixing varieties proposed by Schembri et al. (2013, p. 148)

CSL and Signed Chinese were regarded by many as identical before the publication of *Longren Shouyu Gailun* (“*An Introduction to the Deaf Sign Language*” in English) by Fu and Mei (1986). They were the first to state that sign language (i.e., *shouyu*) was the language used by deaf people to socialise and communicate ideas (1986: 1), and they drew a distinction between natural signs (i.e., *shoushiyu*) and the fingerspelling systems (i.e., *shouzhuyu*) in CSL (Fischer & Gong, 2010).

Wu (2005) described the basic difference between CSL and Signed Chinese as lying in their relationship with spoken Chinese, i.e., the former is less associated with spoken Chinese while the latter is Mandarin-based. Signed Chinese features frequent use of mouthings and loan signs which include character signs, Pinyin signs and loan translations (see Section 7.2 for the definitions of character signs and loan translations and Section 9.2 for the definition of Pinyin signs). Furthermore, Wu (2005) noted that Signed Chinese is used mainly by hearing people and by a small number of well-educated deaf people. It is also preferred as the language of interpretation in formal settings such as conferences.

Signed Chinese is highly advocated in deaf schools in China, because the language policy in China has long favoured the use of spoken language and lip reading for deaf students (Lin, Gerner de García, & Chen-Pichler, 2009). While Signed Chinese is fully legitimised through

its use by a majority of hearing teachers in formal education, natural signing is usually regarded in deaf schools as inferior (Callaway, 2000).

The following chapter, which looks at deaf education in China, explores the use of oral methods and manual systems in deaf schools and how they have influenced the signing of deaf people in China.

Chapter 2. Deaf education in China

The presence of lexical variation in sign languages is often linked to the signing used in deaf schools (for BSL, for example, see Stamp, Schembri, Fenlon, & Rentelis, 2015 for a study of variation in number signs; Stamp et al., 2014 for a study of variation in signs for colours, countries, numbers and UK place names). The same is true in China; to understand lexical variation in China requires looking back at the history of deaf education.

Deaf education in China started in the late 19th century, and most of the early deaf schools were established by foreign missionaries (Fu & Mei, 1986). Oral teaching has been the major communication approach in the instruction of deaf children throughout the history of deaf education in China, and CSL remained officially unknown until the 1950s (Yau, 1993). Various manual systems have been used for teaching deaf students to pronounce Chinese characters, from the Lyon manual alphabet developed by missionaries of the first deaf school in the late nineteenth century, to the Pinyin manual alphabet based on the Romanised Chinese pronunciation system introduced in 1963. These changes, along with a series of other language policies implemented by the Chinese government, are likely to have shaped the CSL used nowadays, influencing lexical variation in CSL.

This chapter describes deaf education in China in three sections. Section 2.1 describes the early deaf schools established by foreign missionaries in the north and south of China; Section 2.2 looks at the oral teaching promoted by the communist government since the 1950s; Section 2.3 introduces the manual systems which evolved from the late 1890s till today.

2.1 Early deaf schools in China

In the late 19th century, China was in a state of turmoil due to the policy of isolation implemented by the Qing government to prevent influences from other nations such as trading, education and technologies. This political turmoil began with the Opium Wars against Britain

and ended with the Qing government being forced to open five ports (Shanghai, Guangzhou, Ningbo, Fuzhou and Xiamen) for trading, enabled foreign missionaries to come to China (Guo & Cao, 1994).

The first deaf school in China was named *Qiyin* School, meaning “to enlighten the deaf to speak” (Johnson, 2003). It was founded in 1887 by an American Presbyterian missionary, Annetta Mills, from the Rochester School for the Deaf (Piao, 1992). The *Qiyin* school was located at Chefoo, now known as Yantai, a coastal city of Shandong Province in North-eastern China. The oral approach was used with the aid of a manual system developed by the missionary (see Figure 2). Sign language was not used for instruction at *Qiyin*, but the oral method in *Qiyin* enabled deaf students to not only pronounce words but to write Chinese characters. The successes of the *Qiyin* school amazed the public at that time since deaf people were conventionally thought to be mute and illiterate (Guo & Cao, 1994). Demonstrations of how the deaf children were taught to read and write were presented across China by the teachers and students from *Qiyin* School in the early 1900s, which in turn enhanced the nationwide influence of *Qiyin*. By 1909, forty deaf children from nine provinces in China had studied at *Qiyin*, with five hearing teachers receiving training there (Guo & Cao, 1994). The Qing government also supported *Qiyin*'s promotion of deaf education across China (Carter, 1911), and many deaf schools established subsequently in other parts of China had connections with the *Qiyin* School, with founders and teachers trained there.

By the start of the Second World War, when China was invaded by Japan, about thirty deaf schools had been built, either with help from the *Qiyin* school or by other foreign missionaries. The locations of these schools included cities in South China: Shanghai, Nanjing, Hangzhou, Chengdu, Guangzhou, and Fujian; and others in North China, including Beijing, Shenyang, Yantai, Tianjin, and Baoding (Carter, 1911).

The first deaf school in Shanghai was funded in 1897 by a French Catholic church (Dai & Song, 1999). At first, the church adopted only abandoned deaf infants, who were cared for by nuns in the church. Later on, older deaf children were also looked after, and as the number of children increased, the church opened special classes with textbooks that had been used in the deaf schools in France (Liu, 1994). The school closed in the 1950s because of the civil war, and the children in the school were either transferred to other deaf schools or cared for by other welfare institutes. There is little documentation about this school, as it did not openly recruit deaf children from the community, and also because there was little awareness of Catholic organisations in China at that time (Liu, 1994).

The second deaf school in Shanghai, the *Fulanya* Deaf School, was established by an English missionary, John Fryer, in 1926. The Shanghai Local Records official website states that a combination of signing and written Chinese was used in the teaching curriculum at *Fulanya* deaf school. The Visible Speech system created by Alexander Melville Bell was used to teach pronunciation while British Sign Language (BSL) was used to teach English to the students. Although evidence of historical influence from BSL on CSL is limited, Fischer and Gong (2010) suggest that some Shanghai regional signs originated from BSL. For example, the sign for SHANGHAI resembles the BSL fingerspelling for the letter -s- (see Figure 1). The *Fulanya* school was taken over by the government of the People's Republic of China in 1953, and its name was changed into Shanghai Deaf Middle School in 1992.



Figure 1: The Shanghai variant for SHANGHAI

2.2 Contemporary deaf education

Compared with western countries such as France, the United States and the United Kingdom, where deaf schools were founded by the second half of the 18th century or early 19th century, the beginnings of deaf education in China lagged by at least a hundred years. Decades of political turmoil prevented the development of deaf education in China. The situation remained unchanged until 1949 when the People's Republic of China started its governance in China. In 1951, the government issued a policy stipulating that provincial, municipal and local governments were obliged to provide education for the deaf children (Callaway, 2000). The national government carried out measures such as developing a standard curriculum and vocational training for the students in deaf schools, providing a 15% salary supplement to staff in deaf schools compared with mainstream schools, and issuing special textbooks for subjects such as Chinese and mathematics. As a result, the number of deaf schools increased rapidly from 23 in 1948 to 261 in the 1960s. By the end of 1997, there were about 980 schools established for special education (China Statistical Yearbook, cited in Callaway, 1999). Meanwhile, colleges and universities offering special courses to deaf students began to emerge in the 1990s. For example, the first technical college for deaf students was established in Tianjin in 1991. So far, at least 16 colleges and universities across the country offer special courses to deaf students in China.

In China, the age for deaf school enrolment is normally seven, or a year or two older in rural areas (Yau, 1989). Although deaf schools adopted a communication policy of “spoken language as major means, and sign language auxiliary” (Fischer & Gong, 2010:500), oral teaching was not strictly adhered to since many deaf schools preferred to employ deaf teachers who were less expensive to hire than hearing teachers. Nevertheless, in the 1980s formal certification in special education became an official requirement for teaching in deaf schools. This measure thus squeezed many deaf people out of the profession, and the teaching staff in

deaf schools in China shifted to predominantly hearing (Callaway, 2000). Meanwhile, Signed Chinese, which follows the word order of spoken Chinese, has become the preferred form of signing in classrooms. Teachers often adopted a method which was called ‘bilingual education’ (more accurately simultaneous communication) in which spoken Chinese accompanies the production of Signed Chinese, although teachers seldom received training in sign language before starting their teaching careers (Lytle, Johnson, & Yang, 2005).

Oral approaches have always been advocated for instruction in Chinese deaf schools (Fischer & Gong, 2010; Yang & Fischer, 2002). However, only a few early deaf schools were able to implement oral approaches because of the absence of hearing aids and speech training devices as well as appropriately qualified staff (Callaway, 2000). In addition, the extent of oralism practiced in deaf schools varied from the north to the south in China. The deaf schools in northern China, particularly in Beijing, had a stronger oral tradition than the deaf schools in the south, whilst in regions such as Hong Kong and western China oralism was not strictly practiced (Fischer & Gong, 2010). This policy is said to have influenced regional varieties to varying degrees. Generally, it has been frequently noted (e.g., Fischer & Gong, 2010; Shen, 2008; Yang & Fischer, 2002) that the northern varieties of CSL are more heavily influenced by spoken Chinese than the southern varieties.

2.3 The development of manual systems

Similar to the manual alphabets used alongside many western sign languages such as the United States or the United Kingdom, a number of fingerspelling alphabets or manual systems have been used during different periods in the history of Chinese deaf education to represent the pronunciation of Chinese characters. Fu and Mei (1986:12) described three main periods of use of manual systems in Chinese deaf education: the Lyon manual period, the *Zhuyin Zimu* period, and the *Pinyin* period.

2.3.1 The Lyon manual system

Prior to the introduction of the Lyon manual system by American missionaries, the first manual system introduced to China was the two-handed BSL manual alphabet (Gao & Gu, 2013). After China's loss to Britain in the First Opium War (1839-1842), a number of Chinese officials and scholars realised that China had fallen far behind the western countries, and urged the nation to open its eyes to the world and learn advanced knowledge and technologies from western countries. The British two-handed manual alphabet was introduced around 1840, described in detail by Emperor Guangxu's foreign languages teacher in correspondence with the Qing authority (Gao & Gu, 2013). However, the system failed to be promoted nationwide because no deaf school was established at that time and deaf education was barely known under the rule of the Qing government.

Along with the first deaf school, *Qiyin*, established in 1887, the Lyon manual system became the first one-handed manual system introduced into deaf education in China. Lyon symbols were based on a phonetic system called Visible Speech, created by Alexander Melville Bell in 1864 to facilitate deaf people's speech learning. Each symbol in this system was designed to resemble the movement of the throat, tongue or lips, to assist deaf people to understand and pronounce speech sounds correctly. In the early 20th century, an American teacher, Edmund Lyon, adapted the visible speech system of 119 symbols into a fingerspelling system of 45 handshapes and introduced the adapted system to American deaf schools. The fingerspelling system was thus named the Lyon manual system. It was introduced and adapted by the founder of the *Qiyin* deaf school to represent sound segments in Chinese in order to teach characters and the pronunciation of sounds to deaf children. The adapted Lyon manual system was published in a textbook called *Qiya Chujie* (in English "*First Step for the Deaf*"), in which 31 of the 45 Lyon symbols were used to represent the phonemes in Chinese (see Figure 2). Fu and Mei (1986:14) pointed out that some of the forms in the adapted Lyon system, although

designed to contrast, are highly similar and thus difficult for deaf people to distinguish in pronunciation.



Figure 2: The adapted Lyon manual system used in the first deaf school of China (cited in Fu & Mei, 1986:13)

2.3.2 Zhuyin Zimu

During the ruling of the Republican government (1912-1949), *Zhuyin Zimu* (meaning “Phonetic Alphabet”) was promoted in 1918 as the official system to unite the various pronunciations of spoken Chinese. The system consisted of 37 characters and 4 tone marks. To manually represent the *Zhuyin Zimu* alphabets, two manual systems were proposed: the *Zhuyin Zimu Fangan* and the *Guoyu Zhuyin Fuhao Fayin Zhishi*, both of which are one-handed systems. The *Zhuyin Zimu Fangan* (in English “A Plan for the Zhuyin Alphabets”) consists of 34 handshapes and retains 32 of the Lyon signs proposed by the founder of *Qiyin* deaf school. It was soon abandoned because of the complexity in how sound segments were represented (for example, some sounds were represented by three or four handshapes) as well as the high

similarity between its handshapes (Fu & Mei, 1986). In 1930, the second manual system *Guoyu Zhuyin Fuhao Fayin Zhishi* (in English “*Pronunciation Manual for Mandarin Phonetic Symbols*”) was invented by a number of Shanghai scholars of deaf education (Fu & Mei, 1986:17). Although not completely independent from the Lyon manual, the handshapes in the second system were simplified, i.e., each character was represented by one handshape (see Figure 3). This system still failed to be widely used among deaf people since oral teaching during this period of time was not strictly emphasised in deaf schools (Shen, 1964). This system existed until its replacement by *Hanyu Pinyin* in 1958, a Romanisation system promoted by the government of the People’s Republic of China.

ㄅ	ㄆ	ㄇ	ㄏ	ㄏ	ㄏ	ㄏ
ㄐ	ㄑ	ㄒ	ㄓ	ㄔ	ㄕ	ㄖ
ㄗ	ㄘ	ㄙ	ㄚ	ㄛ	ㄜ	ㄝ
	ㄟ	ㄠ	ㄡ		ㄣ	
	ㄤ	ㄥ	ㄦ	ㄧ	ㄨ	ㄩ
	ㄚ	ㄛ	ㄜ	ㄝ	ㄞ	ㄟ

Figure 3: The *Guoyu Zhuyin Fuhao Fayin Zhishi*, cited from Fu & Mei (1986: 16)



Figure 4: An illustration of the character, *Pa* (meaning ‘crawl’) from the textbook *Qiya Chujie*. Above the illustration is a drawing of the sign’s meaning. Below the picture are the alphabetic letters, the Chinese character and the symbols in Visible Speech (from left to right). Corresponding handshapes in the Lyon manual system are shown at the bottom (cited in Fu & Mei, 1986: 14)

2.3.3 The *Pinyin* manual alphabet system

The *Pinyin* manual alphabet system, the fingerspelling system based on *Pinyin* letters, was published in 1959 and officially promoted in 1963 by the government of People’s Republic of China, to replace the manual systems introduced by the former Republican government. The one-handed *Pinyin* manual alphabet system includes 30 handshapes representing the 30 Latin alphabet letters in *Hanyu Pinyin*, the romanisation system for pronouncing Chinese characters (see Figure 5). The system is heavily influenced by western manual alphabets, with 13 of the handshapes sharing their forms with French fingerspelled forms: -, -a-, -b-, -c-, -g-, -h-, -k-, -l-, -m-, -n-, -o-, -v-, -w-, and -y-. Zhou (1980) states that the creation of the *Pinyin* manual alphabet system was based on four principles (see Table 2). The major advantages of this system, according to Shen (1964), are that it has the smallest number of handshapes compared to

previous manual systems, and that over half of the handshapes are iconic with their corresponding written alphabets, and are therefore easier for deaf children to memorise. The *Pinyin* manual alphabet system is still in use, and some of the handshapes have been widely used by Chinese deaf signers in the creation of new signs.

The lexical signs which include one or more of the fingerspelled handshapes from the *Pinyin* manual alphabet system are referred to in this thesis as Pinyin signs. Among the Pinyin signs, there are a number of signs in which the handshape corresponds to the first letter in the Romanised form of a spoken Chinese word. This type of sign is often called an initialised sign. Initialisation is a loan process commonly seen in sign languages using one-handed manual alphabets such as ASL and Irish Sign Language (Sutton-Spence & Woll, 1999). Fischer and Gong (2010) state that initialised signs in CSL are generally based on existing signs, with some created specifically for the book *Zhongguo Shouyu*. An example of an initialised sign in CSL is presented in Figure 16 in Section 9.2.2.

Although Pinyin signs appeared in the official book *Longyaren Tongyong Shouyu Caotu* published in the 1960s, the manual system was not officially promoted to deaf schools until the publication of the first edition of *Zhongguo Shouyu* in 1988. In 1991 the government stipulated that the signs in the book should be used on television programmes and in classroom teaching in deaf schools (Liu, Gu, Cheng, & Wei, 2013). A survey conducted by Jiang (2003:29) on the use of *Zhongguo Shouyu* signs among Chinese deaf signers reported that ZS signs were used more frequently by deaf students and teachers than by deaf adults. It is likely that Pinyin signs, along with other ZS signs, are more familiar to the younger signers in the Chinese deaf community.

This chapter has offered a description of deaf education in China, with specific reference to some of the early deaf schools established in the north and the south. The policy of oral teaching in contemporary deaf education, as well as the manual systems officially promoted to assist

deaf children's pronunciation of Chinese characters were also introduced. These events and language policies have together shaped deaf education in China and continue to influence the Chinese deaf community. They are also likely to have played important roles in shaping lexical variation in CSL in relation to CSL signers' social backgrounds, regions and ages. The next chapter looks at the Chinese deaf community from two aspects: signing varieties used by deaf people in different regions of China and attitudes towards the Chinese deaf community and CSL, along with the rise of deaf culture in China.



Figure 5: The 30 handshapes in the Pinyin manual alphabet system (from Fu & Mei, 1986:18)

Principle 1. To imitate the forms of Roman letters	-o-, -c-, -b-, -d-, -e-, -f-, -h-, -k-, -l-, -m-, -n-, -p-, -s-, -v-, -w-, -x-, -y-, -z-
Principle 2. To borrow sounds by acrophony from traditional Chinese signs	The sign for ONE (<i>yi</i>) is used for the handshape for -i-; The sign for FIVE (<i>wu</i>) is used for the handshape for -u-; The sign for SEVEN (<i>qi</i>) is used for the handshape for -q-; The sign for NINE (<i>jiu</i>) is used for the handshape for -j-; The sign for RABBIT (<i>tu</i>) is used for the handshape for -t-
Principle 3. To borrow the meanings of signs	The sign for BEST/FIRST is used for the handshape for -a-; The sign for LAST is used for the handshape for -ng-; which always comes last in a Chinese syllable
Principle 4. Other variations	The handshapes for -z-, -c- and -s- were slightly modified to form the other three handshapes for -zh-, -ch-, -sh-.

Table 2: Four principles to create the handshapes in *Pinyin* Manual Alphabet System (Zhou, 1980)

Chapter 3. The deaf community in China

In the report of the sixth national census in 2010, the China Disabled Persons' Federation (CDPF) estimated that there were about 20.54 million people with hearing loss in China, accounting for 1.7% of the overall population (National Bureau of Statistics, 2010). A survey by Callaway (1999) of 22 deaf schools in Jiangsu province reported that around 5 percent of the deaf children in deaf schools had deaf parents, in line with the estimated figure of 5 to 10 percent (Mitchell & Karchmer, 2004) in most countries. This chapter addresses the deaf community in China through the sign language varieties they use and the attitudes towards this community as well as CSL, along with the rise of deaf culture in China.

3.1 Regional varieties of CSL

It has been reported that there are two major geographical divisions of CSL: the northern varieties, which are characterised by the frequent use of mouthings and borrowing of signs from Chinese characters; and the southern varieties, with frequent use of visually motivated signs and facial expressions (Gong, 2009; Fischer & Gong, 2010; Yang, 2015). Beijing and Shanghai signing varieties are often seen as representative of the northern and southern varieties, influenced by the differences between communication approaches in deaf schools across the two regions, and with consequent influence at the lexical level (Yang & Fischer, 2002).

The northern/southern division applies only to the Han ethnic regions, comprising around 90% of the Chinese population (Yau, 1996). There are other signing varieties used in regions such as Tibet and Xinjiang in western China, Inner Mongolia in northern China and some regions in northeastern China where people of minority ethnic groups reside, which do not pattern in this way. Research on Tibetan Sign Language (TibSL) shows substantial lexical

differences from the signing of those belonging to the Han ethnic groups (Yang, 2015). The signs of Hong Kong Sign Language (HKSL) have been found to be very similar to Shanghai signs because of historical contact (Woodward, 1993), although Hong Kong is politically and culturally separate to a degree from mainland China. Given the sharp contrasts between the regions and the relative closeness of signing varieties, the investigation of how Beijing and Shanghai signers perceive varieties such as TibSL and HKSL will deepen our understanding on the distribution of regional signing varieties used in China. The language attitudes study reported in Part 4 explores this issue in detail.

Tibetan Sign Language (TibSL) was recognised by the Chinese government as a minority sign language in 2000 (Yang, 2015). TibSL contains neither an influence from written Chinese characters nor borrowings from Pinyin signs (Yang, 2015). The Tibetan Deaf Association, a semi-governmental organization founded in 2001, has initiated a number of TibSL projects aiming for the development of a native sign language in Tibet. The projects have so far resulted in the creation of the Tibetan Manual Alphabet which consists of 30 handshapes representing the sound segments of spoken Tibetan, and the *Standard Tibetan Sign Language Dictionary*, published in 2011, with 1437 signs (Hofer, 2017). However, CSL still has a dominant position in deaf education in Tibet, with none of the teachers in Tibetan deaf schools using TibSL for instruction (Hofer 2017), and an increase of CSL use among Tibetans may be expected.

Hong Kong Sign Language (HKSL) is a well-studied CSL-related sign language (for example, see Sze (2011) on topic constructions; Lam (2011) on verb agreement; and Lee (2011) on negation). The first deaf school in Hong Kong was established in 1935 and there were around seven to ten deaf schools in Hong Kong by the 1950s (Tang, 2007), but signing was rarely used for instruction in those deaf schools. In the 1950s, a deaf couple believed to be from Shanghai or Nanjing founded a deaf school named the *Huaqiao* Deaf School in Hong Kong. The *Huaqiao* Deaf school was the first to use signing as a language of instruction by both

hearing and deaf teachers (Shi, Lu, Lu, & Zhu, 2011). Later on, some of the teachers and students graduated from *Huaqiao* went on to teach in other deaf schools in Hong Kong, thus further spreading the influence of Shanghai signing (or Nanjing signing, which was considered to be close to Shanghai signing (Yi, 2017)) among deaf people in Hong Kong. A study conducted by Woodward (1993) comparing the lexicons of Shanghai signing and HKSL reported the level of cognates in the two varieties to be between 66% and 68% (see Section 5.1 for the review of the study), suggesting a close relationship between Shanghai signing and HKSL.

Despite linguistic studies of signing in China, the linguistic status of CSL is not yet well recognised by the authorities. The deaf community in China is still a marginalised minority group, although this situation has recently begun to change. The next section describes the attitudes held by the public towards CSL and its users and presents the change of attitudes in recent years.

3.2 Attitudes towards the deaf people and sign language

Attitudes towards deaf people and the use of sign language in China are generally negative, and this may be related to Confucian teaching which stresses conformity and normalcy, and to medical views of deafness (Callaway, 2000; He, 2016; Johnson, 2003).

The medical perspective emphasises the individual's physical loss of hearing, rather than a linguistic and cultural minority perspective underpinned by respect for the unique language and culture of the deaf community (Johnson, 2003). The medical perspective usually imposes pressure on the parents of deaf children. When a child is found to be deaf, the preoccupation of the parents is to find a medical cure, or the provision of hearing aids and professional support (He, 2016).

The negative attitude towards deafness held by the public means that the concept of deaf culture does not appear to be strong in China (Callaway, 2000; Yang, 2015). Deaf role models highlighted in the media are mostly oral deaf adults, whose spoken language skills may be unrealistic for many deaf children to achieve; this may deepen the social prejudice against deafness and the use of signing (Mudgett-DeCaro & DeCaro, 2009).

Similarly, the signing used by the deaf community in China has also been viewed negatively. Oral teaching has always been held in the highest esteem, and most deaf schools in China have relied primarily on Signed Chinese in the classroom, while natural signs were considered to be ‘irregular’ and criticised by the teachers (Callaway, 2000).

In some recent works (for example, see He, 2016; Yang, 2015), however, it has been noted that a sense of deaf culture in China has begun to develop among both deaf and hearing people in recent years, and that public attitudes towards deaf people and sign language users have improved. In 2007, the Chinese government signed the declaration of the United Nations Convention on the Rights of People with Disabilities (CRPD), which states that “persons with disabilities shall be entitled, on an equal basis with others, to the recognition and support of their specific cultural and linguistic identity, including sign languages and deaf culture” (CRPD, cited in He, 2016:39) The changing attitudes of government towards the deaf community and their language in China, along with the development of linguistic research on CSL and increasing engagement of Chinese deaf young people in deaf-related events taking place at home and abroad, are likely to play important roles in strengthening deaf culture in China.

Improvements in the education provided to deaf children in China have also helped to nurture a sense of deaf culture. Traditionally, deaf schools are places where the bonds among deaf individuals develop through sign language. In the 1980s only 6% of deaf children were enrolled in schools (Yau, 1996). Mudgett-DeCaro and DeCaro (2009) report that by 2004 more than 80% of deaf children received education at the compulsory level, which comprises 9 years

of education including primary school and middle school. Nevertheless, a challenge for the deaf community and for the establishment of a stronger deaf culture, is the existence of regional variation in CSL, especially in rural areas where deaf people are much more isolated and uneducated (Lytle, Johnson & Yang 2006). The next chapter describes the language policies implemented by the government to deal with the regional varieties used by deaf people across China.

Chapter 4. Language planning relating to CSL

Regional variation in sign language has long been viewed by the government as an obstacle to communication among signers from different regions of China, and to the uniform and regulated development of deaf education (Gao & Gu, 2013; Lytle, Johnson, & Yang, 2006). Since the late 1950s, the government has tried to standardise and promote a common sign language for use among deaf people in China by means of the book *Longyaren Tongyong Shouyu Caotu*. In 1991, the government issued a notice about nationwide promotion of the book *Zhongguo Shouyu*, stating that: 1) the *Zhongguo Shouyu* lexicon must be used in meetings held by local branches of the China Association of the Deaf, and in television programmes; 2) the lexicon should be used in teaching in deaf schools; 3) the teaching of ZS signs should be included in the curriculum for special education majors in secondary normal schools and normal universities (Liu, Gu, Cheng, & Wei, 2013).

However, this measure has so far yielded limited results. ZS signs has enjoyed low popularity among deaf people (Gu, Liu, Dong, & Wang, 2005; Jiang, 2003), and the signs used by sign language interpreters on television news are claimed by deaf people to be difficult to understand since the interpreters' signing usually contains a mixture of government promoted signs, local signs and even signs invented by interpreters themselves (Liu, Gu, Cheng, & Wei, 2013; Ni, 2015; Ran, 1998). The low popularity of ZS signs is perhaps one of the reasons why the lexicon of *Zhongguo Shouyu* has undergone constant change by the authority (see Section 4.1). In 2017, a scheme for a common national sign language was issued as a part of an Action Plan jointly carried out by the China' Disabled Persons' Federation (CDPF), the Ministry of Education, the State Language Work Committee and the State Administration for Press, Publication, Radio, Film and Television (SAPPRFT) for the Thirteenth Five-Year Plan from 2015 to 2020 (Gu, 2017). In 2018, the draft version of a newly standardised lexicon named *Guojia Tongyong Shouyu Changyong Cibiao* (in English "Vocabulary of National Common

Sign Language”) was published on the official website of the Ministry of Education. Similar considerations of whether imposing uniform signing on regional varieties have been discussed in other countries, but in many cases, it has been recognised that regional variation does not seem to hinder communication among deaf people (Callaway, 2000). Whether the most recent standardised lexicon will gain popularity among Chinese deaf people is not yet known.

4.1 *Zhongguo Shouyu*

The official book *Zhongguo Shouyu* was first published in 1959 with the title *Longyaren Tongyong Shouyu Caotu* (in English “*Sketches of Signs for Common Use among the Deaf and Mute*”). The first edition was initiated by the Language Reform Committee and published by the Ministry of Education (Yau, 1977). Hearing teachers in deaf schools played a major role, with deaf people consulted at the collection and discussion stages (Callaway, 2000). In 1979, the first edition was revised and then published as the second edition, with an extra 640 lexical signs added and the title slightly changed into *Longyaren Tongyong Shouyu Tu* (in English “*Illustrations of Signs for Common Use among the Deaf and Mute*”). The second edition was published in two separate volumes. In 1988, another edition was published, with the number of lexical entries increased to 3300. This edition is the first with the title *Zhongguo Shouyu*. A supplement was published in 1990, with an extra 2266 lexical entries.

In 2001, a revision of the 1988 edition of *Zhongguo Shouyu* was undertaken by the China Disabled Person’s Federation (CDPF) and China Association of the Deaf (CAD, now China Association of the Deaf and Hard of Hearing) and was published in 2003 as the revised edition of *Zhongguo Shouyu*. This edition includes 5586 word entries in two volumes. The standardised signs in this book, as described by the editorial committee, include Pinyin signs, signs that were modified from natural signs as well as local signs adopted from different regional varieties of CSL (CDPF & CAD, 2003). Several researchers in special education have

explored the take-up of this book by deaf people. Gu, Liu, Dong and Wang (2005) reported that most of those who owned this book were teachers in deaf schools rather than deaf people. Criticisms of this book include frequent loan signs from the Pinyin manual alphabet and Mandarin, substantial differences from deaf people's regional signing, an absence of professional vocabulary and some modified signs that are awkward to produce. In a survey conducted by Jiang (2003), 15.1% of deaf college students reported that they often used ZS signs, with 61.8% reporting they seldom (25.5%) or never (36.3%) used ZS signs. In a recent investigation of the choice of signs by Shanghai deaf signers, teachers in deaf schools and interpreters, Liu, Gu, Cheng and Wei (2013) found that adult deaf people predominantly used local forms of signs and deaf school pupils used signs from *Zhongguo Shouyu* alongside local signs, but teachers in deaf schools predominantly used ZS signs. The same study also reported that interpreters on television were well understood by less than 10% of the deaf respondents.

4.2 Sign language interpreting on TV news

In a parallel way to *Zhongguo Shouyu*, which serves as a part of language planning for sign language in China, the signing used by interpreters on television reflects the government's policies on CSL. Sign language first appeared on television in 1989, when a programme named *Shouyu Yizhou Xinwen Zongshu* (in English "A Sign Language Review on The News Within One Week") was broadcast on Beijing Television Station and was originally hosted by presenters using sign language. The presenters in the programme were mostly teachers working in local deaf schools (Ni, 2015). In later news programmes, sign language interpreting was presented in a small box located in the lower part of the television screen. This mode of television interpreting was later adopted by both local and national television stations across China and is in current use.

Although the profession of sign language interpreter was officially recognised as an occupation in 2007 by the Ministry of Human Resources and Social Security of the People's Republic of China (2008), low wages, inadequate government support, and a lack of relevant training and assessment have prevented the further development of sign language interpreting (Meng & Han, 2015). Inconsistency in the signing of interpreters has been reported in a number of studies, generally including a mixture of *Zhongguo Shouyu* signs, local signs and even the signs invented by interpreters themselves (Liu, Gu, Cheng, & Wei, 2013; Ni, 2015; Ran, 1998). A number of surveys have demonstrated that sign language interpreting on TV news does not enjoy wide popularity in the Chinese deaf community (see Ran, 1998; Liu, Gu, Cheng, & Wei, 2013; Xiao & Li, 2013). In Ran's study (1998), 79% of 120 deaf Beijing signers reported they were able to understand less than 60% of the interpreting on TV news. The reasons given for the difficulty in understanding included the high speed of signing by interpreters, signers' unfamiliarity with the signs produced by the interpreters, and signers' lack of interest in TV news. The low comprehension rate has led to low TV ratings. Only 6% of signers reported that they watched the TV news with sign language interpreting every day. Similarly, in Xiao and Li's (2013) survey of 336 Chinese deaf signers' perspectives on sign language interpreting in TV news programmes, 88.7% of deaf respondents reported that they either never watched sign language interpreted programmes or only watched them occasionally. The language attitudes study undertaken for this thesis and reported in Part 4 will explore in detail Beijing and Shanghai signers' ratings of their understanding of sign language interpreting in national and local television news programmes.

Part 2. Sociolinguistic variation in lexical signs in Beijing and Shanghai varieties of CSL

Part 1 provided an introduction to Chinese Sign Language, deaf education, deaf community and language planning in China, and defined CSL (Section 1.2), Signed Chinese (Section 1.3) and *Zhongguo Shouyu* (Section 4.1). As described in Chapter 2 and Chapter 4, deaf education in the north and south of China (see Section 2.1 for the introduction of early deaf schools and Section 2.2 for the teaching methods), and the official policy of sign language standardisation (see Section 2.3 for the manual systems and Section 4.1 for *Zhongguo Shouyu*) have been anecdotally reported to have influenced the sociolinguistic variation in CSL.

The study in Part 2 thus aims to investigate lexical variation in Beijing and Shanghai signing varieties in relation to social and linguistic factors, including region, age, gender, family language background and semantic category. This study is organised into five chapters. Chapter 5 provides an overview of the lexical studies on sign languages, followed by an introduction in Chapter 6 to the lexical elicitation task used to collect lexical data from Beijing and Shanghai signers. Chapter 7 describes the five pairs of variants examined in this study (i.e., ZS vs. non - ZS variants; Pinyin vs. non - Pinyin variants; character vs. non - character variants; loan translation vs. non - loan translation variants; traditional regional vs. non - traditional regional variants) and how they were coded in ELAN for analysis. Chapter 8 presents the multivariate analyses of the collected lexical variants using Rbrul, and Chapter 9 discusses the results obtained from the analyses.

Chapter 5. Review of lexical studies on sign languages

Weinreich, Labov and Herzog (1968) characterize language as having ‘structured heterogeneity’, with variation in language not being random but with patterns related to different sociolinguistic factors. Similar to the studies of sociolinguistic variation in spoken languages (see Labov, 1963; 1966), social factors such as region, age, gender, social class and ethnic background have been found in many studies to be capable of predicting linguistic variation in sign language (e.g., Bickford, 1991; Woll, Allsop, & Sutton-Spence, 1991; Lucas, Bayley, & Valli, 2001).

Lexical variation was the first type of sign language variation to be investigated, ahead of phonological or syntactic variation (Lucas, Bayley, & Valli, 2001). Since sociolinguistic studies of Chinese Sign Language have just started recently (e.g., see Jiang, 2012; Lu, 2012), the current study, as one of the earliest works in this research field, attends to the sociolinguistic variation of Beijing and Shanghai varieties of CSL on the lexical level.

This chapter reviews some of the representative studies on sociolinguistics of sign languages. The research on lexical comparison which provides background for the sign elicitation approach in current study is addressed in Section 5.1, followed by a review of the studies on lexical variation in sign languages in Section 5.2 and on Chinese Sign Language in Section 5.3. Research questions for the current study are then presented in Section 5.4.

5.1 Lexical comparison of sign languages and varieties

Much of the early sociolinguistic research on sign languages focused on comparative studies of relationships across sign languages or sign language varieties. In these studies, wordlists were often used to compare languages or varieties. The most commonly used wordlist for such lexical comparison is the Swadesh wordlist (Swadesh, 1950; 1955). This 200-word list was designed by the American linguist Morris Swadesh to compare cognates in basic vocabulary

across spoken languages (Crowley & Bower, 2010). However, as Woll (1984) pointed out, the original Swadesh list was inadequate for the study of sign languages. Woodward (2003) also believed that using lists designed for spoken language in sign language research was not desirable because it would be likely to result in an overestimation of the relationships between sign languages, because signs such as pronouns and body parts were likely to consist of points (e.g., 'you', 'this', 'eye' and 'belly'). These were therefore omitted from Woodward's modified 100-word list for sign language research (Woodward, 1978; 1991; 1993; 1996).

Woodward (1991) examined the relationship among four sign languages used in Costa Rica with the modified Swadesh list. He compared the cognates between ASL and LESCO, a sign language similar to ASL and favoured by younger signers in the San José area of Costa Rica. Signs were identified as being cognates if they differed in only one or two linguistic parameters (i.e., handshape, orientation, location of movement, and point of contact). He reported that 63.3% of signs on the wordlist were cognates. Based on Gudschinsky's (1956) classification, in which two languages are considered to exist if less than 81% of lexical items are possible cognates, ASL and LESCO were classified as two distinct languages, although closely related historically as both of them descend from Old French Sign Language. A variant of LESCO (termed as 'original LESCO' by the researcher) which tended to be used by older Costa Rican signers shared 41.8% of cognates with LESCO and 26.5% with ASL. Two indigenous sign languages, i.e., Brunca Sign Language and Bribri Sign Language, shared many fewer cognates with both ASL and with the two types of LESCO. He thus concluded that Costa Rica has at least four separate sign languages.

Woodward (1993) also studied similarities between Shanghai signing and Hong Kong Sign Language (HKSL) by investigating the intuitive judgements of four Hong Kong signers about Shanghai lexical signs using the modified Swadesh list. The study was conducted with the assumption that basic vocabulary items in Hong Kong signing would be highly similar to basic

vocabulary items in Shanghai, based on a general belief that a small group of deaf people from Shanghai, Nanjing, and Hangzhou came to Hong Kong in 1949 and established private teaching to local deaf people. The four Hong Kong signers were presented with Chinese translations of the modified vocabulary list as well as a videotape of two Shanghai signers signing the items on the list. They were then asked to circle the items that they thought were similar to Hong Kong signs. The items circled were highly consistent among all four signers, with the similarity ratings ranging from 66% to 68%, and confirming a close relationship between Shanghai signing and HKSL.

Apart from Woodward's modified Swadesh list, other methods such as random selection of words from dictionaries and sign language reference books, sometimes together with the modified Swadesh list, have also been used in a number of studies (see McKee & Kennedy, 2000; Currie, Walters, & Meier, 2002; Johnston, 2003; Xu, 2006; Su & Tai, 2009)

McKee and Kennedy (2000) compared the lexicons of Australian Sign Language (Auslan), New Zealand Sign Language (NZSL), British Sign Language (BSL) and American Sign Language (ASL) using two rounds of comparisons. They first used the modified Swadesh list to compare lexical signs in the four sign languages, and then used a new list of 199 signs randomly selected from a dictionary, in order to reduce possible overestimations of relationships among the languages. Relationships among the compared signs were placed into one of the following four categories: identical, related, different and not found. Pairs of signs which shared three out of four phonological parameters (handshape, movement, place of articulation and orientation) were considered to be 'similarly-articulated' signs. The similarity rates for NZSL and Auslan dropped from 87.8% (using the modified Swadesh list) to 65.5% (using the new list), and from 84.9% to 62.5% for NZSL and BSL. On the basis of these figures, the authors concluded that NZSL, Auslan and BSL belong to the same language family, but are not dialects of one language.

Xu (2006) also used Woodward's modified Swadesh list, but using a different model, to compare lexical signs in Taiwan Sign Language (TSL) and CSL. The model included iconic motivations of signs in the comparison. For example, a pair of non-identical signs having the same iconic motivation would be categorised as 'similar' signs (in contrast to the categories 'identical' and 'different') if they shared one or more parameters. Among the 89 signs compared, 37.1% of TSL and CSL signs were found to be similar, with this ratio falling within the lexicostatistical range 36%-81% in which two compared languages are considered to belong to one family (Gudschinsky, 1956). However, Xu did not accept this conclusion, considering that the similarity between the two languages might have been the result of borrowing rather than sharing the same genetic origin. Su and Tai (2009) pointed out that Xu's inclusion of iconicity could, like the modified Swadesh list, also overestimated the similarity of two languages, even where languages were not known to be historically related.

Another study looking at the relationship between TSL and CSL was conducted by Su and Tai (2009). The lexical signs in TSL, CSL, JSL and ASL, which had been taken from the ASL Browser, TSL Browser, the Japanese-JSD Dictionary, and *Zhongguo Shouyu* (termed in the study as a Chinese-CSL Dictionary), were compared. To test whether inclusion of iconicity into lexical comparison could lead to an overestimation of the result, the study made two comparisons, one including the four types of iconic motivation categorised by Sutton-Spence and Woll (1999) and the other excluding iconic motivation. Adopting the criteria used in McKee and Kennedy (2000) and Xu (2006), the study categorised signs as 'identical', 'similar' and 'different'. Based on Gudschinsky's (1956) classification, a shared similarity of core lexicon between 36-81% indicates that two languages belong to the same language family. The first comparison reported 74% similarity between lexical signs of TSL and JSL and 58% between TSL and CSL, classifying TSL, CSL and JSL as belonging to the same language family. The second comparison, excluding iconically motivated signs, indicated that only TSL

and JSL belonged to the same language family while TSL and CSL did not. In the comparison between TSL and ASL (two unrelated languages), the exclusion of iconically motivated signs reduced the similarity rate from 31% to 7%. The study thus suggested that the influence of iconicity should be considered in the comparison of lexical similarity in sign languages, i.e., signs with iconic motivation should be excluded in deciding whether two sign languages are historically related. However, it is worth noting that the lexical signs in the book *Zhongguo Shouyu* were used as CSL signs in Su and Tai's study, although it cannot be assumed that the signs in *Zhongguo Shouyu* are representative of CSL for comparison with other sign languages. The conclusions of this study therefore require further investigation.

A more recent study conducted by Aldersson and McEntee-Atalianis (2008) examined lexical similarity between Icelandic Sign Language (ISL) and Danish Sign Language (DSL). Using a 262 wordlist which was based on previous used lists for lexical studies of sign languages, together with 30 words for country names, the researchers elicited and compared lexical signs from 20 informants (10 Icelandic signers and 10 Danish signers). Similarity was determined based on the parameters of hand configuration, location and movement. Pairs of signs were considered as identical (where all three parameters were identical), similar (where two of the parameters were identical) or different (where fewer than two parameters were similar). The authors reported that 16% of the lexical signs in DSL and ISL were similar, and 47% were identical. The similarity of signs for country names (e.g., AMERICA, AUSTRALIA) in ISL and DSL, compared with an unrelated sign language such as BSL, was much higher than signs for other semantic categories, and supported the claim that country name signs are shifting towards standardised usage among sign languages, particularly among European sign languages.

5.2 Lexical variation in sign languages

Following Lucas, Bayley and Valli (2001), sociolinguistic variation at the lexical level increasingly has been studied using larger numbers of signers to obtain a representative sample of the population varying along such dimensions as region, age, gender, ethnicity, family language background, deaf school attended etc. To date, several sign language corpora and other large datasets have been established by sign language researchers in order to undertake multiple linguistic investigations and study the linguistic and social factors that affect variation within a sign language (e.g., see Johnston, 2003; Lucas et al., 2003; Schembri, 2008; Geraci et al., 2011; McKee & McKee, 2011; Osugi, 2012). The massive amount of data collected in these corpora enables researchers to investigate the patterns of lexical variation within languages.

Lucas, Bayley and Valli (2001) were the first to investigate sociolinguistic variation in sign language based on a large videotaped corpus. Most of the earlier sociolinguistic studies of sign language used only a small number of signers and focused on a range of linguistic features (Bayley, Schembri, & Lucas, 2015). Lucas, Bayley and Valli's data (2001) included free conversations and interviews, collected from 207 ASL native signers with a range of social factors such as age, region, gender, ethnicity and socioeconomic status. They investigated phonological, syntactic and lexical variation in ASL, and found that the variation was constrained by an array of internal linguistic (e.g., grammatical category, preceding and following handshapes) and external demographic factors (e.g., age, social class, and region). The methods of data collection, such as recruiting deaf individuals who were active in the local deaf community to work as fieldworkers assisting the researchers to record deaf people, notably reduced the effect of the Observer's Paradox, a major problem in collecting sociolinguistic data. Their methods have been adopted by many subsequent sociolinguistic studies of sign language (e.g., Geraci et al., 2011; McKee & McKee, 2011; Schembri et al., 2013)

Geraci, et al. (2011) researched lexical signs in Italian Sign language (LIS) using a corpus of data collected from 165 deaf signers from ten cities in Italy. The lexical signs, elicited from 128 participants in eight cities, were divided into three categories: local variants, signs found in a few cities, and national variants around Italy. VARBRUL analyses showed that older signers used more local variants whilst younger signers preferred national variants, and signers in central Italy (i.e., Florence and Rome) tended to use more national variants than signers from the other parts of Italy. Variation was related to an ongoing standardisation process, with the variety used in Rome, the capital city of Italy, the prestige variety favoured by younger signers.

Another study of sociolinguistic variation based on a large dataset is McKee and McKee's (2011) study of lexical signs in New Zealand Sign Language (NZSL). In their study, 80 concepts from different semantic categories (e.g., colors, family members and countries) were used to elicit lexical signs from 138 signers of different ages, genders, regions and ethnicities across New Zealand. The lexical signs were divided into 'more frequent' (signs which were used after Total Communication was introduced to deaf education in NZSL) and 'less frequent' (pre-Total Communication signs) and were analysed using GOLDVARB multivariate analysis software. Age was the most important factor in lexical variation, with older signers disfavoured 'frequent' variants. The study also indicated that lexical levelling was occurring among younger signers, who produced a more uniform and smaller range of lexical variants than older signers. Age variation found in the study was considered to be a result of educational policy, in which ASE (Australian Signed English) was introduced to deaf schools in New Zealand in 1979 as a part of the Total Communication approach.

Stamp et al. (2014) investigated sociolinguistic variation in lexical signs in British Sign Language (BSL), using the data collected for the British Sign Language Corpus Project (Schembri et al., 2014). The Corpus project collected a range of data types including narratives, conversations, interviews and lexical signs, elicited from 249 deaf participants in eight sites

across the UK (London, Bristol, Newcastle, Manchester, Birmingham, Belfast, Cardiff and Glasgow). Stamp et al.'s study focused on the lexical data collected by means of a lexical elicitation task in which 6722 responses were elicited for 102 concepts for colours, countries, UK place names and numbers. The lexical variants were divided into 'traditional' and 'non-traditional' variants for logistic regression analysis to see whether levelling (i.e., the reduction in use of regionally marked variants) was occurring in BSL. The term 'traditional variant' refers to a sign associated with a particular region in the UK, while a 'non-traditional variant' is not related to a particular region. Age was found to be the most important factor in predicting lexical variation in BSL, with school location and language background the other two significant factors predicting variation in number and colour signs. Younger signers disfavoured the use of traditional signs and older signers strongly favoured traditional signs. The signs for countries in BSL were found to be changing at a faster rate than number and colour signs, and the researchers attributed this to political correctness, changing attitudes towards lexical borrowing and increased contact between deaf communities around the world. The study also showed that younger signers used a reduced number of traditional signs, suggesting that levelling was occurring.

Compared with the study of sign languages in many western nations, research on Chinese Sign Language (CSL) started relatively late and fewer studies have been undertaken as yet on sociolinguistic variation in CSL. The following section reviews work on sociolinguistic variation in CSL.

5.3 Research on lexical variation in CSL

In 1977, Shunchiu Yau, one of the first Chinese scholars to study Chinese Sign Language, wrote *Chinese Signs: Lexicon of the Standard Sign Language for the Deaf in China* in 1973. This book was for the most part a translation into English of the first edition of *Longyaren*

Tongyong Shouyu Caotu, the government-promoted book published in 1959. As well as presenting photographs of the signs produced by Yau himself together with English translations, lexical signs were analysed in terms of five parameters (handshape, movement, location, orientation, and intensity). Forty-one handshapes, twelve places of articulation and ten movements were described. Yau also noted that lexical signs used by Chinese deaf people varied across regions: Peking (Beijing), Shanghai, Nanking (Nanjing), Canton (Guangzhou), Hong Kong and Taiwan. Certain semantic categories of signs such as plants, animals, fruits and insects, were far from being uniform even among deaf signers in the same region (Yau, 1977).

Yau's observations about lexical differences in CSL have been studied only recently by CSL researchers. Jiang (2012) looked at lexical signs produced by two Shanghai deaf signers, one aged 35 years and the other aged 50. In his study, 92 concepts selected from the Swadesh list and another 113 concepts selected from the book *Zhongguo Shouyu* were used to elicit responses from the two participants. Jiang (2012) found no significant variation in signs for pronouns, body parts, weather, or natural scenery. Among the 113 words selected from *Zhongguo Shouyu*, 14 were observed to be signed differently, of which 3 were signs for family members, 7 for countries and place names, 3 for domestic devices, and 1 for occupation. The author attributed the variation to contact with other regional varieties of CSL and other sign languages. For example, the sign SINGAPORE used by the younger Shanghai signer was similar to the corresponding sign in Singapore Sign Language (SgSL). The author also proposed that some signs produced by the younger signer were influenced by technological progress and social change. For example, TELEVISION was produced by the older Shanghai signer with a switching movement depicting the switch-on of an old-fashioned television, while the younger signer produced a movement representing pressing on a remote control. Another example was UNITED STATES, where the younger Shanghai signer used the ASL sign.

Although the study was one of the first on lexical variation in Shanghai signing, the findings provide limited empirical support for age-related variation in CSL, given that there were only two participants.

Lu's (2012) PhD dissertation, *The Study of Variation in Shanghai Sign Language*, investigated phonological variation in lexical signs used in regions across the Yangtze River delta (i.e., the metropolitan cities of Shanghai, Suzhou, Hangzhou and the surrounding rural regions of Fengxian, Minhang, and Chongming Island). The author used sixty-four lexical items in a survey wordlist derived from Woodward's Swadesh list together with proper names and concepts relating to city life. Thirty-nine signers of varying ages, regions and gender were included. Lu reported that metropolitan varieties included less lowering, less assimilation of handshape by the non-dominant hand in symmetrical two-handed signs, and more frequent occurrence of two-handed signs (suggested by the author as reflecting greater iconicity and higher redundancy) than the rural varieties. These findings were interpreted to be the result of greater experience of contact with other sign languages.

Shao's (2014) study compared 327 lexical signs in Chinese Sign Language with Shanghai signs (the *Zhongguo Shouyu* book was used as the supporting reference to check the 'accuracy' of CSL signs, indicating that the author probably equated CSL signs with ZS signs), using a random selection of vocabulary from a CSL-Shanghai sign reference book. The selected signs were divided into 'single morpheme signs' and 'compound signs' (i.e., signs where the number of morphemes ranged from two to four). Using four phonemic parameters (handshape, location, movement and palm orientation), the single morpheme signs were grouped into one of three categories: identical (all parameters are the same), similar (one of the four parameters is different) and different (more than one parameter is different). The compound signs were grouped into one of the following categories: identical (two or more morphemes are identical), partly similar (one of the morphemes is similar and the other is identical), partly different (one

of the morphemes is similar/identical and the other is different) and different (all the morphemes are different). Sixty-eight percent of the single morpheme signs were cognates and eighteen percent of the compound signs were cognates. Shao concluded that CSL (ZS signs) and the Shanghai variety belonged to the same sign language family, and that the CSL (ZS) lexicon had greater influence from spoken Chinese. Because of the conflation of CSL and ZS signs, this study is most likely a lexical comparison of officially promoted signs and Shanghai signs.

Most of the studies reviewed above focused on the Shanghai variety, and suggested that increased language contact with other signing varieties and other sign languages was a major contributor to linguistic variation in CSL.

Although attempts to build corpora of CSL have been mentioned since 2010s, only two corpora of CSL have been created so far. One project was conducted by Gong and his students in Fudan University (The National Social Science Fund of China, 2015), and the other by Zhao, Ren and Ding (2017), affiliated to Nanjing Normal University of Special Education.

Gong's project, funded by the National Social Science Fund of China since 2013, aims to look at the signing used by Chinese deaf people of the Han ethnic group as well as other minority ethnic groups. The project has collected around 20 hours of conversational data and lexical signs, using a wordlist of more than 2000 vocabulary items from a number of regions in China (e.g., Shanghai, Guangzhou, Chongqing and Tibet). Several studies using the corpus have been published. Ni (2013) studied verbs in the Shanghai variety, providing examples of plain verbs, agreement verbs, spatial verbs and bidirectional verbs, and then compared verbs used in Shanghai signing with those in Beijing signing, reporting that 70% of the verbs were similar. Ni also distinguished the verbs used by Shanghai deaf signers from those in ZS as well as from those used by students in deaf schools; Liu (2013) compared the pronominal system in Shanghai signing with that in spoken Chinese, and concluded that the pronominal and indexing

features in the two systems differed in meaning and function; Jiang (2014) investigated taboo expressions in the Shanghai variety and found that non-manual features played an important role in discriminating grammatical category and the meanings of taboo signs.

Zhao, Ren and Ding (2017) focuses on the collection of lexical signs from nine regions in China (Beijing, Shanghai, Nanjing, Wuhan, Yantai, Ha'erbin, Chengdu, Guangzhou and Lasa). Over 600,000 lexical signs were collected from two deaf signers in each of the nine regions, using a 7000-word list selected from *Zhongguo Shouyu* and *Xiandai Hanyu Changyong Cibiao* (in English “*Lexicon of Common Words in Contemporary Chinese*”). It is planned that the data will be accessible online in the future (Zhao, personal communication).

5.4 Research questions

Beijing and Shanghai signing varieties are often seen as representatives of the northern and southern branches of CSL respectively, influenced by different teaching approaches in deaf schools across the two regions, with consequent influence on the lexical level (Yang & Fischer, 2002). Although some examples of lexical differences between the two regions have been widely observed and noted by CSL researchers (e.g., Fischer & Gong, 2010; Shen, 2008; Yau, 1977), no systematic investigation into lexical variation in the two varieties from a sociolinguistic perspective has previously been undertaken. The overarching research question addressed in the thesis is: How do sociolinguistic factors affect the production and comprehension of - and attitudes towards - the lexical signs used by Beijing and Shanghai deaf signers, and how do these three aspects relate to each other? The present study, which is the first of three studies in this thesis, will examine the lexical variation in Beijing and Shanghai signing varieties. The research questions addressed in this study are as followed:

1. How does the production of lexical signs vary in relation to the participants' demographic information and the semantic categories of the signs?

2. Do Shanghai and Beijing signers differ in their production of traditional regional signs and ZS signs as well as signs borrowed from spoken Chinese?
3. Does the lexical variation suggest change in CSL?

Chapter 6. Data collection

This chapter describes the process of data collection, which consists of a lexical elicitation task and a questionnaire about signers' social backgrounds. For the lexical elicitation task, stimuli (i.e. concepts and pictures) were designed to elicit lexical signs, with deaf fieldworkers involved to help recruit participants and to conduct filming. The questionnaire asks for details of the participants' age, gender, family language background etc., which are later used in the multivariate analysis to explore the relations between these social factors and participants' lexical signs.

The chapter is divided into seven sections. The documentation required for data collection is described in Section 6.1; Section 6.2 explains how the stimuli used in the lexical elicitation task were selected and arranged for presentation; Section 6.3 and 6.4 introduce the recruitment of fieldworkers and participants in Beijing and Shanghai; Section 6.5 and 6.6 describe the filming equipment and settings as well as the pilot filming; finally, Section 6.7 deals with the data collection process.

6.1 Ethics procedures and other documentation

Following the regulations of University College London, all research proposals involving living human participants undertaken by UCL staff and students must be submitted to the UCL Data Protection Officer for ethics approval, in order to protect both the participants and the researchers, and to make sure that the research results in benefit and minimizes risk of harm. The ethics of the current study have been approved by the UCL Research Ethics Committee (project ID number: EPI201503).

Each participant was provided with an information sheet to be read and undersigned before data collection (see Appendices A (English) and B (Chinese)). This provides information on

the procedure of data collection, the length of time required for filming, compensation for participation and contact details of the researcher.

In addition, an Informed Consent form and Video Consent form were provided for participants to undersign in order to ensure that: 1) each participant joins the study of his or her own will; 2) each participant's right of confidentiality in relation to the data produced by the participants and personal information is respected (see Appendices C and D for the Informed Consent form in English and Chinese, and Appendices E and F for the Video Consent form in English and Chinese). The forms were adapted from those previously used in the BSL Corpus Project (Schembri, 2008), and then translated into written Chinese.

Each participant also received a debriefing information form following completion of the data collection session which informed them about the purpose of the study (see Appendices O (English) and P (Chinese)). Debriefing took place at the end of the session in order not to reveal the purpose of the study, which might impact participants' production of signs.

6.2 Stimuli

Different types of stimuli have been used in lexical studies to elicit signs; the most frequent types of stimuli include written words to be translated (see Aldersson & McEntee-Atalianis, 2008; Woodward, 1993) and/or graphic images (drawings or photographs) (see Vanhecke & De Weerd, 2004; Osugi, Supalla, & Webb, 1999). The use of written stimuli can help clarify the meaning of a concept to the participants, especially to those who are literate. This method, however, has been questioned because the production of signs may be influenced by the choice of written translation. Graphic images, on the other hand, provide illustrations of the targeted concepts and help to elicit naturalistic data to a greater extent than written forms. As mentioned by Nyst (2015), images and props are particularly beneficial to research on sign languages that have evolved outside the context of deaf education. However, there are still some problems

with the use of images on their own. For example, it is often difficult to show abstract concepts or those that are not easily imageable; the selection of an image may not clearly represent the concept, so participants may refer to different feature(s) of the image rather than the feature(s) denoting the targeted concept.

In light of the issues discussed above, the current study is adapted from the approach used in the BSL Corpus Project (Schembri et al., 2013): using PowerPoint slides to display images of concepts accompanied by written translations in Chinese (see Section 6.4). The following section presents the target concepts chosen for the lexical elicitation task, and explains how images and corresponding Chinese characters were arranged to represent the concepts.

6.2.1 Concepts

139 concepts were originally used in the lexical elicitation task to obtain responses from the deaf participants from Beijing and Shanghai. The selected concepts were chosen because they were expected to exhibit variation in relation to signers' demographic information, on the basis of the following sources: 1) literature on CSL and Shanghai signing in which sociolinguistic variation in certain signs and variation among semantic categories was mentioned (Yau 1973; Fischer & Gong, 2010; Lu, 2012; Jiang, 2012); and 2) personal communication with local deaf signers in Beijing and Shanghai (including the fieldworkers) and with CSL researchers.

For the current study, 76 concepts were analysed, divided into eight categories (see Table 3). The original number of concepts was reduced for various reasons. First, a part of the concepts was excluded from the current study because they did not fall into any of the eight semantic categories. Second, among the concepts selected for the semantic field 'time', only the concept MONDAY was finally included in the analysis, since it was observed during data coding that the lexical signs for days of the week followed a fixed pattern: a bimorphemic structure with one morpheme denoting WEEK and the other being one of the numeral signs

from 1 to 7. In almost all cases, signs for MONDAY differed from signs for TUESDAY only in the morpheme for numbers. Had all the signs for days of the week been included in the analyses, the true extent of variation in the ‘time’ semantic field would have been compromised. Given that numeral signs are included in a separate semantic field (i.e., numbers), the concepts for days of the week were therefore reduced to only one – MONDAY – in the semantic category of time, and variation in the morpheme for WEEK was investigated. As for the category of numbers, concepts from ONE to THIRTEEN were included, and variation was particularly noticeable in the numeral signs TEN, ELEVEN, TWELVE and THIRTEEN.

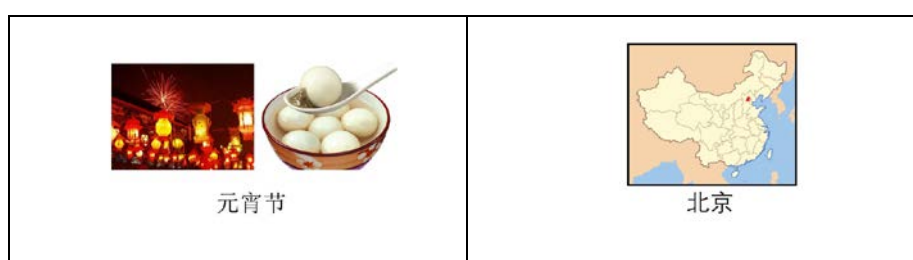
Semantic category	Number of concepts	Concepts
Chinese place names	16	Hangzhou, Hong Kong, Inner Mongolia, Xinjiang, Tibet, Shanghai, Fujian, Beijing, Chongqing, Shandong, Wuhan, Taiwan, Tianjin, Shenzhen, Macau, Nanjing
Colours	8	blue, white, brown, purple, yellow, green, orange, grey
Family terms	8	mother, father, grandmother, grandfather, elder sister, elder brother, younger sister, younger brother
Country names	7	UK, China, France, Germany, India, Italy, USA
Time	8	morning, noon, afternoon, week, year, month, day, Monday
Foods	11	rice, noodles, milk, potato, dumpling, mantou, pear, peach, orange, apple, grapes
Festivals	5	Chinese New Year, Tomb-Sweeping festival, Dragon boat festival, Lantern festival, Moon festival
Numbers	13	1 - 13
Total	76	

Table 3: The semantic categories and the number of concepts in each category

6.2.2 Pictures

Most of the selected concepts were presented using images together with written Chinese translations on PowerPoint slides, except for numeral concepts and the concepts for days of the week, which were shown without images. Different types of images were used for the concepts of different semantic categories. Maps were used for Chinese place names (see Figure 6 for the image selected for BEIJING). For country names, images of corresponding flags were presented (see Figure 6 for the image selected for GERMANY). All the colour concepts were presented with images of pure colour blocks (see the example presented in Figure 6). In most cases, the concepts were illustrated with one image except for abstract terms, the meanings of which may easily cause confusion to the signers if only one image is used. In this case, two or more pictures were selected for these concepts to specify the meanings to the participants. For example, the concept LANTERN FESTIVAL was presented with images of two different objects (i.e. lanterns and the traditional food for this festival), to reduce the chance that the signers may be influenced by any one of the specific objects and subsequently produced unwanted signs.

All the images used in the lexical elicitation task were obtained from the Internet with copyrights cleared. Parts of the images were taken from a graphic website named ‘clipart.com’ subscribed by Deafness, Cognition and Language Research Centre, University College London. The other images were downloaded from Google Images with the usage rights set as ‘free to use, share or modify’.



LANTERN FESTIVAL	BEIJING
 紫色	 德国
PURPLE	GERMANY
2 10 5 7 9 3 12 4 6 13 8 1 11 个 十 百 千 万	
NUMBERS	

Figure 6: Examples of stimulus slides used in the Lexical Elicitation Task

6.3 Fieldworkers

It has been noted in many studies that the presence of hearing researchers during data collection may prompt deaf participants to produce signs they think are socially desirable rather than those which they use on a daily basis within the deaf community. To avoid the Observer's Paradox, it is important to include fieldworkers from local deaf communities to assist researchers to carry out tasks such as recruiting deaf participants and collecting data from the participants (cf. Lucas et al., 2001 for ASL; Schembri et al., 2013 for BSL). Apart from being deaf and fluent signers, fieldworkers should be active members of their communities so that they have good connections with other deaf people in the community (Schembri et al., 2013).

Three fieldworkers assisted in the current study, and their responsibilities comprised recruiting participants from Beijing and Shanghai and filming them. Shortly after the lexical elicitation task was designed, an experienced deaf Shanghai signer, who had been helping sign language researchers and students to film deaf people in Shanghai, was introduced to the

researcher by her former colleagues. The Shanghai fieldworker then introduced to the researcher two local fieldworkers in Beijing and a former official working in the Ministry of Education in China, who approved the use of a filming site in a university in Beijing. The filming took place over two weeks in Shanghai and one week in Beijing. All the fieldworkers assisting this study were deaf native CSL signers and were familiar with their local deaf communities. They had also previously helped students and researchers to collect data from deaf people, so they were experienced in data collection procedures.

The researcher and fieldworkers communicated prior to the data collection sessions via text message and email. Instructions on ethics, the responsibilities of fieldworkers during data collection, participant recruitment, filming and questionnaire completion were sent in advance. The fieldworkers also were able to request clarification and ask questions relating to the data collection. The fieldworkers in Beijing and Shanghai were briefed about the social factors to be examined in the current study and were asked to try to recruit equal numbers of participants in each subgroup except for family language background. Other recruitment criteria for participants included: they have been living in Beijing or Shanghai for at least 10 years; they are lifelong users of CSL since childhood (with acquisition of CSL before the age of seven); no more than 2 deaf participants from the same family (to avoid the possibility of similar signs used by signers from the same family).

A total of 60 participants were recruited by the fieldworkers from their friends, families, working colleagues, and local community gatherings to take part in the lexical elicitation task, with 30 participants from Beijing and 30 from Shanghai. For the data collection in Beijing, two fieldworkers took on different tasks, with one fieldworker responsible for filming participants and the other fieldworker responsible for providing participants with the documentation, explaining the documents and questionnaires to participants who had difficulties with reading or who required clarification, and managing the documents after the filming finished. The

fieldworker in Shanghai, who worked alone, undertook most tasks including recruitment, explaining documents and filming participants. All three fieldworkers were paid at the end of the process for their assistance.

6.4 Participants

In many studies of sociolinguistic variation in sign languages (see McKee & McKee, 2011; Schembri et al., 2013), where the number of social variables for investigation is relatively large (usually including region, age, gender, ethnicity and family background), a quota sample approach (Schembri et al., 2013) is used to make sure that the sample size is large enough to represent different social backgrounds. For example, 139 participants from five sites in New Zealand were recruited for the study of NZSL by McKee and McKee (2011), and 249 participants from eight sites in the UK were included for the BSL variation study (Schembri et al., 2013). Sampling sign language data from a variety of signers with different backgrounds helps ensure that the dataset is as representative as possible (Fenlon et al., 2014). The current research aims to investigate four social factors: region, age, gender and family background. To ensure that the dataset is representative for analysis and the number of participants is balanced across the sub-groups of each social variable, 60 participants were recruited. Details of participant demographics are presented in Section 6.4.2. Although ethnic group is another commonly investigated factor in sign language research, it was not considered in this study. Unlike regions such as Tibet and Guangxi where a majority of residents belong to minority ethnic groups, most residents of Beijing and Shanghai belong to the Han ethnic group. The factor ‘age’ in this study is divided into three sub-groups: younger, middle-aged and older, with around 10 participants in each sub-group. This 3-way division was based on historical events which were likely to have influenced differences in the use of lexical signs by signers falling into each of the three age sub-groups. Further details are provided in Section 6.4.1. ‘Gender’

is divided into two groups (i.e. male and female), and family language into two groups: signers from hearing families and signers with deaf siblings or deaf parents. In most Western countries, around 5 to 10 percent of deaf children are born to deaf parents (Mitchell & Karchmer, 2004). Callaway (1999) reported that the number of participants born to deaf parents in China was about 5 percent based on estimates by teachers in deaf schools. Callaway also noted that this proportion might be smaller in China as a higher proportion of deafness was the result of disease, ear infection and the effects of ototoxic drugs (Callaway, 1999:38). Given that the number of deaf participants with deaf parents was rather small in this study (2 signers in Shanghai and 4 signers in Beijing), the category of ‘familial deaf’ (signers with deaf siblings or deaf parents) was used to include an additional 5 Shanghai participants and 9 Beijing participants who have deaf siblings and who therefore were likely to have more exposure to CSL in childhood than deaf children from hearing families.

6.4.1 Division of age groups

As mentioned above, there were three age groups in this study, divided as follows: the ‘younger group’ (18 to 35 years old); the ‘middle-aged group’ (36 to 60 years old); the ‘older group’ (participants aged 61 years and over). The choice of these groups was based on historical events which might have impacted the signing of deaf participants of different ages. Although the age of schooling for Chinese deaf children begins at around 7-8 years, many participants aged over 60 (i.e. born before 1955) did not attend or were not able to complete schooling due to the Cultural Revolution from 1966 to 1976, a period when education across China was mostly suspended. Older signers were therefore expected to have been less influenced by the signs introduced in the book *Zhongguo Shouyu* and by *Pinyin* signs. The signing of the middle-aged group (those born between 1955-1980) might reflect mixed influences during a period between the Cultural Revolution and the implementation of the Reform and Opening-up policy. Signers

born between 1980 -1997 (18-35 years old) are likely to have better access to education because of social stability from 1978 onwards due to the Reform and Opening-up policy. The younger signers' signing and language attitudes are thus expected to have been influenced by the official promotion of the *Pinyin* manual alphabet system, the standardised lexicon of *Zhongguo Shouyu* and the increased hiring of hearing teachers in deaf schools in the 1980s.

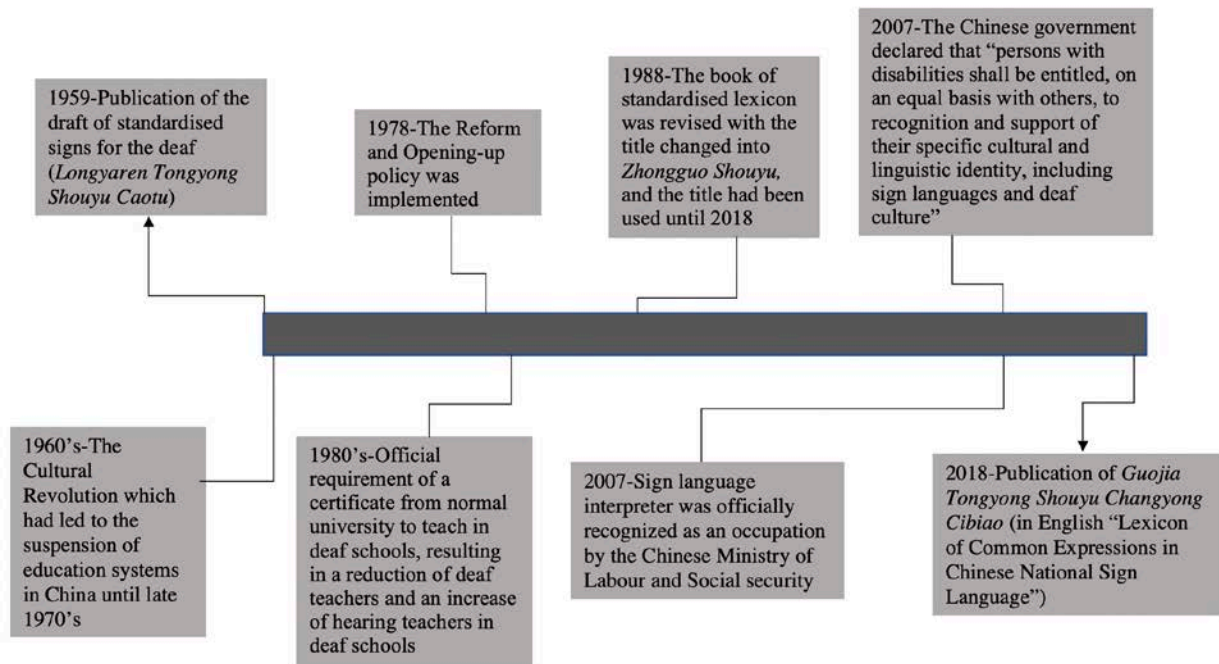


Figure 7: Historical events and official policies relating to the deaf education in China (Callaway, 2000; CRPD, 2006; Gu, 2018; Johnson, 2003; Ministry of Human Resources and Social Security of the People's Republic of China, 2008; Yang, 2015)

6.4.2 Participant demographics

Video data were obtained from 30 participants in Beijing and 31 in Shanghai, but one participant (female, middle-age group) was subsequently excluded from the Shanghai data. On the day of filming, the participant had arrived with another Shanghai participant, and she told the fieldworker that she was also interested in joining in the lexical elicitation task. The fieldworker then filmed both participants, but forgot to ask whether she was born in Shanghai

and if she had lived in Shanghai for over 10 years (all other Shanghai participants had been born in Shanghai). The fieldworker later found that many of her signs originated from Changchun, a city in northern China where she had been born and lived before moving to Shanghai. Although the participant had lived in Shanghai for the previous 10 years, she still uses Changchun signs. After discussion, the fieldworker and the researcher agreed to exclude this participant from the Shanghai dataset, and she was subsequently informed.

Finally, 60 participants were included in the study: 30 Beijing signers and 30 Shanghai signers. Table 4 provides demographic information about the participants. The numbers in the groups of ‘age’ and ‘region’ are well-balanced, but there is some imbalance in the factors ‘gender’, with slightly more female participants recruited than male participants, and in ‘family language background’, where the number of signers born to families with other deaf members is smaller than the number of signers born to hearing families.

Region	Total	Age			Gender		Family language background	
		18-35	36-60	61+	Female	Male	Deaf family	Hearing family
Beijing	30	10	10	10	17	13	13	17
Shanghai	30	11	10	9	17	13	7	23
Total	60	21	20	19	34	26	20	40

Table 4: Participant demographics in the lexical elicitation task

6.5 Recording equipment and filming sites

To carry out the elicitation task, the following equipment was required: a video camera with tripod to record production of signs by the participants; a laptop for the fieldworker to show

the PowerPoint slides to the participants; and a portable hard disk drive to back up the recorded videos from the camera.

In Beijing, filming took place in a classroom at a local university where the fieldworkers worked. The filming in Shanghai, however, was conducted by a freelance fieldworker who was not affiliated to a university. Therefore, filming took place in a number of sites including university classrooms, hotel rooms, and participants' homes. The researcher and the fieldworkers tried to ensure that all the filming sites had good lighting and plain backgrounds. In addition, following the method adopted by Schembri et al. (2013), all the chairs on which the participants sat during filming had no armrests to ensure that signers would produce signs freely without resting their elbows on armrests, which might impede the production of signs. Prior to the day of filming, participants were asked by the fieldworkers to wear plain coloured t-shirts, avoiding clothes with patterns. Plain coloured t-shirts were also prepared by the filming team as backups in case the participants did not come with proper clothing on the day of filming.

6.6 Pilot session

To check if any potential problems might exist relating to the use of stimuli before actual data collection, a pilot filming session was carried out with a deaf Chinese college student who was then visiting London. The pilot session took place in a filming room at DCAL where, following the arranged procedure, the student completed a lexical elicitation task and then a questionnaire with background information. Minor changes were made relating to the adjustment of camera and laptop positions following the pilot to ensure the participants would have a clear view of the stimuli. There were no problems with the presentation of the concepts on PowerPoint slides during the pilot session. However, at the stage of data annotation, certain concepts were found to be redundant (e.g., concepts for days of the week, as discussed in Section 6.2.1). Such problems might have been avoided had there been more piloting.

6.7 Data collection procedure

Thirty sessions of data collection were conducted in each region, corresponding to the number of participants. Before starting the lexical elicitation task, each participant was asked to read the information sheet and sign the consent forms to indicate a basic knowledge of what the research was about and agreement to participate in the study. The fieldworker helped explain the information sheet and consent forms, by signing to the participants who were not literate or who found the fonts too small to read (in particular the older signers).

Each session consisted of two parts, with the lexical elicitation task taking place before the completion of the questionnaire. The arrangement of tasks was designed to minimise the possibility that the participants' production of signs might be influenced by the questionnaire. For example, answering questions about Signed Chinese or *Zhongguo Shouyu* before lexical elicitation task might influence participants to use these signs in the task.

The fieldworkers were present throughout the data collection session. During the lexical elicitation task, the fieldworkers set up the camera in front of the participants and controlled the presentation of the stimuli on the laptop screen by advancing to the next slide following the completion of each response. At the end of the task, the fieldworkers double-checked that the signing had been recorded and then guided the participant to another room to complete the background questionnaire (see Appendix G in English and H in Chinese).

At the end of each session, participants were given a copy of the debriefing sheet with a brief explanation about the purpose of the study. A small payment or gift was then given to the participant in thanks.

6.7.1 Lexical Elicitation Task

During the lexical elicitation task, participants were asked to respond to each stimulus presented on the laptop screen by producing as many variants as they liked, but that the first

sign variant to be produced should be the one that they would most commonly use on a daily basis. During each filming session, only the fieldworker(s) and the participant were present to reduce possible influence from other deaf signers and from hearing people including the researcher herself.

6.7.2 Questionnaire on background information

The questions used in the background questionnaire generally followed those used in the British Sign Language Corpus Project (Schembri et al., 2013). Appropriate modifications were made in relation to education and schooling, and which signed and spoken languages were used by the participants. The questionnaire has 37 questions, including basic personal information: name, gender, age, hearing background of the participants' family, school location and educational background. Participants were also asked whether they had training and/or experience of teaching sign language. Other questions addressed how the participants communicate with family members and friends, about their preferences for signing in different situations, about their confidence in their own signing, and about their knowledge of other sign languages.

This chapter provides the methodology of this study, including details of the participants' demographic background; the fieldworkers' responsibility; the lexical elicitation task and the background questionnaire. The next chapter describes how these collected data were coded for statistical analyses.

Chapter 7. Data coding

After data collection, two types of data, digital data (videos of sign productions) and paper data (signed consent forms and questionnaires about participants' social background information), were obtained from the participants. The videos were downloaded to a computer and backed up on a server, both in encrypted form. Questionnaire information was transferred to Excel files and the name of each individual participant was replaced with a unique code to ensure the confidentiality and security of personal data. A series of combined numbers and letters were used as codes, and only these codes appear in the annotation and analysis. The paper documents were temporarily stored in a locked cupboard and subsequently transferred to UCL under the university's Data Archiving and Management Policy.

The participant videos were edited into clips of individual lexical items and annotated using ELAN, software commonly used for linguistic annotation of video and audio resources (Sloetjes & Wittenburg, 2008). The lexical items were annotated using 10 independent tiers:

1. 'annotation ID gloss' (for coding lexical variants)
2. 'ID gloss' (for coding phonological variants, see Section 7.1 for the definitions of lexical and phonological variants)
3. 'Chinese meaning'
4. 'English meaning'
5. 'ZS signs' (see Section 4.1)
6. 'loan translations' (see Section 7.2.1)
7. 'morphemic analysis'
8. 'character signs' (see Section 7.2 for the definitions of loan translations, morphemic analysis and character signs)
9. 'Pinyin signs' (see Section 2.3)

10. 'comments'

Each lexical item was given a unique label on the 'annotation ID gloss' tier. For example, one variant of the concept MORNING is glossed as MORNING01 in the 'annotation ID gloss' to distinguish from other lexical variants of MORNING. The tiers 'annotation ID gloss' and 'ID gloss' are used to distinguish lexical and phonological variants, with the 'ID gloss' tier used for the annotation of phonologically different versions of a single variant. For example, phonological variants of MORNING01, such as MORNING01A and MORNING01B are coded on this tier. The tier 'Chinese meaning' provides Chinese translations of the sign variants; these are the same as the words presented on the PowerPoint slides as the stimuli in the lexical elicitation task. The tier 'English meaning' provides English translations. The 'comment' tier is used to note any irregularity such as missing or problematic signs during annotation. The tiers 'ZS signs', 'loan translations', 'morphemic analysis', 'character signs' and 'Pinyin signs' are used to annotate various types of loan signs, as noted below in Section 7.2 in the following section.

The image shows a video player interface. The main video area displays a man in a black shirt performing a sign language gesture with his hands near his face. To the right of the video is a list of annotation tiers. The 'ID gloss' tier is expanded, showing a list of items with a red play button icon next to '14 INNERMONGOLIA02a'. Below the video player is a timeline and a list of annotation tiers for the video segment. The tiers are:

Tier	Annotation
morphemic analysis	INSIDE01*MONGOLIA02
annotation ID gloss	INNERMONGOLIA02
ID gloss	INNERMONGOLIA02a
meaning/English	inner mongolia
meaning/Chinese	内蒙古
comment	CP
compound	

Figure 8: An example of the glossing of the compound sign INNER MONGOLIA02A

7.1 Lexical and phonological variants

This study follows the principle of lemmatisation applied in the British Sign Language Corpus Project (Cormier et al., 2012; Fenlon et al., 2015). Lemmatisation in sign language is a process which groups phonological and lexical variant of the same concept into a single lemma so that all related variants can be analysed as a single sign (Cormier et al., 2012). If two tokens differ in one phonological parameter (handshape, location, movement, orientation) and have the same or closely related meaning, they are considered as phonological variants of a single lexical item (lemma); if two tokens differ in more than one phonological parameter, they are considered to be two separate lexical variants of a lemma. Lexical variants are coded with numbers following the gloss, and phonological variants are coded with letters following the numbers. For example, in Figure 9, the variants BLUE01A and BLUE02B are two different lemmas for the concept BLUE, bearing the same meaning but having different forms. BLUE01A comprises an L handshape with the elbow performing a downward movement located in front of the signer's chest, while BLUE02B is a bent V handshape with internal movement at the metacarpal joint performed in front of the signer's head. Since the two variants differ in handshape, location, movement and orientation, they are coded as separate lexical variants. The variants BLUE01A and BLUE01B are treated as phonological variants for the lemma BLUE01 since all parameters of the two signs are identical except for handshape.



Figure 9: Examples of phonological and lexical variants for the concept BLUE

7.1.1 Comparison of variation

Although phonological variants are defined as variants differing in only one parameter in sign language, phonological variation can sometimes be very subtle: the lowering of a sign location may vary from near the forehead in its citation form to a location near the eyes, on the cheek, at the jaw or at even lower locations in the space near the signer's body (Schembri et al. 2009). In the data collected in the present study, lowering of signs by some participants was also observed. Studies of the lowering of signs as phonological variation in ASL, Auslan and NZSL suggest that location variation (Lucas et al., 2002; Schembri et al., 2009) and signing speed (Mauk & Tyrone, 2012) may be predicted by social and linguistic factors. The signs which were distinguished by these subtle differences were thus coded in this thesis as phonological variants, although phonological variation is not a focus of the current study. For example, one sign for GRANDMOTHER was produced on the back of the signer's head to indicate the hairstyle of a traditional old lady, i.e., with a bun tied at the back of the head; other signers lowered the location of the sign to the back of the neck. These two variants were coded as phonological variants GRANDMOTHER03A and GRANDMOTHER03B (see Figure 10). It was also noted that some participants reduced two-handed signs to one-handed signs by omitting the

non-dominant hand. Brentari (1998) had previously identified this variation as a phonological process called ‘weak drop’. Signs produced as either a one-handed or two-handed variant with the same meaning were considered as phonological variants of a single lexeme in this study. For example, the concept SHENZHEN was produced by most participants with two hands (annotated as SHENZHEN01A) but by a few participants with the non-dominant hand dropped (i.e., SHENZHEN01D). SHENZHEN01A and SHENZHEN01D were included in the ‘ID gloss’ tier and SHENZHEN01 was included in the ‘annotation ID gloss’ tier.



Figure 10: Examples of phonological variants for SHENZHEN01 and GRANDMOTHER03

7.2 Loan signs from spoken Chinese

Mandarin is the majority language in China, and CSL, as a minority language, is influenced by the structure of Chinese words and pronunciation, i.e., *Hanyu Pinyin* which consists of 30 alphabet letters used to indicate pronunciation of words in Mandarin (see Section 2.3.3).

Signers from different regions in China may have different preferences in relation to loan signs. For example, the word *Bo'shi* (in English “doctorate”) has a conventionalized monomorphemic form in Shanghai signing which depicts the outline of the mortarboard and its tassel, whilst Beijing signers prefer a bimorphemic sign influenced by the spoken Chinese word, with one sign located on the neck (representing the Chinese word NECK, *Bo*), and the other sign shaped like the Chinese character *Shi* (i.e., 士).

Three tiers were created in ELAN for annotation of loan signs: loan translations, Pinyin signs and character signs.

7.2.1 Loan translations

Loan translation is a common type of borrowings in many sign languages. Sutton-Spence and Woll (1999) describe loan translation in BSL as a process in which there is a sign-for-morpheme translation from English. For example, one sign for the city MANCHESTER in BSL is produced with two separate morphemes MAN and CHEST. This process is also very often seen in CSL, especially in proper name signs such as place names, festival names and personal names (see Figure 11 for an example of a loan translation sign for TOMB SWEEPING FESTIVAL).

Qing'ming'jie (Tomb-sweeping festival)



Figure 11: An example of loan translation in CSL

Many loan translations with multi-morphemic structures were observed in the data, with the morphemes in loan translations combined in varying order. For example, the concept INNER MONGOLIA was produced by some participants as INNER^MONGOLIA, by some as MONGOLIA^INNER, and by others as MONGOLIA. In such a case, it is difficult to assign a unique ID in the gloss tier if one of the morphemes has already been glossed as a lexical variant. To disentangle the relations between morphemes and signs in these compounds, another tier named ‘morphemic analysis’ was used to specify the meaning of each morpheme in compounds while just the meaning of the compound was kept in the layer ‘lexical variant’. Following the example above, if a sign for MONGOLIA was already glossed as INNER MONGOLIA01 (i.e., a variant of the concept INNER MONGOLIA), the variant MONGOLIA^INNER would be glossed as INNER MONGOLIA02 in the ID gloss tier while remaining as MONGOLIA^INNER in the morphemic analysis tier.

The tier ‘compound sign’ was created for loan translations with bimorphemic features for multivariate analysis. The lexical variants marked as compound signs not only include compound signs such as YOUNGER SISTER01 (see Figure 12) which have been lexicalised in CSL, but also loan translation variants consisting of morpheme for morpheme translations from Chinese to CSL.



YOUNGER SISTER01

Figure 12: An example of lexicalised compound sign in CSL

7.2.2 Character signs

Character signs constitute another type of loan sign in CSL. Fischer and Gong (2010) describe three ways of forming character signs: tracing and depicting signs; Chinese pronunciation pun signs; and visual metonymic signs. In tracing signs, the index finger (usually of the dominant hand) traces or writes a Chinese character; depicting signs are static arrangements of the hands and fingers to represent Chinese characters, with relative location sometimes employed to indicate the placement of component in multi-component Chinese characters. For example, the character *Ping* (meaning “virtue”) is depicted with an -f- (ASL fingerspelling) handshape, and the handshape is moved to a lower leftward location and then to a rightward location to depict the other two components in the character (see Fischer & Gong, 2010:506). Tracing and depicting are the most common types of character signs, and sometimes the two processes are used together to refer to one character. Chinese pronunciation pun signs are another type of character sign. In these, a character with a similar pronunciation but different meaning is used to represent a sign. For example, the character *Wu* (in English “middle of the day”) in Mandarin has the same pronunciation as the character for FIVE; therefore many Beijing signers use the sign for FIVE in the signs relating to the middle of a day, such as *Shang’wu* (“morning”) or *Xia’wu* (“afternoon”). Visual metonymic signs use part of a corresponding Chinese character such as the radical¹ or parts that can be easily produced. For example, signers in Shanghai often produce the sign for *CHEN* (written in Chinese 陈) by touching their ear, because the

¹ Radical refers to the component(s) of a Chinese character which can be shared among other Chinese characters. For example, the component 女 on the left of the character 妈 (in English “mother”) also appears in characters such as 好 (“good”), 奶 (“grandmother”), 奴 (“slave”). Therefore the component “女” serves as a radical, although it can also be used independently as a character, meaning “girl”. Not all the radicals can be used independently.

component on the left side of this character (the radical in written Chinese) resembles the outline of a person's ear.

7.3 Traditional regional signs

Traditional signs were used in Stamp et al. (2014) as dependent variables to test the anecdotal claim that traditional signs in BSL are in decline as language change occurs. The identification of a traditional sign in the BSL Corpus Project was based on consultation with the deaf community fieldworkers, looking at signs produced by older signers. Similarly, this study investigates traditional regional signs in Beijing and Shanghai to explore language change in CSL. Each lexical variant in the data was discussed with the fieldworkers who had helped to collect the data in Beijing and Shanghai, in order to ascertain whether it was commonly used by older signers in that region. In Section 8.2.5, multivariate analysis using Rbrul (Johnson, 2009), a statistical program which quantitatively assesses the influence of multiple factors on linguistic variables, is undertaken on the identified traditional regional signs. As well as discussing traditional regional signs, the next chapter also presents the results of multivariate analyses of ZS signs as well as loan signs borrowed from spoken Chinese (as introduced in Section 7.2).

Chapter 8. Data analysis

A total of 4560 lexical items were obtained for statistical analysis. However, 48 items were excluded for the following reasons: 1) there was no response to the given concept; 2) a participant reported not knowing or not being sure about the sign for the concept; 3) the sign produced was confirmed by the fieldworkers to be a result of misunderstanding; 4) full Pinyin fingerspelling was produced for the given concept.

The number of lexical variants which were excluded from the six semantic categories is shown in Table 5, and a full list of excluded variants can be seen in Appendix S. As a result, 4512 lexical items were available for statistical analysis.

Semantic groups	Number of excluded lexical tokens
Numbers	7
Chinese place names	7
Colours	7
Time	6
Food	14
Festivals	7
Total	48

Table 5: Number of excluded lexical tokens in terms of semantic groups

This chapter presents the statistical analyses of lexical signs. The average number of lexical variants for the concepts is presented in Section 8.1, followed by Section 8.2 presenting the multivariate analyses of ZS signs, Pinyin signs, character signs, loan translations and traditional regional signs.

8.1 Number of variants for concepts

The average number of lexical signs for each concept varies across semantic fields (see Table 6). There is a mean of 8.6 lexical variants for festival concepts, with 10 variants identified for

the concepts DRAGONBOAT FESTIVAL and LANTERN FESTIVAL. Numeral concepts had the smallest number of variants of all categories, with a mean of 2.4 variants for each concept. Numbers of lexical variants identified for the 76 concepts are listed in Appendix T.

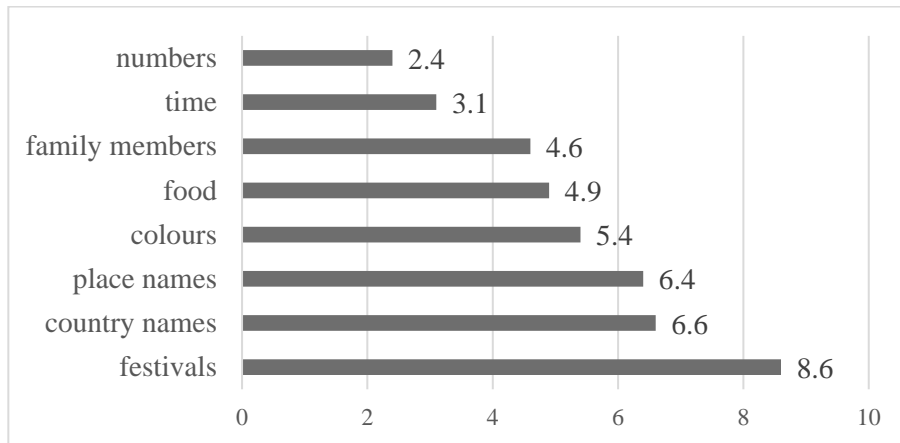


Table 6. Average number of lexical variants for the concepts in the eight semantic categories

8.2 Results of multivariate analyses

This section presents the results of logistic regression analyses using Rbrul. Rbrul is a data analysis program extended from R. Compared with GoldVarb (Sankoff, Tagliamonte, & Smith, 2005) often used to evaluate the effects of multiple factors on linguistic variables, the greatest advantage of Rbrul is that it allows mixed-effects modelling, taking random effects into account, and thus avoiding the overestimation of significance (Johnson, 2009). The mixed-effects regression in Rbrul can also handle imbalanced datasets and can provide an improved predictive model for such datasets in sociolinguistic studies.

The data are divided into two major pairs of variants: ZS vs. non-ZS variants (see Section 4.1); and traditional regional vs. non-traditional regional variants (see Section 7.3). The ZS pair divides lexical variants into those which are identical to the signs in the book *Zhongguo Shouyu*, and those which are not. Traditional regional signs, using a similar division of sign variants to

that in Stamp et al. (2014), are those commonly used among older signers in the regions. Another three pairs of variants, relating to borrowings from spoken Chinese and its romanisation system (i.e., *Hanyu Pinyin*), are included in the analysis to study oral influence on lexical signs. These comprise: (1) character variants (signs tracing and depicting Chinese characters or radicals (Fischer & Gong, 2010)), and non-character variants; (2) Pinyin variants (signs involving fingerspellings from the Pinyin manual alphabet), and non-Pinyin variants; (3) loan translation variants (sign-for-word or morpheme-for-morpheme translations from written words to signs (Sutton-Spence & Woll, 1999)) and non-loan translation variants. The independent variables for Rbrul analysis comprise region, age, gender, language background and semantic categories. Participants and concepts are treated as random effects in the analysis.

8.2.1 ZS signs

Of the 4512 lexical signs, 1595 signs (i.e., 35.4%) produced by the participants are identical to the signs in *Zhongguo Shouyu*. Of the 1595 identical signs, 886 (55.5%) were produced by Beijing participants and 709 (44.5%) by Shanghai participants; 684 signs (42.9%) were produced by male participants and 911 (57.1%) by female participants; younger participants produced the most ZS signs (i.e., 596, 37.4%) compared to middle-aged participants, who produced 503 signs (31.5%), and older participants, who produced 496 signs (31.1%); 553 (34.7%) of the identical signs were produced by signers with deaf family members, and 1042 (65.3%) were produced by signers of hearing background. As for semantic categories, the signs for numbers include 566 (35.5%) ZS signs, while only two ZS signs (0.1%) were produced for festival concepts.

Table 7 presents the results of the Rbrul analysis, with ZS signs being the application value. An asterisk appears before a factor if the relation between the factor and its application value is significant ($p < .05$). If the number in the log odds is positive (as opposed to negative) or the

number in the factor weight is over 0.5, the use of ZS signs is likely to be favoured. On the other hand, a negative value in log odds or a factor weight below 0.5 suggests a likelihood of disfavouring ZS signs (Stamp et al., 2014). For the interpretation of results, factor weight is commonly referred in linguistic analysis while log odds is used mostly for psychological studies.

Application value: ZS signs.						
	Factor	Log odds	Tokens	% of ZS signs	Factor weight	P value
*Region	Beijing	0.34	2263	0.392	0.584	<.001
	Shanghai	-0.34	2249	0.315	0.416	
*Age	Young	0.382	1499	0.397	0.594	<.001
	Middle	-0.189	1508	0.334	0.453	
	Old	-0.193	1505	0.330	0.452	
Gender	Female	0.0472	2563	0.355	0.512	.439
	Male	-0.0472	1949	0.351	0.488	
Language background	Familial deaf	-0.0302	1510	0.366	0.492	.656
	Hearing	0.0302	3002	0.347	0.508	
*Semantic categories	Numbers	5.386	774	0.731	0.995	<.001
	Food	0.512	646	0.356	0.625	
	Chinese place names	0.418	952	0.325	0.603	
	Family members	0.339	480	0.371	0.584	
	Country names	-0.204	420	0.210	0.449	
	Colours	-0.305	473	0.211	0.424	
	Time	-0.498	474	0.257	0.378	
	Festivals	-5.648	292	0.007	0.004	

*Factor groups significant at <.05. 4512 tokens. Input probability=0.135, Mean=0.354, Intercept=-1.854, Deviance=3370.6, Random (concept) standard deviation=2.844, Random (participant) standard deviation=0.304

Table 7: Multiple logistic regression result for ZS signs

The significant factors identified in the analysis are region, age and semantic category. Gender and language background were not found to be significant factors.

Among the 2263 lexical signs produced by Beijing participants, 39.2% of them were ZS signs (factor weight, 0.584); among the 2249 lexical signs produced by Shanghai participants, 31.5% of them were ZS signs (factor weight, 0.416). This result indicates that ZS signs were more likely to be preferred by Beijing signers. Younger participants produced the largest

number of ZS signs in comparison to middle-aged and older signers (factor weight, younger participants = 0.594, middle-aged participants = 0.453, older participants = 0.452), meaning that ZS signs were favoured by the younger generation. Among the eight semantic groups, 73.1% of number signs included ZS signs (factor weight, 0.995) while only 0.7% of festival signs were ZS signs (factor weight, 0.004), suggesting that ZS signs were most favoured in number signs while least favoured in festival signs.

8.2.2 Pinyin signs

Since the semantic groups ‘times’ and ‘numbers’ included no Pinyin signs, the sign variants of these two categories were excluded from this round of analysis to optimise the variation outcome. Thus, 3264 tokens, of which 186 were Pinyin signs (i.e., 5.7%), were included in the analysis. 84 out of the 186 Pinyin signs (45.2%) were produced by Beijing participants and 102 (54.8%) were produced by Shanghai participants. Younger participants produced 104 Pinyin signs (55.9%); middle-aged participants produced 61 Pinyin signs (32.8%); and older participants produced only 21 Pinyin signs (11.3%). Female participants produced 101 Pinyin signs (54.3%) and male signers produced 85 Pinyin signs (45.7%). Of the six semantic categories, 29 Pinyin signs (15.6%) were produced for festival terms; 45 (24.2%) were produced for colour terms; 44 (23.7%) were produced for food terms; 46 (24.7%) were produced for the terms of Chinese place names; 16 (8.6%) were produced for family members; and 6 (3.2%) were produced for country names. Table 8 presents the results of the logistic regression analysis, with Pinyin signs being the application value.

Application value: Pinyin signs. *Factor groups significant at p<.05.

	Factor	Log odds	Tokens	% of Pinyin signs	Factor weight	P value
Region	Beijing	-0.178	1636	0.0513	0.456	.165
	Shanghai	0.178	1628	0.0627	0.544	
*Age	Young	0.950	1081	0.0962	0.721	<.001
	Middle	0.175	1094	0.0558	0.544	

	Old	-1.125	1089	0.0193	0.245	
Gender	Female	-0.0483	1857	0.0544	0.488	.721
	Male	0.0483	1407	0.0604	0.512	
Language background	Familial deaf	0.0388	1090	0.0569	0.51	.778
	Hearing	-0.0388	2174	0.0570	0.49	
*Semantic categories	Festivals	1.955	293	0.0990	0.876	.039
	Colours	1.115	473	0.0951	0.753	
	Food	0.439	646	0.0681	0.608	
	Chinese place names	-0.956	952	0.0483	0.278	
	Family	-1.255	480	0.0333	0.222	
	Country names	-1.298	420	0.0143	0.215	

*Factor groups significant at <.05. 3264 tokens.

Input probability=0.0097, Mean=0.057, Intercept=-4.631, Deviance=1075, Random (participant) standard deviation=0.592, Random (concept) standard deviation=2.077

Table 8: Multiple logistic regression result for Pinyin signs

This round of analysis shows that age and semantic categories were significant factors in predicting variation in Pinyin sign use. Region, gender and language background were not significant. The younger age group (factor weight, 0.721) produced more Pinyin signs than the middle aged (factor weight, 0.544) and older groups (factor weight, 0.245). Therefore, Pinyin signs were favoured among younger signers. The signs for festivals (factor weight, 0.876) included the largest number of Pinyin signs amongst the six semantic groups, whilst the smallest number of Pinyin signs were used among names for countries (factor weight, 0.215).

8.2.3 Character signs

Since no character signs were found in the semantic group ‘family members’, this group was removed from this round of analysis. Similarly, although 33 character signs appeared in the signs for numbers, none of them were used as lexical signs for ONE to NINE, i.e., character signs were only found among signs for TEN, ELEVEN, TWELVE and THIRTEEN. As this was the case, the lexical signs from ONE to NINE were excluded from the analysis. After the exclusion, there were totally 3496 lexical tokens identified for the analysis of character and

non-character signs, among which 492 character signs were identified (i.e., 14%). 256 of the character signs (52%) were produced by Beijing participants, and 236 (48%) were produced by Shanghai participants. The younger participants produced 137 character signs (27.9%), with 163 (33.1%) produced by the middle-aged participants and 192 (39%) produced by the older participants. Female participants produced 279 character signs (56.7%) and male participants produced 213 character signs (43.3%). The participants with hearing language background produced 334 signs (67.9%), and those who have deaf family members produced 158 character signs (32.1%). As for the semantic categories, 235 character signs (47.8%) were produced for place names; 78 (15.8%) were produced for festival terms; 60 (12.2%) were produced for country names; 49 (10%) for terms relating to time; 33 (6.7%) for numbers; 29 (5.9%) for food terms; and 8 (1.6%) for colour terms. Table 9 presents the result of Rbrul analysis, with character signs as the application value.

Application value: character signs. *Factor groups significant at p<.05.						
	Factor	Log odds	Tokens	% of character signs	Factor weight	P value
Region	Beijing	0.065	1753	0.146	0.516	.482
	Shanghai	-0.065	1743	0.135	0.484	
*Age	Young	-0.339	1160	0.118	0.416	<.001
	Middle	-0.002	1169	0.139	0.5	
	Old	0.341	1167	0.165	0.584	
Gender	Female	-0.0037	1987	0.140	0.499	.949
	Male	0.0037	1509	0.141	0.501	
Language background	Familial deaf	-0.0546	1170	0.135	0.486	.553
	Hearing	0.0546	2326	0.144	0.514	
*Semantic categories	Festivals	2.269	293	0.266	0.906	<.001
	Chinese place names	2.25	952	0.247	0.905	
	Numbers	0.897	238	0.139	0.71	
	Country names	0.419	420	0.143	0.603	
	Time	0.065	474	0.103	0.516	
	Food	-2.755	646	0.045	0.06	
	Colour	-3.145	473	0.017	0.04	

*Factor groups significant at <.01. 3496 tokens.
 Input probability=0.00731, Mean=0.141, Intercept=-4.912, Deviance=1613.134, Random (participant) standard deviation=0.373, Random (concept) standard deviation=3.208

Table 9: Multiple logistic regression result for character signs

Age and semantic categories were found to be significant in predicting the variation of character signs, and region, gender and language background were not the significant factors in the analysis. The younger participants (factor weight, 0.416) were found to disfavour character signs, while the older participants (factor weight, 0.584) favoured the use of them. For semantic groups, character signs were highly favoured among the signs for festivals (factor weight, 0.906) and Chinese place names (factor weight, 0.905), and they were least favoured among food signs (factor weight, 0.06) and colour signs (factor weight, 0.04).

8.2.4 Loan translations

1340 sign variants were identified as loan translations among the 4512 lexical signs (i.e., 29.7%), which take up around one fourth of the total number of signs collected. Loan translations were produced by 748 Beijing participants (55.8%) and by 592 Shanghai participants (44.2%). Among the age groups, older participants produced 475 loan translations (35.4%); middle-aged participants produced 450 loan translations (33.6%) and younger participants produced 415 loan translations (31%). Female participants produced 745 loan translations (55.6%) and male participants produced 595 loan translations (44.4%). Participants with deaf family language background produced 470 loan translations (35.1%); and those with hearing language background produced 870 loan translations (64.9%). As for semantic categories, 463 loan translations (34.6%) were produced for Chinese place names; 266 (19.9%) were produced for festivals terms; 210 (15.7%) were produced for food; 207 (15.4%) for country names; 133 (9.9%) for numbers; 32 (2.4%) for family members; 15 (1.1%) for time and 14 (1%) for colour terms. Table 10 demonstrates the results of analysis, with loan translations being the application value.

Application value: loan translations. *Factor groups significant at p<.05.						
	Factor	Log odds	Tokens	% of loan translations	Factor weight	P value
*Region	Beijing	0.421	2263	0.331	0.604	<.001
	Shanghai	-0.421	2249	0.263	0.396	
Age	Young	-0.2532	1499	0.277	0.437	.158
	Middle	0.0482	1508	0.298	0.512	
	Old	0.205	1505	0.316	0.551	
Gender	Female	-0.0979	2563	0.291	0.476	.334
	Male	0.0979	1949	0.305	0.524	
Language background	Familial deaf	0.0173	1510	0.311	0.504	.86
	Hearing	-0.0173	3002	0.29	0.496	
*Semantic categories	Festivals	5.784	293	0.908	0.997	<.001
	Chinese place	1.886	952	0.486	0.868	
	Country names	1.691	420	0.493	0.844	
	Food	0.756	646	0.325	0.68	
	Family members	-1.266	480	0.0667	0.22	
	Colour	-2.561	473	0.0296	0.07	
	Numbers	-2.923	774	0.172	0.05	
	Time	-3.367	474	0.0316	0.03	

*Factor groups significant at <.01. 4512 tokens.

Input probability=0.074, Mean=0.297, Intercept=-2.526 Deviance=2555.642, Random (participant) standard deviation=0.634, Random (concept) standard deviation=2.914

Table 10: Multiple logistic regression result for loan translations

As shown in Table 10, region and semantic categories were the two significant factors identified in the multivariate analysis as predicting variation in loan translation variants. The other factors (age, gender and language background) were not significant.

Factor weights presented in the results indicate that Beijing signers (factor weight, 0.604) favoured loan translations, and Shanghai signers disfavoured their use (factor weight, 0.396). For semantic groups, loan translations were highly favoured in signs for festivals (factor weight 0.997), Chinese place names (factor weight 0.868) and country names (factor weight 0.844), whilst they were disfavoured in signs for family members (factor weight 0.22), colours (factor weight 0.07), numbers (factor weight 0.05) and time (factor weight 0.03).

8.2.5 Traditional regional signs

The signs for ONE to NINE in the number category were removed from this analysis because only one sign variant was found for each of the nine concepts and eight out of the nine were used by all signers and hearing people across China (SEVEN has two lexical variants, with the second used by two of the Beijing signers). The analysis of the 3976 lexical signs is presented in Table 11, with traditional signs being the application value. 3033 signs were identified among the 3976 signs as traditional regional variants (i.e., 76.3%). Participants in the younger age group produced 898 (29.6%) of the traditional regional signs; the middle-aged participants produced 1024 (33.8%) and the older participants produced 1111 (36.6%). 1481 traditional regional signs (48.8%) were produced by Shanghai participants and 1552 (51.2%) were produced by Beijing participants; female participants produced 1732 traditional regional variants (57.1%) and male participants produced 1301 variants (42.9%); participants who were born with deaf family members produced 1027 traditional regional variants (33.9%) and participants who were born with hearing family members produced 2006 variants (66.1%). As for semantic categories, 447 traditional regional variants (14.7%) were produced for terms of times; 407 (13.4%) were produced for family members; 213 (7%) were produced for numbers; 501 (16.5%) were produced for food; 677 (22.3%) were produced for Chinese place names; 357 (11.8%) were produced for colour terms; 276 (9.1%) were produced for country names; and 155 (5.1%) were produced for festivals terms.

Application value: Traditional regional signs. *Factor groups significant at p<.05.						
	Factor	Log odds	Tokens	% of traditional signs	Factor weight	P value
*Region	Beijing	0.121	1993	0.779	0.53	.0461
	Shanghai	-0.121	1983	0.747	0.47	
*Age	Young	-0.618	1320	0.68	0.35	<.001
	Middle	0.024	1329	0.771	0.506	
	Old	0.594	1327	0.837	0.644	
Gender	Female	0.025	2259	0.767	0.506	.679
	Male	-0.025	1717	0.758	0.494	
Language background	Familial deaf	0.0395	1330	0.772	0.51	.539
	Hearing	-0.0395	2646	0.758	0.49	
*Semantic categories	Time	2.036	474	0.943	0.885	<.001
	Family members	0.858	480	0.848	0.702	
	Numbers	0.588	238	0.895	0.643	
	Food	-0.077	646	0.776	0.481	
	Chinese place names	-0.35	952	0.711	0.413	
	Colours	-0.362	473	0.755	0.41	
	Country names	-0.895	420	0.657	0.29	
	Festivals	-1.798	293	0.529	0.142	

*Factor groups significant at <.05. 3976 tokens.

Input probability=0.873, Mean=0.763, Intercept=1.926, Deviance=3381.112, Random (participant) standard deviation=0.289, Random (concept) standard deviation=1.587

Table 11: Multiple logistic regression result for traditional regional signs

The Rbrul results show that age (p, <.001), semantic category (p, <.001) and region (p, 0.046) were significant in predicting the use of traditional regional signs. Gender and family language background were not significant. The results show that younger signers disfavoured the use of traditional regional signs (factor weight, 0.35), while the older signers favoured the use of them (factor weight, 0.644). Beijing signers (factor weight, 0.53) slightly favoured the use of traditional regional signs than Shanghai signers (factor weight, 0.47). As for semantic categories, traditional regional signs were highly favoured for time (factor weight, 0.885), family members (factor weight, 0.702), and numbers (factor weight, 0.643), and were the least favoured among signs for festivals (factor weight, 0.142) and country names (factor weight, 0.29).

8.2.6 Summary

The Rbrul results presented in the previous sections altogether show that the lexical signs produced by Beijing and Shanghai participants exhibited variation with regards to region, age and semantic categories, with different patterns of variation for traditional regional signs, ZS signs, Pinyin signs, character signs and loan translations. Beijing participants favoured the use of ZS signs, loan translations and traditional regional signs while Shanghai participants disfavoured the use of them; younger participants favoured the use of ZS signs and Pinyin signs while older participants favoured the use of character signs and traditional regional signs. In general, borrowed signs, including character signs, loan translations and Pinyin signs were found to be favoured in signs for festivals, country names and place names, while traditional regional signs were disfavoured in these fields. Gender and language background were not found to be significant in the analyses. Detailed discussion of these findings is presented in Chapter 9.

Chapter 9. Discussion

This chapter, which is organised into six sections, discusses the patterns of variation found in relation to semantic category, age and region in the five types of variants. Section 9.1 compares the lexical variants produced by participants with those in *Zhongguo Shouyu*, and provides possible explanations for similarities as well as differences. Sections 9.2, 9.3 and 9.4 analyse variation in the use of three types of loan signs (i.e., Pinyin signs, character signs and loan translations). Variation in traditional regional variants is discussed in Section 9.5. Section 9.6 concludes the discussion and 9.7 and presents the limitations of the current study.

9.1 ZS signs

This section discusses the results of the analysis of ZS signs, with variation in relation to semantic category discussed in Section 9.1.1, and variation relating to region and age discussed in Section 9.1.2.

9.1.1 Semantic categories

Number signs

Across the eight semantic categories, number signs were found to be strongly correlated with *Zhongguo Shouyu* signs (factor weight, 0.995), suggesting that the signs for number concepts from ONE to THIRTEEN produced by the participants were highly similar to the number signs in ZS. As was shown in Section 8.1, the number category includes the fewest lexical variants. Each concept from ONE to NINE has only one variant except for the concept SEVEN, for which two variants were identified. In fact, gestures with the same configurations as these number signs are also commonly used by hearing people in China. The small variation in signs for ONE to NINE is thus likely to be linked to the wide use of these forms by both deaf and hearing people in China.

In contrast to the concepts ONE to NINE, the range of variants for the concepts TEN, ELEVEN, TWELVE and THIRTEEN is much larger. It should be noted that for these four concepts, the ZS signs are the same as the variants produced by Beijing signers. Among the four variants identified for the concept TEN, TEN01, a traditional regional sign in Beijing, has the same form as the ZS sign. Similarly, the ZS signs for ELEVEN, TWELVE and THIRTEEN were also uniquely used by Beijing signers, with the ZS signs for ELEVEN, TWELVE being traditional Beijing variants. As for THIRTEEN, the two variants THIRTEEN01 and THIRTEEN02 were both uniquely used by Beijing participants, with THIRTEEN01 produced by 8 of 30 Beijing participants and THIRTEEN02 produced by 19 Beijing participants, and THIRTEEN01 is the ZS sign. The two variants are partly similar, in that the part representing TEN is the same (see Figure 13). THIRTEEN01 consists of two morphemes, while THIRTEEN02 has hand-internal movement of the index and middle fingers. Yang's (2016) study of numeral signs in CSL compared Shanghai and Beijing variants for TEN. She observed that the Beijing variant for TEN can be compounded with the numbers 1-9 to show teens, whereas the Shanghai variant, which is produced with the thumb and index finger crossed, cannot be compounded with other number signs to show teens and tens (Yang, 2016:255-256). She further noted that the Beijing variant's capability of compounding with other number signs was the major reason why the editorial committee of *Zhongguo Shouyu* decided to adopt the Beijing variant as the standardised variant for TEN.



Figure 13: Traditional variants for TEN, TWELVE and THIRTEEN by Beijing signers

Festival signs

In contrast to number signs, ZS variants were found to be strongly disfavoured as festival signs, with only 2 of 60 participants preferring ZS signs in this category. The signs produced by the participants in this category are very different from their ZS equivalents (see Figures 14 and 15). The festival signs in *Zhongguo Shouyu* mostly depict the date of the festivals. For example, the ZS variant for MOON FESTIVAL is produced with the number signs for the date on which this festival takes place, the 15th of August in the Chinese lunar calendar (see Figure 15). Another example is the ZS variant for DRAGON-BOAT FESTIVAL, which is produced as the 5th of May. These festival signs found in ZS were not observed to be used by the CSL signers in this study. The Beijing and Shanghai participants reported that they found these expressions confusing as there was no indication from the signs of whether the dates were based on the lunar or solar calendar, or whether the signs signify dates or festivals.

Example of Shanghai signers' responses for MOON FESTIVAL



Example of Beijing signers' responses for DRAGON BOAT FESTIVAL



Figure 14: Beijing and Shanghai signers' responses for MOON FESTIVAL and DRAGON BOAT FESTIVAL

ZS sign for MOON FESTIVAL



ZS sign for DRAGON BOAT FESTIVAL



Figure 15: ZS signs for MOON FESTIVAL and DRAGON BOAT FESTIVAL (CDPF & CAD, 2003)

9.1.2 Social factors

As well as semantic category, age and region were also factors found to be significant in predicting variation in the use of ZS signs by the participants, with Beijing and younger participants most likely to favour the use of ZS signs.

Region

There are two probable reasons for Beijing signers favouring ZS signs. Firstly, a number of traditional regional variants in Beijing were observed to also appear in the book (for example, see Figure 13 for the number variants for ELEVEN and TWELVE), although the extent of similarity between Beijing signs and ZS signs has not been fully studied. Secondly, both ZS signs and Beijing signs have a strong oral influence from Mandarin, as they include many loan signs from the Pinyin system and Chinese characters.

Age

As noted in Section 4.1, teachers in deaf schools have been reported to use a high percentage of ZS signs in their signing (Liu, Gu, Cheng, & Wei, 2013). The exposure to ZS signs in deaf schools is likely to be greater than in other settings. The higher use of ZS signs among younger signers thus might be a result of the national promotion of ZS signs for teaching in deaf schools. As well as its use in schools, ZS has also been promoted for use in sign language interpretation on television as well as for activities organised by local branches of the China Disabled Persons' Federation (Liu, Gu, Cheng, & Wei, 2013). Although the use of ZS signs was found to be preferred only by younger signers, middle-aged and older signers may also have acquired some ZS signs through the national promotion of the book. Sociolinguistic variation in the comprehension of ZS signs will be explored later, in Part 3 of the thesis.

9.1.3 Summary

In conclusion, the investigation of ZS signs confirms that lexical signs in the book include both natural signs that are commonly used among deaf signers in China as well as invented signs which appear to be less widely used in the deaf community. The ZS signs for numbers include variants that are widely used by hearing and deaf people in China, whilst the signs for festivals, which do not appear to have originated from within the deaf community, were disfavoured by the participants. Furthermore, a higher degree of similarity was found between Beijing signs and ZS signs than between Shanghai signs and ZS signs, although reasons for this have not been fully investigated. Finally, the study proposed that the favouring of ZS signs among younger signers may be resulting from the national promotion of *Zhongguo Shouyu*, especially in educational settings.

9.2 Pinyin signs

Age and semantic category were found to be predictors of variation in Pinyin signs. This section discusses the results of the statistical analysis of Pinyin signs, with Section 9.2.1 focusing on age variation in the use of Pinyin signs, and 9.2.2 on the initialised sign for -j- in festival signs.

9.2.1 Age

An ongoing diachronic change in the use of Pinyin signs was indicated by the result of multivariate analysis, with younger signers favouring the use of Pinyin signs. The Pinyin manual alphabet (*Hanyu Shouzhi Zimu Tu*) was created in the late 1950s and published in 1963 by the Sign Language Reform Committee, but was not specifically promoted among deaf people in China until 1988 with the production of *Zhongguo Shouyu*, in which the Pinyin manual alphabet was promoted to assist deaf children to pronounce the sounds of Mandarin. Pinyin signs also frequently appear in ZS signs to complement the natural signs which were believed not to be able to express abstract concepts such as conjunction (Gu, 2017). The frequent use of Pinyin signs in education settings may thus have led to the inclusion of more Pinyin signs in the lexicons of younger signers than middle-aged and older signers.

9.2.2 Festival signs

Among the six semantic categories analysed, Pinyin signs were most favoured in signs for festivals. This may be related to the frequent use of polymorphemic festival signs. In Mandarin, festivals are formally expressed with a morpheme for FESTIVAL attached to the end of a word. For example, the sign for CHINESE NEW YEAR is expressed as *Chun'jie*, where *Chun* means “spring” and *Jie* is the English equivalent of “festival”. In the present study many signers produced polymorphemic signs for the festivals with the last morpheme being the fingerspelled

form -j-, representing *JIE* (in English “festival”) as an initialised sign (see Section 2.3.3). In Shanghai, this variant is produced on the forehead and is commonly seen even among older signers when signing FESTIVAL. This suggests that the fingerspelled letter -j- has already been lexicalised in the Shanghai variety. A similar morpheme, with the same handshape but a different place of articulation, (see Figure 16) was also produced by Beijing signers. The favouring of fingerspelled -j- in festival signs is likely to explain the favouring of Pinyin signs using polymorphemic structures in this semantic category.



Figure 16: Pinyin variants for the concept FESTIVAL

9.3 Character signs

Similar to Pinyin signs, age and semantic category were found in the Rbrul analysis to significantly predict variation in character signs. Sections 9.3.1 and 9.3.2 discuss age variation and variation relating to semantic category in character signs, and Section 9.3.3 discusses the Chinese pronunciation pun signs identified among the character signs.

9.3.1 Age

In contrast to the pattern of age variation in Pinyin signs, which were favoured by younger signers, character signs were favoured by older signers. Since the Pinyin manual alphabet was not officially introduced to deaf education until the late 1990s, it is likely that Pinyin signs are less familiar to many middle-aged and older generations of signers. Character signs, which are borrowed directly from traditional written characters, tend to be an ‘older’ form of loan signs

in CSL compared with the Pinyin signs. In contrast to their use of Pinyin signs, character signs were less favoured among younger signers.

9.3.2 Semantic categories

Character signs were favoured in the semantic fields of proper names: festivals, names of countries, and Chinese place names. Among the five festivals, character signs were most frequently used for MOON FESTIVAL (71.8%, see Figure 14) and TOMB-SWEEPING FESTIVAL (23%, see Figure 11). The use of the character sign for *ZHONG* (“middle”) in MOON FESTIVAL (the Chinese equivalent *Zhong’qiu’jie* is literally translated as “mid-autumn festival” in English), as well as the use of the Chinese pronunciation pun sign for *QING* in TOMB SWEEPING FESTIVAL (*Qing’ming’jie*), contributed to the high frequency of character signs in this category. Lexical variants for the other three festival concepts rarely included character signs. A similar situation was observed in the signs for countries, where 46.7% included the sign for *ZHONG* (in English “middle”) in the concept CHINA (*Zhong’guo*), and 30% of the country name signs included the Chinese pronunciation pun sign for *YI* in ITALY (*Yi’da’li*). Although character signs were also favoured in place name signs, they were not used as frequently as for festivals and countries. Of the 16 concepts in this group, 6 of them (i.e., BEIJING, SHANGHAI, HONG KONG, NANJING, TIANJIN, XINJIANG) did not include character signs. Compared with the other ten (CHONGQING, FUJIAN, HANGZHOU, INNER MONGOLIA, MACAU, SHANDONG, SHENZHEN, TAIWAN, TIBET and WUHAN), the six cities are either metropolitan areas or well-known tourist cities and the local signs for these cities are widely used by signers across China. Increased language contact through travelling, frequent use on television and the inclusion of local signs for places in the book *Zhongguo Shouyu* have possibly contributed to the adoption of these signs by signers

across China. For less famous cities, however, the use of character signs was much more frequent.

9.3.3 Chinese pronunciation pun signs

Of the various types of character signs in the data, Chinese pronunciation pun signs, tracing signs and depicting signs (see the definitions of tracing and depicting signs in Section 7.2.2) were the most frequently observed. In the present study, 68% (334 out of 492) of the character signs produced are tracing and depicting signs, and 32% (157 out of 492) are Chinese pronunciation pun signs.

Fischer and Gong (2010) defined a Chinese pronunciation pun sign as a sign whose spoken Chinese equivalent shares the same or similar pronunciation with a Chinese word for another sign. Pun signs have been reported to occur more frequently in northern signing varieties than southern varieties. The findings in this study are consistent with this claim. The 256 character signs produced by Beijing signers include 119 Chinese pronunciation pun signs (46%); whilst only 16% (38 out of 236) of character signs produced by Shanghai signers are pun signs. A common example of the pun signs used by Beijing signers is the concept APPLE, which is pronounced in Mandarin as *ping'guo*. The pronunciation of *ping* is also found with a different character meaning a flat, level surface. The lexical variant APPLE01 is a traditional regional sign used by 28 Beijing signers, in which a sign represents the flat level surface and is followed by another handshape signifying the shape of an apple. Another example is the Chinese place name variant HANGZHOU02. This is pronounced in Mandarin as *Hang'zhou* with the first character *hang* written as 杭. However, many Beijing signers prefer to use the sign AGAINST (pronounced as *Kang*) in HANGZHOU02, which in Mandarin is written as 抗 (see Figure17).

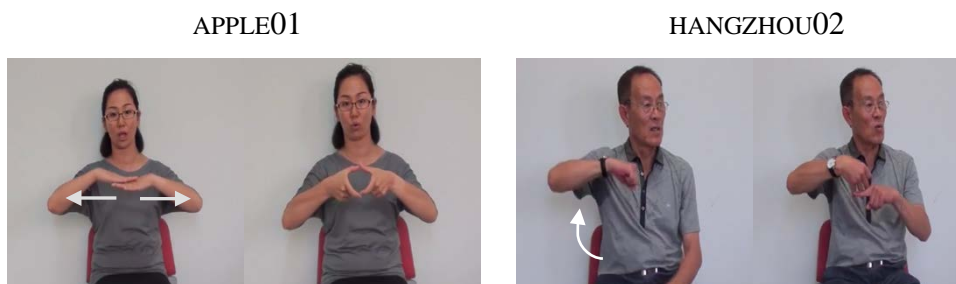


Figure 17: Examples of Chinese pronunciation pun signs for *PING'GUO* (“apple”) and *HANG'ZHOU* (“Hangzhou”)

9.4 Loan translations

Of the 4511 signs investigated in the current study, a quarter included loan translations (1339). Since sign languages are socially marginalised and are often influenced by their surrounding mainstream spoken languages, the frequent use of loan translations in CSL may be related to the use in Chinese of bimorphemic and polymorphemic forms. The analysis found that loan translation variants were favoured by Beijing signers, which is likely to relate to the stronger oral tradition in deaf schools in Beijing (see Chapter 2). As a type of loan signs borrowed from spoken Chinese, this finding supports the claim that the Beijing variety has more oral influence than the Shanghai variety.

The pattern of variation in loan translations regarding semantic categories is similar to that of character signs, which were favoured for festivals, Chinese place names and countries. As explained in the discussion section on character signs (see Section 9.3), festivals in Mandarin are always written with a morpheme for FESTIVAL at the end of the word. This was paralleled in the data collected for this study, in which most of the festival signs were polymorphemic. Similarly, signers tended to add a sign for NATION at the end of the names of countries. For example, the variant CHINA05 is produced by some signers as CHINA05^NATION although some signers only produce CHINA01, which means “nation” (see Figure 18). It is possible that the

number of loan translations would be lower in conversation in comparison to the lexical elicitation task, as their choice may be influenced by the Chinese words presented as stimuli.

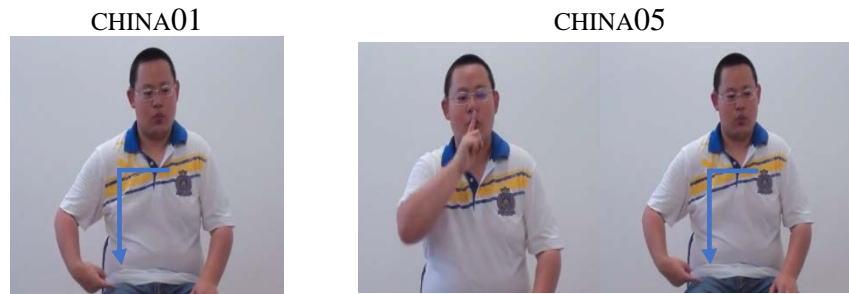


Figure 18: Lexical variants for the concept CHINA

9.5 Traditional regional signs

Semantic category was found to be one of the three significant factors (with age and region) in predicting the variation of traditional regional signs, with time, family members and numbers being the more favoured categories, while colours, festivals and country names being the less favoured categories. It is not surprising to find that traditional regional signs were not favoured in the signs for proper names, as these signs included many borrowings such as character signs and loan translations (see Section 9.3 and 9.4). Interestingly, traditional regional signs for colours were also slightly disfavoured, and a few colour concepts had much larger numbers of sign variants than others. Specifically, the concept BROWN had nine sign variants, and ORANGE had ten sign variants. For the variants of BROWN, some Shanghai signers produced the sign for COFFEE, and some signers produced the Chinese pun sign for *ZONG'ZI*, a traditional food for the Dragon Boat Festival, in which the pronunciation of *Zong* is the same as that of BROWN. There were four lexical variants identified for WHITE and BLUE.

9.5.1 Age

Similar to the findings in the studies of BSL (Stamp et al., 2014) and NZSL (McKee & McKee, 2011), traditional regional signs were also found to be in decline among younger signers. However, unlike studies of other sign languages which showed that younger signers were using fewer traditional regional variants than older signers, evidence of levelling was not strong among the younger signers in Beijing and Shanghai. As has been shown above, younger signers' lexicon tends to include more Pinyin signs and ZS signs than older signers', possibly as the result of the policy of sign language standardisation that has been implemented in recent decades. In 2018, a new standardised lexicon, named *Guojia Tongyong Shouyu Changyong Cibiao* (in English "Lexicon of Common Expressions in Chinese National Sign Language") was published to replace the previous book named *Zhongguo Shouyu*. Gu (2017) states that 40% of the ZS signs remain unchanged in the new lexicon, with 30% only partially modified. It is likely that lexical signs used by younger signers will continue to change under the influence of this continuing policy.

Additionally, the increasing language contact among deaf signers from different regions of China and other countries of the world through social media and travel, as has been suggested in previous studies (Jiang, 2012; Lu, 2012), is also likely to expose younger signers to other signing varieties and new sign languages, and might further reduce the use of traditional regional signs.

9.5.2 Region

Beijing signers was found to slightly favour the use of traditional regional signs than Shanghai signers. Of the 3033 traditional regional signs collected, 1198 were identified by the Beijing fieldworker as the traditional regional signs in Beijing variety; 1315 were identified by the Shanghai fieldworker as the traditional regional signs in Shanghai variety; and the other 520

were identified by fieldworkers of both regions as their traditional regional signs. An imbalance in Beijing and Shanghai signers' production of the traditional regional signs in each others' regions was observed from the collected data. 66 of the 1198 traditional Beijing signs were produced by Shanghai signers (5.6%), and 161 of the 1315 traditional Shanghai signs were produced by Beijing signers (12.2%). The figures show that the traditional regional signs in Shanghai variety were more frequently used by Beijing signers than vice versa, thus contributing to the favour of traditional regional signs by Beijing signers in general (see Section 8.2.5). This finding suggests that Shanghai variety may have more influence over Beijing variety. An investigation of the mutual intelligibility of Beijing and Shanghai varieties is presented in Part 3.

9.6 Summary

This study analysed 4512 lexical signs produced by 60 signers in Beijing and Shanghai. The analyses of these signs confirmed previous observations by Yau (1977) and Jiang (2012) that lexical signs in CSL exhibited greater or lesser variation depending on semantic fields. Borrowed signs, including character signs, loan translations and Pinyin signs were found to be used more frequently in signs for festivals, country names and Chinese place names, while traditional regional signs were used less frequently in these fields. Different patterns of variation were also found in these signs in relation to the social factors of age and region. Firstly, the preference for ZS signs and loan translations by Beijing participants are consistent with the claim that the Beijing variety exhibits a stronger influence of spoken/written Chinese than the Shanghai variety. Secondly, the preference for traditional regional signs by Beijing participants may suggest a greater influence of the Shanghai variety over the Beijing variety. Moreover, applying the apparent time hypothesis (Bailey, Tillery, & Sand, 1991), the fact that traditional regional signs were disfavoured among younger signers indicates that language change is

taking place, with the lexicon of younger signers tending to include more ZS signs and Pinyin signs, but fewer character signs than middle-aged and older signs.

In general, variation in signs with regard to age and region may be the result of educational and official policies, as well as opportunities for increased language contact via social media and travel. The variation between different age groups relating to communication methods in deaf schools and the influence of government promoted signs is consistent with the finding in studies of some sign languages that lexical change has been led by changes in educational and official policies (Bayley, Schembri & Lucas, 2015). The decreased use of traditional regional variants among younger signers has been reported in the study of BSL by Woll, Allsop and Sutton-Spence (1991), which attributed the change to increased exposure to other regional varieties on television. The study in Part 3 will explore the influence of Beijing and Shanghai varieties by investigating signers' mutual intelligibility of the lexical signs used in these two regions.

9.7 Limitations

This study serves as a first step in the systematic investigation of sociolinguistic variation in lexical signs used by CSL signers. However, there are a number of limitations to the methodology of this study, specifically in relation to relying on a single type of stimuli to elicit lexical signs, to limited fieldworker training, to a lack of pilot sessions and to no reliability coding of the lexical elicitation task.

The lexical signs produced by signers in Beijing and Shanghai were obtained solely through a lexical elicitation task. As stated by McKee and McKee (2010), decontextualised elicitation techniques do not reveal signers' whole potential repertoire of lexical forms for a given concept, and they also fail to capture signers' choices of signs in different discourse conditions. In the present study, the frequent use of loan translations and character signs might be the result of

using decontextualised stimuli in the lexical elicitation task, although there is independent evidence that oral influence is strong among Beijing signs.

Secondly, only written instructions on procedures for data collection were provided to the fieldworkers. Their unfamiliarity with the equipment and procedures resulted in a number of problems such as missing some lexical variants and recruitment of at least one ineligible participant. These problems could have been avoided if face-to-face training had been offered to the fieldworkers prior to the data collection.

Since only one pilot session was conducted before beginning data collection, some of the concepts (e.g., days of the week) had later to be excluded from analysis because of repetitive patterns of signing. Although they may still be useful to the documentation of CSL lexical signs, the selection of concepts could have been refined had more pilot sessions been undertaken prior to the main study.

Finally, the traditional regional variants were consulted with only one local fieldworker in each region. The categorising of variants should have been made more valid if more native signers were involved in consultation. In addition, other categorising of signs, such as loan translations and non-loan translations, and the task of lemmatisation (i.e., labelling of morphological and phonological variants) could not be double-checked and reliability of coding assessed, due to the absence of other CSL researchers in DCAL.

In general, although there are several weaknesses in the methodology, this study is the first to systematically investigate lexical variation in Beijing and Shanghai varieties, and thus plays an important role in starting to understand patterns of lexical variation in the northern and southern signing varieties in China.

Part 3. Lexical comprehension task

The study described in Part 2 looked at sociolinguistic variation in lexical signs used by Beijing and Shanghai signers, and it was found that signs varied with regard to factors including region, age and semantic category. It was observed that some of the traditional regional signs used by Shanghai signers were used more frequently by Beijing signers than vice versa. For example, the traditional regional signs for family members used by Beijing participants: BROTHER01, FATHER01, MOTHER02 and GRANDMOTHER01 were not used by Shanghai signers, while those used by Shanghai signers: BROTHER02, FATHER02, MOTHER01 and GRANDMOTHER04, were used by some Beijing signers. This finding in the variation study may suggest that Beijing signers know more Shanghai variants than Shanghai signers know Beijing variants, and possibly, therefore that Shanghai signing may have a greater influence on Beijing signing than vice versa. To gain a better understanding of this ‘directional bias’ in the relationship between Beijing and Shanghai signers’ production of signs, the study described in Part 3 looks at the extent to which Beijing and Shanghai signers understand each others’ signs and *Zhongguo Shouyu* signs. The findings of the present study are compared later with signers’ reports on their comprehension of regional varieties of CSL, to study the language attitudes of Beijing and Shanghai signers in the next part of this thesis.

The present part of the thesis, which comprises 3 chapters, investigates variation in comprehension of Beijing signs, Shanghai signs, and ZS signs. Chapter 10 introduces approaches to measure mutual intelligibility and reviews relevant research on spoken and sign languages; Chapter 11 describes the lexical comprehension task used with the Beijing and Shanghai participants; the results of the analyses and discussion of the results are presented in Chapter 12.

Chapter 10. Mutual intelligibility of languages and regional dialects

Studies of mutual intelligibility explore the extent to which speakers of two different languages or dialects are able to understand each others' languages or dialects. Mutual intelligibility can be measured at different linguistic levels such as words, sentences and texts, and in relation to both social and linguistic factors such as linguistic distance, language attitudes and language contact (Gooskens, 2007). Techniques used to measure mutual intelligibility are generally divided into two categories: opinion testing and functional testing (Gooskens & Van Bezooijen, 2006). Opinion testing asks how well participants think they understand the other dialect(s). This method usually involves directly asking for participants' opinions about the intelligibility of other dialects, and/or using questionnaires to ask them to rate how well they think they can understand the other dialects. Studies using these methods can either include speech samples or not (Haugen, 1966; Tang & Van Heuven, 2007). Opinion testing is sometimes seen as a shortcut to functional intelligibility tests because it is relatively easy for researchers to obtain information on the intelligibility of dialects compared to functional testing. However, it only reflects subjective ideas and sometimes a person's report may not be in line with reality. Gooskens (2013) has suggested that the results obtained by opinion testing should be dealt with cautiously for this reason. Functional testing, on the other hand, measures how well other languages or dialects are understood. Typically, this type of study counts the percentage of words correctly translated from dialect A to dialect B (Tang & Van Heuven, 2009). The methods used in functional testing include presenting texts in other dialects and asking participants to answer questions relating to content, or asking participants to translate words, sentences or texts into other varieties. For example, in a study of mutual intelligibility among 15 Chinese dialects (Tang & Van Heuven, 2009), isolated spoken words which had been audio recorded were played to 15 subjects in a semantic categorisation task. In this task, the subjects

were asked to classify words into one of ten different semantic categories. The subjects were also presented with recordings of target words in sentence context and were asked to translate the target words into the subjects' own dialects. The results of this study were then compared to another study of mutual intelligibility of Chinese dialects, using opinion testing (see Tang & Van Heuven, 2007) to investigate the correlation between the two measures. The study concluded that degree of mutual intelligibility can be determined by both opinion and functional tests, but with functional tests better reflecting Chinese dialect classifications at sentence level.

10.1 Intelligibility of sign languages and sign language varieties

Compared with the studies of mutual intelligibility of unrelated spoken languages, many studies of intelligibility among different sign languages have suggested that the level of intelligibility among sign languages is higher. Battison and Jordan (1976) stated that deaf people who do not share the same sign language can communicate with each other more easily than two hearing people who do not speak the same language. They explored this in a referential communication task with signers of six different sign languages (i.e., American, Danish, French, Chinese, Italian and Portuguese). Participants alternately served as receivers and senders, choosing from a set of pictures based on descriptions in a foreign sign language. Although the authors reported difficulty in the completion of the task, the result shows that the participants achieved an average of 34% accuracy.

In another early functional testing study conducted by Faurot et al. (1999), the intelligibility of Mexican Sign Language (LSM) to ASL signers was investigated. Participants were asked to watch videos of LSM and answer questions relating to the content of the videos. Although there was hardly any evidence suggesting that language contact and historical influence had

occurred between ASL and LSM, the mean level of comprehension of LSM text was found to be 14%.

Greenberg (1957) states that lexical similarity of over 20% in basic vocabulary between two spoken languages indicates some historical relationship. However, the lexical similarity between unrelated sign languages could be higher than that benchmark, and this is probably due to the presence of iconic signs, especially in the core vocabulary of sign languages. For example, Currie, Walters and Meier (2002) investigated the lexical similarity between Japanese Sign Language (JSL) and Mexican Sign Language (LSM), two historically and culturally unrelated languages, by comparing 166 lexical items elicited from two sets of flashcards comprising Bickford's (1991) wordlist and "a few lexical items that occurred spontaneously in conversation" (Currie, Walters, & Meier, 2002:226). The study found that the lexical similarity score between JSL and LSM was 23%, a number which would suggest a historical relationship between two spoken languages using Greenberg's definition of lexical similarity.

Ease of communication across sign languages has been attributed not only to shared grammatical features found in many sign languages such as classifier constructions and constructed action, but also to mouthing and availability of contextual information (for example, see Mckee & Napier, 2002; Hiddinga & Crasborn, 2011; Sáfár et al., 2015; Stamp, 2015).

Sáfár et al. (2015) explored the intelligibility of Flemish Sign Language (VGT) to signers of French Belgian Sign Language (LSFB) and signers of Sign Language of the Netherlands (NGT). VGT is the sign language used by the deaf communities of Flanders (the Dutch-speaking area of Belgium); LSFB is used in Wallonia (the French speaking area of Belgium); and NGT is used in the Netherlands. Four videos of two genres (narrative and informative) were presented in VGT to test how well they were comprehended by signers of LSFB and NGT. The study found that NGT signers performed better than signers of LSFB in comprehending

VGT when mouthing was present, while LSFBS signers performed better than NGT signers when mouthing was absent. Moreover, a higher degree of intelligibility was found in the narratives, where iconic structures were more frequently used, compared to the informative videos. The study concluded that mouthing and iconicity facilitated comprehension across sign languages.

As well as studying the mutual intelligibility of different sign languages, Woll (1994) studied the comprehension of regional signing varieties of BSL, investigating BSL signers' knowledge of the signs used on the BBC television programme *See Hear*. In the study, participants of two age groups (under or over 45 years of age) were first presented with a set of cards with English words and were asked to give their signs for the words. Then a sample of sign variants obtained in a previous study of lexical variation was shown to the participants and they were asked about the meaning of the variants. Responses were divided into three categories for analysis: a) those who failed to offer the correct meaning of the presented sign variant; b) those who offered the correct meaning of the presented sign variant and who produced the same variant in response to the presented card; c) those who offered the correct meaning of the variant but produced a different variant in response to the presented card. The results revealed that many younger signers in Group C had more knowledge of regional variants than the older group. Participants were also asked in interviews to say how well they understood different regional signing varieties of BSL, and their responses were compared to the results of the study by Kyle and Allsop (1982), who had reported that over 40% of deaf respondents in Bristol and surrounding areas had never met a deaf person from farther than 125 miles away. In contrast to their study, Woll reported that her subjects rated most regional varieties as relatively easy to understand, except for Northern Irish and Scottish signing which was rated as difficult to understand. Woll attributed this change in reports of ease of comprehension to increased use of BSL on television.

A recent study by Stamp et al. (2015) investigated language contact and accommodation among 25 signers from four regions of the UK (Belfast, Glasgow, Manchester and Newcastle), using a 'spot the difference' task. The study showed that signers from different regions had no difficulty in understanding each other, and minimal examples of language accommodation were found to contribute to the ease of communication among signers from different regions. Stamp (2015) further studied the mutual intelligibility of lexical signs used in the four regions. She used a lexical comprehension task to investigate the extent to which signers with different social backgrounds were familiar with lexical variants for colour signs in eight regional varieties of BSL. During the task, participants were presented with videos of signs for different colours, without the presence of mouthing or context, and were asked to choose the colour best matching the meaning of the signs. Results showed that lexical recognition was relatively poor in BSL, with London and Birmingham colour signs being the most easily recognised by all signers (45% for London colour signs and 42% for Birmingham colour signs), and Bristol and Glasgow colour signs being the least frequently recognised (24% and 16% respectively). The study concluded that mouthing and fingerspelling were the two coping strategies to assist signers in recognising BSL regional varieties.

10.2 Comprehension of regional varieties of CSL

The two major branches of CSL are the northern and southern varieties. Although linguistic variation has been reported to exist between northern and southern varieties of CSL (Yang & Fischer, 2002; Fischer & Gong, 2010), whether regional variation in CSL affects the extent to which signers of these two varieties understand each other has yet to be studied (Shen, 2008).

Liu, Gu, Cheng and Wei (2013) conducted a questionnaire-based survey with 13241 participants (deaf pupils, deaf and hearing teachers of special education, and deaf adults) from 18 regions of China. The participants were asked to report on how well they were able to

understand signing varieties used in other regions of China, TV signing and ZS signs. Difficulties in understanding signs not used in the participants' own region were reported by 80.3% of deaf pupils and 78.2% of deaf adults. In addition, while over 80% of deaf participants reported that they had tried to watch the sign language interpretation on the TV news, fewer than 10% reported no difficulty in understanding the TV signing. Despite the reported poor comprehension of TV interpretation, over 90% of deaf students and over 80% of deaf adults reported that they were familiar with *Zhongguo Shouyu* signs. The researchers concluded that it was necessary to promote a single variety of sign language among deaf people in China. The findings in the study provide data on signers' reports about the intelligibility of different signing varieties in China, including ZS signs, but the participants' actual comprehension was left uninvestigated. Part 3 of the present study addresses Beijing and Shanghai participants' actual comprehension of lexical signs used in three signing varieties in China: Beijing signs, Shanghai signs and ZS signs.

The research questions addressed in the current study are:

1. Is there an asymmetry in the extent to which Beijing signers understand Shanghai signs and vice versa?
2. To what extent are signers able to understand the lexical signs promoted in *Zhongguo Shouyu*?
3. How does comprehension of Beijing signs, Shanghai signs and ZS signs relate to signers' demographic information (region, age, gender and family language), as well as to different semantic categories (place names, food, family members, colour and time)?

The following chapter describes the lexical comprehension task as well as participant demographics, with the results of statistical analyses and the discussion of findings presented in Chapter 12.

Chapter 11. Methodology

This chapter is an introduction to the lexical comprehension task used to collect data for comparison. It begins with a description of ethics-related documentation in Section 11.1, and then is followed by a description of the design of the lexical comprehension task in Section 11.2. Sections 11.3 and 11.4 describe the participants and the fieldworkers recruited for the task. Details of the experimental procedure are presented in Section 11.5, and the final section describes data coding and analysis.

11.1 Ethics approval and documentation

Similar to the procedure in Study 1, ethics approval from the university's Research Ethics Committee (project ID EPI201503) was obtained before conducting the comprehension study. Participants were given an information sheet (see Appendices K in English and L in Chinese) which includes a description of the procedure of the lexical comprehension task, compensation for their participation, expected length of time required for the experiment, and contact details of the researcher and her supervisors. Each participant was then asked to complete a consent form (see Appendices M in English and N in Chinese). Since the lexical comprehension task was conducted at the same time as the administration of the questionnaire for the study on language attitudes (see Part 4), the consent form as well as the information sheet included information relating to both studies. Where participants were not literate and therefore not able to read the forms, or where further clarification was needed, the fieldworkers explained the content in sign language. After completion of the experiment, participants were given a debriefing form (see Appendices Q in English and R in Chinese) explaining the purpose of the study and thanking the participants for their involvement. Each participant received a small gift or payment to compensate them for their time.

11.2 Lexical Comprehension Task

To investigate signers' comprehension of signs, a lexical comprehension task was used to elicit responses from the participants. The experiment was designed using E-prime 2.0 (Schneider, Eschman, & Zuccolotto, 2002), a software suite designed for psychological behavioural studies. E-Studio is the interface where an experiment is designed and built; E-Run is used to present the experiment to participants while recording their responses; E-Merge is used to organise the data so that multiple data files can be merged into a target file for analysis; and E-DataAid enables the creation of tables and graphs. The lexical comprehension task was built through E-studio, presented to the participants via E-Run, and the responses merged through E-Merge before being transferred to Excel and SPSS files for statistical analysis.

11.2.1 Selection of lexical signs

To study signers' understanding of Beijing, Shanghai signs and *Zhongguo Shouyu* signs, the sign variants for 76 concepts elicited from the data collected for Study 1 (see Part 2) were used as a source to provide stimuli for the current study. At the time the lexical comprehension study was prepared, only half of the data collected for Study 1 had been coded, covering five of the eight investigated semantic categories. Therefore, 33 sign variants for 20 concepts in 5 semantic categories (place names, food, family members, colours and time) were selected from the data to serve as Beijing and Shanghai stimuli for the lexical comprehension task. For the ZS variants, only those signs judged to be created for the book, rather than collected from regional varieties of CSL (Gu, 2017), were included as possible ZS stimuli. After consultation with the fieldworkers, five sign variants were selected from *Zhongguo Shouyu* to serve as ZS stimuli for the lexical comprehension task, including initialised signs, which used Pinyin signs to represent the first phoneme in the pronunciation of the Chinese word for a concept, and signs which had been found to be rarely used by Beijing and Shanghai participants in the lexical

elicitation task. Altogether 38 sign variants, representing Beijing signs, Shanghai signs and ZS signs, were used to investigate signers' comprehension (see Appendix W).

Given their visual-gestural nature, sign languages are characterised by a high degree of iconicity (Mandel, 1977). Sutton-Spence and Woll (1999) identified four categories of iconic motivation for items in the BSL lexicon: substitutive depiction, virtual depiction, presentable action and presentable objects. The categories were adopted by Su and Tai (2009) in their study comparing TSL and CSL. Iconicity in sign languages may assist individuals to guess the meanings of certain signs without having previously seen them. In order to minimise the possibility that the target pictures were chosen by guesswork, sign variants which were highly iconic were not included as stimuli in the lexical elicitation task. For example, the sign variant MILK01 (Figure 19) is a compound sign CATTLE^DRINK. The first morpheme is a substitutive depiction of a horn and the second morpheme, DRINK, is a presentable action which depicts holding and drinking from a cup. Variants as such were not considered as eligible stimuli for the task. Furthermore, it had also been observed that many participants added a sign for *Jie* (meaning “festival”) at the end of signs for festivals (see Section 9.2.2). The presence of a sign meaning *Jie* may possibly enable participants in the comprehension task to guess that the sign is a festival, therefore festival signs were also excluded from the comprehension task.



Figure 19: The variant MILK01

11.2.2 Selection of distractors

For each sign stimulus, four pictures illustrating different possible meanings were presented to the participants. In each set of four, only one picture matched the meaning of the stimulus, with the other three pictures serving as distractors. All distractors were either semantically or phonologically related to the stimulus. For example, the Shanghai variant BROWN02 (Figure 22 in Section 11.2.4) is produced with a flat B handshape located on the signer's right cheek. This variant was used by four Shanghai signers in the younger age group and is likely to have been borrowed from ASL (Cormier, personal communication, 2018). The distractors selected for this sign stimulus included a picture with a block of the colour purple, which is in the same semantic category (colour), and a picture of a shy face (the sign SHY in BSL has a similar location and handshape to the sign for BROWN02). All the distractors are listed in Appendix X.

The locations of the target pictures on the screen were pseudo-randomised. Participants were instructed to choose from the four pictures the one they thought best matched the meaning of a sign.

The sources of the images used in the lexical comprehension task included Clipart, a website for picture downloading (subscribed to by the Deafness, Cognition and Language Research Centre), and Google Image (free for commercial and non-commercial use), as well as photos taken by the researcher.

11.2.3 Variant types

Since this study investigates the comprehension of Beijing, Shanghai and ZS signs, the 38 stimuli were grouped into these three major categories. In addition, under the major categories, the Beijing and Shanghai variants were further divided into traditional and non-traditional regional signs. The following sub-sections describe each variant type in detail.

Traditional regional signs

The traditional regional signs used as stimuli in the lexical comprehension task were those identified in Study 1 as signs used uniquely in a region and preferred among older signers (see Section 7.3 in Part 2). For example, the variant BLUE02 is a traditional regional sign in Shanghai. In the data collected in Study 1, BLUE02 was produced by 29 out of 30 Shanghai participants and was confirmed by the Shanghai fieldworker as a traditional regional sign used in Shanghai. AFTERNOON01 was identified as a Beijing traditional regional sign. This variant was produced by 24 out of 30 Beijing participants (see Figure 20). After discussion with the local fieldworkers, 14 Beijing and 12 Shanghai traditional regional signs were included as the stimuli in this group (see Appendix W).

BLUE02



AFTERNOON01



Figure 20: Traditional Shanghai sign BLUE02 and traditional Beijing sign AFTERNOON01

Non-traditional regional signs

In general, the traditional regional signs were identified through consultation with local fieldworkers, and most of them had been produced in the lexical variation study by a majority of local signers, especially older signers in the regions (see Table 12 for the identified traditional regional signs). Other signs, which were not specifically traditional regional signs, but which were used by young and middle-aged signers rather than older signers in the regions were included as the non-traditional regional stimuli. For example, as shown in the results in

Part 2, younger signers produced more manual alphabet signs and ZS signs than older signers. The use of these variants is likely to be the result of the promotion of the Pinyin manual alphabet and *Zhongguo Shouyu* to the Chinese deaf community over past decades. The fieldworkers reported that language contact with other CSL regional varieties or with, e.g., International Sign or ASL, had also facilitated change in signs among younger signers. Such signs were identified as non-traditional regional signs and were also used to study signers' comprehension. Three Beijing non-traditional regional signs and four Shanghai non-traditional regional signs were included in the non-traditional regional group (see Appendix W).

Beijing traditional regional signs	number of local signers in lexical elicitation task	Shanghai traditional regional signs	number of local signers in lexical elicitation task
GRANDMOTHER01	18	YELLOW03	30
WHITE01	26	YOUNGER-BROTHER03	22
FATHER01	22	BLUE02	28
BLUE01	23	FATHER02	30
SHANGHAI01	26	HANGZHOU01	19
MANTOU02	27	NOODLE02	30
NOODLE01	30	MANTOU04	23
PEAR02	18	SHANGHAI02	30
AFTERNOON01	24	ORANGE07	19
HANGZHOU02	10	PEACH05	25
YOUNGER-BROTHER04	9	AFTERNOON03	30
CHONGQING02	13	NEXTWEEK06	22
NEXTWEEK01	9		
FUJIAN02	20		

Table 12: The Beijing and Shanghai traditional regional signs identified in the lexical elicitation task in Study 1 (Part 2), in which the data were obtained from 30 Beijing and 30 Shanghai signers

ZS signs

The ZS signs used as stimuli in the lexical elicitation task were selected from the authorised book *Zhongguo Shouyu*. These specific signs as representative of ZS signs were selected for the following reasons: 1) they were not produced as preferred signs by any of the Beijing or Shanghai participants in Study 1; 2) they were reported by the fieldworkers to have been created by the compilers of the book (it is mentioned in the book that some of the signs were invented (*Zhongguo Shouyu*, 2003:1-3), although the origins of these specific signs were not confirmed with the compilers of the book). One example is MORNING03, a sign introduced in the book and produced by only one (middle-aged) participant from Shanghai in the lexical elicitation task. This sign does not appear to have been influenced by spoken Mandarin. The pair MORNING03 and AFTERNOONZS (Figure 21) may have been created for the *Zhongguo Shouyu* book. Altogether five ZS signs were included as stimuli in the lexical comprehension task (see Appendix W).

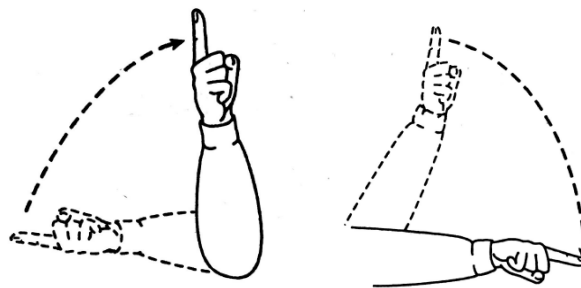


Figure 21: The ZS signs MORNING03 (left) and AFTERNOONZS (right) (CDPF & CAD, 2003)

11.2.4 Re-recording of lexical stimuli

To avoid the possibility that participants might know the signers who took part in the lexical elicitation task in Part 2, the original videos were not used as stimuli in the lexical comprehension task. Instead, the selected lexical signs were reproduced by a deaf signer from Hong Kong. Since this signer has lived only in Hong Kong and the UK, it was felt that there

was only a small likelihood that the signer would be known to signers in Beijing and Shanghai. In addition, to also reduce the possibility of mouthing providing a clue to a sign's meaning, the model was instructed not to use mouthing when reproducing the sign variants. After recording, the file was edited into individual video clips for use as stimuli.

When the experimental design was complete, three Chinese non-signers (with no knowledge of sign linguistics) and two BSL signers with no knowledge of CSL were invited to take part in a pilot study to check if there were any stimuli which could be easily guessed. An average score of less than 25% (below chance) was obtained by the 3 Chinese non-signers, and the average score obtained from the 2 BSL signers was around 50%. MILK01 and the festivals were then excluded (see Section 11.2.1), and the pilot was repeated. Once these signs were excluded, the pilot scores dropped to near chance level.



Figure 22: The variant BROWN02

11.3 Participants

Sixteen local deaf signers in Beijing and seventeen signers in Shanghai, from different age groups, genders and language backgrounds, took part in the lexical comprehension task (see Table 13 for participant demographics), of whom twenty signers had taken part in the lexical elicitation task.

The numbers of signers were roughly balanced in terms of age, gender and family background in order to make the sample sizes in each social group representative for analysis, with two exceptions: about twice as many female signers as male signers were recruited in Shanghai; and the number of Shanghai signers from hearing families is larger than the number of Shanghai signers from deaf families. This is not surprising, as signers from hearing families vastly outnumber those from deaf families (see Section 6.4).

Region	Total	Age			Gender		Language background	
		18-35	36-60	61+	Female	Male	Deaf	Hearing
Beijing	16	6	4	5	8	8	9	7
Shanghai	17	7	5	5	12	5	4	13
Total	33	13	9	10	20	13	13	20

Table 13: Participant demographics in the Lexical Comprehension Task

11.4 Fieldworkers

The two fieldworkers (one in Beijing and one in Shanghai) who had assisted with data collection in Study 1 also assisted with the data collection in Study 2. As the fieldworker in Beijing is a member of a university sign language research team, the lexical comprehension task was carried out in the university. The recruitment of participants in Shanghai, however, was more difficult to organise than in Beijing because the fieldworker in Shanghai is not a research team member. The study in Shanghai was carried out in several different locations: 5 older Shanghai participants took part in a senior citizen centre where older deaf people in Shanghai regularly gather to meet and hold activities; 2 younger participants did the lexical comprehension task in a Starbucks café, and the setting was not very ideal with the presence of other customers. Following completion of data collection, the fieldworkers were debriefed and thanked for their assistance.

11.5 Procedure

Before performing the lexical comprehension task, the participants were instructed by the fieldworker to sit with the laptop on a table in front of them. The participants were asked to read the instructions on the screen. These provided information about how to initiate the task and how to give responses using the keyboard.

Once the task was initiated, the 38 sign stimuli were presented to the participants one after another. For the presentation of each stimulus during the lexical elicitation task, a video clip of the lexical variant appeared on the screen, and immediately after the video of the sign finished, four pictures with numbers, images and corresponding Chinese characters appeared on the screen. Once the participant selected one of the pictures by pressing one of the numeral keys from 1 to 4 on the laptop keyboard, a small plus symbol (or fixation point) then appeared in the centre of the screen and lasted for 5 seconds before the next video clip was presented. Appendix U illustrates the task procedure.

For most participants, the 38 stimuli were presented in three sections, with each section lasting about 5 minutes on average. Two of the three sections each consisted of twelve lexical stimuli and one consisted of fourteen stimuli. Participants could either have a short break at the end of each section or continue with the task by pushing a 'continue' button on the laptop. The opportunity for a short break was offered between each two sections. After all the 38 items had been presented, a slide signifying completion of the task appeared on the screen. The participant was then given a debriefing form about the task and a small gift for their participation.

11.6 Data coding and analysis

Prior to running the lexical comprehension task, videos of the selected sign variants, along with their properties (meaning, semantic category, variant type), were coded in E-prime. The

properties of stimuli were not shown to the participants during the task, but were kept for statistical analysis of the participants' comprehension after the task.

After completion of the task, each of the 33 participants was assigned an individual and regional identification code to protect privacy. The responses given by each participant and the correct responses for each lexical sign were coded, and the coding was then exported from E-Prime to Excel for subsequent statistical analysis. Rbrul analyses were performed on the traditional regional, non-traditional regional and ZS signs to study the sociolinguistic variation in participants' comprehension; for Beijing and Shanghai participants' comprehension of each others' signs, repeated measures ANOVA and independent sample t-tests were used for analysis. The next chapter presents the results of these analyses.

Chapter 12. Results and Discussion

This chapter presents and discusses the results obtained from statistical analyses of the participants' comprehension of Beijing, Shanghai signs and ZS signs. Section 12.1 describes the results of Rbrul analyses of sign comprehension in relation to social factors (region, age, gender and family language background) and semantic categories. Section 12.2 presents the analyses of the extent of mutual comprehension of Beijing and Shanghai participants. The results are discussed in Section 12.3, with a summary of the chapter presented in Section 12.4.

Overall, 1254 responses were collected from 33 participants in the lexical comprehension task (33 participants x 38 trials). The average overall score was 64.5% (809 correct trials/1254 trials), with Beijing participants correctly identifying 72.5% (441 correct trials/608 trials) of the sign variants and Shanghai participants correctly identifying 57% (368 correct trials/646 trials) of the variants.

12.1 Effects of social and linguistic factors on participants' performance

This section presents the Rbrul analyses of participants' comprehension of ZS signs, traditional regional and non-traditional regional signs in Beijing and Shanghai in terms of signers' demographic information. Semantic category was not included in the analyses of this section because the number of variants within each semantic category was too small (between 0 and 2 in each semantic group) to generalise representative results. Results of six Rbrul analyses are reported in this section: two analyses were performed on participants' comprehension of traditional regional Beijing and Shanghai signs; two analyses were on comprehension of non-traditional regional Beijing and Shanghai signs; the fifth analysis concerned comprehension of ZS signs; and the final analysis addressed the general performance of the participants.

12.1.1 Traditional regional signs in Beijing

A total of 462 responses were given by 33 participants on 14 traditional regional sign variants in Beijing, of which 287 were correctly identified (i.e., 62.1%). Each response was coded as a token, with the application value being the correct responses. Table 14 shows the results of Rbrul analysis in relation to the participants' comprehension of traditional regional signs in Beijing.

	Factor	Log odds	Tokens	% of correct signs	Centred weight	P value
*Region	Beijing	1.878	224	0.871	0.867	<.001
	Shanghai	-1.878	238	0.387	0.133	
Age	Younger	-0.249	182	0.593	0.438	0.12
	Middle	-0.654	154	0.695	0.658	
	Older	-0.405	126	0.571	0.4	
Gender	Female	0.239	280	0.604	0.559	0.3
	Male	-0.239	182	0.648	0.441	
Language background	Familial deaf	-0.378	168	0.637	0.407	0.13
	Hearing	0.378	294	0.612	0.593	

*Factor groups significant at <.01. 462 tokens. Application value: correct response. Input probability=0.712, Mean=0.621, Intercept=0.903, Deviance=408.731, random (participant) standard deviation=0.898, random (sign variants) standard deviation=1.316

Table 14: Multiple logistic regression result for comprehension of traditional regional signs in Beijing

As shown in Table 14, region was the only significant factor associated with participants' comprehension of traditional regional signs in Beijing² (a centred weight larger than 0.5 indicates a positive relation with participants' performance, and a centred weight smaller than 0.5 indicates a negative relation).

The centred weight values show that the comprehension of traditional regional Beijing signs is positively related to being from Beijing and negatively related to being from Shanghai. As expected, Beijing participants (factor weight, 0.867) were better at understanding traditional

² Factors that are significant in the analyses are marked with asterisks in the tables.

Beijing regional signs than Shanghai signers (factor weight, 0.133). The other social factors, including gender, age, language background of the participants, were not significant.

12.1.2 Traditional regional signs in Shanghai

For the Shanghai group of traditional regional signs, 396 responses (33 participants x 12 sign variants) were recorded, of which 306 were correctly responded (i.e., 77.3%). Table 15 presents the results of Rbrul analysis of the participants' comprehension of traditional regional Shanghai signs.

	Factor	Log odds	Tokens	% of correct signs	Centred weight	P value
*Region	Beijing	-0.829	192	0.672	0.304	<.001
	Shanghai	0.829	204	0.868	0.696	
Age	Younger	-0.201	156	0.769	0.45	0.209
	Middle	0.514	132	0.833	0.626	
	Older	-0.313	108	0.704	0.422	
Gender	Female	0.343	240	0.821	0.585	0.102
	Male	-0.343	156	0.699	0.413	
Language background	Familial deaf	-0.255	144	0.701	0.437	0.211
	Hearing	0.255	252	0.813	0.563	

*Factor groups significant at <.01. 396 tokens. Application value: correct response. Input probability=0.862, Mean=0.773, Intercept=1.835, Deviance=289.707, random (participant) standard deviation=0.544, random (sign variants) standard deviation=1.829

Table 15: Multiple logistic regression result for traditional regional signs in Shanghai

As with the results of the analysis of comprehension of traditional regional Beijing signs, region was the only variable to correlate with the comprehension of traditional regional Shanghai signs: Shanghai participants were better at understanding the traditional regional signs used in their own region than Beijing signers were. Age, gender and language background were not significant in predicting the comprehension of traditional regional Shanghai signs. The two analyses together demonstrate that Beijing and Shanghai participants performed best at comprehending the traditional regional signs used in their own regions.

12.1.3 Non-traditional regional signs in Beijing and Shanghai

This subsection presents the results of Rbrul analyses of non-traditional regional signs in Beijing and Shanghai. Seven non-traditional regional signs were included in the analyses: YOUNGER-SISTER02, MILK03 and PEAR04 (Beijing variants); and MILK04, FUJIAN05, WHITE03 and BROWN02 (Shanghai variants). A total of 99 responses (33 participants x 3 sign variants) were recorded for comprehension of non-traditional Beijing signs, of which 38 were correct (38.4%). 132 responses for comprehension of non-traditional Shanghai signs (33 participants x 4 sign variants) were recorded, and 86 of the responses were correct (65.2%).

Table 16 shows that region ($p < .001$) and sign variant ($p < .001$) were the two factors significantly associated with comprehension of non-traditional regional signs in Beijing. Beijing participants (centred weight, 0.927) performed better than Shanghai participants (centred weight, 0.073) in understanding non-traditional Beijing signs, with YOUNGER-SISTER02 (centred weight, 0.879) being the most frequently comprehended variant and PEAR04 the least frequently comprehended variant (centred weight, 0.067).

	Factor	Log odds	Tokens	% of correct signs	Centred weight	P value
*Region	Beijing	2.537	48	0.688	0.927	<.001
	Shanghai	-2.537	51	0.098	0.073	
Age	Younger	-0.201	39	0.359	0.45	0.473
	Middle	0.599	33	0.424	0.645	
	Older	-0.398	27	0.370	0.402	
Gender	Female	0.457	60	0.367	0.612	0.23
	Male	-0.457	39	0.41	0.388	
Language background	Familial deaf	-0.136	36	0.41	0.466	0.721
	Hearing	0.136	63	0.333	0.534	
*Sign variants	YOUNGER-SISTER02	1.981	33	0.576	0.879	<.001
	MILK03	0.653	33	0.455	0.658	
	PEAR04	-2.634	33	0.121	0.067	

*Factor groups significant at $<.01$. 99 tokens. Application value: correct response. Input probability=0.24, Mean=0.384, Intercept=-1.154, Deviance=60.433, random (participant) standard deviation=0.369

Table 16: Multiple logistic regression result for non-traditional regional signs in Beijing

Table 17 presents the Rbrul analysis of comprehension of non-traditional regional signs in Shanghai, with gender ($p < .05$), age ($p < .05$) and sign variants ($p < .001$) all significantly associated with signers' comprehension. Region, in contrast with the results in Tables 14 -16 above, was not significantly associated with comprehension of non-traditional regional variants in Shanghai. Younger participants (centred weight, 0.722) showed greater comprehension of non-traditional variants than middle-aged (centred weight, 0.593) and older participants (centred weight, 0.209); female participants (centred weight, 0.692) performed better than male participants (centred weight, 0.308). Among the four sign variants, MILK04 (centred weight, 0.954) was the variant best understood, while BROWN02 (centred weight, 0.037) was the least frequently recognised.

	Factor	Log odds	Tokens	% of correct signs	Centred weight	P value
Region	Beijing	-0.308	64	0.594	0.424	0.292
	Shanghai	0.308	68	0.706	0.576	
*Age	Young	0.953	52	0.750	0.722	0.007
	Middle	0.377	44	0.682	0.593	
	Old	-1.33	36	0.472	0.209	
*Gender	Female	0.809	80	0.738	0.692	0.007
	Male	-0.809	52	0.519	0.308	
Language background	Familial deaf	-0.0318	48	0.604	0.492	0.917
	Hearing	0.0318	84	0.679	0.508	
*Sign variants	MILK04	3.038	33	0.970	0.954	<.001
	FUJIAN05	1.694	33	0.909	0.845	
	WHITE03	-1.466	33	0.515	0.188	
	BROWN02	-3.266	33	0.212	0.037	

*Factor groups significant at $< .01$. 132 tokens. Application value: correct response. Input probability=0.755, Mean=0.652, Intercept=1.125, Deviance=85.104, random (participant) standard deviation=0.132

Table 17: Multiple logistic regression result for non-traditional regional sign variants in Shanghai

In summary, the analyses of participant's comprehension of non-traditional regional signs show that region was the only social factor significantly associated with signers'

comprehension of non-traditional regional signs in Beijing, while age and gender are significantly associated with comprehension of non-traditional Shanghai signs.

12.1.4 ZS signs

Altogether 165 responses were collected from the lexical comprehension task in regard to ZS signs (33 x 5), of which 92 were correctly identified. An Rbrul analysis shows that sign variant ($p < .001$) was the only factor significantly correlated with comprehension of ZS signs (centred weights: BROWNZS=0.01, CENTURYZS=0.372, HUBEIZS=0.63, YELLOWZS=0.753 and MORNINGZS=0.968). Figure 23 shows the percentage of correct responses for each of the five sign variants. BROWNZS was the least recognised ZS sign variant, while MORNINGZS was the most frequently correctly identified.

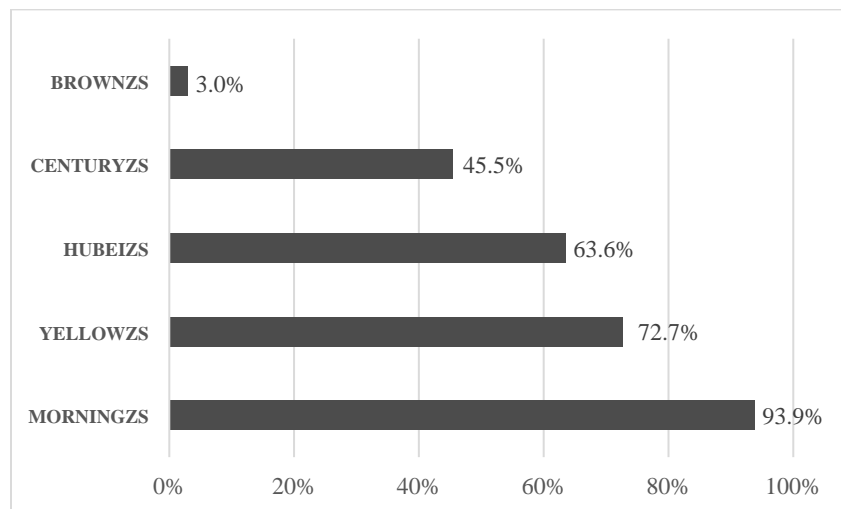


Figure 23: Percentages of correct responses to the five ZS sign variants

12.1.5 General performance

The analysis presented in this subsection (Table 18) concerns participants' performance on comprehension of the 38 sign variants in terms of social and linguistic factors. A total of 1254

responses (33 participants x 38 sign variants) were identified for analysis, of which 809 were correct responses (i.e., 64.5%).

Application value: correct answers. *Factor groups significant at $p < .05$.

	Factor	Log odds	Tokens	% of correct signs	Centred weight	P value
*Region	Beijing	0.673	608	0.725	0.662	<.001
	Shanghai	-0.673	646	0.570	0.338	
Age	Young	0.029	494	0.654	0.507	0.054
	Middle	0.392	418	0.701	0.567	
	Old	-0.421	342	0.564	0.396	
*Gender	Female	0.28	760	0.667	0.57	0.035
	Male	-0.28	494	0.611	0.43	
Language background	Familial deaf	-0.227	456	0.618	0.443	0.099
	Hearing	0.227	798	0.660	0.557	
*Semantic categories	Place names	1.152	264	0.799	0.76	<.001
	Food	0.024	330	0.645	0.506	
	Family members	-0.032	198	0.641	0.492	
	Time	-0.099	198	0.636	0.475	
	Colour	-1.044	264	0.500	0.26	

*Factor groups significant at $<.05$. 1254 tokens.

Input probability=0.688, Mean=0.645, Intercept=0.791, Deviance=1236.867, random (participant) standard deviation=0.538, random (trials) standard deviation=1.512

Table 18: Multiple logistic regression result for general performance in lexical comprehension task

Region ($p < .01$), gender ($p < .05$) and semantic category ($p < .01$) were the three factors significantly associated with comprehension, as shown in Table 18. Beijing participants performed better than Shanghai participants; female participants performed better than male participants; signs for Chinese place names (centred weight, 0.76) were the most frequently comprehended, while colour (centred weight, 0.26) was the semantic group in which the smallest number of variants were correctly identified.

12.1.6 Summary

The analyses above demonstrate that region is the major social factor predicting variation in Beijing and Shanghai signers' comprehension of traditional regional signs. Beijing and

Shanghai participants were better at understanding the traditional regional signs used in their own regions. As for the non-traditional regional signs, region, age and gender were found to be significant factors. Beijing participants were better at understanding non-traditional regional Beijing signs; female participants recognised more Shanghai non-traditional regional variants than male participants; and younger and middle-aged participants comprehended more non-traditional regional Shanghai signs than older signers did. Interestingly though, Beijing participants performed as well as Shanghai participants in comprehension of Shanghai non-traditional regional signs, suggesting that Shanghai variety may have greater influence on Beijing signers than vice versa. In terms of general performance, Beijing participants were able to comprehend more sign variants than Shanghai participants. However, this situation is not true for ZS signs, since region was not found to be a significant factor in predicting the comprehension of ZS signs. The extent of mutual intelligibility of Beijing and Shanghai signs is explored further in the next section.

12.2 Mutual comprehension of lexical signs by Beijing and Shanghai participants

This section describes Beijing and Shanghai participants' mutual comprehension of each others' traditional regional signs. An independent-sample t-test confirmed a significant difference between Beijing participants' comprehension of Shanghai signs ($M=0.64$, $SD= 0.187$) and Shanghai participants' comprehension of Beijing signs ($M=0.38$, $SD= 0.21$); $t(32) = 3.86$, $p < .001$, indicating that Beijing participants comprehend more traditional regional signs in Shanghai than Shanghai participants comprehend traditional regional signs in Beijing. This demonstrates an asymmetry between Beijing and Shanghai signers' knowledge of each other's sign variants.

12.2.1 Age and mutual intelligibility

This section analyses the performances of younger, middle-aged and older signers in relation to comprehension of traditional regional signs in Beijing and Shanghai. In Beijing, scores were obtained for 6 younger participants, 5 middle-aged participants and 5 older participants; in Shanghai, scores were obtained for 7 younger participants, 6 middle-aged participants and 4 older participants. The average accuracy scores of the three age groups of Shanghai participants in comprehending traditional Beijing regional signs are: 34% (younger participants), 49% (middle-aged participants) and 29% (older participants); the average accuracy scores of the three age groups of Beijing participants in comprehending traditional Shanghai regional signs are: 69% (younger participants), 65% (middle-aged participants) and 54% (older participants). One-way ANOVA tests were performed to investigate the effect of age on Beijing and Shanghai participants' comprehension of traditional signs from the other region. The analysis of Beijing participants' comprehension showed no significant effect of age [$F(2,13) = 0.984$, $p = 0.4$]. For Shanghai participants, although there is a trend for Shanghai middle-aged signers to comprehend more traditional regional variants in Beijing than either the older or younger signer groups, the result still shows no significant effect of age on comprehension of Beijing sign variants [$F(2,14) = 1.304$, $p = 0.302$].

12.3 Discussion

This section reviews and discusses the results obtained from the analyses in Sections 12.1 and 12.2. Section 12.3.1 offers possible reasons for Beijing signers' better performance in comprehending Shanghai signs than vice versa; Section 12.3.2 discusses the comprehension of ZS signs in both regions; Section 12.3.3 discusses the variation in signers' comprehension related to region, age and gender; and the comprehension scores in different semantic categories are discussed in the final section.

12.3.1 Asymmetrical intelligibility

The analysis of Beijing and Shanghai participants' comprehension of each other's traditional regional sign variants has demonstrated an asymmetrical intelligibility existing between Beijing and Shanghai signing varieties, with Beijing participants understanding significantly more Shanghai signs than vice versa. Early studies on spoken languages (see Haugen, 1966; Maurud, 1976; Wolff, 1959) had identified two factors which can contribute to asymmetrical intelligibility: language contact and language attitudes. Stamp (2015) suggests that some varieties in sign language may be more intelligible because signers have more frequent exposure to them via social media or widespread geographical use.

One possible influence of Shanghai signing on Beijing may have been a deaf teacher from Shanghai, Mei Fusheng, who taught in Beijing deaf schools from his early 20s until his retirement and is famous in the Chinese deaf community. In Mei's (2016) autobiography, he notes that he was born and educated in Shanghai. In 1955, he moved to Beijing and took up a post as a child care instructor in the Beijing Second Deaf School, later serving for many years as an art teacher in the Beijing Third Deaf School. He reports that because of the emphasis on oralism, only a few deaf teachers were employed in the Third School: 4 deaf teachers compared to 40 hearing teachers. Mei opposed oralism and writes that the deaf pupils always had better interaction with the deaf teachers because "most of the hearing teachers were not even familiar with Signed Chinese" (Mei, 2016:47). Mei's teaching in Beijing deaf schools for many decades may have brought some knowledge of Shanghai signing to Beijing signers. In addition, at the time when Mei was a middle-school pupil himself in the deaf school in Nanjing, a region whose sign variants have been said to be the closest to Shanghai variants (Yi, 2017:84), many of Mei's deaf classmates were from Beijing. Mei (2016:93) also notes that Shanghai signs are used by Beijing signers who have attended universities in Shanghai. These observations described by

Mei in the book indicate that Beijing signers may have had more exposure to Shanghai signs than vice versa.

Apart from historical contact, language attitudes may also play a role in accounting for the asymmetric intelligibility between Shanghai and Beijing signs. Gooskens (2007) states that if the attitudes of speakers are more positive towards a dialect or language, they will have fewer problems in understanding that dialect or language. The asymmetric intelligibility found in this study suggests that Beijing and Shanghai signers might hold different attitudes to each other's varieties, with more positive attitudes of Beijing signers towards Shanghai variants than vice versa. In Part 4, Beijing and Shanghai signers' attitudes towards each other's signing varieties (and also to other varieties) will be explored, and the relationship between asymmetric intelligibility and signers' language attitudes will be further discussed in Section 17.4.1.

12.3.2 ZS signs

The result of statistical analysis, presented in Section 12.1.4, shows that Beijing and Shanghai participants were able to comprehend an average of 56% of the ZS signs in the lexical comprehension task. Although this finding does not seem to contradict Liu et al.'s survey (2013), in which over 80% of the respondents reported that they had read the ZS book, signers' actual knowledge of ZS signs was lower than might have been expected. Comprehension of the five ZS signs (i.e., CENTURYZS, BROWNZS, HUBEIZS, MORNINGZS and YELLOWZS) varied significantly, with MORNINGZS being the most well understood, and BROWNZS the least understood (see Section 12.1.4).

CENTURYZS, BROWNZS, and YELLOWZS are all initialised signs, i.e., signs using a Pinyin manual alphabet handshape which represents the first letter of the Chinese written equivalent in *Hanyu Pinyin* (see Figure 20). Although ZS variants were rarely produced by signers as preferred sign variants in the lexical elicitation task, over 40% of participants recognised

CENTURYZS and YELLOWZS. However, not all the initialised signs introduced in the book were as well understood by participants. In contrast to CENTURYZS and YELLOWZS, the variant BROWNZS was recognised by only 1 of the 33 participants in the lexical comprehension task. One possible reason for the low comprehension figure for BROWNZS is that BROWN may not be a familiar concept: 3 participants in the lexical elicitation task produced no sign in response to the stimulus for BROWN, with one signer reporting that he did not know a sign for that concept, and the other two expressing uncertainty, perhaps suggesting the concept is rarely used in signers' daily life.

In the lexical elicitation task, the variant MORNINGZS was produced by only one middle-aged Shanghai signer. However, in the comprehension task, 31 out of 33 participants chose the correct meaning for this variant. According to the Shanghai fieldworker (personal communication), this sign was quite well-known to signers as a ZS variant. The high level of comprehension of this sign may be related to its iconic motivation (upward rotation of the forearm depicting the rising of the sun) (see Figure 24) contrasted with another ZS variant AFTERNOONZS (downward rotation of the forearm). This variant may also have been relatively easier for most signers because knowledge of the Pinyin manual alphabet is not required for signers to produce it. However, it was found to be seldom used among the signers during the lexical elicitation task.



Figure 24: ZS signs BROWNZS (left) and MORNINGZS (right)

12.3.3 Effects of social factors on the comprehension of signs

The social and demographic variables of region, age and gender were found in the analyses (see Section 12.1) to associate with participants' comprehension. Region was significantly associated with comprehension of all 38 sign variants. Beijing signers' comprehension was higher than that of Shanghai signers. As mentioned in the previous section, Beijing signers' exposure to Shanghai signs through historical contact may be one reason for this. Additionally, Beijing signers' greater familiarity with variants they do not use themselves may also be linked to the economic, cultural and political status of Beijing as a capital city where residents may be more likely to encounter a variety of sign variants and different sign languages. Given that only two signing varieties were investigated in this study, it can only be said that Beijing signers understand more Shanghai signs than vice versa. The question of whether Beijing signers would be better than signers from other regions of China in understanding different CSL variants requires further investigation.

The study also found that female participants significantly outperformed male participants in understanding non-traditional regional Shanghai sign variants as well as the 38 sign variants in general. Although gender differences have not often been reported in sociolinguistic studies of sign languages, they have been studied in spoken languages for many years (Sapir, 1929; Haas, 1964; Labov, 1966; Trudgill, 1972; Nordberg & Sundgren, 1998). These studies have demonstrated that women were more likely than men to prefer prestige forms and to lead language change through the use of innovative forms (Labov, 1990). In relation to the present study, the greater influence of Shanghai signing over other regional varieties in CSL might be related to women's greater knowledge of Shanghai signs. However, gender differences may also correlate with other social factors such as social class, age, educational background and even the density of social networks (see Romaine, 2003), which were not investigated in the current study. Further investigation of the relationship between gender and other social factors

would be required to better understand the reasons for gender differences in signers' knowledge of regional varieties of CSL.

In the comprehension of non-traditional regional Shanghai signs, younger and middle-aged participants recognised more of these than older participants. All four non-traditional Shanghai variants, i.e., MILK04, FUJIAN05, WHITE03, BROWN02 (possibly borrowed from ASL - see Figure 22 in Section 11.2.4) were produced only by younger Shanghai participants in the lexical elicitation task. Larger social networks, increased mobility and advanced technological innovations are likely factors facilitating access of younger signers to other signing varieties, foreign sign languages such as ASL, and to International Sign, compared to middle-aged and older signers.

12.3.4 Semantic categories

As well as region, age and gender, specific semantic categories were also significantly associated with comprehension scores. Participants performed best at comprehension of the signs for Chinese place names (factor weight, 0.76), while the signs for colours (factor weight, 0.26) were the least frequently understood.

Chinese place names

Eight lexical variants were included in the set of Chinese place names, and an average of 80% of the participants could recognise these variants (see Figure 25). It is not surprising that CHONGQING02, SHANGHAI02 and HANGZHOU01 were the signs most recognised by the participants because these signs are very commonly used among CSL signers, and the signs were included in the ZS book and described as being borrowed from local signs. SHANGHAI01 was another variant also traditionally used by Beijing signers. Although none of the Shanghai signers produced it as a preferred sign in the lexical elicitation task, they understood its

meaning in the comprehension task. However, the situation is different for some of the variants in this group. HANGZHOU02 was a Beijing sign which many Shanghai participants, despite appearing confused when they first saw this sign, did choose correctly. HANGZHOU02 is a loan translation, produced with a pronunciation pun sign representing the character for *Hang* and a second sign representing the character *Zhou* (see Figure 17 in Section 9.3.3 for the Beijing sign for HANGZHOU). The polymorphemic structure of the loan translation is likely to have helped participants to decode the structure morpheme by morpheme, and the character sign might also have facilitated understanding of the meaning even if the sign was unfamiliar.

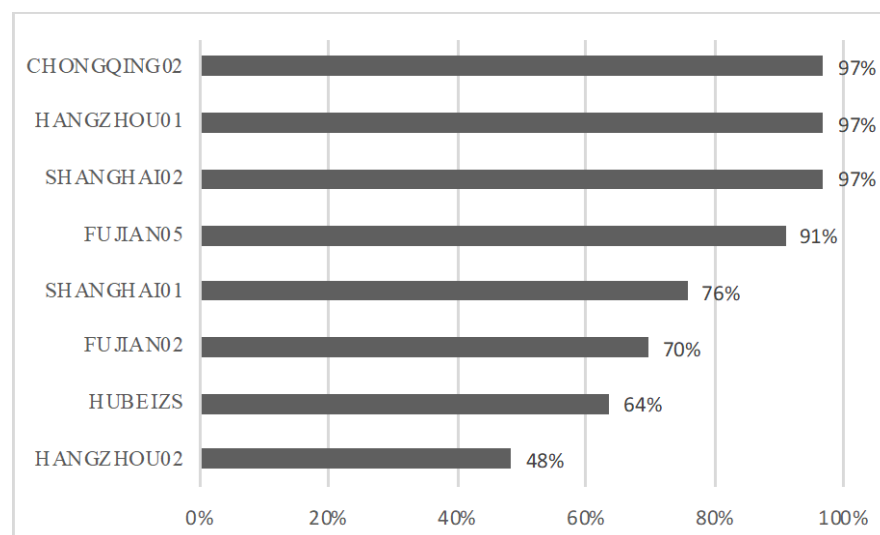


Figure 25: Accuracy scores for signers' comprehension of the eight variants for Chinese place names (HUBEIZS, FUJIAN02, CHONGQING02, FUJIAN05, SHANGHAI01, HANGZHOU02, HANGZHOU01, SHNGHAI02)

In general, the relatively high level of comprehension of Chinese place name signs may be partly accounted for by the inclusion of these natural signs in *Zhongguo Shouyu*. The use of character signs is also likely to contribute to the high accuracy rate in this category. Although character signs were considered by Su and Tai (2009) to be examples of contact signs, distinguished from signs with iconic motivation, they can also be considered to be examples

of virtual depiction (Sutton-Spence & Woll, 1999), i.e. tracing the shape of a referent (in this case – a character) in signing space. As reported in the lexical variation study, semantic categories of proper names, including Chinese place names, tend to favour the use of character signs. The greater comprehension for character signs is at least partly because signers were able to understand the meaning of these signs via their written equivalents. However, not all loan signs in CSL behave like character signs. The comprehension of initialised signs is relatively poor (as shown by the variant BROWNZS) as only the first letter of the whole syllable for the word is represented, limiting the extent of a link via written Chinese between the sign and its meaning.

Colours

Of the lexical variants for terms relating to colour, the signs for BROWN were the least frequently identified by the participants (see Figure 26). BROWN02 is a sign suspected to be borrowed from ASL (see Figure 22 for the sign and Section 12.3.3 for the discussion of the sign), and BROWNZS is a ZS sign (see Figure 24 for the sign and Section 11.3.2 for the discussion of the sign).

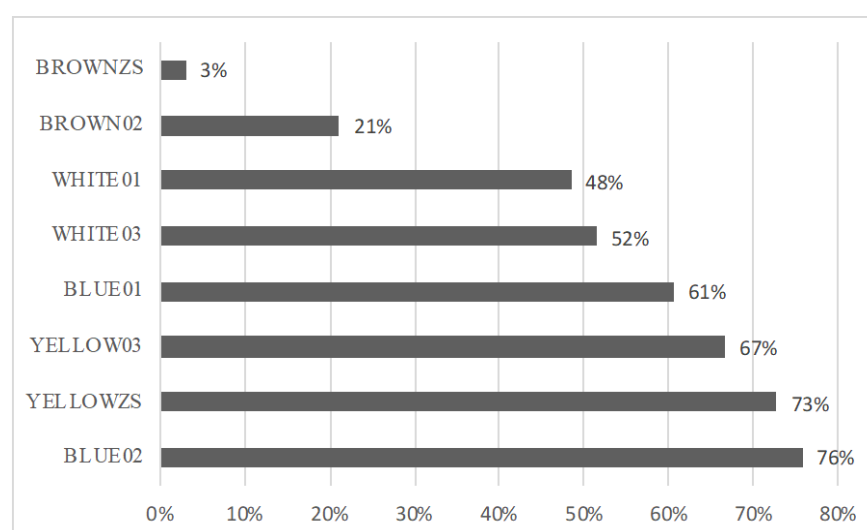


Figure 26: Accuracy scores of signers' comprehension of the eight sign variants for colours (BROWNZS, BROWN02, WHITE01, WHITE03, BLUE01, YELLOW03, YELLOWZS, BLUE02)

Therefore, one possible reason for the relatively low comprehension figure is that the sign variants investigated in this category included two variants for BROWN, one of which is suspected to be borrowed from ASL and the other is suspected to be an invented ZS sign.

12.4 Limitations

A number of limitations were identified in this study. Due to a lack of experience in collecting data, the researcher and fieldworkers conducted the task with two of the Shanghai participants in a Starbucks café, which is not an ideal location since participants may have been distracted by the presence of other customers. Although the responses of these two participants were collected without obvious difficulty, sites with distractions should be avoided for future data collection. For the selection of ZS stimuli for analysis, the study focused on the modified signs adopted in the book, i.e., signs that were not used by the Chinese deaf community. Local CSL signs included in the book were not tested in the current study, which might lead to the relatively low comprehension score of ZS signs. A study of the comprehension of the ZS lexicon which included such signs (in particular place name signs) would complement the current study and would yield a better understanding of the comprehension of the ZS standardised lexicon.

12.5 Summary

This part of the study investigated signers' comprehension of Beijing signs, Shanghai signs and ZS signs. Regarding the mutual comprehension of Beijing and Shanghai signs, Beijing participants tended to know more Shanghai signs than Shanghai participants knew Beijing signs. This has been interpreted as having been caused by one-way historical language contact. The ZS signs were understood to some extent, but comprehension varied for individual sign variants. The reason for such variation is likely to have been caused by signers' unfamiliarity

with some of the initialised signs introduced in the book. As for sociolinguistic variation in comprehension, factors including region, age, gender and semantic categories were associated with variation in participants' performance. Not surprisingly, participants performed best at comprehending the signs used in their own regions; younger and middle-aged participants understood more non-traditional regional Shanghai signs than the older generation of signers; women in general performed better than men on comprehension. This study suggests that the greater historical influence of the Shanghai variety over the Beijing variety and changes in social networks are the major factors contributing to differences in signers' general performance on the comprehension task.

This study serves as a preliminary investigation of CSL signers' knowledge of different signing varieties used within China; it is an initial step towards gaining a better understanding of the mutual intelligibility of northern and southern signing varieties in CSL. The study in Part 4 explores signers' attitudes towards Beijing and Shanghai varieties and ZS signs, and will report how signers' language attitudes can account for the variation in production and comprehension presented in the previous two studies in this thesis.

Part 4. Language attitudes towards regional varieties of CSL and *Zhongguo Shouyu* signs

The study of language attitudes helps to better understand the beliefs lying behind language variation and people's language behaviours. Preston (1999) describes three closely related approaches: (a) to study what people say; (b) to study how people react to what is said; and (c) to study what people say about it (see Figure 27 for approaches a, b and c). Approach a addresses the investigations and classifications of actual language use as well as the states and processes which govern it; approaches b and c relate to investigations of laypersons' views of linguistic concepts and what lies behind such views.

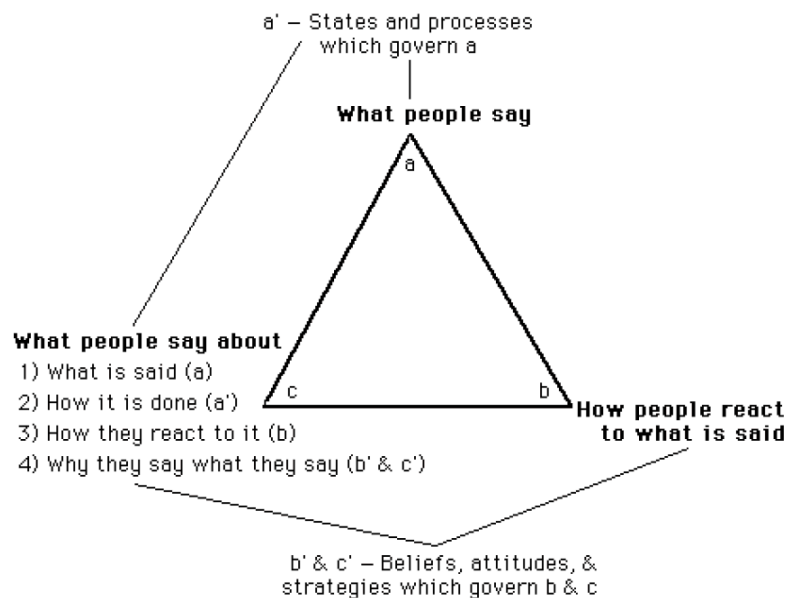


Figure 27: Preston's three approaches to language data (1999)

Parts 2 and 3 in this thesis addressed the production and comprehension of Beijing and Shanghai varieties. A study of signers' attitudes towards these two varieties, exploring what lies behind sociolinguistic variation in the production and comprehension of signs, is an essential complement to the previous two studies. The study in Part 4 specifically looks at Beijing and Shanghai signers' self-reports on how well they can understand Beijing and

Shanghai signing varieties, and *Zhongguo Shouyu* signs; how difficult they find it to understand the regional varieties of CSL; and how they evaluate Beijing variety, Shanghai variety, and Signed Chinese in terms of personal traits and job suitability of the users of these varieties. Part 4 also aims to explore how these self-reports and evaluations relate to demographic factors (region, age, gender and family language background), and finally how the participants' responses relate to their production and comprehension of sign variants studied in Parts 2 and 3.

Part 4 is divided into four chapters. Chapter 13 describes the literature in relation to the theoretical approaches and methods used in language attitude studies, and reviews studies on attitudes towards sign languages that are relevant to the current study. Chapter 14 describes the questionnaire used to collect language attitude data. Chapter 15 presents the results of statistical analyses of the data, and in Chapter 16, the results are interpreted and compared to the findings presented in Parts 2 and 3.

Chapter 13. Introduction and literature review of studies of language attitudes

This chapter first discusses the history of research on language attitudes since the introduction of the Matched Guised Technique (MGT) by Lambert, Hodgson, Gardner and Fillenbaum in 1960. It is then followed by an introduction to three techniques (i.e., societal treatment, direct measurement and indirect measurement) that have been used to measure language attitudes. A summary description of studies that are relevant to the present study is then presented and discussed, followed at the end of the chapter by the presentation of the research questions.

13.1 Theoretical approaches to language attitudes

Attitude is defined as a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour (Eagly & Chaiken, 1993). Since the 1960s, a number of important approaches and theoretical models have been developed to study language attitudes, with a variety of models addressing different aspects. The earliest and the most well-known of these is the Matched Guise Technique (MGT) developed by Lambert, Hodgson, Gardner and Fillenbaum (1960). This technique explores how a speaker's language, dialect, or accent influences people's trait attributions, based on Lambert's theoretical premise of 'perceived language features → social categorisation → trait attributions' (Giles & Rakić, 2014). Further details of this technique are introduced in Section 13.2, which reviews the techniques commonly used in studies of language attitudes. A framework proposed by Ryan, Giles, and Sebastian (1982) looks at language attitudes with two dimensions: standard - nonstandard as the vertical dimension; and decreasing vitality - increasing vitality as the horizontal dimension. The framework divides speakers' attitudes towards dominant varieties and speakers' own varieties into four patterns (A to D) in relation to solidarity and status. In Pattern A the dominant variety is favoured by both the dominant and minority groups of

speakers in relation to status and solidarity traits; in Pattern B there is a status preference for the dominant variety among both groups but each group shows solidarity traits for their own varieties; in Pattern C both groups prefer their own varieties in relation to both status and solidarity; Pattern D is characterised by solidarity preference for the dominant variety and status preference for the minority variety by both groups of speakers.

Giles and Rakić (2014) pointed out that early models for studying language attitudes, particularly the MGT, are typically noninteractive in design, focussing on respondents' judgements about the speakers. In recent decades, a number of models have been proposed to emphasise social interaction in language attitude studies. These include the social process model of language attitudes (Cargile, Giles, Ryan, & Bradac, 1994) which focuses on the interpersonal communication between speakers and listeners; the communication ecology model (Giles, Katz, and Myers, 2006) which argues that an individual's attitudes are embedded in multiple levels of social interactions including family, friends and other in-group members; and the theory of motivated information management (TMIM) (Giles, 2011), which treats language attitudes as a discursive ongoing event in social life, and most importantly as a process involving sense-making by speakers.

As observed from the review presented above, the theories and frameworks proposed to study language attitudes (for more detailed reviews, see Giles & Marlow, 2011; Giles & Rakić, 2014) have shifted towards a more complex, multidisciplinary, and interaction-based approach. However, as research on language attitudes of CSL signers is still in its initial stages, the current study will employ a non-interactive approach, using a questionnaire.

13.2 Techniques for the study of language attitudes

In language attitude studies, there are generally three techniques used: content analysis, direct measurement, and indirect measurement. Content analysis (Garret, Coupland, & William, 2003)

typically involves the study of observational and ethnographic data, or materials in the public domain. It allows researchers to observe participants in their natural settings. Compared with content analysis, direct approach is more intrusive in that respondents' attitudes are elicited by directly asking for evaluations and judgements about language varieties. Direct approach methodology can include asking participants to provide evaluative labels for language varieties (e.g., Fiske, Cuddy, Glick, & Xu, 2002) and to draw maps of linguistic variation and social meanings (e.g., Ryan, Giles, & Hewstone, 1988), but the most commonly used are questionnaires and interviews, in which participants are asked to report on their own language attitudes based on their experiences.

Likert scales and Semantic Differential (SD) procedures (Osgood, 1964) are two of the most common formats used in questionnaires on language attitudes. Likert scales are used to rate attitudes by presenting statements to respondents who are then asked to rate the extent to which they agree or disagree (Baker, 1992). The Semantic Differential procedure asks participants to evaluate the target languages or speakers of the languages using characteristics on a bipolar scale (e.g., educated-uneducated, honest-dishonest). SD is often used together with the Matched-Guise Technique (e.g., Lambert, Hodgson, Gardner, & Fillenbaum, 1960), an indirect attitude-measuring technique to elicit participants' evaluations of language varieties.

Indirect approach requires that respondents are not informed in advance of the actual purpose of the research (Cargile et al., 1994). The most famous method of indirect measurement in language attitude research is the Matched Guise Technique (MGT) developed by Lambert et al. (1960) to investigate French- and English-speaking students' evaluation of French and English. The study used as stimuli the recordings of short paragraphs pronounced by speakers who were bilingual in French and English, with listener judges believing that the audio recordings were produced by different native speakers. The judges were then asked to attribute a number of characteristics and traits to the speakers. Lambert developed this

technique because he believed that the responses elicited through direct approaches did not always match people's covert attitudes (Garret, Coupland, & Williams, 2003).

According to Giles and Marlow (2011), MGT also has the advantage of experimental control, holding all extraneous variables (e.g., prosodic, paralinguistic, and emotional investment) constant across the stimuli, so that the difference of responses can be attributed to the guises being contrasted. This technique has been used in many studies of language varieties in different regions and cultures around the world. Despite the dominant status of MGT in language attitude research, the technique has certain flaws and a variety of modified techniques have been developed. Many studies have sought to provide alternative approaches to address problems related to the MGT. Agheyisi and Fishman (1970), Lee (1971), Fasold (1984) and Hiraga (2005) criticised MGT for being 'unnatural' and 'artificial' in that the stimulus material is usually in a formal register and is practised beforehand so it is not representative of real-life speech. As alternatives, some studies chose to investigate language attitudes in more natural settings such as face-to-face interaction (for examples, see Giles, Baker, & Fielding, 1975; Giles & Farrar, 1979), or using recordings of spontaneous speech (for examples, see El Dash & Tucker, 1975; Grondelaers, van Hout, & Steegs, 2010). Moreover, the 'factually neutral' passages produced in MGT experiments do not take account of how speakers modify their language in different social situations and with different interlocutors (Garrett, Coupland, & Williams, 2003). To tackle this problem, a number of studies have shifted their focus to the evaluation of accommodative communication behaviour (for example, see Giles & Powesland, 1975 for 'speech accommodation theory'). Such evaluation assumes that speakers' convergent or divergent speech styles are based on prior language attitudes, with convergence associated with a positive attitude and divergence associated with a negative attitude towards the language variety (Bradac, 1990). In addition, it is sometimes not possible to find a person who can competently produce all the varieties required in MGT (Garrett, Coupland, & Williams, 2003).

In this case, The Verbal Guise Technique (VGT) can be employed instead. The VGT uses recordings of a number of different speakers, rather than relying on one speaker to produce several authentic languages or varieties (for example, see Gallois & Callan, 1981; Coupland & Bishop, 2007). Fasold (1984) employed the technique to study teachers' attitudes towards African-American and white children. Using video recordings with swapped sound tracks, the teachers were asked to evaluate the speech. The study found that white children's speech was rated higher regardless of whether the sound tracks were switched or not. Another criticism of MGT is that the technique focuses more on the study of accents rather than dialects, and more on pronunciation rather than lexical, morphological and syntactic features (Giles, 1970).

13.3 Language attitudes in terms of social status and solidarity

Personality trait analyses are commonly used in language attitude studies to evaluate the overt and covert attitudes of signers towards languages and dialects. The notion of prestige in sociolinguistics, first used by Labov (1966), refers to linguistic behaviour motivated by societal attitudes towards linguistic forms (Hernández-Campoy, 2008). Attitudes have been primarily evaluated with two dimensions: status and solidarity (Lambert et al., 1960). Status, related to traits such as *confident*, *good looking*, *intelligent*, was described by Woolard (1989:90) as "the desire to get ahead in some way". Solidarity, which refers to friendliness and generosity, was described as "the desire to be accepted by another group". People who identify themselves with the language or dialect of a speaker usually offer high ratings for solidarity, such as *kind*, *friendly*, *modest* and *honest*.

Overt prestige is openly expressed in the linguistic behaviour of the community while covert prestige reflects private and subconsciously favourable disposition towards certain linguistic forms (Trudgill, 1975). Nonstandard language varieties are usually evaluated less favourably than standard varieties in terms of traits relating to high social status, competence and

dynamism (e.g., *intelligent, enthusiastic, well-educated*), but more favourably on traits associated with high solidarity (e.g., *friendly, generous, likeable*) (Giles & Marlow, 2011). The attribution of high-status traits to a language variety usually indicates an overtly positive attitude towards the variety while traits relating to high solidarity indicate a covertly positive attitude. Overt prestige is usually found to be associated with standard and mainstream language varieties while covert prestige is related to non-standard and minority varieties (Marlow & Giles, 2008). Job suitability is another technique used to evaluate attitudes regarding the social status of a speaker, and it was first employed by Labov (1968). The technique requires respondents to ascribe suitability for a type of occupation based on the language variety used. For example, non-manual occupations are more likely to be described as suitable for users of a standard or prestigious language variety, and manual occupations are more likely to be associated with a non-standard variety.

13.4 Studies of sign language attitudes

Sign languages are usually considered to be low status minority languages, and attitudes about sign languages parallel, to a great extent, attitudes to minority spoken languages (Burns, Matthews, & Nolan-Conroy, 2001). Some early studies, such as Isaacs (1973), reported that sign languages were viewed negatively by both deaf and hearing people. Kyle and Allsop (1997)'s study of language attitudes of deaf people in the European Union reported that the deaf respondents generally reported negative attitudes towards other deaf people.

However, attitudes to language can change over time (Baker, 1992:97) and may have become more positive to sign language because of increased awareness of the deaf community and linguistic research on sign languages (Burns et al., 2001). Kyle and Allsop (1982) had reported that 40% of deaf people living in Bristol said they had never met a deaf person from farther than 125 miles away and rated other regional varieties of BSL 'difficult to understand'.

Woll (1994) interviewed deaf signers from different regions of Britain, exploring their comprehension of and attitudes to regional varieties of BSL. She found that attitudes towards regional variation had substantially changed over the preceding 12 years from ‘difficult to understand’ to ‘relatively easy to understand’. Woll noted that this change in attitudes was likely to be associated with the establishment of television programming in sign language and the expansion of contexts for signing in schools for the deaf and the establishment of training for sign language interpreters.

Hill (2012) investigated 74 deaf adults’ perceptions and evaluations of three forms of signing: ASL, Signed English, and mixed signing (or contact signing³). Using an evaluation questionnaire, the study elicited signers’ responses on scales of agreement for traits including *purity, beauty, and smoothness for signing* (related to language); and *education, intelligence, leadership, deaf cultural identity, and appearance* (related to social characteristics of the signers). ASL received the most positive evaluations on all language and social scales; Signed English was negatively evaluated in terms of *purity, beauty, leadership and deaf identity* but positively on *education and intelligence*; the contact signing type received a mixed evaluation. The author noted that “the general attitude about ASL is more positive today than it was in the 1960s (Hill 2012:9).”

³ Contact signing in ASL refers to a variety of signing which occurs naturally and includes ASL and English elements (Lucas & Valli, 1992). Contact signing ‘takes on the richness of ASL with vocabulary, nonmanual signals, inflections in movement, and spatial locations. It can be expressed by mouthing English words fully and fingerspelling English words or phrases’ (Hill 2012:34).

13.5 Language attitudes to CSL

Compared to sociolinguistic studies of sign languages in many western nations, research on Chinese Sign Language started relatively late, and there have been few published works about language attitudes towards CSL.

Liu, Gu, Cheng and Wei (2013) used a questionnaire to investigate comprehension, language preferences and fluency of local signing and Signed Chinese. Three groups of respondents were included: students who attended deaf schools, special education teachers, and deaf adults with varying occupations. 59% of the deaf adult respondents reported a preference for their own signing varieties while 10.1% favoured *Zhongguo Shouyu*. This contrasts with the responses of the hearing teachers, only 6.5% of who chose local varieties used by deaf students as their preferred signing variety, with 34.7% preferring *Zhongguo Shouyu*. The preferences of deaf students, however, were quite mixed: 33% preferred to use local varieties and 27% preferred *Zhongguo Shouyu*. Fluency in Signed Chinese was found to be associated with less severe hearing loss and older age at onset of deafness. Deaf adults who could follow speech with a hearing aid reported higher fluency in Signed Chinese than those who were profoundly deaf; students who had become deaf before the age of 4 reported using less Signed Chinese than students who had become deaf after the age of 4. In addition, students with deaf family members reported greater fluency in their own variety than students from hearing families. As for the book *Zhongguo Shouyu*, while over 99% of the teachers in deaf schools and 80% of the students reported that they had read the book *Zhongguo Shouyu*, fewer than 10% of the deaf participants reported no problems in understanding interpreters' signing on the television news. The study also reported that the largest group of users of Signed Chinese were teachers.

While this was a pioneering survey of signers' attitudes to varieties of CSL, including assessment of the opinions of participants in relation to the promotion of standardised signing,

the survey was conducted by researchers who themselves had been involved in producing the standardised lexicon *Zhongguo Shouyu*. It was also mentioned in the report, although not actually investigated, that variation in CSL causes difficulties in communication among Chinese signers, and that therefore a standardised lexicon is necessary to help alleviate the difficulty and enhance understanding among deaf people of China. Despite these unresearched claims and the reflection of language planning approaches to Chinese Sign Language, the survey has contributed to the literature on attitudes towards local varieties of CSL and official sign forms in China, serving as an important reference for the current study.

To gain a deeper understanding of Chinese deaf people's attitudes towards regional varieties of CSL, the book *Zhongguo Shouyu* and Signed Chinese, the present study aims to investigate deaf signers' attitudes to different signing varieties. Following the study presented in Part 3, which explored the comprehension of Beijing signs, Shanghai signs and ZS signs, this part of the thesis extends the study to explore Beijing and Shanghai signers' underlying attitudes towards these varieties to better understand the relationship between signers' comprehension of signs and their covert and overt attitudes towards these varieties.

13.6 Research questions

The main research questions addressed in this study are:

1. What is the self-reported comprehension by the participants of Beijing signs, Shanghai signs and *Zhongguo Shouyu* signs?
2. What attitudes of the participants towards Beijing and Shanghai varieties and Signed Chinese can be inferred from their responses to questions about job suitability and trait ascription?

In order to answer the research questions, a questionnaire with 16 related questions was designed. The next chapter, which addresses the methodology for the current study, looks at the details of the questionnaire and describes how the data were collected and analysed.

Chapter 14. Methodology

This chapter describes the questionnaire used to elicit Beijing and Shanghai signers' attitudes towards regional varieties of CSL, ZS signs and Signed Chinese. The structure of the questionnaire and its three sub-sections (comprehension of signing varieties, personal traits, and job suitability) are presented in Section 14.1, which is then followed by a description of the participant demographics, data collection procedures and data analyses in Sections 14.2, 14.3 and 14.4.

14.1 The language attitudes questionnaire

The language attitudes questionnaire consists of 16 questions (see Appendices I and J for the questionnaire in English and Chinese respectively) designed to study participants' reports of their comprehension of different signing varieties used in China and their attitudes towards the Beijing variety, the Shanghai variety, *Zhongguo Shouyu* and Signed Chinese. Signed Chinese, or sign-supported Chinese (Callaway, 2000), *Wenfa Shouyu* ("grammar signing", Wu, 2005), *Guiyue Shouyu* ("conventional signing", Wang, 2003), *Jiaoxue Shouyu* ("teaching signing", Ha, 2002), *Tongyong Shouyu* ("common signing", Gu, 2017), as discussed in Section 1.3, refers to signing which uses the same word order as spoken Chinese (Lytle, Johnson, & Yang, 2005).

The questionnaire was presented in written Chinese and was divided into three main sections, comprising self-ratings of comprehension of different signing varieties, using a six-point Likert-scale (questions 1-6 in Table 19); self-ranking of comprehension of regional varieties of signing (questions 7-11 in Tables 20-21), and evaluation of personal traits and job suitability for users of the Beijing and Shanghai varieties and Signed Chinese (questions 12-16 in Tables 22-23). For the last group of questions, participants were told that they could choose as many traits and jobs as they liked for people who used different signing varieties (see a full description of the questions in Sections 14.1.2 and 14.1.3). Questionnaire respondents also

participated in the lexical comprehension task (see Part 3) which immediately preceded the language attitudes tasks. The questionnaire in Chinese, and the other written documents required for the study, were first checked with a visiting researcher in London whose first language was Chinese, and were then administered in a pilot study with a Chinese deaf signer prior to data collection.

14.1.1 Comprehension of signing varieties

Questions 1 to 6 (Table 19) required participants to self-rate their comprehension of Beijing signing, Shanghai signing, *Zhongguo Shouyu*, Signed Chinese, and the signing used by interpreters in regional and national TV news. The responses produced by the participants for Beijing signing, Shanghai signing and *Zhongguo Shouyu* signing were then compared with their comprehension of the lexical signs presented in Part 3 of this thesis. Questions regarding the signing produced by sign language interpreters in local TV and national TV (i.e., China Central Television) news were included in order to provide a comparison to previous reports about the extent of Chinese signers' comprehension of signing used in similar public settings (see Liu, Gu, Cheng, & Wei, 2013; Ni, 2015; Ran, 1998). For each of the six questions, a Likert-scale ranging from 1 (cannot understand at all) to 6 (have no problem understanding) was provided for the signers' response.

Number	Questions
1	How well do you understand the Shanghai/Beijing signing variety? (the signing used in the participants' own region)
2	How well do you understand the Beijing/Shanghai signing variety? (the signing used in each other's regions)
3	How well do you understand Signed Chinese (i.e. <i>Wenfa Shouyu</i>)?
4	How well do you understand the signing used by sign language interpreters in the CCTV news?

5	How well do you understand the signing used by sign language interpreters in local television news?
6	How well do you understand the signs promoted in the book <i>Zhongguo Shouyu</i> ?

Table 19: Questions 1- 6 in the language attitudes questionnaire

In Questions 7 to 10, participants were asked to rank five signing varieties in terms of their suitability (most suitable to least suitable) for use in four different contexts: 1) teaching in deaf schools; 2) official signing in conferences; 3) sign language interpreting in national TV news; 4) sign language interpreting in local TV news. The five signing varieties were Beijing signing, Shanghai signing, Signed Chinese, HKSL and TibSL (see Section 3.1 for a discussion of the inclusion of HKSL and TibSL in the current study).

Number	Questions
7	If you were given a chance to vote for a signing variety to be used by sign language interpreters in national TV news, which of the following varieties would you vote for?
8	If you were given a chance to vote for a signing variety to be used by sign language interpreters in local TV news, which of the following varieties would you vote for?
9	If you were given a chance to vote for a signing variety to be used for teaching in deaf schools, which of the following varieties would you vote for?
10	If you were given a chance to vote for a signing variety to be used as the official sign language in a conference, which of the following varieties would you vote for?

Table 20: Questions 7-10 in the language attitudes questionnaire

Question 11 asked participants to rank the signing varieties used in eight regions of China in terms of their ease of comprehension (from easiest to most difficult to understand). Among the eight regions, six are the conventional geographical regions in China above provincial, autonomous and municipal levels:

1. North China, including one municipality (Beijing), one autonomous region (Inner Mongolia) and three provinces (e.g., Tianjin);
2. Northeast China, including three provinces (Jilin, Liaoning and Heilongjiang);
3. East China, including one municipality (Shanghai), and six provinces (e.g., Jiangsu and Fujian);
4. Middle China, including one autonomous region (Guangxi), and five other provinces (e.g., Guangzhou and Hainan);
5. West China, including one municipality (Chongqing), one autonomous region (Tibet) and three provinces (e.g., Yunnan);
6. Northwest China, including one autonomous region (Xinjiang), and four provinces (e.g., Shaanxi and Gansu).

Minority ethnic groups, such as the Tibetans and the Uyghurs, reside in the autonomous regions. CSL researchers have recently begun to investigate the signing of minority ethnic groups and have observed that the signing varieties used in these regions are different from the varieties used by the majority Han ethnic group (Liu et al., 2016). In the present study, the varieties used by deaf signers living in minority ethnic regions of China are listed as a separate option (i.e., ‘minority ethnic regions’) from the other varieties used in the six broader regions. Additionally, since Hong Kong is not considered as belonging to any of the six regions, HKSL was listed as another separate option. As a result, eight regional varieties of signing (6 geographical regions, minority ethnic groups, and Hong Kong) were offered for ranking.

Number	Question
11	Deaf people living in different parts of China have been found to use different signing varieties. Which part of China has the sign varieties you find most difficult to understand and which part has the signing varieties you find easiest to understand? Please rank the regions shown below from 1 (easiest) to 8 (most difficult).

Table 21: Question 11 in the language attitudes questionnaire

14.1.2 Personality traits

Questions 12, 13 and 14 required participants to select the best matched personal trait(s) for signers who use Beijing signing, Shanghai signing and Signed Chinese.

Fourteen personal traits associated with status and solidarity were used for the investigation of language attitudes. The traits related to status comprised: *intelligent, well-educated, enthusiastic, bureaucratic, snobbish, indifferent* and *arrogant*. The traits related to solidarity were *considerate, kind, honest, modest, rough, boasting* and *dishonest*.

Number	Questions
12	Which of the following descriptions do you think fit(s) a sign language interpreter who prefers to use Signed Chinese?
13	Which of the following descriptions do you think fit(s) a sign language interpreter who prefers to use Beijing signing?
14	Which of the following descriptions do you think fit(s) a sign language interpreter who prefers to use Shanghai signing?

Table 22 : Questions 12-14 in the language attitudes questionnaire

14.1.3 Job suitability

UK studies of language variation and attitudes commonly use the ONS (Office for National Statistics) division of occupations into 6 categories of socio-economic classes: A and B (higher and intermediate managerial, administrative, professional occupations); C1 (supervisory, clerical and junior managerial, administrative, professional occupations); C2 (skilled manual occupations); D and E (semi-skilled and unskilled manual occupations, unemployed and lowest grade occupations). A structure proposed by Lu (2002) for the study of socio-economic class in China divides social class into ten categories: (1) managerial class of the state and civil service; (2) business executives; (3) entrepreneurs; (4) professionals and skilled workers; (5) civilian staff; (6) self-employed and small-business owners; (7) staff in business and service

industries; (8) semi-manual or manual workers in secondary industry; (9) manual workers in agriculture; (10) semi-unemployed or unemployed. Members of the deaf community, as a marginalised group in society, are often considered to be incapable of taking on many kinds of jobs. As a result, the range of occupations available for deaf people is limited in variety and in lower ranked categories compared with the hearing community. The occupations selected for investigation in the current study conform to occupations falling in categories 5 to 10 in Lu (2002), as these are common occupations for deaf people in China.

Questions 15 and 16 asked the participants to identify the kinds of occupations which they think were likely to be taken by signers who use Beijing signing, Shanghai signing and Signed Chinese. The occupations were divided into two broader categories: white-collar jobs and blue-collar jobs (see Table 23), to investigate how participants associate occupations of lower or higher social status with their own signing varieties and with Signed Chinese.

White-collar category	waiter, babysitter, vendor, factory worker
Blue-collar category	sign language teacher, leader ⁴ , online shop owner, graphic designer

Table 23: Occupations in questions 15 and 16 in white-collar and blue-collar categories

Number	Question
15	Which of the following job(s) do you think is likely to be taken by signers who use Signed Chinese?
16	Which of the following job(s) do you think is likely to be taken by signers who sign Beijing/Shanghai variety?

Table 24: Questions 15 and 16 in the language attitudes questionnaire

⁴ The occupation *leader* in this study refers to the term *Ling'dao*, meaning officials working in government related departments and state-owned enterprises.

14.2 Participants

The questionnaires were completed by the 16 signers in Beijing and 17 signers in Shanghai who also took part in the lexical comprehension task. The demographic information for participants is thus the same as that in Part 3. All participants were born in the regions in which they were tested and were native or near-native signers of their own regional variety.

Region	Total	Age			Gender		Language background	
		18-35	36-60	61+	Female	Male	Deaf	Hearing
Beijing	16	6	4	5	8	8	9	7
Shanghai	17	7	5	5	12	5	4	13
Total	33	13	9	10	20	13	13	20

Table 25: Participant demographics in the language attitude study

14.3 Data collection procedures

Data were collected with the assistance of fieldworkers who were active members of their local deaf community. Following completion of the lexical comprehension task, the fieldworkers checked whether the participant had participated in the lexical variation production study (see Part 2). If the participant had participated in that study, and therefore had already completed the personal background questionnaire (see Appendices G in English and H in Chinese), they could immediately begin completing the attitudes questionnaire; if the participant reported that they had not participated in the study, the fieldworker asked the participant to complete the background questionnaire before moving on to the attitudes questionnaire. If participants were not literate in Mandarin or had difficulty in reading, the fieldworker explained the contents of the questionnaire using signing. During data collection in Shanghai, four older signers reported that they had difficulty in reading the questions because font size was small. The fieldworker therefore explained the questions to the participants and wrote down their answers for them.

14.4 Data analyses

Completed questionnaires were collected by the fieldworkers and then passed on to the researcher. The researcher organised the questionnaires in terms of region, assigned code numbers to each of the completed questionnaires and then transferred the questionnaire responses onto Excel for subsequent statistical analyses. The statistical software SPSS (version 24) was used to perform analyses on the coded data. For the Likert-scale responses relating to comprehension of signing varieties, independent t-tests and one-way ANOVA with post hoc tests were performed; for the analysis of judgements of suitability of varieties in different settings, individual rankings for each setting were summed and then compared; for responses relating to ascribed personality traits and job suitability, the sums of responses were calculated and then ranked for comparison. Chapter 15 presents the results of analyses and chapter 16 discusses the results.

Chapter 15. Results

This chapter consists of five sections describing the analyses of the 16 questions. Section 15.1 presents the analysis of the participants' self-ratings of their comprehension of Beijing signing, Shanghai signing, Signed Chinese and ZS signs. Comprehension ratings in relation to participants' demographic information, including age and gender, are also explored in this section; Section 15.2 analyses participants' perceptions of the ease and difficulty of the varieties used in eight regions of China; Section 15.3 presents the ranking of suitability of five regional varieties for 4 different hypothetical settings (conferences, teaching in deaf schools, national television news, and local television news); Sections 15.4 and 15.5 look at the participants' ascription of personal traits and suitable occupations to signers who use Beijing and Shanghai varieties and Signed Chinese.

15.1 Self-ratings for comprehension of Beijing and Shanghai varieties, Signed Chinese and the signing used by interpreters in television news

This section describes the participants' self-reports on the extent to which they understand Beijing signing, Shanghai signing, and Signed Chinese as well as the signing used by interpreters in television news programmes. Questions for the ratings were presented to the participants as follows:

How much can you understand Shanghai signing / Beijing signing / Signed Chinese / ZS signs / the signs used by the interpreters in the CCTV news / the signs used by the interpreters in local television news?

The participants were asked to provide ratings of comprehensibility using a six-point Likert-scale, with higher scores indicating better comprehensibility. Details of the questions in English and Chinese are in Appendices I and J respectively.

15.1.1 Reported comprehension of Beijing and Shanghai signing varieties

This section presents the results of statistical analyses of the Beijing and Shanghai participants' reported comprehension of the varieties used in their own regions, as well as those used in each other's regions. The ratings provided by the participants are presented in Figure 28.

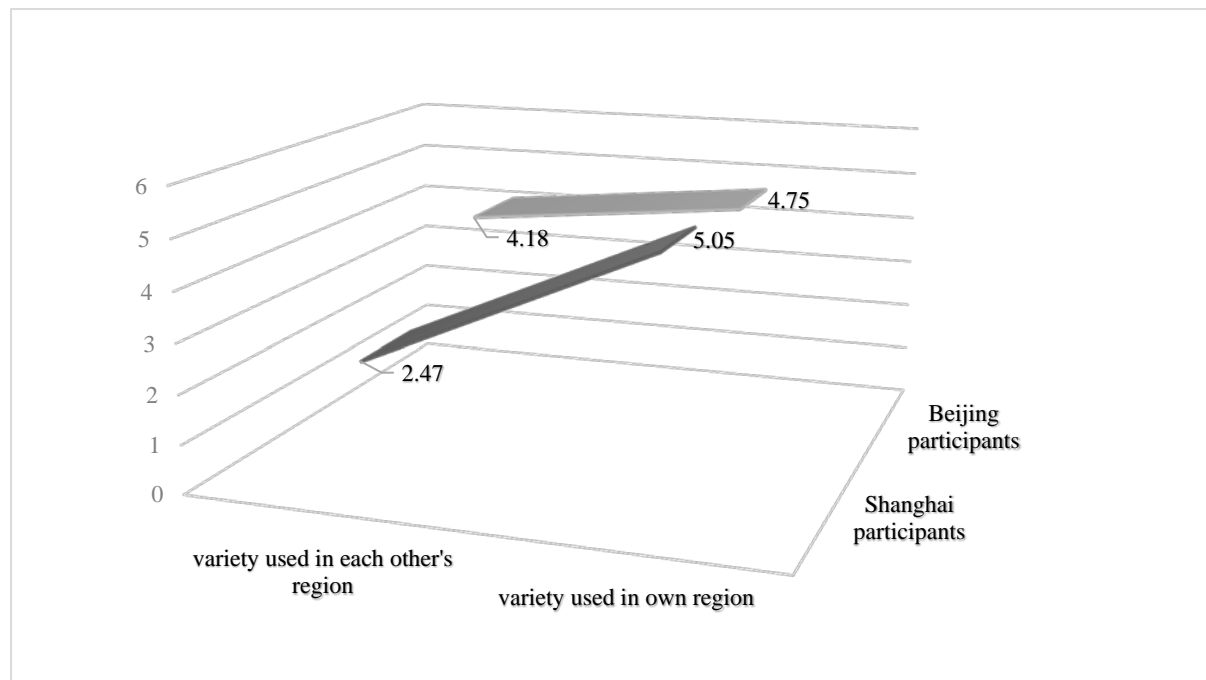


Figure 28: Average scores for participants' reported comprehension of Beijing and Shanghai signing varieties

The average rating of Shanghai participants' comprehension of Beijing signing is 2.47 (on a scale of 1 - 6), whilst Beijing participants' average rating for comprehension of Shanghai variety is 4.18. The average rating for Shanghai participants' comprehension of their own variety (i.e., Shanghai signing) was 5.05, and the average rating for Beijing participants' comprehension of Beijing signing was 4.75. According to the results of an independent t-test ($t(31)=0.781$, $p=0.441$), there is no significant difference between Shanghai and Beijing signers' reports of understanding of their own varieties. Therefore, the Beijing and Shanghai participants both reported their own varieties as relatively easy to understand.

In relation to reported understanding of each other's varieties, however, the t-test analysis shows a significant difference between the two groups ($t(31) = 3.467, p = 0.002$), with Shanghai participants reporting the Beijing variety ($M = 2.47, SD = 1.28$) as significantly more difficult to understand than Beijing participants reporting the Shanghai variety to be ($M = 4.18, SD = 1.55$). This indicates that Beijing signers thought they could understand Shanghai signing quite well, while Shanghai signers thought they had relatively less understanding of Beijing signing. In general, Beijing participants' reported understanding of the Shanghai variety is close to their reported ratings for understanding their own variety ($M = 4.75$), while Shanghai participants reported a relatively lower level of understanding of Beijing signing.

15.1.2 Reported comprehension of Signed Chinese and *Zhongguo Shouyu* signs

This section explores participants' reports of the ease or difficulty understanding Signed Chinese and ZS signs. Figure 29 shows Beijing and Shanghai participants' average ratings for *Zhongguo Shouyu* signs and Signed Chinese.

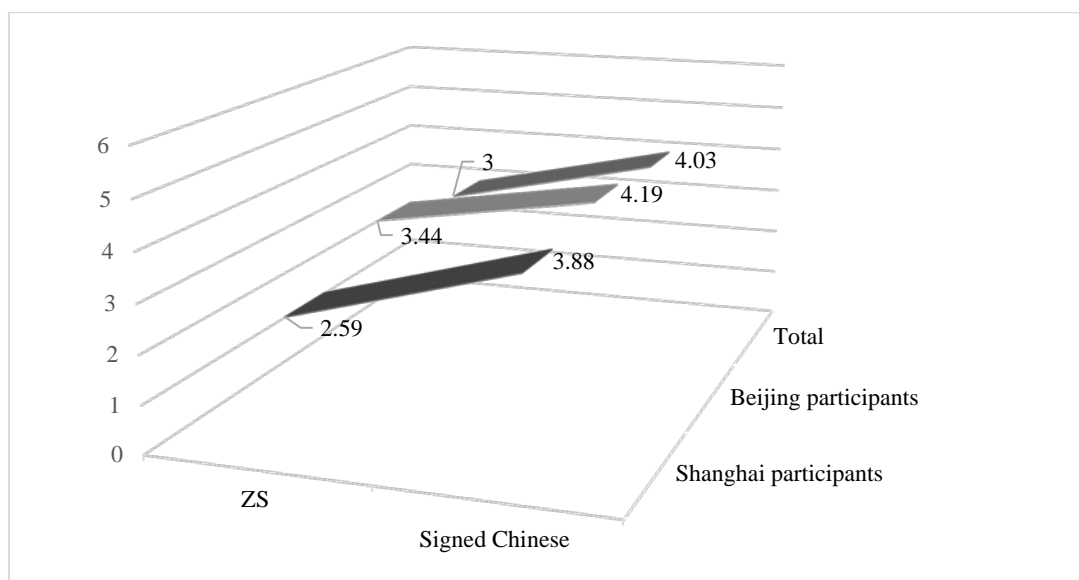


Figure 29: Average ratings of participants' reported comprehension of Signed Chinese and *Zhongguo Shouyu* signs

Figure 29 indicates that Shanghai participants reported an average rating of 3.88 for understanding Signed Chinese, while Beijing participants reported a slightly greater ease of understanding at 4.19, although the t-test analysis for Signed Chinese shows no significant difference between Shanghai participants ($M=3.882$, $SD=1.997$) and Beijing participants ($M=4.19$, $SD=1.97$): $t(31)=0.441$, $p=0.662$.

The average reported rating of understanding ZS signs is 2.59 for Shanghai participants, and 3.44 for Beijing participants. Although the average reported ease of understanding *Zhongguo Shouyu* signs is higher among Beijing participants ($M=3.44$, $SD=1.36$) than among Shanghai participants ($M=2.59$, $SD=1.5$), the independent t-test analysis also shows no significant difference between Beijing and Shanghai participants' ratings: $t(31)=1.696$, $p=0.374$. In conclusion, no differences were found between Beijing and Shanghai participants' self-reports of their understanding of Signed Chinese and *Zhongguo Shouyu* signs.

The descriptive statistics in Figure 29 also show that total average rating for understanding ZS signs is 3 and that for Signed Chinese is 4.03. Independent one-sample t-tests were performed on Beijing and Shanghai participants' ratings to compare the reported comprehension of Signed Chinese and *Zhongguo Shouyu*. Reported understanding of Signed Chinese is significantly different from that of *Zhongguo Shouyu* signs: $t(31)=2.41$, $p=0.019$, with reported comprehension of Signed Chinese ($M=4.03$, $SD=1.96$) higher than comprehension of *Zhongguo Shouyu* signs ($M=3$, $SD=1.48$). Two separate analyses of Shanghai and Beijing participants' ratings were also performed on Beijing participants and Shanghai participants. The results show no significant difference between Beijing participants' ratings of ZS and Signed Chinese: $t(15)=1.25$, $p=0.22$, while Shanghai participants reported comprehension of Signed Chinese differs from their reported comprehension of ZS: $t(16)=2.14$, $p=0.04$. This result indicates that Shanghai participants reported having greater

understanding of Signed Chinese than ZS signs. The discussion of these results is presented in Section 16.1 in the next chapter.

15.1.3 Reported comprehension of television signing

This section looks at participants' reported understanding of sign language interpreters in national news and local television news. The same rating scale was used for questions 7 and 8 as for the previous questions (see question 7-8 in Table 20), with higher scores indicating better comprehension: 1 (don't understand the signing at all) to 6 (have no difficulty in understanding the signing).

Two Shanghai participants and one Beijing participant did not provide ratings of the signing in national TV news. Five Shanghai participants and one Beijing participant did not provide ratings of the understanding of signing on local TV news. Therefore, 30 participants' ratings for the signing on national TV news (15 Beijing participants and 15 Shanghai participants) and 27 participants' ratings for the signing used on local TV news (15 Beijing participants, 12 Shanghai participants) were available for the following analyses.

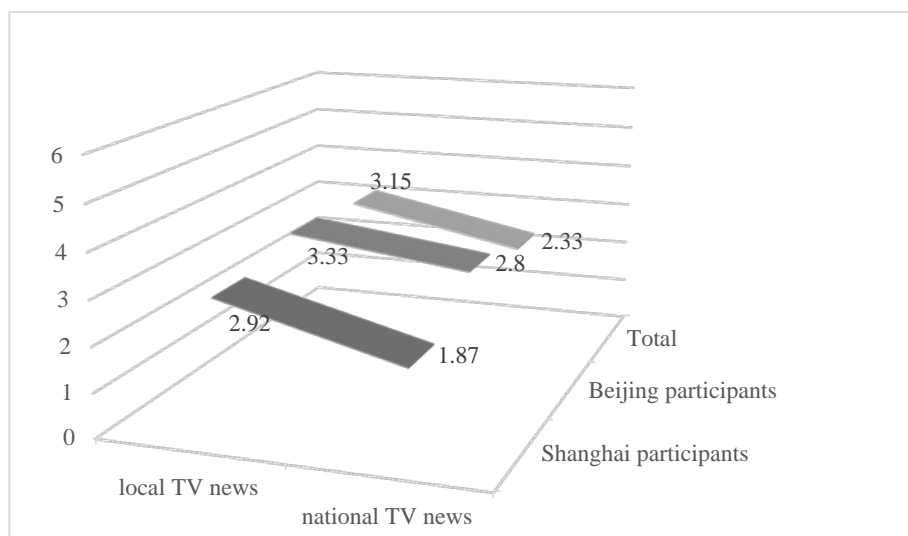


Figure 30: Average ratings of reported comprehension of interpreters on national and local television news

According to Figure 30, Shanghai participants' average rating of understanding interpreters on local TV news is 2.92; Beijing participants' average rating is 3.33. Shanghai participants' average rating of understanding interpreters on national TV news is 1.87; for Beijing participants, the average rating is 2.8. The following two sections present the results of independent t-tests performed on participants' ratings for local and national TV news.

Signing on National Television News

Using an independent t-test, the difference between Beijing ($M=2.8$, $SD=1.37$) and Shanghai participants ($M=1.87$, $SD=0.92$) in their ratings of understanding the interpreters on national TV news is significant: $t(28) = 2.2$, $p=0.037$). Shanghai participants reported a lower level of comprehension than Beijing participants, meaning that Shanghai signers considered the signing used by interpreters in national TV news more difficult to understand than Beijing signers do.

Signing on Local Television News

In contrast to the ratings for difficulty in understanding the signing used in national TV news, no difference was found between Shanghai ($M=2.92$, $SD=1.62$) and Beijing participants' ($M=3.33$; $SD=1.63$) ratings for local TV news: $t(25) = 2.2$, $p=0.52$.

Comparison of National and Local Television signing

The last two sections presented the results of analyses of ratings of Beijing and Shanghai participants for interpreting on television. To investigate whether there is a difference between the signing used on national TV and that used on local TV, another independent t-test was performed to compare participants' general ratings for the two types of signing. Results show that the average rating for understanding local TV news is significantly higher ($M=3.15$,

SD=1.61) than the average rating for understanding national TV news (M=2.33, SD=1.24): $t(30) = -2.15, p=0.039$, suggesting that the signing used by interpreters in national TV news is considered to be more difficult to understand than the signing used by interpreters in local TV news.

15.1.4 Comprehension in relation to age

This section presents the analyses of the participants' reported comprehension of different signing varieties in relation to age. The participants were categorised into three age groups (i.e., 13 younger signers, 11 middle-aged signers and 9 older signers). Firstly, one-way analyses of variance were used to determine whether there is an age difference in ratings for comprehension of signing varieties used in the participants' own regions. Three rounds of analyses were performed: on the overall ratings, the Shanghai participants' ratings and the Beijing participants' ratings. Secondly, analyses were undertaken to see if there were any age differences in reported comprehension of the varieties used in each others' regions, with two rounds of one-way ANOVAs performed on Beijing participants' ratings and Shanghai participants' ratings respectively. Finally, results obtained from the analyses of participants' ratings for Signed Chinese, the signing used in national television news and in local television news are presented below.

Ratings for the comprehension of participants' own varieties

For the overall reported comprehension of the varieties used in the participants' own regions, a significant age difference was found in the one-way ANOVA [$F(2, 30)=3.88, p=.032$]. Applying a Bonferroni correction with a critical p value of .0167, the difference between the average ratings by middle-aged participants (M=5.36, SD=1.03) and older participants (M=4.11, SD=1.05) was significant ($t(18)=2.68, p = .015$). The difference in the average

ratings between younger participants ($M=5.08$, $SD=1.04$) and middle-aged participants was not significant ($p=.505$), and the difference in the average ratings between younger participants and older participants was not significant, either ($p=.046$). Another two rounds of one-way ANOVAs, looking at whether there are age differences in Beijing and Shanghai participants' ratings respectively, showed no significant age difference found among Beijing participants [$F(2, 13)=0.816$, $p=.463$], but a significant difference in the ratings by Shanghai participants [$F(2, 14)=3.851$, $p=.05$]. However, applying a Bonferroni correction with a p value of .0167, the results of post hoc tests of Shanghai participants' ratings fail to show a significant difference among the three age groups of Shanghai signers, i.e., between younger and older signers ($p=.05$); between middle-aged and older signers ($p=.023$); and between the younger and middle-aged groups ($p=.677$).

Ratings for the Comprehension of Each Others' Varieties

The analysis found no significant age effect in participants' overall reported comprehension of the signing used in each other's regions [$F(2,30)=2.396$, $p=.108$], with participants of older ($M=2.44$, $SD=1.88$), middle ($M=4$, $SD=1.67$) and younger ($M=3.31$, $SD=1.25$) age groups providing similar comprehension ratings.

The ratings of Beijing and Shanghai participants for the comprehension of each others' varieties were then analysed, respectively. For Beijing participants, no significant age difference was found in reported comprehension ratings for Shanghai signing [$F(2, 13)=0.816$, $p=.463$]. Although the ratings provided by Shanghai participants for Beijing signing were significantly different than ratings by Beijing participants for Shanghai signing [$F(2, 14)=3.617$, $p=.05$], three post hoc independent-samples t-tests with a Bonferroni correction of .0167 failed to find any significant age differences in reported comprehension of Beijing signing among the

three age groups (between younger and middle-aged groups ($p=.259$); between younger and older groups ($p=.209$); between middle-aged and older groups ($p=.066$)).

Ratings for the Comprehension of Signed Chinese

A one-way ANOVA was performed to test for age differences in participants' overall reported comprehension of Signed Chinese. The differences between the three age groups is significant [$F(2, 30)=9.68, p<.01$]. Results of post hoc tests with a Bonferroni correction value at .0167 demonstrate that this difference is accounted for by differences between the average rating by older participants ($M=2.33, SD=1.8$) and the average rating by middle-aged participants ($M=5.45, SD=0.93$) ($t(18)=5, p < .001$), with the older participants rating their comprehension of Signed Chinese significantly lower than the middle-aged participants. This indicates that older participants thought that Signed Chinese was more difficult to understand than middle-aged participants did. The difference between the rating by younger participants ($M=4, SD=1.83$) and those by middle-aged participants ($p=.026$), and the difference between younger participants and older participants ($p=.047$) were not found to be significant, applying the Bonferroni correction.

A further analysis of the ratings of Beijing participants shows significant differences in the ratings of younger participants ($M=4.17, SD=1.6$), middle-aged participants ($M=5.8, SD=0.45$) and older participants ($M=2.6, SD=2.19$) [$F(2, 13)=5.069, p=.024$]. Three post hoc independent-sample t-tests on the three age groups show that the difference between the ratings provided by middle-aged participants and those by older participants is significant ($t(8)=3.2, p=.013$). The differences of ratings between younger participants and older participants ($p=.203$), and between younger participants and middle-aged participants ($p=.056$) did not show significance. The ratings by the Shanghai participants also show significant age differences

[$F(2, 14)=4.246, p=.036$], with the ratings provided by middle-aged participant ($M=5.17, SD=1.17$) being higher than the ratings provided by older participants ($M=2, SD=1.41$) ($t(6)=-3.71, p<.01$). The difference between the ratings by younger participants ($M=3.86, SD=2.12$) and middle-aged participants ($p=.206$), and that between younger participants and older participants ($p=.155$) were not significant.

Ratings for the Comprehension of ZS

The ratings for comprehension of ZS signs approached significance across the three age groups [$F(2, 30)=3.262, p=.052$]. For Beijing participants, no age group effect was found [$F(2, 13)=1.418, p=.277$]. However, the ratings by Shanghai participants differed significantly across the age groups [$F(2, 14)=4.357, p=.034$]. Post hoc tests using a Bonferroni correction with the critical value of .0167 indicate a significant difference between the older group and the younger group ($t(9)=3.24, p<.01$), with the older participants ($M=1, SD=0$) rating comprehension of ZS signs lower than the younger participants ($M=3.29, SD=1.38$). No significant difference was found between the middle-aged group ($M=2.83, SD=1.47$) and the younger group ($p=.58$), and between the middle-aged group and the older group ($p=.04$).

Ratings for the Comprehension of Signing used in National and Local TV News

The three age groups provided similar ratings for comprehension of the signing used in national TV news [$F(2, 30)=1.02, p=.374$] and local TV news [$F(2, 30)=1.713, p=.202$]. There were also no age differences in ratings for comprehension of signing on national TV news programmes by Shanghai participants [$F(2, 12)=.62, p=.554$] and Beijing participants ($F(2, 12)=1.94, p=.186$); or in ratings for comprehension of signing on local TV news programmes: Shanghai participants ($F(2, 9)=2.44, p=.142$); Beijing participants ($F(2, 12)=1.39, p=.286$).

To sum up, this section has presented analyses of participants' reported comprehension of Beijing signing, Shanghai signing, ZS signs, Signed Chinese and the signing used in national and local television news in relation to age. Age differences were found in the reported comprehension of the signing used in participant's own varieties, Signed Chinese and ZS signs. Older participants gave lower ratings to the comprehension of their own varieties and Signed Chinese in general, compared with middle-aged participants; Shanghai older participants gave lower ratings to Signed Chinese and ZS signs, compared with middle-aged and younger participants; Beijing older participants gave lower ratings to Signed Chinese, compared with middle-aged participants. Importantly, this age difference was not found in the earlier study (Part 3) of participants' actual comprehension of their own varieties and ZS signs. Discussion of the relation between participants' reported and actual comprehension of signs in terms of age is presented in Section 17.4.

15.1.5 Comprehension in relation to gender

To investigate whether there is gender difference in the participants' reported comprehension of Beijing signs, Shanghai signs, Signed Chinese, and *Zhongguo Shouyu* signs as well as the signs used by sign language interpreters in national and local television news, six rounds of independent t-tests were performed on 33 Beijing and Shanghai participants' ratings for comprehension (13 men and 20 women). As shown in Table 26, no significant gender differences were found in these analyses.

	Participants' own regions	Each other's regions	Signed Chinese	<i>Zhongguo Shouyu</i> signs	National TV news	Local TV news
t stat	-1	0.2	0.43	0.24	0.19	1.41
p value	0.32689191	0.84	0.67	0.81	0.85	0.17
M (female)	4.75	3.35	4.15	3.05	2.37	3.53
SD (female)	1.12	1.66	1.81	1.57	1.16	1.55
M (male)	5.15	3.23	3.85	2.92	2.27	2.67

SD (male)	1.14	1.69	2.23	1.38	1.42	1.61
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Table 26: Results of independent t-tests on participants' reported comprehension of Beijing signs, Shanghai signs, Signed Chinese, *Zhongguo Shouyu* signs and the signs used in national and local TV news, in relation to participant gender

15.1.6 Comprehension in relation to family language background

In this section, six rounds of analysis using family language background as a variable (21 from hearing families and 12 from deaf families) were performed on the participants' ratings of comprehension. No significant differences were found, with participants from deaf families and from hearing families providing similar ratings of comprehension of Beijing signs, Shanghai signs, Signed Chinese, ZS signs and the signs used in national and local television news (see Table 27).

	Participants' own regions	Each others' regions	Signed Chinese	<i>Zhongguo Shouyu</i> signs	National TV news	Local TV news
t stat	1.68	-0.65	0.59	0	-0.41	0.59
p value	0.1	0.52	0.56	1	0.69	0.56
M (deaf) ⁵	4.5	3.58	3.75	3	2.45	2.9
SD (deaf)	1	2.1	2.14	1.76	1.21	1.73
M (hearing)	5.15	3.14	4.19	3	2.26	3.29
SD (hearing)	1.15	1.35	1.89	1.34	1.28	1.57

Table 27: Results of independent t-tests on participants' ratings of comprehension of Beijing signs, Shanghai signs, Signed Chinese, *Zhongguo Shouyu* signs and the signs used in national and local TV news, in relation to family language backgrounds

⁵ To investigate reported understanding of participants' own varieties and each other's varieties, the participants' region of origin was confirmed for each of the two groups of family language backgrounds, i.e., deaf vs. hearing, in order to ensure that their origins corresponded with their ratings, i.e., Beijing participants provided ratings for the Beijing variety and Shanghai participants provided ratings for the Shanghai variety in the 'participants' own variety' group; and Shanghai participants provided ratings for the Beijing variety and Beijing participants provided ratings for the Shanghai variety in the 'each other's regions' group.

15.2 Ranking of signing varieties used in eight regions of China in terms of difficulty

This section presents the analyses of Question 11: Which part of China do you think has the most difficult signing variety and which part has the easiest signing variety to understand? The regions offered for ranking comprised: North China, Northeast China, East China, Middle China, West China, Northwest China, Minority ethnic regions and Hong Kong. Participants were asked to rank the signing varieties used in these regions from the easiest to understand (1) to the most difficult to understand (8).

The average rankings given by the participants for each of the eight regions were calculated, and then the average rankings of Beijing and Shanghai participants were compared to see if there were any differences between the two groups of signers. The calculated rankings for the regions are arranged from the easiest (1) to the most difficult (8) in ascending order in terms of Shanghai participants' rankings and are presented in Figure 31.

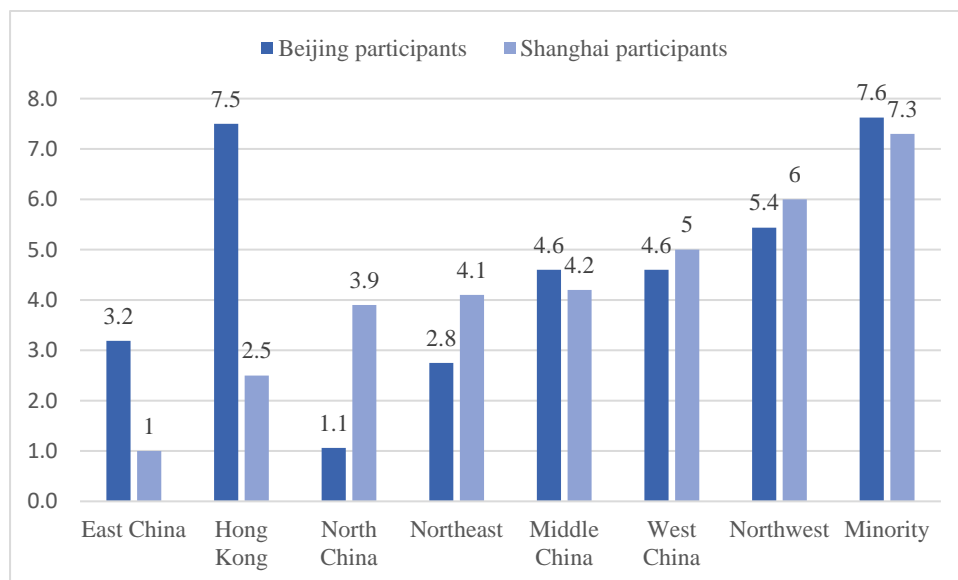


Figure 31: Average rankings of participants' reported difficulty in understanding signing varieties used in eight regions in China

Figure 31 indicates prominent difference between Beijing and Shanghai participants' rankings in relation to the varieties in East China, Hong Kong, North China and Northeast China. The average ranking by Shanghai signers for HKSL was the second easiest to understand, while Beijing signers' average rating for HKSL was the second most difficult to understand; for the signing varieties used in North China, Shanghai signers ranked them as the third easiest to understand while Beijing signers ranked them as the easiest to understand; for the varieties used in East China, Shanghai signers ranked them as the easiest to understand while Beijing signers ranked them as the third easiest to understand; for Northeast China, Beijing signers ranked them as the second easiest to understand while Shanghai signers ranked them as the fourth easiest to understand. Beijing and Shanghai participants' ratings for the other regions, including minority, Northwest China, West China and Middle China showed little difference.

In general, participants ranked the regions of their own signing variety as the easiest to understand, i.e., Shanghai participants ranked the varieties used in East China as the easiest to understand, and Beijing participants ranked the varieties used in North China as the easiest.

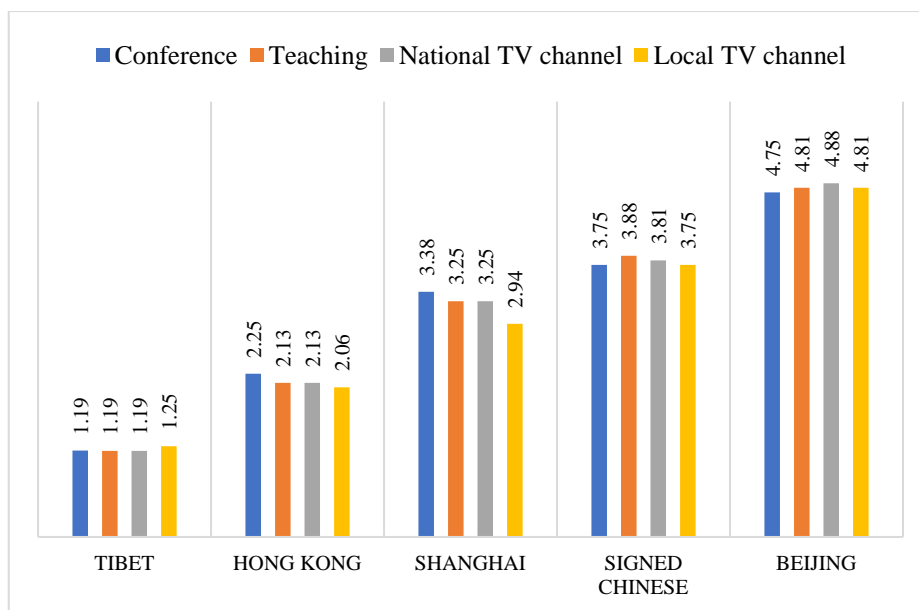
For Shanghai participants, HKSL was the second easiest variety to understand, after the varieties used in East China; while for Beijing participants, HKSL was the second most difficult variety to understand. It is not surprising to find that Shanghai participants ranked HKSL as relatively easy to understand, since Shanghai signs have been shown to be highly similar to HKSL signs (Woodward, 1993). However, it is worth noting that Beijing signers tended to think HKSL as difficult to understand although the studies in Part 1 and Part 2 showed that Beijing signers understood many Shanghai signs and produced some of the Shanghai traditional regional signs. Since Hong Kong is located in the south of China and Beijing is in North China, limitations on contact between the two signing varieties may have led Beijing signers to not recognise that they may possibly understand more HKSL signs than expect.

15.3 Ratings of suitability of five regional varieties for different settings

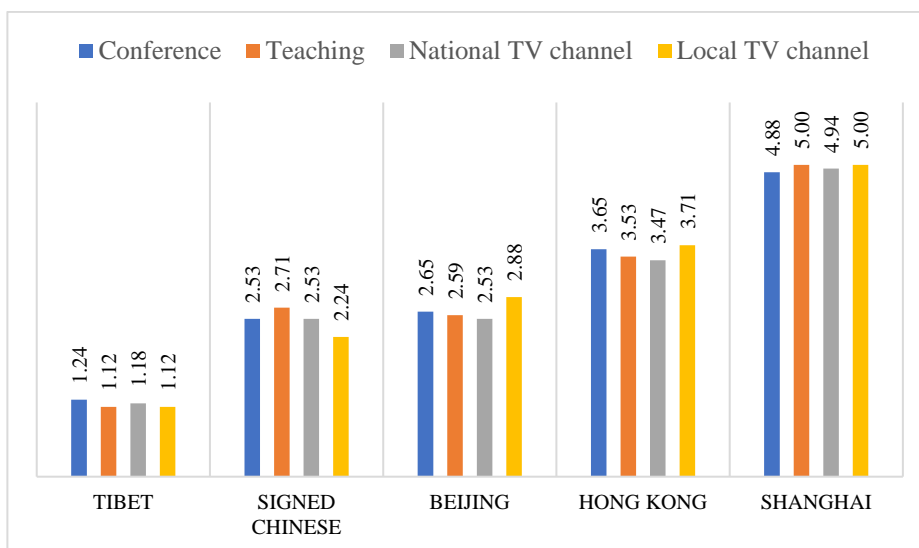
Questions 7-10 (Table 20) asked participants to rank the suitability of five signing varieties (Beijing signing, Shanghai signing, Signed Chinese, Tibet signing and Hong Kong Sign Language) for use in four different settings (conferences, teaching, national TV news, and local TV news).

Participants were asked to rank the five signing varieties for use in the four settings, with the highest rank being 5 (the most preferred), and the lowest (the least preferred) being 1. The average rankings of signing varieties for each setting were calculated and are presented in Figure 32.

The average rankings of Beijing participants are as followed, from the most preferred to the least preferred varieties: Beijing—Signed Chinese—Shanghai—Hong Kong—Tibet. The average rankings of Shanghai participants are as followed: Shanghai—Hong Kong—Beijing—Signed Chinese—Tibet.



a. Average rankings by Beijing participants



b. Average rankings by Shanghai participants

Figure 32: Average rankings for signing varieties to be used in conference, teaching in deaf schools, in local and national TV news: a) Beijing participants (N=16); b) Shanghai participants (N=17)

The figure above indicates that the rankings are similar for all four contexts of use. Tibet received an equal ranking from both Beijing and Shanghai participants as the least recommended regional variety for use in conferences, for teaching in deaf schools and on television. Likewise, the signing varieties used in the participants' own regions were ranked as the most preferred varieties, with the rankings for each others' signing varieties in between.

Similar to the rankings of difficulty in understanding signing varieties in eight regions in China, Shanghai participants ranked HKSL as the second most preferred variety after their own variety, while Beijing participants ranked HKSL as the second least preferred variety. Signed Chinese was ranked as the second most preferred variety by Beijing participants and as the second least preferred variety by Shanghai participants.

15.4 Personal traits

This section explores participants' attribution of personal traits to sign language interpreters who use Beijing signing, Shanghai signing and Signed Chinese, asking participants to choose from a list of 14 personal traits the one(s) best matched to interpreters who use these varieties. The questions on personal traits were presented as: Which of the following descriptions fit a sign language interpreter who uses Beijing signing/Shanghai signing/Signed Chinese? The 3 positive traits for status were: *intelligent*, *well-educated* and *enthusiastic*; the 4 positive traits for solidarity were *considerate*, *kind*, *honest* and *modest*; the 4 negative traits for status were *bureaucratic*, *snobbish*, *indifferent*, and *arrogant*; and the 3 negative traits for solidarity were *rough*, *boasting* and *dishonest*.

In the following sub-sections, the selections of traits are summed and ranked to provide information on the attitudes the participants held towards Beijing and Shanghai signing varieties and Signed Chinese. The factors of 'gender' and 'family language background' were excluded from the analysis, given that they had not been found to be significant in predicting the ratings of ease of comprehension of varieties in Sections 15.1.4 and 15.1.5. The two social factors of 'region' and 'age' are analysed in the following sections.

15.4.1 Traits related to high status

The number of participants who selected each of the three traits related to high status (*intelligent*, *well-educated* and *enthusiastic*) was calculated. Table 28 presents the three positive status traits for interpreters who prefer the Shanghai variety, the Beijing variety and Signed Chinese respectively. The traits that are most frequently selected among the three signing varieties are highlighted in bold. Where the numbers selecting the three traits are even or nearly even, then no highlight is added.

Total selection of positive status traits	intelligent	well-educated	enthusiastic
Shanghai signing	22	7	12
Beijing signing	16	7	9
Signed Chinese	15	8	15
Selections by Shanghai participants	intelligent	well-educated	enthusiastic
Shanghai signing	12	3	8
Beijing signing	7	2	2
Signed Chinese	8	5	4
Selections by Beijing participants	intelligent	well-educated	enthusiastic
Shanghai signing	10	4	4
Beijing signing	9	5	7
Signed Chinese	7	3	11

Table 28: Sums of selected traits related to status for Shanghai signing, Beijing signing and Signed Chinese; bolded entries indicate the most frequently selected traits among the three signing varieties

In general, the trait *intelligent* was most frequently selected (22 participants) for Shanghai signing, and *enthusiastic* was most frequently selected for Signed Chinese (15 participants). The analysis of Shanghai participants' responses shows that positive status traits were most frequently selected for their own variety (a total of 23: 12 *intelligent* + 3 *well-educated* + 8 *enthusiastic*), with a low number of status traits ascribed to users of the Beijing variety (a total of 11: 7 *intelligent* + 2 *well-educated* + 2 *enthusiastic*). Beijing participants frequently

ascribed positive status traits to their own variety (a total of 21: 9 *intelligent* + 5 *well-educated* + 7 *enthusiastic*) and to Signed Chinese (a total of 21: 7 *intelligent* + 3 *well-educated* + 11 *enthusiastic*), compared to positive traits ascribed to Shanghai signing (a total of 18: 10 *intelligent* + 4 *well-educated* + 4 *enthusiastic*). In general, both Beijing and Shanghai participants tended to ascribe positive status traits to their own varieties, with Beijing participants also associating Signed Chinese with positive status traits.

The trait *well-educated* was selected much less frequently than the other two positive traits for status. It is recognised that deaf people's access to education is often more limited than hearing people's. However, *well-educated* was also selected no more frequently for Signed Chinese than signers' own varieties, despite the promotion of Signed Chinese by teachers in deaf schools in contrast to the use of local signing varieties (Callaway, 2000).

15.4.2 Traits related to solidarity

Table 29 presents the selections by Beijing and Shanghai participants of four positive solidarity traits (*considerate*, *kind*, *honest*, *modest*) for Shanghai signing, Beijing signing and Signed Chinese.

Total selections of positive solidarity traits	Considerate	kind	honest	modest
Shanghai signing	19	17	15	12
Beijing signing	17	16	14	15
Signed Chinese	20	15	13	11
Selections by Shanghai participants	Considerate	kind	honest	modest
Shanghai signing	12	9	9	6
Beijing signing	5	5	3	5
Signed Chinese	10	4	5	6
Selections by Beijing participants	Considerate	kind	honest	modest
Shanghai signing	7	8	6	6
Beijing signing	12	11	11	10

Signed Chinese	10	11	8	5
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Table 29: Sums of selected positive traits related to solidarity for Shanghai signing, Beijing signing and Signed Chinese; bolded entries indicate the most frequently selected traits

In general, the participants' choices of the positive solidarity traits favoured for each signing variety are roughly similar for Beijing signing, Shanghai signing and Signed Chinese. However, the trait selections by Beijing and Shanghai participants respectively demonstrate an overwhelming tendency for the participants to attribute positive solidarity traits to users of their own regional variety, i.e., the traits *considerate*, *kind*, *honest* and *modest* were most frequently selected by the Shanghai participants for users of Shanghai signing (a total of 36: 12 *considerate* + 9 *kind* + 9 *honest* + 6 *modest*); and Beijing participants attributed positive solidarity traits to the Beijing variety (a total of 44: 12 *considerate* + 11 *kind* + 11 *honest* + 10 *modest*). Beijing participants also associated the use of Signed Chinese with the positive solidarity traits *considerate* and *kind*.

The findings of positive solidarity traits to signers' own variety is consistent with previous findings that users of sign language dialects hold positive attitudes towards their own variety (e.g., Hill, 2012).

15.4.3 Negative traits

This section presents participants' ascription of negative traits to Beijing and Shanghai signing varieties and Signed Chinese. The negative traits for status employed in the current study are *bureaucratic*, *snobbish*, *indifferent*; and the negative traits for solidarity: *arrogant*; *rough*, *boasting* and *dishonest*. Table 30 shows the participants' selections of negative traits for users of the three varieties.

Total selections of negative traits	Status traits	Solidarity traits
-------------------------------------	---------------	-------------------

	bureaucratic	snobbish	indifferent	arrogant	boasting	dishonest	rough
Shanghai signing	7	4	6	4	3	6	5
Beijing signing	11	2	6	3	4	6	4
Signed Chinese	13	2	5	6	2	3	2
Selections by Shanghai participants	Status traits			Solidarity traits			
	bureaucratic	snobbish	indifferent	arrogant	boasting	dishonest	rough
Shanghai signing	2	0	1	0	1	2	1
Beijing signing	8	1	3	2	2	4	2
Signed Chinese	10	0	2	5	0	1	0
Selections by Beijing participants	Status traits			Solidarity traits			
	bureaucratic	snobbish	indifferent	arrogant	boasting	dishonest	rough
Shanghai signing	5	4	5	4	2	4	4
Beijing signing	3	1	3	1	2	2	2
Signed Chinese	3	2	3	1	2	2	2

Table 30: Sums of negative status and solidarity traits ascribed to interpreters who use Beijing signing, Shanghai signing and Signed Chinese

According to the total selections, *Bureaucratic* and *arrogant* were the most frequently selected negative status traits for Signed Chinese, compared to traits ascribed to Shanghai and Beijing varieties. The ascription of negative status traits to signers who use Signed Chinese was found in both groups, but more strongly in Shanghai participants (with 10 participants selecting *bureaucratic* and 5 selecting *arrogant*) compared to Beijing participants (where only 3 participants selected *bureaucratic* and 1 participant selected *arrogant*). In addition, Shanghai and Beijing participants also differed in their assignment of *bureaucratic* for each others' varieties. 8 Shanghai participants selected *bureaucratic* for Beijing signing; while only 3 Beijing participants selected *bureaucratic* for Shanghai signing. However, negative traits in general tended to be more frequently ascribed to the Shanghai variety by Beijing participants (a total of 28) than to Signed Chinese (15) and Beijing signing (14).

To sum up, both Beijing and Shanghai participants tended to associate their own varieties with positive solidarity. Although positive status was also associated with participants' own varieties, the trait *well-educated* was less frequently selected than the other two positive status traits *intelligent* and *enthusiastic*. Negative traits tended to be associated by Shanghai signers with the Beijing variety and Signed Chinese; while Beijing signers tended to ascribe negative traits only to the Shanghai variety.

Differences in the status and solidarity traits ascribed by Beijing and Shanghai participants to users of Signed Chinese, together with their rankings of Signed Chinese as the second most preferred variety for different settings (see Section 15.3), indicate that Beijing signers hold a more positive attitude to Signed Chinese than to Shanghai signing. Section 15.5 further explores participant attitudes towards Beijing signing, Shanghai signing and Signed Chinese in relation to participants' selection of occupations for users of different varieties.

15.4.4 Trait ascription in terms of age

The participants' ascriptions of personality traits to Beijing signing, Shanghai signing and Signed Chinese in terms of age are presented in this section.

As shown in Table 31, participants across all three age groups generally tended to ascribe positive solidarity traits to the three varieties, compared to positive status traits and negative solidarity and status traits. 62 positive solidarity traits were ascribed to the Beijing variety, compared to 28 positive status traits and 40 negative traits; similarly, 63 positive solidarity traits were ascribed to the Shanghai variety and 59 to Signed Chinese by Beijing participants, while no more than 40 status traits and negative traits were ascribed to these two varieties.

		status	solidarity	negative
Beijing variety	younger	11	19	19
	middle-aged	5	20	10
	older	12	23	11
	Total	28	62	40
Shanghai variety	younger	19	25	10
	middle-aged	11	17	11
	older	10	21	13
	Total	40	63	34
Signed Chinese	younger	10	18	21
	middle-aged	13	22	4
	older	15	19	8
	Total	38	59	33

Table 31: Sums of positive status and solidarity traits and negative traits ascribed by participants of in the different age groups

The negative traits tended to be more often selected for the three varieties in general by younger participants than middle-aged and older participants. The negative traits were selected 50 times (19 for Beijing variety + 10 for Shanghai variety + 21 for Signed Chinese) by younger participants, 25 times (10 for Beijing variety + 11 for Shanghai variety + 4 for Signed Chinese) by middle-aged participants, and 32 times (11 for Beijing variety + 13 for Shanghai variety + 8 for Signed Chinese) by older participants. Among the three signing varieties, the Beijing variety and Signed Chinese tended to be viewed negatively by younger signers, with 19 negative traits ascribed to the Beijing variety and 21 to Signed Chinese whilst only 10 ascribed to Shanghai variety (see Figure 33). To the contrary, negative traits tended to be less frequently ascribed to the Beijing variety and to Signed Chinese by middle-aged and older signers.

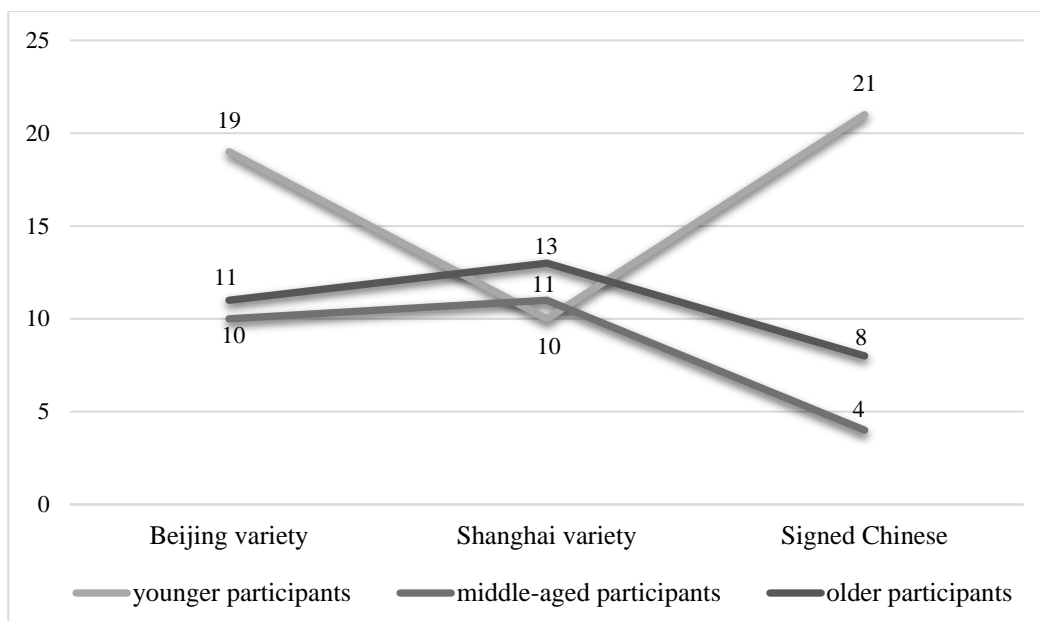


Figure 33: Ascriptions of negative traits to Beijing and Shanghai varieties and to Signed Chinese

Finally, positive status traits were more often ascribed to Shanghai variety by the younger participants. Positive status traits were selected 19 times by younger participants, but only 11 times by middle-aged and 10 times by older participants (see Figure 34).

In conclusion, the participants of all the three age groups expressed a covertly positive attitude towards all three types of signing, with the positive solidarity traits selected more frequently than the positive status traits or either of the negative traits; the younger participants tended to have more positive attitudes towards status in relation to the Shanghai variety than middle-aged and older participants; they also tended to think less negatively of Shanghai variety than middle-aged and older participants.

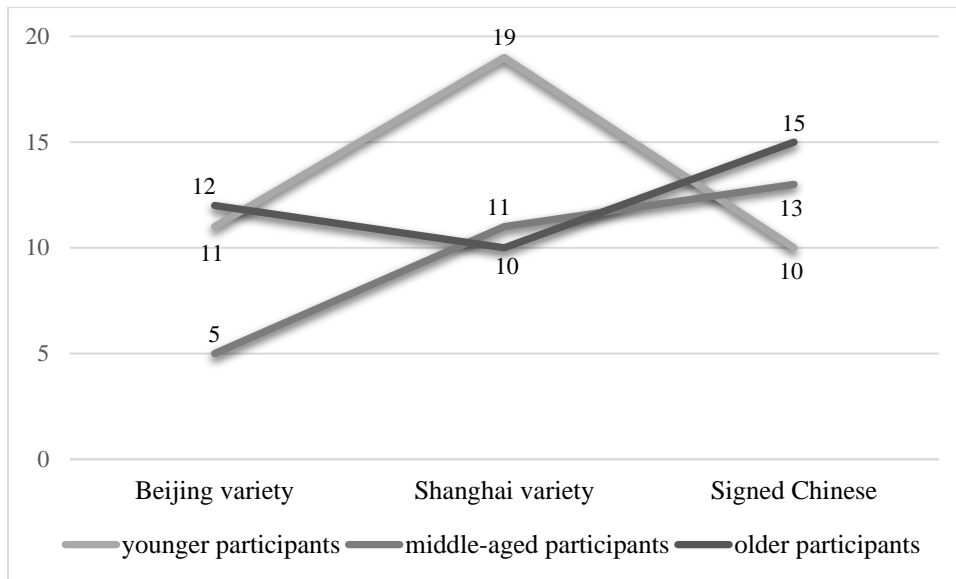


Figure 34: Ascriptions of positive status traits to Beijing and Shanghai varieties and to Signed Chinese

15.5 Job suitability

This section investigates participants' language attitudes by examining their evaluation of suitable jobs for signers using regional varieties and Signed Chinese. The questions relating to job suitability are: Which of the following job(s) do you think is likely to be taken by signers who use your own signing variety/Signed Chinese? Participants were asked to choose as many options as they liked from eight given occupations. The eight options were: *teacher, leader, graphic designer, online shop owner, vendor, factory worker, restaurant waiter and babysitter*. Participants' selections of suitable jobs were summed up and ranked from the most to the least suitable. The rankings for the signing varieties used in the participants' own regions and for Signed Chinese are presented in Figures 35 and 36 respectively.

15.5.1 Job selection for Signed Chinese

Figure 35 shows the job selection by Beijing and Shanghai participants for signers who use Signed Chinese, ranking from the most suitable on the left to the least suitable on the right in terms of Beijing participants' selection.

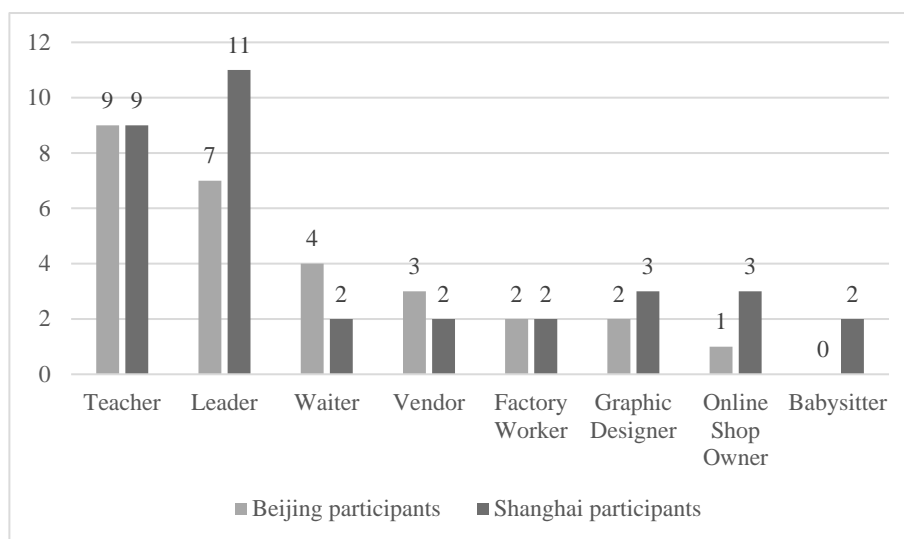


Figure 35: Sums of jobs selected by Beijing and Shanghai participants as suitable for signers who use Signed Chinese

As shown in the figure, the occupations identified by Beijing participants as suitable for Signed Chinese users tended to be *teacher* (selected by 9 participants) and *leader* (selected by 7 participants); the other occupations were much less frequently selected, and the occupation *babysitter* was selected by none of the Beijing participants. Similarly, the two most frequently selected occupations by Shanghai participants as suitable for Signed Chinese users are *leader* (selected by 11 participants) and *teacher* (selected by 9 participants). The total number of participants who selected the two occupations *teacher* and *leader* was 36 (16 Beijing participants and 20 Shanghai participants), constituting 58% of all the selections for Signed Chinese. Since *teacher* and *leader* are both white-collar occupations, the results suggest that

both Beijing and Shanghai signers associate the use of Signed Chinese with relatively high social status, although they differed in the ascriptions of negative traits to users of Signed Chinese (see Section 15.4.3).

The following section looks at participants' selections of occupation for signers who use their own signing varieties (i.e., Beijing and Shanghai varieties).

15.5.2 Selections of suitable jobs for signers who use regional varieties

Figure 36 shows the occupations selected by the Beijing and Shanghai participants as suitable for signers who use the signing varieties in their own regions, i.e., Beijing participants were asked to choose suitable jobs for signers who use Beijing signing, and Shanghai participants were asked to choose suitable jobs for those who use Shanghai signing. The selections of occupations offered by Beijing and Shanghai participants are ranked from the most frequently selected occupation on the left to the least selected occupation on the right.

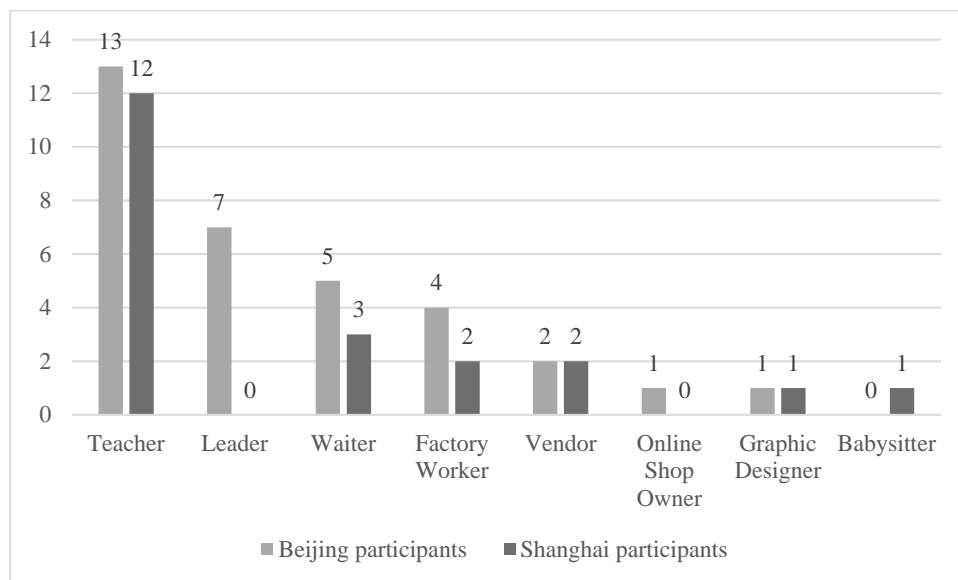


Figure 36: Sums of jobs selected by Beijing and Shanghai participants as suitable for signers who use their own regional variety

In general, the occupations selected most frequently as suitable for signers using their own regional variety include *teacher* (selected by 25 participants), *waiter* (8 participants), *leader* (7 - Beijing participants only) and *factory worker* (6 participants). Two of the occupations (*teacher* and *leader*) are white collar occupations, while the other frequently selected occupations (*waiter* and *factory worker*) are blue collar occupations.

When responses were examined by region, differences were apparent between Beijing and Shanghai participants. The occupation *leader* was selected by 7 Beijing participants as suitable for Beijing variety users; however, it was selected by none of the Shanghai participants for Shanghai variety users, despite *teacher* being selected by roughly the same number of participants in both regions. This result may indicate that, as well as positive attitudes held towards Signed Chinese, Beijing signers may also hold positive attitudes towards their own variety. Given that Beijing is the capital city of China, it is possible that Beijing signers may associate their variety with higher social status. Another possibility is that there are regional differences in the employment of deaf people in *leader* roles, with more such positions available in Beijing.

To sum up, Beijing and Shanghai participants' views on Signed Chinese are generally similar; they tended to view that white collar occupations such as *teacher* and *leader* are suitable for users of Signed Chinese. However, the two groups expressed different views in relation to their own regional variety, with Beijing participants associating their variety more often with white collar occupations than Shanghai participants did.

Chapter 16. Discussion

This chapter discusses the results of analyses presented in Chapter 15. Section 16.1 considers the participants' reported comprehension of the signing varieties used in the participants' own region, the varieties used in each others' regions and *Zhongguo Shouyu* signs, and then compares reported comprehension with participants' actual performance in the lexical comprehension task presented in Part 3. Attitudes towards the signing in television news programmes are also discussed. In Section 16.2, the participants' rankings of difficulty in understanding the signing varieties used in eight broader regions in China are discussed, and differences in ratings by Beijing and Shanghai participants towards regional varieties in CSL are explored. In Section 16.3, the attitudes of the participants towards Beijing and Shanghai varieties and Signed Chinese, which were studied by means of selection of personal traits and jobs associated with each variety, are summarised and discussed. This is then followed by a presentation of the limitations identified in this study and a summary.

16.1 Reported comprehension of signing varieties

Region and age were found to be the two significant factors accounting for the differences in participants' reported comprehension in this study. Beijing signers rated the Shanghai variety twice as easy to understand as Shanghai signers rated the Beijing variety, and older signers reported the lowest level of comprehension of their own varieties, Signed Chinese and ZS signs, compared to middle-aged and younger signers.

The following two subsections compare participants' reported ease of comprehension with their actual performance in the lexical comprehension task presented in Part 3. The ratings of ease of comprehending signing used by interpreters in television news programmes are discussed in Section 16.1.3.

16.1.1 Comparison of Beijing and Shanghai participants' reports of comprehension ease and difficulty with their performance on the comprehension task

It is not surprising that both Shanghai and Beijing participants rated the varieties used in their own regions as the easiest to understand. In the lexical comprehension study, the participants also scored best at comprehending traditional regional signs from their own varieties (see Section 12.1.1 and Section 12.1.2). In relation to comprehension of each others' varieties, Shanghai participants rated the Beijing signs twice as difficult to understand as Beijing participants rated Shanghai signs. This is also consistent with their actual performance in the lexical comprehension task, where Shanghai participants understood an average of 30.6% of the Beijing lexical signs, while Beijing participants understood 65.6% of the Shanghai lexical signs. In relation to reported comprehension of *Zhongguo Shouyu* signs, the ratings given by Beijing participants and Shanghai participants did not differ significantly (see Section 15.1.2), and the analysis of participants' actual comprehension scores showed that Beijing signers and Shanghai signers understood a similar number of ZS signs (see Section 12.4). In general, Beijing and Shanghai participants' reported comprehension of Beijing signs, Shanghai signs and ZS signs were consistent with their actual comprehension scores presented in Part 3.

16.1.2 Age difference

In most of the analyses of reported comprehension (see Section 15.1 for analyses of reported comprehension of the varieties used in signers' own regions, Signed Chinese and *Zhongguo Shouyu*), older participants' ratings, especially those of Shanghai participants, are significantly lower than those of middle-aged participants. However, the Rbrul analyses in the lexical comprehension study showed that age was not a significant factor in predicting signers' actual comprehension of ZS signs and signs used in the signers' own regions (see Section 12.1.2); the older participants were able to understand as many ZS signs and their own region's signs as

younger and middle-aged participants, indicating that older signers' reported level of comprehension of these varieties is lower than their actual comprehension. This finding to some extent echoes earlier studies comparing BSL signers' reported judgements about comprehension and their actual comprehension of regional varieties (Kyle & Allsop, 1982; Woll, 1991). The relationship between signers' reported comprehension and actual comprehension is further discussed in Section 17.4.

16.1.3 Attitudes towards the signing in television news programmes

The signing used by sign language interpreters in local television news programmes was rated by participants as easier to understand than the signing used in the national television news. It is possible that sign language interpreters on local TV news use more local signs than the national TV news, since a majority of the sign language interpreters in local TV news programmes are also teachers in local deaf schools (Liu, Gu, Cheng, & Wei, 2013).

However, despite reporting that it was relatively easier to understand local news interpreting, the signing used by interpreters in both local and national television news was generally rated as quite difficult to understand. Liu et al. (2013) found that less than 10% of deaf respondents reported that they could fully understand television signing, and noted that the difficulty of understanding television signing was associated with inconsistency in the signing used by sign language interpreters. The study also reports that 58.8% of the television sign language interpreters used at least two varieties of signing; 32.6% mainly used *Zhongguo Shouyu*; 7.8% used local signing and a small percentage used signs invented by the interpreters themselves. Meng and Han (2015) suggested that the difficulty of understanding television signing was likely to be associated with such factors as the relatively late recognition of sign language interpreting as a profession in China and the lack of systematic training provided to sign language interpreters. Sign language interpreting as a profession was not officially recognised

by the Chinese authorities before 2007, the year in which the Ministry of Human Resources and Social Security (2008) first recognised it as one of the ten new occupations in China. These factors may contribute in some degree to the low level of reported comprehension of television signing by Beijing and Shanghai participants.

16.2 Comprehension of regional varieties of CSL

It had been reported by Woodward (1993) that Shanghai signing and HKSL have about 66% to 68% cognate signs, and that HKSL could be regarded as a variety of Shanghai signing. In the lexical comprehension study, the Beijing participants had demonstrated good comprehension of Shanghai signs. However, in the reports of perceived difficulty in comprehension, Beijing participants considered HKSL as the most difficult regional variety to understand, followed by the signing varieties used by minority ethnic groups. Similarly, in the rankings of the suitability of the different varieties for use in conferences, teaching and television news (see Section 15.3), HKSL was ranked second to TibSL as the least suitable variety. The reasons that Beijing signers viewed HKSL as a relatively difficult variety to understand may be related to geographical distance and a lack of historical contact directly with Hong Kong signers. Beijing is located in the north of China, while Hong Kong is in the south coast of China, and historical record of contact between signers from Beijing and Hong Kong is limited. A study of the mutual intelligibility of signing used by Beijing, Shanghai and Hong Kong signers may provide further explanations of Beijing signers' attitudes towards HKSL.

16.3 Language attitudes related to status and solidarity

The participants' selections of personal traits and suitable jobs as presented in Sections 15.4 and 15.5 have revealed varying patterns of attitudes to the varieties used in their own regions and to Signed Chinese.

Among the positive status traits, *enthusiastic* was frequently selected for signers who use Signed Chinese. Among occupations, *teacher* and *leader* were most frequently selected for Signed Chinese. Although the findings indicate that signers from both regions associated Signed Chinese with overt prestige, Shanghai participants did not rate Signed Chinese as a desirable variety for use in public settings, including teaching in deaf schools, use at conferences and on TV news programmes. Shanghai participants also tended to attribute the negative traits *bureaucratic* and *arrogant* to users of Signed Chinese, while Beijing participants did not. Therefore, although Signed Chinese enjoys overt prestige among Shanghai participants, they did not hold covertly positive attitudes towards Signed Chinese as Beijing participants did.

In relation to the attitudes towards signers from the participants' own regions, different patterns emerged. In relation to positive solidarity traits, participants from both regions selected *considerate*, *kind*, *honest* and *modest* for their own varieties. However, for the identification of suitable occupations, 7 Beijing participants selected *leaders* for signers who used Beijing signing, while none of the Shanghai participants selected this occupation for their variety. This indicates that Beijing participants tended to associate their own variety with high positive status and solidarity, while Shanghai participants associated the Shanghai variety with low positive status and high positive solidarity. As Beijing is the capital city of China, deaf signers in Beijing may think of their variety as more prestigious than the varieties used in other regions of China. As well as their own variety, Beijing participants also tended to associate Signed Chinese with high positive status and high positive solidarity. It may be due to the geo-political status of Beijing signing and the political status of Signed Chinese that both the Beijing variety and

Signed Chinese were considered to be prestigious by Beijing participants. In addition, lexical similarities between Beijing signing and Signed Chinese may also account for their shared higher status. As reported in the study of lexical variation in this thesis, *Zhongguo Shouyu* signs shared more similarity with Beijing signs than with Shanghai signs (see Section 8.2.1), and ZS and Beijing signing share a number of lexical features (see Section 9.1.1). In future studies, it would be important to investigate the linguistic distance between Beijing and *Zhongguo Shouyu* signs in order to better understand the language attitudes of Beijing signers.

The analysis of age differences in participants' attitudes to Beijing and Shanghai varieties and to Signed Chinese indicates that all participants generally tended to ascribe positive solidarity features to users of all three varieties. Since sign language is the participants' first language, they are more likely to show emotional closeness to it despite the overtly negative views of sign language users in the majority society. Younger participants tended to associate Shanghai signing with higher social status than middle-aged and older signers did. This may suggest that the Shanghai variety is considered as a prestigious variety of CSL among younger signers. An increase in social prestige associated with the Shanghai variety thus may have an influence on the lexicon of younger CSL signers.

16.4 Study Limitations

The present study is one of the first to investigate Chinese signers' attitudes towards signing varieties, and a number of limitations have been observed in the methodology and analyses.

Firstly, the number of participants recruited for this study is rather small. Although the sample size permitted statistically meaningful results relating to participants' ratings of comprehension, the sample size became underpowered in the analysis of attitudes relating to status and solidarity traits of signers using different varieties. As a result, it has not been

possible to fully analyse the relationship between participants' demographic information and their language attitudes, particularly for the data on the attribution of personality traits.

Additionally, the questions on personality traits and occupations included multiple options, which enabled participants to select which traits to comment on. However, the number of selected traits obtained for analyses was generally too small to produce statistically analysable results. This shortcoming might be avoided if a Semantic Differential approach (Osgood, 1964) was adopted, in which a scale is located between a pair of polar adjectives, with the participants required to respond to each of the traits. The SD approach ensures that a full set of responses are collected from each participant.

Another shortcoming relating to the design of the questionnaire is that only direct questions were used to elicit responses in the study. As mentioned in Garret, Coupland and Williams (2003), the direct approach is intrusive, and it may be difficult using this method to elicit 'private attitudes' from respondents. However, given the visual qualities of sign languages, the indirect approach used with spoken languages may not be easily adaptable to sign language studies at present.

16.5 Summary

The study in this part of the thesis explored Beijing and Shanghai signers' reports of comprehension of different signing varieties used in China, and investigated signers' attitudes towards Beijing and Shanghai varieties and towards Signed Chinese through trait ascription and job selection. Region- and age-related differences were observed in participants' ratings of comprehension of different varieties. Beijing signers rated the Shanghai variety twice as easy to understand as Shanghai signers rated the Beijing variety; older participants reported greater difficulty in comprehending different varieties than younger and middle-aged signers.

Both Beijing and Shanghai participants held positive attitudes towards their own signing variety in terms of solidarity, and positive attitudes towards Signed Chinese in terms of status. Beijing participants tended to associate their own variety with relatively high status and high solidarity, while Shanghai participants tended to associate their own variety with low status and high solidarity. As discussed in previous chapters, each of the 14 personal traits used for the study were selected by varying numbers of participants. The numbers of selections for all personal traits are presented in Figure 37.

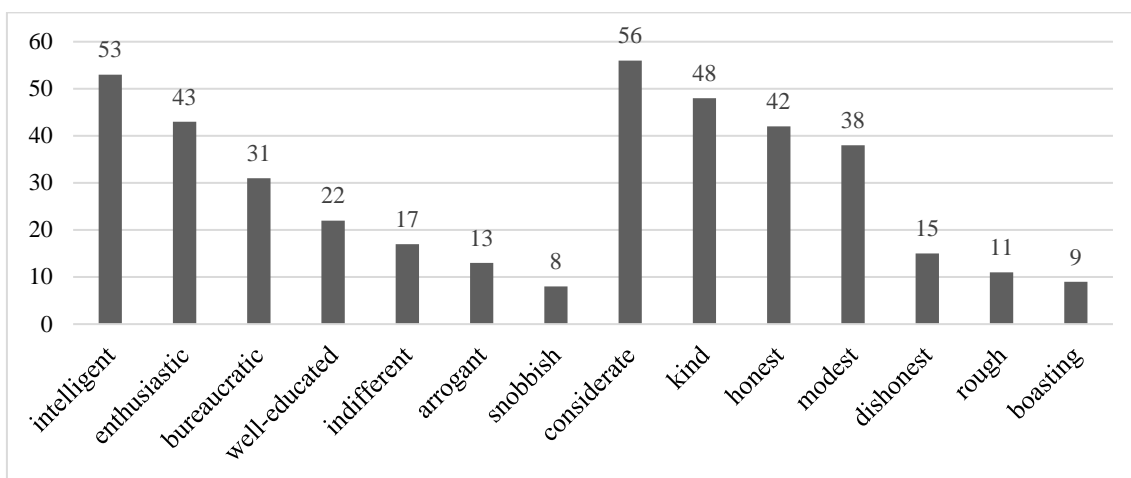


Figure 37: Frequency of selections of the 14 personal traits

In general, the findings in the current study mirror studies of spoken languages (Lambert, Hodgeson, Gardner, & Fillenbaum, 1960; Cargile & Giles, 1998; Marlow & Giles, 2008) in that the users of a minority language variety demonstrate solidarity with their own variety and assign status to the standard variety. Because spoken languages are dominant in mainstream society, being able to use Signed Chinese, which is heavily influenced by Chinese, may indicate a high level of skill in Mandarin and written Chinese. In Chinese deaf schools, Signed Chinese is always encouraged while natural signing is discouraged because teachers believe that being fluent in CSL may hinder the deaf child's ability to read and write (Callaway, 2000). The association of education with Signed Chinese may thus contribute to the positive attitudes

towards Signed Chinese expressed by signers from both Shanghai and Beijing. However, the three varieties examined in the study were generally ascribed with low social status. Although the Deaf community constitutes only a small group in a hearing world, language is an integral part of identity, and sign language is inseparable from the deaf community. Revised language policies, which would include providing institutional support and official recognition of sign language, would improve signers' as well as the public's attitudes towards sign language, and thus would help in enhancing the social status as well as the wellbeing of deaf people in China.

Part 5. Conclusions

The current thesis has explored the sociolinguistic variation of Beijing and Shanghai varieties of CSL by investigating the lexical production, comprehension and language attitudes of deaf signers in Beijing and Shanghai. Given that CSL is relatively understudied particularly from a sociolinguistic perspective, the three studies together have yielded a number of important findings which can improve our understanding of CSL regional varieties and thus lay the groundwork for future studies on regional variation of CSL.

The final part of this thesis, which consists of two chapters, provides a summary of the general discussions for the three studies as a whole, addresses possible implications of the studies, makes suggestions for future research based on the current studies, and finally concludes the thesis. Chapter 17 returns to the overarching research questions which guide the three studies and then discusses their relationships. Chapter 18 addresses the implications of this thesis and proposes a number of directions for future studies.

Chapter 17. General discussion

The overarching research question addressed in the thesis is: How do sociolinguistic factors affect the production and comprehension of - and attitudes towards - the lexical signs used by Beijing and Shanghai deaf signers, and how do these three aspects relate to each other? The research questions are addressed with three studies on lexical variation, lexical comprehension and language attitudes in the thesis.

In Study 1, a review of the literature on variation studies of CSL demonstrated that lexical variation had been observed between the Beijing and Shanghai varieties, with the Shanghai variety being the most influential variety in CSL and the Beijing variety showing stronger influence from Mandarin. The research questions in Study 1 are: (1) How does the production of lexical signs vary in relation to the participants' demographic information and the semantic categories of the signs? (2) Do Shanghai and Beijing signers differ in their production of traditional regional signs, ZS signs as well as the borrowed signs from spoken Chinese? (3) Does lexical variation suggest any language change in CSL?

The finding that some of the Shanghai traditional regional signs were favoured by Beijing signers than vice versa suggests that the Shanghai variety may be the more influential variety. This leads to the further exploration of mutual intelligibility and signers' language attitudes towards Beijing and Shanghai signing varieties as well as to ZS signs in the following two studies.

Study 2 aims to answer two questions: (1) Is there an asymmetry in the extent to which Beijing signers understand Shanghai signs and vice versa? (2) To what extent are signers able to understand the lexical signs promoted in *Zhongguo Shouyu*? (3) How does comprehension of Beijing signs, Shanghai signs and ZS signs relate to signers' demographic background

(region, age, gender and family language), as well as to different semantic categories (place names, food, family members, colour and time)?

The research questions addressed in Study 3 include: (1) What is the self-reported comprehension by the participants of Beijing signs, Shanghai signs and *Zhongguo Shouyu* signs? (2) What attitudes of the participants towards Beijing and Shanghai varieties and Signed Chinese can be inferred from their responses to questions about job suitability and trait ascription?

The following sections 17.1 to 17.3 summarise the findings of Studies 1 to 3 respectively and Section 17.4 discusses these findings in relation to the overall research questions.

17.1 Study 1: Lexical Variation in Beijing and Shanghai Signing Varieties

The results of Study 1 showed that lexical variation in the Beijing and Shanghai varieties is conditioned by three factors: age, region and semantic category (see Section 8.2). Beijing signers were found to slightly favour the use of traditional regional signs compared to Shanghai signers, and Beijing signers produced loan translations and ZS signs more frequently than Shanghai signers. Younger signers produced traditional regional signs and character signs less frequently than middle-aged and older signers, whilst favouring the use of Pinyin signs and ZS signs. The signs for Chinese place names, colours, country names and festivals were found to change at a faster rate compared to the signs for time, family members, numbers and food. Certain Shanghai traditional regional signs were observed to be used by some Beijing participants, but Beijing traditional regional signs were rarely used by Shanghai participants.

17.2 Study 2: Lexical comprehension of Beijing and Shanghai Signing Varieties

To address the question of whether Beijing signers understand more Shanghai signs than the other way around, the results in Study 2 showed that asymmetrical intelligibility exists between

Beijing and Shanghai signers, with Beijing signers able to understand significantly more Shanghai signs than vice versa, thus suggesting that Beijing signers' knowledge of the Shanghai variety is more extensive than Shanghai signers' knowledge of Beijing variety. The study proposes that historical contact of signs between the two regions is a major reason for the asymmetrical intelligibility.

As for the comprehension of ZS signs, the study showed that Beijing and Shanghai participants were able to comprehend an average of 56% of the ZS signs in the lexical comprehension task, which is likely to be caused by the inclusion of both natural signs adopted from CSL and invented signs in the *Zhongguo Shouyu* lexicon.

In addition, Study 2 also found that the signers' comprehension of the traditional regional and non-traditional regional signs varied with their demographic information including region, age and gender. Beijing signers were found to have more extensive knowledge of signs than Shanghai signers in their general performance; female signers outperformed male signers in the comprehension task, even though in Study 1 gender was not found to be an indicator of lexical variation; the younger and middle-aged participants recognised more Shanghai signs than the older generation of signers. Finally, participants performed better at comprehending the signs for Chinese place names and food than the signs for family members, time and colours.

17.3 Study 3: Language attitudes of Beijing and Shanghai Signers

Part 4 investigated the attitudes of Beijing and Shanghai signers towards regional varieties of CSL, with particular attention paid to Beijing and Shanghai varieties, as well as Signed Chinese. The results showed that region and age are the two significant factors accounting for the variation in participants' reported comprehension of different signing varieties. Beijing signers tended to consider the Shanghai variety twice as easy to understand than Shanghai signers considered the Beijing variety. Older signers reported the lowest level of knowledge of Beijing,

Shanghai, and ZS signs as well as Signed Chinese among the three age groups. The study further explored the signers' attitudes towards Beijing, Shanghai and Signed Chinese through personal trait ascription and job selection. Signers of both regions were found to ascribe their own varieties with high solidarity, and at the same time, Beijing signers also tended to ascribe Beijing variety with high social status. Signed Chinese was ascribed by both Beijing and Shanghai signers with traits of higher social status, although a covertly positive attitude towards Signed Chinese was not found among the Shanghai signers in this study.

17.4 Discussion of overall findings

Drawing on the findings in this thesis, signers' production, comprehension and attitudes of the lexical signs used in Beijing and Shanghai signing varied with their demographic information including region, age and gender, as well as semantic category. This section summarises the findings in the three studies and discusses their relationships in terms of region, gender, age and semantic category.

The results in Study 1, 2 and 3 showed that variation in Beijing signers' production and comprehension of Shanghai signs was generally consistent. Specifically, Beijing signers preferred to produce some of the Shanghai traditional regional signs, and they were able to comprehend more Shanghai signs, which they themselves were also aware of according to their reported comprehension of Shanghai signs. Beijing signers' attitude towards the Shanghai variety, however, was not consistent with their production and comprehension, i.e., although showing a good level of comprehension and production of Shanghai signs, Beijing signers did not have positive attitudes towards the Shanghai variety. There were also differences between Beijing and Shanghai signers' production and comprehension of ZS signs. The lexical variation study showed that Beijing signers produced more ZS signs compared to Shanghai signers. The lexical comprehension study, however, showed that there was no significant difference in the

comprehension of ZS signs between Beijing and Shanghai signers, i.e., Beijing and Shanghai signers tended to have equal knowledge of ZS signs. As for the study of language attitudes in Part 4, signers of both regions viewed ZS signs and Signed Chinese (ZS signs are considered by many deaf people as a part of Signed Chinese) with an overtly positive attitude, i.e., they tended to associate the use of Signed Chinese with high social status. However, Shanghai signers' preferential attitudes towards Signed Chinese appeared less strong than Beijing participants, since Shanghai signers tended to ascribe negative traits of social status to Signed Chinese, but Beijing participants did not. The less positive attitude towards Signed Chinese and ZS signs by Shanghai signers may explain their disfavouring of ZS signs in the production study, although their recognition of ZS signs was equal to that of Beijing signers.

The lexical comprehension study found that female signers outperformed male signers in recognising regional variants and ZS signs in general, but gender was not found to be an indicator of lexical variation in production, i.e., the production of traditional regional signs, loan signs and ZS signs by women showed no difference from the production of these signs by men.

As for age, the ratings provided by older signers in the language attitude study (see Section 15.1.4 for the analysis of reported comprehension of the varieties used in signers' own regions, Signed Chinese and *Zhongguo Shouyu* signs) showed that older signers tended to rate the comprehension of signs significantly lower than the signers in the other two groups did. In the lexical comprehension study, however, older participants and participants of the other age groups actually performed equally well in recognising ZS signs and signs in general.

The signs for Chinese place names were found to be changing at a faster rate than the signs for colours, country names, festivals, time, family members, numbers and food in the production study. Meanwhile, the signers in the lexical comprehension task performed best at understanding the signs for Chinese place names compared to other semantic categories.

17.4.1 Asymmetrical intelligibility and language attitudes

Although Beijing signers were found to produce and know more Shanghai signs than vice versa, they did not show a particular preference towards the Shanghai variety over their own variety in the language attitude study. Neither did Shanghai signers show a preference towards the Beijing variety over the Shanghai variety and HKSL. On the contrary, signers of both regions favoured their own varieties over other varieties of CSL (including Signed Chinese) in the ranking of varieties to be used for interpretation in television, for teaching in class and for use in conferences. In the literature on spoken languages (for example, see Haugen, 1966; Wolff, 1959), language contact and attitudes are described as the two major reasons for asymmetrical intelligibility. The findings in this thesis together suggest that the asymmetrical intelligibility between Beijing and Shanghai may be a result of historical language contact (see Section 12.3.1) rather than language attitudes.

Stamp's (2013) study mentioned that the hierarchical structure of regional varieties in terms of social status, commonly found in spoken languages, was not prominent in BSL varieties, as BSL regional varieties developed separately in school-based communities. The current study, however, showed that Beijing signers ascribed high social status to their own signing variety. It is possibly because the Beijing signing variety is used in the cultural, political, and economic centre of China that signers may associate their variety with the high prestige of Beijing. High prestige of the Beijing variety, however, was not the case for Shanghai signers who, although associated the Shanghai variety with relatively low social status, demonstrated high solidarity towards their own variety. Shanghai signing has demonstrated its strong vitality by influencing other signing varieties through historical contact (see Section 3.1). An investigation in future studies of how signers from the other regions of China perceive Beijing and Shanghai varieties would widen our understanding of the relationship between the two varieties and social status.

17.4.2 Production and Comprehension of the signs by older signers

The inconsistency found in the study between older signers' beliefs and their actual comprehension suggests that the signers were possibly unaware of the changes occurring in their actual knowledge of CSL regional varieties.

In a survey conducted by Kyle and Allsop (1982), 40% of the participants in the Bristol deaf community reported that they had rarely met deaf people from further than 125 miles away, and half of the participants reported that they had great difficulties in understanding deaf people from geographically distant areas. Ten years later, Woll (1991) investigated signers' views on the level of difficulty of comprehending regional signing varieties in BSL, and also looked at signers' comprehension of different regional varieties of BSL. Although most signers still rated regional varieties as relatively difficult to understand (with older signers outperforming younger signers in the comprehension task), regional varieties were not found to be as difficult to understand as had been claimed by the participants. The change from the earlier study was suggested by Woll to be the result of increased exposure to regional varieties of BSL on television, which had become possible ten years earlier, facilitating comprehension of different regional varieties, although signers' ratings of their comprehension remained unchanged. Similarly, in the current study, the older signers' beliefs did not match their actual knowledge. Although the ratings of their comprehension tended to be lower than middle-aged and younger signers, their actual comprehension of regional and ZS signs was not different. It is possible that at one time, knowledge of CSL regional varieties was more limited. However, exposure to other varieties of CSL has increased within recent decades, possibly as a result of the frequent use of ZS signs on television, increasing opportunities for travel due to economic development, and advances in social media which enable communications with signers from other regions.

17.4.3 Standardisation

Signed Chinese and ZS signs were found in this study to enjoy social prestige by both Beijing and Shanghai signers over their own varieties. This may be due to oralism having been the dominant approach to communication in deaf schools of China for decades. Signed Chinese, which follows the syntax of spoken Chinese and uses the ZS lexicon, has been promoted in public and educational settings as a part of the government's language planning relating to the sign languages used in China. Contrary to the overtly positive attitudes held by signers, however, these varieties have largely not been adopted by deaf people, many of whom reported that they seldom used ZS signs in their daily communication with other deaf people, and that the signing used by interpreters on television, as well as the signing used by hearing teachers in deaf schools was difficult to understand (Shen, 2008). The standardisation of signing in China, which has proceeded for over five decades since 1959, seems to have yielded limited results. As shown in the comprehension study, half of the ZS signs were incomprehensible to the participants, and were particularly disfavoured by Shanghai signers. The term Chinese Sign Language remains confusing to the public, including some hearing teachers in deaf schools, who equate ZS signs with the lexical signs used by members of the deaf community (Shen, 2008). This confusion is at least partly caused by the use of the same term 'Chinese Sign Language' for deaf community signs and the title of the ZS book. The findings may also reflect a lack of recognition of the minority linguistic and cultural status of the deaf community in China.

17.4.4 Language change

The production and comprehension of lexical signs by Beijing and Shanghai signers as well as their language attitudes have demonstrated a number of patterns which reflect the complexity of language change occurring within these two regions. Although the use of ZS signs has been

generally reported to have enjoyed low popularity among the deaf people in China (for example, see Gu, Liu, Dong, & Wang, 2005; Liu, Gu, Chen, & Wei, 2013), the increasing use of Pinyin and ZS signs among younger signers reflects a change led by the government's language planning on sign language standardisation. With the publication of a new common lexicon to replace the former ZS lexicon in 2018, it remains unclear whether Pinyin signs and the former ZS lexicon will continue to be used by younger signers in the future. However, although the participants tended to associate the officially promoted signs with high social status, high solidarity was found towards the signers' own varieties. In the language attitude evaluation model proposed by Giles and Ryan (1982), the vitality of nonstandard varieties increases if they are used in more formal status-stressing situations as well in as solidarity-stressing situations. Recent attention paid to linguistic research on CSL, the change of government language policy on sign language, and the active engagement of Chinese deaf young people in deaf-related events taking place at home and abroad may play important roles in strengthening signers' deaf identity and their bond with sign language, which might consequently increase the vitality of local signs.

As for language change in relation to different varieties, the findings of the lexical production and comprehension studies together showed that the Shanghai variety has greater influence than the Beijing variety, and the language attitude study demonstrated that younger signers tended to associate the Shanghai variety with high social status. This might suggest that Shanghai signing will continue to influence other regional varieties of CSL. A study to explore accommodation strategies in communication among signers from different regions of China may provide support for the impact of language contact and predict change in regional varieties of CSL in the future.

Chapter 18. Implications and future research

18.1 Implication of the studies

The investigation described in this thesis serves as the first systematic study of sociolinguistic variation in Beijing and Shanghai signing varieties, and thus has both theoretical and practical implications. The following section presents the implications of the current research for sociolinguistic research in general, language planning, language attitude, and public understanding of CSL regional variants.

Both linguistic and sociolinguistic research on CSL has been limited. The sociolinguistic studies of CSL carried out previously have either been based on a small number of participants or have considered a limited range of social factors (for example, see Jiang, 2012). The current study is the first to systematically explore the sociolinguistic factors which impact on variation in sign production, comprehension, and language attitudes, based on data collected from a reasonably large number of deaf signers in Beijing and Shanghai. The findings show for the first-time patterns of lexical variation in relation to signers' social backgrounds and semantic categories, providing valuable resource for future study of sociolinguistic variation of Chinese Sign Language. The study is also an important work for spoken language sociolinguists in China to recognise the deaf community as a minority cultural and linguistic community, and the finding on the use of loan signs from spoken Chinese may also be useful for future study of cross-dialect communication in the Chinese hearing community.

The current study looked at variation in relation to the officially promoted lexicon *Zhongguo Shouyu*. ZS signs, although some are understood by Beijing and Shanghai signers and enjoy overt prestige, were rarely produced by the signers themselves and were not favoured for use in educational and public settings. The authorities have become aware of problems with ZS and issued a new version of the lexicon 'Chinese National Sign Language' in 2018. Invented

or modified signs are no longer mentioned as part of the lexicon, and a new principle for the selection of signs for this lexicon is ‘conventionalization (among the Deaf community)’. Meanwhile, the editor of the book described a majority of the newly adopted signs as those widely used in the daily life of Chinese deaf people and in deaf schools (Gu, 2018). This suggests that the authorities are paying increasing attention to the natural signs used by the deaf community of China and are trying to avoid including modified signs into the standardised lexicon. The new language policy is in agreement with the implications of the present study. The collection and study of deaf community signs will serve as a useful resource in future planning of language policies which value the social, cultural and linguistic aspects of the Chinese deaf community. Furthermore, lessons on the use of real language in the standardised lexicon can be learnt from the BSL SignBank, which was built based on data collected from signers with a variety of social backgrounds for the BSL Corpus Project (e.g., Cormier et al., 2012; Stamp et al., 2014).

The language attitude study investigated in the thesis was conducted via a questionnaire and has explored Beijing and Shanghai signers’ attitudes towards regional varieties of CSL, *Zhongguo Shouyu*, and Signed Chinese. Other approaches which are interaction-based (e.g. Giles, Katz, & Myers, 2006; Giles, 2011) can be adopted to further study CSL signers’ language attitudes on regional signing varieties and provide more details and support to the findings of the current study.

Finally, the findings from the present study may increase public understanding about regional signs being associated with different social groups of signers. For example, hearing teachers in deaf schools may become more accepting of different signs used by deaf students and may become less likely to see Signed Chinese as the only option for instruction; and interpreters may become more aware of lexical choices and how to adjust them when interpreting for different groups of deaf people.

18.2 Suggestions for future research

The current study has investigated sociolinguistic variation in the lexical signs used by Beijing and Shanghai deaf signers, and has shown that their production and comprehension of lexical signs and their language attitudes are conditioned by social and linguistic factors. The study serves as a preliminary study of sociolinguistic variation in CSL, and lays the groundwork for further investigations of sociolinguistic variation in other signing varieties of CSL (Section 18.2.1), language accommodation among signers of different regional varieties (Section 18.2.2), phonological variation of Beijing and Shanghai signs (Section 18.2.3), as well as variation in relation to the social factors which are unique to the deaf community (Section 18.2.4). The investigation of these aspects in future studies will surely improve our understanding of the sociolinguistic variation of regional varieties of CSL.

18.2.1 Sociolinguistic studies of the signing varieties used in China

This thesis has primarily investigated the sociolinguistic variation of Beijing and Shanghai varieties. As a relatively new research field, variation in other regional varieties of CSL remains unexplored. For example, the lexical signs used by signers of minority ethnic groups and in remote regions such as Tibet had previously been observed to show great differences from the signs used by signers of the Han ethnic group (Hofer, 2017; Yang, 2015). An investigation into lexical variation across CSL varieties would enable us to gain a much clearer view of how variations pattern in relation to broader regions of China and minority ethnic groups. Future sociolinguistic research on regional varieties can start by exchanging data among existing CSL datasets. Since 2010, several CSL datasets have been built by researchers in special education and linguistics at different institutions in China, many of which have obtained lexical data from several regional varieties of CSL. It is also important to base future studies on multiple data types in order to obtain results that are more generalisable. The data in the present study were

collected by means of a lexical elicitation task in which individual lexical signs were elicited from the participants. It would be better for future lexical studies to include more naturalistic data such as conversations and narratives to be able to explore the use of signs in context.

This study has revealed that asymmetrical intelligibility exists between Beijing and Shanghai signing varieties and has provided indications that the Shanghai variety is more influential than the Beijing variety. The question of whether the Shanghai variety has comparable influence over other signing varieties is still unclear. A study of lexical comprehension between the Shanghai variety and other regional varieties of CSL will help better understand the extent of influence of Shanghai signing.

18.2.2 Language accommodation

Through evidence of synchronic variation occurring among the older and younger signers, this study has provided evidence of diachronic language change, with historical contact and language policies proposed as the two major factors influencing change. A study of language accommodation among signers from different regions would help to reveal the extent of contact between varieties of CSL and in turn predict language change. Accommodation among BSL signers was studied by Stamp et al. (2015) who found accommodation on the lexical level was low and regional contact was not the best predictor for lexical change in BSL. A study of accommodating strategies used by CSL signers would contribute to research on language variation and change in sign languages. Moreover, the current thesis has demonstrated in the language attitude study that Beijing and Shanghai signers both showed preferences towards their own varieties over other regional varieties and that Beijing signers tended to associate the Beijing variety with high social status. It is possible that as Beijing and Shanghai are the two most developed regions in China, these two varieties are more influential than other regional varieties of CSL. However, it remains unclear whether or not the regional varieties of CSL, are

structured hierarchically, as spoken languages are. Sutton-Spence and Woll (1999) noted that within a minority group like the deaf community, hierarchies or social distinctions may not be quite as prominent as they are in the surrounding hearing community. A study on the convergent and divergent behaviours of signers during communication may help to reveal whether hierarchical structure in relation to social status exists among the regional varieties of CSL.

18.2.3 Phonological variation

Although the focus of the present study has been lexical variation, phonological variation in the lexical variants investigated in this study was also coded to help identify the status of lexical variants. Several phonological processes such as lowering of signs and ‘weak drop’ (i.e., deletion of the subordinate hand in two-handed signs) were observed to occur in the data. Thus these data can serve as a resource for future research on phonological variation in Beijing and Shanghai signs and can be compared to studies of these phenomena in other sign languages (For example, see Fenlon, Schembri, Rentelis, & Cormier, 2013; Lucas et al., 2002; McKee, McKee, & Major, 2011; Schembri, McKee, Johnston, & Goswell, 2009).

18.2.4 Variation related to other social variables

Most of the social variables examined in the current thesis (i.e., region, age, gender) are commonly used in sociolinguistic research on both spoken and signed languages. Although the investigation of these social variables is necessary for the general understanding of variation patterns within signing varieties of CSL, the examining of other social factors which have been found unique in affecting variation in sign languages (e.g., Lucas et al., 2001) should also be included in the future agenda of research on variation in CSL. Unlike the acquisition of spoken languages in hearing children, most deaf children are born to hearing parents and acquire sign

languages relatively late in childhood, which makes the linguistic biographies of deaf people more diverse than the hearing community. Therefore, a study of variation in relation to factors such as type of schooling, location of school, age of onset of deafness, and age of exposure to sign language can surely widen our understanding of sociolinguistic variation in CSL.

18.3 Final remarks

The studies in this thesis have revealed a complex relationship among CSL regional varieties and the officially promoted lexicon; further investigation of the depth and width of sociolinguistic variation in CSL is a priority. This research has expanded our knowledge of sociolinguistics-driven lexical variation in Beijing and Shanghai signers, and surely will provide insights for future research on lexical variation in CSL.

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Appendix A: Information sheet for Lexical Elicitation Task (English)

Information Sheet for Participants in Research Studies

You will be given a copy of this information sheet.

Title of project: Sign language, spoken language, gesture and the relationship between them
Specific Study: Documenting lexical signs in China

This study has been approved by the UCL Research Ethics Committee, Project ID EP/2015/3

Director: Prof Bencie Woll
UCL Deafness, Cognition and Language Research Centre
Dept of Experimental Psychology
49 Gordon Square, London WC1H 0PD
b.woll@ucl.ac.uk
Tel 020 7679 8670

Experimenter:

Name: Yunyi Ma Email Address: yunyi.ma.14@ucl.ac.uk Contact Info: WeChat account: mayunyi
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We would like to invite you to participate in this research project. You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, please read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear, or if you would like more information.

This research is to record and study the signs used by deaf people with each other in China. 60 participants will be included in this filming task. The participants will all be deaf people who learn to sign before the age of 7. Each filming session will consist of only one deaf participant (plus the research assistant). First, 109 PowerPoint slides with images will appear on a laptop screen, and then you will be asked to produce corresponding signs to the images on the slides. No images are presented in the last two slides. Finally, you will be asked to answer a questionnaire about your sign language use and social background. The fieldworker can assist you in completing the questionnaire if needed.

Your responses will be coded by an identifying code, and not associated to your identity. Data will be confidentially secured in our laboratory and accessed only by our research staff; data resulting from these experiments will be composite data from multiple participants. We may ask you to provide contact details to participate in future related studies, but this contact information will be kept separate from your data.

There are no known risks associated with participation in this experiment. Because there are no known benefits associated with participation, you will be paid X ¥ as compensation for your time, which should last around 10 minutes).

It is up to you to decide whether or not to take part. If you choose not to participate, you won't incur any penalties or lose any benefits to which you might have been entitled. However, if you do decide to take part, you will be given this information sheet to keep and asked to sign a consent form. **Even after agreeing to take part, you can still withdraw at any time and without giving a reason.**

All data will be collected and stored in accordance with the UK Data Protection Act 1998.

Following your participation in the study, we will provide you with further information regarding the specifics of the study, and you may contact the experimenters if you desire more information (Yunyi, Ma, yunyi.ma.14@ucl.ac.uk; or Prof. Bencie Woll, b.woll@ucl.ac.uk and Dr. Kearsy Cormier, k.cormier@ucl.ac.uk, who are supervising these studies).

Appendix B: Information sheet for Lexical Elicitation Task (Chinese)

知情同意书

项目名称：手语，口语，手势及其相互关系

研究名称：中国词汇手势记录

伦敦大学学院研究伦理委员会（项目代号：EP/201503）已同意该项研究实行。

负责人： Bencie Woll 教授

伦敦大学学院（UCL）聋人，认知及语言研究中心

心理及语言科学学院

邮箱： b.woll@ucl.ac.uk

联系电话： 0044 020 76798670

研究人：

姓名：马运怡
邮箱： yunyi.ma.14@ucl.ac.uk
联系方式：微信号：mayunyi

非常感谢您帮助参与该项研究的语料录制。在您决定是否愿意参加该调查之前，我们向您说明这项研究的意义以及该研究将调查的内容。请您仔细阅读这篇知情同意书。如果您对以下的内容有不清楚之处，或是您想了解更多的信息，请向我们提问。

该研究的目的是记录并研究中国聋人目前所使用的词汇手势。该研究将收集 60 位参与者的手语语料。参与者皆为在 7 岁以前习得手语的聋人。每一个录制阶段都只能有一名聋人参与（调查人除外）。每一个录制段的主要流程包括：首先，您将会看到电脑屏幕上显示的幻灯片，然后给出相应的手势（您与其他聋人的交流中常用的手势）。每张幻灯片包括一个词汇和一张相应的图片，共有 109 张幻灯片，最后两张没有图片。其次，您需要完成一份关于您手语及相关背景的调查问卷。您可以要求调查人（聋人）用手语来帮助您完成该问卷，或者选择自行填写该问卷。

您所录制的语料将会使用代码来标注，不会涉及您的个人信息。所录制的所有语料会严格保密，只有研究人员可以使用。您所填写的姓名及联系方式是为了在后续研究中方便与您取得联系，这些个人信息将不会和您所录制的语料一起归档。我们将会付给您 30 元的报酬费。您参与该项研究的时间大致为 40-60 分钟。

您可自愿参与这项研究。如果您不想参与该研究，可以无条件退出，且不受任何惩罚。如果您决定参与，请您保留这份知情同意书，并在阅读参与者同意书和录制同意书后签字。即便在您签字之后，您仍然可以在任何时候无条件退出该研究。

所有数据的收集和保存都严格遵守英国 1998 数据保护法。

在您完成录制之后，如果您希望了解这项研究的进展或者有任何问题，请您和研究人（马运怡， yunyi.ma.14@ucl.ac.uk）或者其导师取得联系（ Bencie Woll 教授， b.woll@ucl.ac.uk ； Kearsy Cormier 博士， k.cormier@ucl.ac.uk）。

如果您同意参与这项研究，请您填写接下来的同意表。

Appendix C: Informed consent form for Lexical Elicitation Task (English)

Informed Consent Form for Participants in Research Studies

This form is to be completed independently by the participant after reading the Information Sheet and having listened to (or seen in BSL) an explanation about the research.

Title of project: Sign language, spoken language, gesture and the relationship between them

Specific Study: Documenting lexical signs in China

This study has been approved by the UCL Research Ethics Committee, Project ID EP/2015/3

Director: Prof Bencie Woll
 UCL Deafness, Cognition and Language Research Centre
 Dept of Experimental Psychology
 49 Gordon Square, London WC1H 0PD
 b.woll@ucl.ac.uk
 Tel 020 7679 8670

Experimenter:

Name: Yunyi Ma
 Email Address: yunyi.ma.14@ucl.ac.uk
 Contact Info: WeChat account: mayunyi

Participant's Statement

I agree that

	YES	NO
I have read the information sheet and the project has been explained to me orally / in sign language		
I have had the opportunity to ask questions and discuss the study		
I have received satisfactory answers to all my questions or have been advised of an individual to contact for answers to pertinent questions about the research and my rights as a participant and whom to contact in the event of a research-related injury		
I am being paid for my assistance in this research and that some of my personal details may be passed to UCL for administration purposes		
I understand that I am free to withdraw from the study without penalty if I so wish		
I consent to the processing of my personal information for the purposes of this study only and that it will not be used for any other purpose		
I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998		
I agree for the data I provide to be archived at the UK Data Archive or other UCL-approved archive		

I understand that other genuine researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.

Signed:

Date:

Investigator's Statement

I confirm that I have carefully explained the purpose of the study to the participant and outlined any reasonably foreseeable risks or benefits (where applicable).

Signed:

Date:

Appendix D: Informed consent form for Lexical Elicitation Task (Chinese)

参与同意表

请在确认阅读完资料后填写该同意书。

项目名称：手语，口语，手势及其相互关系

研究名称：中国词汇手势记录

伦敦大学学院研究伦理委员会（项目代号：EP/201503）已同意该项研究实行。

负责人： Bencie Woll 教授

伦敦大学学院（UCL）聋人，认知及语言研究中心

心理及语言科学学院

邮箱： b.woll@ucl.ac.uk

联系电话： 0044 020 76798670

☞ 研究者：

姓名：马运怡
邮箱：yunyi.ma.14@ucl.ac.uk
联系电话：暂无 微信号：mayunyi

	是的	不是
我已经阅读了参与者研究信息单，对该研究有了大致的了解。		
对这项研究不明白的地方，我已提问并与调查人进行了讨论。		
我的提问都得到了满意的回答。		
参与该研究的录制，我会得到相应的报酬。		
我可以无条件退出该研究的语料收集，并且不受到任何惩罚。对此我表示理解。		
我所录制的语料只能应用于这项研究，不可用于其他任何用途。对此我表示同意。		
根据英国的 1998 数据保护法，我所填写和录制的信息将会严格保密。对此我表示理解。		
我所录制的语料不会放到网上，只有注册的研究人员才能看到这些语料。对此我表示理解。		
我所录制的语料将被归档至伦敦大学学院授权的学术档案中，对此我表示同意。		

签名: 日期:

名字(正楷)

Appendix E: Video consent form for Lexical Elicitation Task (English)

Video Consent Form for Participants in Research Studies

This form is to be completed independently by the participant after reading the Information Sheet and having listened to (or seen in sign language) an explanation about the research.

Title of project: Sign language, spoken language, gesture and the relationship between them
Specific Study: Documenting lexical signs in China

This study has been approved by the UCL Research Ethics Committee, Project ID EP/2015/3

Director: Prof Bencie Woll
UCL Deafness, Cognition and Language Research Centre
Dept of Experimental Psychology
49 Gordon Square, London WC1H 0PD
b.woll@ucl.ac.uk
Tel 020 7679 8670

Experimenter:

Name: Yunyi Ma
Email Address: yunyi.ma.14@ucl.ac.uk
Contact Info: WeChat account: mayunyi

Your responses will be video-recorded in the course of this study. We will label all data with identifying numbers rather than your name or any other information associated with your identity. However, because face information is important in BSL and in some gesture studies, it may not be possible to fully conceal your identity. Therefore, we will seek your specific consent for the different possible uses of still images or video clips from which you might be recognised. We will only use your still or video images in those circumstances for which you have explicitly given consent.

Please mark "YES" if you give permission for us to use images or brief clips from your video data for a particular purpose, "NO" if you do not give permission.

Do you give permission for this use?

	YES	NO
1. Analysis of your responses by research staff	YES	NO
All of the following uses are strictly optional and will not affect your participation in this study. Please feel free to respond "NO" for any reason. You do not need to provide any explanation to the researcher.		
2. Presentations at academic research conferences	YES	NO
3. Academic publications reporting the results of these studies, including journal articles, book chapters, technical reports, reports to funding bodies	YES	NO
4. Educational uses in classroom settings to demonstrate the research methods and/or outcomes	YES	NO
5. Academic Web pages describing the research methods and/or methods and/or outcomes	YES	NO
6. Media reports of the research:		
a. Print	YES	NO
b. Television	YES	NO
c. Internet	YES	NO
7. Community relations: presentations of the research to groups/organisations within the Deaf community	YES	NO

8. Presentations where video recording or photography is allowed YES NO
which could then appear publicly – e.g. internet

Please note any additional concerns or restrictions on the reverse of this sheet.

Signed: Date:

Name (Please print)

Appendix F: Video consent form for Lexical Elicitation Task (Chinese)

录制同意书

请在确认阅读完资料后填写该同意书。

项目名称：手语，口语，手势及其相互关系

研究名称：中国词汇手势记录

伦敦大学学院研究伦理委员会（项目代号：EP/201503）已同意该项研究实行。

负责人：Bencie Woll 教授

伦敦大学学院（UCL）聋人，认知及语言研究者中心

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邮箱：b.woll@ucl.ac.uk

联系电话：0044 020 76798670

实验者：

姓名：马运怡
邮箱： yunyi.ma.14@ucl.ac.uk
联系电话：暂无 微信号：mayunyi

您所打出的手势将会在这项研究中记录下来。为了保护您的隐私，我们将不会用您的名字或是任何与您身份相关的信息来标注您的录像。但是，由于脸部特征在手语中的重要性，我们无法将这一身份隐去。我们将会在下您同意的条件中使用带有您脸部特征的截图或静态图片。

在以下情况中，如果您同意我们使用您所录视频或截图，请在下列答案中的“是的”打勾，如果您不同意，则请您在“不是”中打勾。

您是否同意如下操作？

- | | 同意 | 不同意 |
|---|----|-----|
| 1. 研究人员进行学术分析 | 同意 | 不同意 |
| 以下的选择将不会对您参加预料的录制产生任何影响，因此您可以自愿选择“同意”或是“不同意”，并且不需要对录制人进行解释。 | | |
| 2. 学术会议中或学术报告 | 同意 | 不同意 |
| 3. 学术出版物例如期刊论文，书本章节 | 同意 | 不同意 |
| 4. 在课堂教学中的研究介绍 | 同意 | 不同意 |
| 5. 学术网站中的研究介绍 | 同意 | 不同意 |
| 6. 媒体对研究的报道 | | |
| a. 印刷媒体 | 同意 | 不同意 |
| b. 电视 | 同意 | 不同意 |
| c. 网络 | 同意 | 不同意 |
| 7. 在聋人社区中的研究介绍 | 同意 | 不同意 |
| 8. 允许媒体拍摄的学术报告，可能会公开报道，如在网上报 | 同意 | 不同意 |

如果您对该录像同意书有任何担心或附加的限制条件，请您在这页纸的背面将它（们）写下来。

签名: 日期:

名字(正楷)

Appendix G: Questionnaire for participants' background information (English)

Documenting lexical signs in China

Questionnaire

Date: ___/___/___ Date of birth: ___/___/___ Gender M/F

Name:

Contact details:

1. Were you born in China? yes no

2. Which hand do you use most for writing: *right* *left* *either*

3. Which hand do you use most for signing: *right* *left* *either*

4. Where did you learn to sign? **Tick all that apply**

<i>at home with parents</i>	<input type="checkbox"/>	<i>at school with teachers</i>	<input type="checkbox"/>
<i>at home with siblings</i>	<input type="checkbox"/>	<i>at school with other children</i>	<input type="checkbox"/>
<i>at home with tutor</i>	<input type="checkbox"/>	<i>with friends</i>	<input type="checkbox"/>
<i>with family outside the home</i>	<input type="checkbox"/>	<i>other</i>	<input type="checkbox"/>

5. Are/were your parents deaf or hearing?

<i>mother</i>	<i>deaf</i>	<input type="checkbox"/>	<i>hard of hearing</i>	<input type="checkbox"/>	<i>hearing</i>	<input type="checkbox"/>
<i>father</i>	<i>deaf</i>	<input type="checkbox"/>	<i>hard of hearing</i>	<input type="checkbox"/>	<i>hearing</i>	<input type="checkbox"/>

6. What is/was the main communication form of your mother with you? **Please choose only one**

<i>Natural signing(Beijing/Shanghai signing)</i>	<input type="checkbox"/>	<i>CSL</i>	<input type="checkbox"/>
<i>mandarin</i>	<input type="checkbox"/>	<i>writing</i>	<input type="checkbox"/>
<i>Fingerspelling</i>	<input type="checkbox"/>	<i>other spoken language</i>	<input type="checkbox"/>

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DCAL (Deafness, Cognition and Language Research Center)
49 Gordon Square
London
WC1H 0PD
England

gesture/home-signs other signed language
 sign and speech
 N/A

7. What is/was the main communication form of your father with you? **Please choose only one**

Natural signing(Beijing/ Shanghai signing) CSL
 mandarin writing
 Fingerspelling other spoken language
 gesture/home-signs other signed language
 sign and speech
 N/A

If both your parents are hearing, go to question 10. If one or both of your parents are deaf, go to question 8.

8. Where do your deaf parents come from/grow up? **Answer only where necessary**

mother _____ N/A
 father _____ N/A

9. If one of your parents is/was deaf, did they attend a school for the deaf?

mother yes no N/A
 father yes no N/A

If you answered yes above, which school did they attend?

mother _____ N/A
 father _____ N/A

10. Do you have any deaf brothers or sisters who use sign language? yes no

If you answered yes, please specify which siblings use sign language.

_____ younger brother(s)
 _____ younger sister(s)
 _____ older brother(s)
 _____ older sister(s)

11. Are/were your grandparents deaf?

Mother's father yes no
 Mother's mother yes no

Father's father yes no

Father's mother yes no

12. Do/did your grandparents use sign language?

Mother's father yes no

Mother's mother yes no

Father's father yes no

Father's mother yes no

13. Do you have a deaf partner/spouse? yes no no partner

14. Does your partner/spouse use sign language? yes no no partner

15. Do you have deaf children? yes no no children

16. Do you sign to your children (hearing/deaf)? yes no no children

17. Do you have other deaf relatives who sign? yes no

If yes who? _____

18. What is the highest level of education you have passed? **Please tick only one**

Went to school but did no exams

Primary school

Secondary school

High school

University degree or above

19. How old were you when you left full-time education? **Please tick only one**

15 years or younger

16-19 years

20 years or older

still in full time education

20. Which school(s) did/do you attend? Please put down both primary and secondary schools (please indicate if they were deaf or hearing schools).

30. Are the majority of your friends Deaf or hearing? Or do you have approximately equal numbers of Deaf and hearing friends?

Deaf hearing equal

31. How would you rate your signing? (1 is not very good at all, 7 is excellent) **Please choose only one**

1 2 3 4 5 6 7

32. Apart from Chinese and sign language, do you use any other languages (signed or spoken/written)?

yes no

If you answered no, **please go to question 32.**

If yes, which languages (signed or spoken/written) do you use?

33. If you answered yes to question 30, please state where you use/used these languages. **Tick all that apply**

at home
in school
at work
when abroad
other

34. Which is your preferred language? **Please choose only one**

Natural signing (or Beijing/Shanghai signing)
CSL
Mandarin
another spoken language
another signed language

35. How do you communicate with (**you may tick more than one box**):

hearing people in your family	sign <input type="checkbox"/>	speech <input type="checkbox"/>	sign & speech <input type="checkbox"/>	writing <input type="checkbox"/>	gesture <input type="checkbox"/>
other deaf people in your family	sign <input type="checkbox"/>	speech <input type="checkbox"/>	sign & speech <input type="checkbox"/>	writing <input type="checkbox"/>	gesture <input type="checkbox"/>
deaf friends	sign <input type="checkbox"/>	speech <input type="checkbox"/>	sign & speech <input type="checkbox"/>	writing <input type="checkbox"/>	gesture <input type="checkbox"/>
hearing friends	sign <input type="checkbox"/>	speech <input type="checkbox"/>	sign & speech <input type="checkbox"/>	writing <input type="checkbox"/>	gesture <input type="checkbox"/>
deaf people at work	sign <input type="checkbox"/>	speech <input type="checkbox"/>	sign & speech <input type="checkbox"/>	writing <input type="checkbox"/>	gesture <input type="checkbox"/>
hearing people at work	sign <input type="checkbox"/>	speech <input type="checkbox"/>	sign & speech <input type="checkbox"/>	writing <input type="checkbox"/>	gesture <input type="checkbox"/>
hearing people you do not know	sign <input type="checkbox"/>	speech <input type="checkbox"/>	sign & speech <input type="checkbox"/>	writing <input type="checkbox"/>	gesture <input type="checkbox"/>
deaf people you do not know	sign <input type="checkbox"/>	speech <input type="checkbox"/>	sign & speech <input type="checkbox"/>	writing <input type="checkbox"/>	gesture <input type="checkbox"/>

36. Have you ever taught CSL? yes no

37. Have you ever had training to teach CSL? yes no

Appendix H: Questionnaire for participants' background information (Chinese)

手语词汇记录

问卷调查

日期：___/___/___ 出生日期：___/___/___ 性别：男 / 女

您的姓名：

联系方式：

1. 您出生在中国吗？ 是 不是
2. 你写字的时候使用的是哪一只手？ 左手 右手 两只都可以
3. 你在打手语时主要使用的是哪一只手？
左手 右手 两只都可以
4. 您是如何学会手语的？（可多项选择）

在家父母教的	<input type="checkbox"/>	在聋校里老师教的	<input type="checkbox"/>
在家向兄弟姐妹学的	<input type="checkbox"/>	在学校和聋人同学一起学的	<input type="checkbox"/>
在家和家庭老师学的	<input type="checkbox"/>	和朋友学的	<input type="checkbox"/>
在外头和家人一起学的	<input type="checkbox"/>	其他	<input type="checkbox"/>
5. 您的父母是聋人还是听人？

母亲：	聋人 <input type="checkbox"/>	重听 <input type="checkbox"/>	听人 <input type="checkbox"/>
父亲：	聋人 <input type="checkbox"/>	重听 <input type="checkbox"/>	听人 <input type="checkbox"/>
6. 您和您母亲交流的主要方式是？

自然手语（上海手语）	<input type="checkbox"/>	普通话	<input type="checkbox"/>
中国手语	<input type="checkbox"/>	写字	<input type="checkbox"/>
指拼字母	<input type="checkbox"/>	其他的方言口语	<input type="checkbox"/>
家庭手势语	<input type="checkbox"/>	其他手语	<input type="checkbox"/>
口语和手语结合	<input type="checkbox"/>	以上选项都不适用	<input type="checkbox"/>
7. 您和您父亲交流的主要方式是？

自然手语（上海手语）	<input type="checkbox"/>	普通话	<input type="checkbox"/>
中国手语	<input type="checkbox"/>	写字	<input type="checkbox"/>
指拼字母	<input type="checkbox"/>	其他的方言口语	<input type="checkbox"/>
家庭手势语	<input type="checkbox"/>	其他手语	<input type="checkbox"/>
口语和手语结合	<input type="checkbox"/>	以上选项都不适用	<input type="checkbox"/>

如果你的父母都是听人，请直接跳至第十题。如果你的父母中有一人是聋人或者两人都是聋人，请从第 8 题往下答。

8. 如果您的父母是聋人，他们是在哪里长大/出生的？
- 母亲 _____ 不是聋人
- 父亲 _____ 不是聋人

9. 如果你的父母其中有一个是聋人，他们曾经上过聋校吗？

母亲： 上过聋校 没有上过聋校 不是聋人

父亲： 上过聋校 没有上过聋校 不是聋人

如果上题你回答的是“上过聋校”，请注明聋校的名字。

母亲 _____ 不是聋人

父亲 _____ 不是聋人

10. 您的兄弟姐妹使用手语吗？ 是 不是

如果您的兄弟或姐妹是聋人，请注明分别是几个兄弟姐妹

_____ 弟弟（们）

_____ 妹妹（们）

_____ 哥哥（们）

_____ 姐姐（们）

11. 您的爷爷/奶奶/外公/外婆是聋人吗？

奶奶： 是 不是

爷爷： 是 不是

外公： 是 不是

外婆： 是 不是

12. 您的爷爷/奶奶/外公/外婆使用手语吗？

奶奶： 是 不是

爷爷： 是 不是

外公： 是 不是

外婆： 是 不是

13. 您的丈夫/妻子是聋人吗？

是 不是 没有伴侣

14. 您的丈夫/妻子使用手语吗?
是 不是 没有伴侣
15. 您的孩子是聋人吗?
是 不是 没有孩子
16. 您和您的孩子用手语交流吗?
是 不是 没有孩子
17. 您的其他亲戚中有聋人吗? 有 没有
如果有, 请您说明是哪一位亲戚。

18. 您的最高学历程度是?
- | | |
|-----------|--------------------------|
| 上学但是没有毕业 | <input type="checkbox"/> |
| 小学 | <input type="checkbox"/> |
| 初中 | <input type="checkbox"/> |
| 高中 | <input type="checkbox"/> |
| 大学或者研究生以上 | <input type="checkbox"/> |

19. 你从学校毕业的时候是几岁? 以下只能选择一项。
- | | |
|---------|--------------------------|
| 15岁或者以下 | <input type="checkbox"/> |
| 16-19岁 | <input type="checkbox"/> |
| 20岁或者以上 | <input type="checkbox"/> |
| 仍是在校生 | <input type="checkbox"/> |

20. 你上的是哪一所学校? 请您写出学校的名字并注明是聋校还是听人学校。

您所上的学校是寄宿制学校吗? (需要住校否)

- | | | |
|-----|----------------------------|-----------------------------|
| 小学: | 是 <input type="checkbox"/> | 不是 <input type="checkbox"/> |
| 中学: | 是 <input type="checkbox"/> | 不是 <input type="checkbox"/> |

21. 在你就读的小学, 老师上课时用的是哪种语言?
手语 口语 手语和口语

22. 在您就读的小学，老师上课时用的是哪种语言？
手语 口语 手语和口语
23. 在小学里，您和班里的其他聋人同学是怎么交流的？可多项选择。
手语 口语 手语和口语 写字
动作和姿势 都不是
24. 在中学里，您和班里的其他聋人同学是怎么交流的？可多项选择。
手语 口语 手语和口语 写字
动作和姿势 都不是
25. 您是在上海出生的吗？ 是 不是
如果您不是出生在上海，您在这里生活/工作了多长时间？

26. 您还在其他地方生活过吗？请您在下面的横线上写下来。如果您没有在上海以外的地方生活过，则忽略这题跳至 29 题。

27. 您在第 27 题所列的地方中，哪一个地方您住的时间超过一年以上？

28. 您平时参与聋人群体的活动有哪些方式？可多项选择
与聋人朋友来往
聋人聚会
聋人俱乐部
聋人教堂
聋人活动(如运动会，表演等)
29. 您的朋友大多数为聋人还是听人？或者各占一半？
聋人 听人 各占一半
30. 您觉得您自己的自然手语水平如何？请为您的手语打个分（1 代表最低分，手语水平最低；7 代表最高分，手语水平最高）。只能选择一项
1 2 3 4 5 6 7
31. 除了中国手语和汉语，您还会其他国家的语言吗？（包括口语或手语）
会 不会

如果您回答的是“会”，请您说明是哪一国手语。如果您答的是“不会”，请跳至 34 题。

32. 你在什么场合使用你会的外语或者外国手语？

- 在家
- 在学校
- 在工作的时候
- 在国外的時候

33. 你更喜欢使用哪一种语言？请只选择一项

- 自然手语（或上海手语）
- 中国手语
- 普通话
- 其他口语
- 其他手语

34. 您是否教过手语？

- 是的 不是

35. 您是否受过相关教授手语的培训？

- 是的 不是

Appendix I: Language attitude questionnaire (English)

Name: _____

1. How well do you understand Beijing signing variety? (Please tick one of the numbers in the given scale ranging from (1) I cannot understand at all, to (6) I can understand very well)

1 – 2 – 3 – 4 – 5 – 6

2. How well do you understand Shanghai signing variety? (Please tick one of the numbers in the given scale ranging from (1) I cannot understand at all, to (6) I can understand very well)

1 – 2 – 3 – 4 – 5 – 6

3. How well do you understand Signed Chinese? (Please tick one of the numbers in the given scale ranging from (1) not understand at all, to (6) have no problem understanding)

1 – 2 – 3 – 4 – 5 – 6

4. How well do you understand the signing used by sign language interpreters in the CCTV news? (Please tick one of the numbers in the given scale ranging from (1) I cannot understand at all, to (6) I can understand very well)

1 – 2 – 3 – 4 – 5 – 6

N/A I don't watch CCTC news

5. How well do you understand the signing used by sign language interpreters in local television news? (Please tick one of the numbers in the given scale ranging from (1) don't know the signs at all, to (6) have no problem producing the signs)

1 – 2 – 3 – 4 – 5 – 6

N/A I don't watch local TV news

6. How well do you understand *Zhongguo Shouyu*? (Please tick one of the numbers in the given scale ranging from (1) don't know the signs at all, to (6) have no problem producing the signs)

1 – 2 – 3 – 4 – 5 – 6

7. If you were given a chance to vote for a signing variety to be used by sign language interpreters in national TV news, which of the following varieties would you vote for? Please indicate your preference of signing by ordering them in numbers.

- Your local signing
- Beijing/Shanghai signing
- Signed Chinese
- Tibet signing
- Hong Kong signing

Others (please add) _____

8. If you were given a chance to vote for a signing variety to be used by sign language interpreters in local TV news, which of the following varieties would you vote for? Please indicate your preference of signing by ordering them in numbers.

- Your local signing
- Beijing/Shanghai signing
- Signed Chinese
- Tibet signing
- Hong Kong signing

Others (please add) _____

9. If you were given a chance to vote for a signing variety to be used for teaching in deaf schools, which of the following varieties would you vote for? Please indicate your preference of signing by ordering them in numbers.

- Your local signing
- Beijing/Shanghai signing

- Signed Chinese
- Tibet signing
- Hong Kong signing

Others (please add) _____

10. If you were given a chance to vote for a signing variety to be used as the official sign language in a conference, which of the following varieties would you vote for? Please indicate your preference of signing by ordering them in numbers.

- Your local signing
- Beijing/Shanghai signing
- Signed Chinese
- Tibet signing
- Hong Kong signing

Others (please add) _____

11. Deaf people living in different parts of China were found to use different signing varieties. Which part of China do you think has the most difficult signing varieties and which part has the easiest signing varieties to understand? Please rank them in numeric order ranging from 1 (easiest to understand) to 8 (most difficult to understand).

- Northern China (e.g., Beijing signing, Tianjin signing)
- North Eastern China (e.g., Liaoning signing, Dalian signing, Dalian signing)
- Eastern China (e.g., Shanghai signing, Anhui signing, Fujian signing, Shandong signing)
- Mid China (e.g., Henan signing, Hunan signing, Guangdong signing, Guangxi signing, Shenzhen signing)
- Western China (Sichuan signing, Chongqing signing, Yunnan signing)
- North Western China (e.g., Shanxi signing, Ningxia signing, Xinjiang signing)
- Minority Ethnic regions
- Hong Kong signing

Other (please add) _____

12. Which of the following descriptions do you think fits a sign language interpreter who prefers to use Signed Chinese? (multiple choices available)

- a. Considerate
- b. Bureaucratic
- c. Kind
- d. Enthusiastic
- e. Rough
- f. Snobbish
- g. Smart
- h. Indifferent
- i. Honest
- j. Arrogant
- k. Well-educated
- l. Boasting
- m. Modest
- n. Dishonest

13. Which of the following descriptions do you think fits a sign language interpreter who prefers to use Beijing signing? (multiple choices available)

- a. Modest
- b. Arrogant
- c. Enthusiastic
- d. Boasting
- e. Kind
- f. Honest
- g. Dishonest
- h. Rough
- i. Indifferent
- j. Smart
- k. Snobbish
- l. Well-educated
- m. Bureaucratic
- n. Considerate

14. Which of the following descriptions do you think fits a sign language interpreter who prefers to use Shanghai signing? (multiple choices available)

- a. Dishonest
- b. Enthusiastic
- c. Boasting
- d. Considerate
- e. Bureaucratic
- f. Kind
- g. Rough
- h. Indifferent
- i. Honest
- j. Arrogant

- k. Modest
- l. Smart
- m. Snobbish
- n. Well-educated

15. Which of the following job(s) do you think is likely to be taken by signers who use Signed Chinese (multiple choices available)

- a. Restaurant waiter/waitress
- b. Sign language teacher
- c. Leaders in a state-owned company
- d. Monthly Babysitter
- e. Vendors selling breakfast on the street
- f. Taobao online shop owner
- g. Factory worker
- h. Graphic designer

16. Which of the following job(s) do you think is likely to be taken by signers who uses Beijing/Shanghai signing? (multiple choices available)

- a. Restaurant waiter/waitress
- b. Sign language teacher
- c. Leaders in a state-owned company
- d. Monthly Babysitter
- e. Vendors selling breakfast on the street
- f. Taobao online shop owner
- g. Factory worker
- h. Graphic designer

Appendix J: Language attitude questionnaire (Chinese)

姓名_____

1. 请您对北京手语的理解程度评分（请在以下数字中选一个数字打勾，1分为“我完全看不懂北京手语”依次递增，6为“我能完全理解北京手语”）

1 – 2 – 3 – 4 – 5 – 6

2. 请您对上海手语的理解程度评分（请在以下数字中选一个数字打勾，1分为“我完全看不懂上海手语”依次递增，6为“我能完全理解上海手语”）

1 – 2 – 3 – 4 – 5 – 6

3. 请您对文法手语的理解程度评分（请在以下数字中选一个数字打勾，1分为“我完全看不懂文法手语”依次递增，6为“我能完全理解文法手语”）

1 – 2 – 3 – 4 – 5 – 6

4. 请您对**中央电视台**“新闻30分”节目中翻译手语的理解程度评分。（请在以下数字中选一个数字打勾，1为“我完全看不懂该节目手语翻译的手语研究”，依次递增，6为“我能完全理解节目里手语翻译的手语”）

1 – 2 – 3 – 4 – 5 – 6

我没有看过“新闻30分”这个节目

5. 请您对**北京电视台 / 上海电视台**的手语新闻节目中翻译手语的理解程度评分。（请在以下数字中选一个数字打勾，1为“我完全看不懂该节目手语翻译的手语研究”，依次递增，6为“我能完全理解节目里手语翻译的手语”）

1 – 2 – 3 – 4 – 5 – 6

我没有看过北京电视台 / 上海电视台的新闻

6. 请您对中国手语黄皮书中手语词汇的理解程度评分。1为“我完全看不懂黄皮书中的手语词汇”，依次递增，6为“我能完全理解黄皮书中的手语词汇”）

1 – 2 – 3 – 4 – 5 – 6

7. 假设发起一个投票，选出一种手语在电视新闻中供手语翻译使用，请问您会将票投给哪种手语？请给以下手语标上数字排序，1为最有可能选的手语，依次递减，5为最不可能选的手语。

- 文法手语
 - 上海手语
 - 北京手语
 - 西藏手语
 - 香港手语
 - 其他 (请添加)
-

8. 假设发起一个投票, 选出一种手语在当地电视新闻中供手语翻译使用, 请问您会将票投给哪种手语? 请给以下手语标上数字排序, 1 为最有可能选的手语, 依次递减, 5 为最不可能选的手语。

- 文法手语
 - 上海手语
 - 北京手语
 - 西藏手语
 - 香港手语
 - 其他 (请添加)
-

9. 假设发起一个投票, 选出一种手语在聋校中作为教学手语, 请问您会将票投给哪种手语? 请给以下手语标上数字排序, 1 为最有可能选的手语, 依次递减, 5 为最不可能选的手语。

- 文法手语
- 上海手语
- 北京手语
- 西藏手语
- 香港手语
- 其他 (请添加) _____

10. 假设发起一个投票, 选出一种手语作为中国手语大会的通用语言, 请问您会将票投给哪种手语? 请给以下手语标上数字排序, 1 为最有可能选的手语, 依次递减, 5 为最不可能选的手语。

- 文法手语
- 上海手语
- 北京手语
- 西藏手语

香港手语

其他 (请添加) _____

11. 住在中国各地的聋人使用的手语存在不同的差异。您认为哪个地方的手语最难理解? 哪个地方的手语最容易理解? 请对以下手语用数字进行排序。1 位最容易理解, 依次递增, 10 位最难理解。

北方地区的手语 (例如: 北京手语, 天津手语)

东北地区的手语 (例如: 辽宁手语, 大连手语)

华东地区的手语 (例如: 上海手语, 安徽手语, 福建手语, 山东手语)

华中地区的手语 (例如: 河南手语, 湖南手语, 广东手语, 广西手语)

华西地区的手语 (例如: 四川手语, 重庆手语, 云南手语)

西北地区的手语 (例如: 陕西手语, 宁夏手语)

少数民族的手语 (例如: 新疆手语, 西藏手语, 内蒙古手语)

香港手语

其他 (请添加)

12. 请问以下哪些描述适合一名喜欢使用文法手语作为翻译语言的手语翻译? (可多选)

a. 为他人着想

b. 官腔官调

c. 善良

d. 满腔热血

e. 粗鲁

f. 势利眼

g. 聪明

h. 冷漠

i. 诚实

j. 高傲

k. 高学历

l. 吹牛皮

m. 谦虚

13. 请问以下哪些描述适合一名喜欢使用北京手语作为翻译语言的手语翻译? (可多选)

a. 为他人着想

b. 官腔官调

c. 善良

d. 满腔热血

- e. 粗鲁
- f. 势利眼
- g. 聪明
- h. 冷漠
- i. 诚实
- j. 高傲
- k. 高学历
- l. 吹牛皮
- m. 谦虚
- n. 狡猾

14. 请问以下哪些描述适合一名喜欢使用上海手语作为翻译语言的手语翻译？（可多选）

- a. 为他人着想
- b. 官腔官调
- c. 善良
- d. 满腔热血
- e. 粗鲁
- f. 势利眼
- g. 聪明
- h. 冷漠
- i. 诚实
- j. 高傲
- k. 高学历
- l. 吹牛皮
- m. 谦虚
- n. 狡猾

15. 请问您认为一下那些人最有可能使用文法手语？（可以多选）

- a. 餐厅服务员
- b. 手语教师
- c. 单位领导
- d. 月嫂
- e. 黑暗料理摊贩
- f. 工厂工人
- g. 平面设计师
- h. 淘宝店主

16. 请问您认为一下那些人最有可能使用北京手语 / 上海手语？（可以多选）

- a. 餐厅服务员
- b. 手语教师
- c. 单位领导
- d. 月嫂
- e. 黑暗料理摊贩
- f. 工厂工人
- g. 平面设计师
- h. 淘宝店主

Appendix K: Participant information sheet for Lexical Comprehension Task and Language Attitude Study (English)

Information Sheet for Participants in Research Studies

You will be given a copy of this information sheet.

Title of project: Sign language, spoken language, gesture and the relationship between them
Specific study: Language attitude study of Beijing and Shanghai signing varieties

This study has been approved by the UCL Research Ethics Committee, Project ID EP/2015/3

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NAME: Yunyi Ma EMAIL: Yunyi.ma.14@ucl.ac.uk Tel: 07341486359
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We would like to invite you to participate in this research project. You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, please read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or you would like more information.

Thirty (30) participants will take part in this study. All participants are recruited through local Deaf fieldworkers. In the lexical recognition task, you will see video clips showing a signer producing signs used in China, and then you will see four responses following each video clip. You will be asked to judge which one of the four responses is the meaning of the video clip, by pressing the buttons on the response you choose.

You will be given a practice trial, and you may ask us any questions before you begin the task. The task should take about 30-40 minutes to finish. There will be a practice session and an actual session. There will be 3 signs presented in the practice session and 38 signs presented in the actual session. The actual session consists of three blocks of task, with 12 or 13 signs presented in each block, and there will be a break between each block.

In addition to the lexical recognition task, there is a questionnaire on your views about different kinds of signing situations. Also, there is a brief questionnaire on some information about you. If you participated in the last experiment organized by the researcher and have filled the same questionnaire, you can skip this questionnaire.

Your responses will be coded by an identifying code, which is not associated to your identity. We may ask you to provide contact details to participate in future related studies, but this contact information will be kept separate from your data.

There are no known risks associated with participation in this experiment. Because there are no known benefits associated with the participation, you will be paid or given a small gift for your participation.

It is up to you to decide whether to take part. If you choose not to participate, you will not incur any penalties or lose any benefits to which you might have been entitled. However, if you do decide to take part, you will be given this information sheet to keep and asked to sign a consent form. **Even after agreeing to take part, you can still withdraw at any time and without giving a reason.**

All data will be collected, stored and/ or reused in accordance with the Data Protection Act 1998, UCL Retention Schedule, UCL Research Data Policy, and UCL Staff IPR Policy.

Following your participation in the study, we will provide you with further information regarding the specifics of the study, and you may contact the experimenter if you desire more information (Yunyi Ma, Tel 0741486359); or Prof. Bencie Woll, b.woll@ucl.ac.uk and Dr. Kearsy Cormier, k.cormier@ucl.ac.uk, who are supervising these studies)

Appendix L: Participant information sheet for Lexical Comprehension Task and Language Attitude Study (Chinese)

知情同意书

项目名称：手语，口语，手势及其相互关系

研究名称：中国北京与上海手语变体的语言态度研究

伦敦大学学院研究伦理委员会（项目代号：EP/201503）已同意该项研究实行。

负责人： Bencie Woll 教授

伦敦大学学院（UCL）聋人，认知及语言研究中心

心理及语言科学学院

邮箱：b.woll@ucl.ac.uk

联系电话：0044 020 76798670

研究人：

姓名：马运怡
邮箱： yunyi.ma.14@ucl.ac.uk
联系方式：微信号：mayunyi

非常感谢您参与该项研究。只有在您同意的情况下我们才可以请您进行问卷调查；您不加入的决定不会对您有任何程度的损害。在您决定是否愿意参加该调查之前，请您仔细阅读这篇知情同意书，如您需要，也可以与他人讨论。如果您对以下的内容有不清楚之处，或是您想了解更多的信息，请向我们提问。

该研究将请 30 位参与者参加，所有参与者皆由当地聋人助手进行招募。您将完成一项网上答题任务以及一项纸质问卷调查任务。在网上答题任务中，您将看到 38 个手语词汇视频，每段视频后有四个选项，您的任务是判断其中哪一个选项符合这段视频手语中的意思，并在您认为正确的答案上选择电脑按钮“1”“2”“3”“4”进行选择。在正式任务开始前，您将进行一次答题练习。在正式任务中，这 38 组词汇视频将会分成 3 组，在每组之间您可以选择短暂休息时间，也可以选择继续进行答题。接着我们会请您填写一份纸质问卷调查，该问卷是关于您对各种情况下使用不同手语的看法。如果您之前没有参加过该研究人组织的北京手语词汇任务，您还需再填写一份关于您的语言背景的问卷；如果您之前参加过该任务，就无须再填写。

您的回答将会使用代码来标注，不会涉及您的个人信息。所录制的所有语料会严格保密，只有研究人员可以使用。您所填写的姓名及联系方式是为了在后续研究中方便与您取得联系，这些个人信息将不会和您所录制的语料一起归档。为了感谢您的参与，我们将会给您提供相应的礼品或报酬。您参与该项研究的时间大致为 40-60 分钟。

您可自愿参与这项研究。如果您不想参与该研究，可以无条件退出，且不受任何惩罚。如果您决定参与，但如果您同意参加此次研究，请您保留这份知情同意书，并在阅读参与者同意书和录制同意书后签字。即便在您签字之后，您仍然可以在任何时候无条件退出该研究。

所有数据的收集和保存都严格遵守英国 1998 数据保护法。

在您完成录制之后，如果您希望了解这项研究的进展或者有任何问题，请您和研究人（马运怡，yunyi.ma.14@ucl.ac.uk）或者其导师取得联系（Bencie Woll 教授，b.woll@ucl.ac.uk；Kearsy Cormier 博士，k.cormier@ucl.ac.uk）。

如果您同意参与这项研究，请您填写接下来的同意表。

Appendix M: Consent form for Lexical Comprehension Task and Language Attitude

Study (English)

Informed Consent Form for Participants in Research Studies

This form is to be completed independently by the participant after reading the Information Sheet and having listened to (or seen in CSL) an explanation about the research.

Title of project: Sign language, spoken language, gesture and the relationship between them
Specific study: Language attitude study of Beijing and Shanghai signing varieties

This study has been approved by the UCL Research Ethics Committee, Project ID EP/2015/3

Director: Prof Bencie Woll
UCL Deafness, Cognition and Language Research Centre
Dept of Experimental Psychology
49 Gordon Square, London WC1H 0PD
b.woll@ucl.ac.uk
Tel 020 7679 8670

Experimenter:

NAME: Yunyi Ma EMAIL: Yunyi.ma.14@ucl.ac.uk Tel: 07341486359
--

Participant's Statement

I,, agree that:

- I have read the information sheet and the project has been explained to me orally / in sign language
- I have had the opportunity to ask questions and discuss the study
- I have received satisfactory answers to all my questions or have been advised of an individual to contact for answers to pertinent questions about the research and my rights as a participant and whom to contact in the event of a research-related injury
- I am being paid or given a small gift for my assistance in this research
- I understand that I am free to withdraw from the study without penalty if I so wish
- I consent to the processing of my personal information for the purposes of this study
- I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998 and UCL Retention Schedule
- Research data from this project will be archived securely by UCL in accordance with the UCL Records Retention Schedule. (Please tick here if you do not want your research data to be archived)
- Research data from this project may be re-used for other research in accordance with the UCL Research Data Policy and UCL Staff IPR Policy. (Please tick here if you do not want your research data to be used in this way)

Signed: _____

Date: _____

Investigator's Statement

I,, confirm that I have carefully explained the purpose of the study to the participant and outlined any reasonably foreseeable risks or benefits (where applicable).

Signed:

Date:

Appendix N: Consent form for Lexical Comprehension Task and Language Attitude

Study (Chinese)

参与同意表

请在确认阅读完资料后或由聋人助手用中国手语进行解释后填写该同意书。

项目名称：手语，口语，手势及其相互关系

研究名称：中国北京与上海手语变体的语言态度研究

伦敦大学学院研究伦理委员会（项目代号：EP/201503）已同意该项研究实行。

负责人： Bencie Woll 教授

伦敦大学学院（UCL）聋人，认知及语言研究中心

心理及语言科学学院

邮箱： b.woll@ucl.ac.uk

联系电话： 0044 020 76798670

研究人：

姓名： 马运怡
邮箱： yunyi.ma.14@ucl.ac.uk
联系电话： 暂无 微信号： mayunyi

	是的	不是
我已经阅读了参与者研究信息单，对该研究有了大致的了解。		
对这项研究不明白的地方，我已提问并与调查人进行了讨论。		
我的提问都得到了满意的回答。		
参与该研究的录制，我会得到相应的报酬。		
我可以无条件退出该研究的语料收集，并且不受到任何惩罚。对此我表示理解。		
我所录制的语料只能应用于这项研究，不可用于其他任何用途。对此我表示同意。		
根据英国的 1998 数据保护法，我所填写和录制的信息将会严格保密。对此我表示理解。		
我所录制的语料不会放到网上，只有注册的研究人员才能看到这些语料。对此我表示理解。		
这项研究的内容和成果还有可能会被用于其他相关的学术研究中。所有的研究都遵循伦敦大学学院的相关研究政策。		

签名：..... 日

期：.....

Appendix O: Debriefing form for Lexical Elicitation Task (English)

Debriefing form

Sign languages have been recognized as natural languages by linguists since 1960s in western countries. Like spoken languages in any nations, sign languages were found in each nation to have their “dialects” in different areas.

The studies in these “dialects” in many nations such as Britain, Australia, Italy and Japan have shown that the social factors of a deaf signer such as age, gender, region, educational background and ethnicity can influence the signs used by deaf people.

In this study, we investigate the signing used by deaf people living in Beijing and Shanghai of China and see how social factors can influence the signs produced by Beijing and Shanghai signers.

The result of this study will not include the participant’s name or other identifying characteristics. If you have any further questions, please do not hesitate to contact either myself or my supervisor.

We will be recording others in your community, so please do not share the aim of this research, as we want to elicit signing that is as natural as possible.
Thank you for your participation in this research.

Appendix P: Debriefing form for Lexical Elicitation Task (Chinese)

研究目的说明

20 世纪 60 年代末，手语开始在西方国家被认为是自然语言。像各国的语言有不同口音一样，各国的手语也存在差异。目前已有的手语差异性研究包括英国手语，美国手语，巴西手语，澳大利亚手语，意大利手语以及日本手语等。这些研究的结果显示，不同的社会因素，例如年龄，性别，地域，教育背景甚至种族，对聋人使用的手语产生影响，进而造成手语的差异。

在这项研究中用，我们对北京和上海两地的聋人进行语料收集，观察研究两地聋人对于词汇打法的差异，并分析造成这些差异的社会因素。这项研究的结果将不会显示被试者的任何个人信息。如果您有任何问题，请随时和实验人联系。

由于我们接下来还要对其他聋人进行录制，请您不要提前对他们透露该研究的目的，以便他们能够打出最自然的手势。

谢谢您的配合与参与。

Appendix Q: Debriefing form for Lexical Comprehension Task and Language Attitude

Study (English)

Debriefing form

Beijing and Shanghai signing varieties are widely known as the two most influential signing varieties in northern and southern China. In the first study of sign variation among Shanghai Deaf signers, it was observed that the variants for a concept used by Deaf people from these two regions are often very different, and Beijing lexical signs share appear more similar with the lexical signs introduced in the book *Zhongguo Shouyu* (the 3rd edition).

In this study, we investigate Deaf signers' understanding of signs used in each other's region and their attitude to both, to observe how variation relates to signers' age, gender, family background and educational background. Our comprehension study also includes signs used in *Zhongguo Shouyu* because we want to see how the signing used in Beijing and Shanghai relates to it.

We will be asking others in your community to participant in this experiment, so please do not share the aim of this study, as we want to elicit responses that are as natural as possible. Thank you for your participation in this research.

Appendix R: Debriefing form for Lexical Comprehension Task and Language Attitude Study (Chinese)

实验后说明

北京手语和上海手语是中国手语变体的两个主要分支。在北京手语和上海手语词汇差异的研究中发现，对于同一个词汇，北京手语和上海手语通常都有不同的对应打法。这一实验旨在调查北京上海两地的聋人对于彼此打法的熟悉程度。实验中的手语词汇来源为北京手语词汇，上海手语词汇以及中国手语词汇（黄皮书）。

这项实验将不会公开被试的名字以及任何个人信息。如果您有任何问题或疑问，请和研究人员和她的导师联系(请参照知情同意书)。

接下来还会请其他聋人朋友参与这一实验，为了帮我们得到最自然的实验数据，请您先勿和他们讨论本次实验细节，或者对他们透露本次实验目的。

再次感谢您的参与和配合。

Appendix S: Lexical signs excluded from data analysis in Study 1 (Part 2)

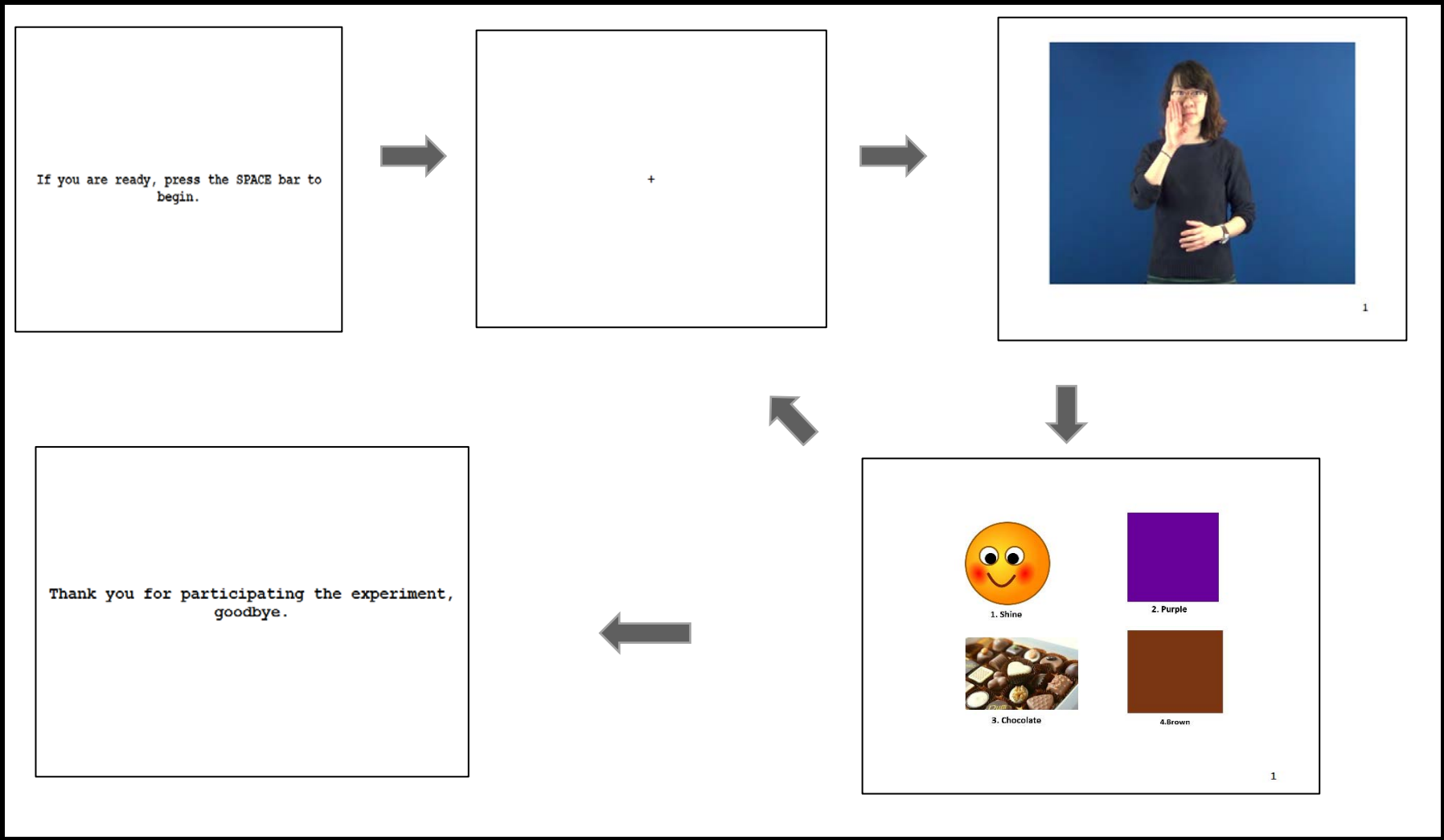
Concept	Number of excluded lexical items
THREE	1
FOUR	1
SIX	1
EIGHT	1
ELEVEN	1
TWELVE	1
TIBET	3
CHONGQING	2
FUJIAN	1
MACAU	1
BROWN	3
PURPLE	1
ORNAGE (colour)	3
NOON	1
DAY	2
WEEK	1
MONTH	1
YEAR	1
MILK	1
POTATO	2
MANTO	2
PEAR	4
PEACH	1
ORANGE	4
CHINESE NEW YEAR	2
TOMB SWEEPING FESTIVAL	1
DRAGON BOAT FESTIVAL	2
MOON FESTIVAL	2

Appendix T: Number of variants for the concepts in Lexical Elicitation Task

SEMANTIC CATEGORIES	CONCEPTS	NUMBER OF VARIANTS	
NUMBERS	ONE	1	
	TWO	1	
	THREE	1	
	FOUR	1	
	FIVE	1	
	SIX	1	
	SEVEN	2	
	EIGHT	1	
	NINE	1	
	TEN	4	
	ELEVEN	4	
	TWELVE	6	
	THIRTEEN	7	
TIMES	MONDAY	2	
	AFTERNOON	3	
	MORNING	4	
	NOON	5	
	DAY	2	
	WEEK	4	
	MONTH	3	
	YEAR	2	
	FAMILY MEMBERS	MOTHER	2
		FATHER	2
GRANDMOTHER		7	
GRANDFATHER		3	
OLDER BROTHER		4	
OLDER SISTER		6	
YOUNGER BROTHER		7	
YOUNGER SISTER		6	
FOOD	APPLE	3	
	DUMPLING	4	
	GRAPE	2	
	MANTO	5	
	MILK	7	
	NOODLE	2	
	ORNAGE	8	
	PEACH	5	
	PEAR	5	
	POTATO	9	
	RICE	4	
	COLORS	BLUE	4
		BROWN	9
GREEN		6	
GREY		2	
ORANGE		10	
PURPLE		5	
WHITE		4	
YELLOW		3	
PLACE NAMES	BEIJING	2	
	CHONGQING	11	
	FUJIAN	11	
	HANGZHOU	3	
	HONGKONG	2	
	INNER MONGOLIA	14	
	MACAU	11	
	NANJING	5	

	SHANDONG	11
	SHANGHAI	2
	SHENZHEN	4
	TAIWAN	7
	TIANJIN	4
	TIBET	7
	WUHAN	5
	XINJIANG	4
COUNTRY NAMES	CHINA	6
	FRANCE	9
	GERMANY	10
	INDIA	8
	ITALY	4
	UK	7
	USA	2
FESTIVALS	CHINESE NEW YEAR	7
	DRAGONBOAT FESTIVAL	10
	LANTERN FESTIVAL	10
	MOON FESTIVAL	9
	TOMB-SWEEPING FESTIVAL	7

Appendix U: Procedure of Lexical Comprehension Task on E-Prime



Appendix V: Participants information in comprehension and language attitudes study

Participant ID	Region	Age group	Gender	Language background	Dominant hand	Education
1	Shanghai	middle	female	H	R	middle
2	Shanghai	middle	female	H	R	college
3	Shanghai	middle	male	H	R	college
4	Shanghai	middle	male	H	R	college
5	Shanghai	old	female	H	R	primary
6	Shanghai	old	female	H	R	primary
7	Shanghai	old	female	D	R	primary
8	Shanghai	old	male	D	R	no
9	Shanghai	old	female	D	R	no
10	Shanghai	middle	female	H	L	college
11	Shanghai	young	male	H	R	university
12	Shanghai	young	female	D	R	university
13	Shanghai	young	male	H	R	university
14	Shanghai	young	female	H	R	college
15	Shanghai	young	female	H	R	university
16	Shanghai	young	female	H	R	university
17	Shanghai	young	female	H	R	university
1	Beijing	old	male	D	R	college
2	Beijing	old	male	D	R	primary
3	Beijing	middle	female	D	R	primary
4	Beijing	middle	female	D	R	primary
5	Beijing	old	male	D	R	primary
6	Beijing	young	male	H	R	primary






















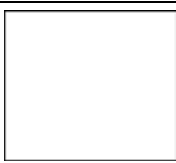


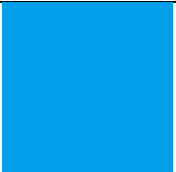


7	Beijing	young	female	D	R	college
8	Beijing	old	female	H	R	primary
9	Beijing	old	male	H	R	primary
10	Beijing	middle	male	H	R	primary
11	Beijing	middle	female	H	R	college
12	Beijing	middle	female	D	R	college
13	Beijing	young	female	H	R	college
14	Beijing	young	female	H	R	college
15	Beijing	young	male	D	R	college
16	Beijing	young	male	D	R	university

Appendix W: Lexical variants used for the Lexical Comprehension Task

Lexical variants	Type of signs	Semantic categories
CENTURYZS	ZS	Time
NEXTWEEK01	Beijing (traditional)	Time
MORNINGZS	ZS	Time
NEXTWEEK06	Shanghai (traditional)	Time
AFTERNOON01	Beijing (traditional)	Time
AFTERNOON03	Shanghai (traditional)	Time
HANGZHOU01	Beijing (non)	Place name
SHANGHAI01	Beijing (traditional)	Place name
FUJIAN02	Beijing (traditional)	Place name
CHONGQING02	Beijing (traditional)	Place name
SHANGHAI02	Shanghai (traditional)	Place name
FUJIAN05	Shanghai (non-traditional)	Place name
HANGZHOU02	Beijing (traditional)	Place name
HUBEIZS	ZS	Place name
MANTOU02	Beijing (traditional)	Food
NOODLE01	Beijing (traditional)	Food
NOODLE02	Shanghai (traditional)	Food
MANTOU04	Shanghai (traditional)	Food
MILK03	Beijing (non-traditional)	Food
MILK04	Shanghai (non-traditional)	Food
PEAR02	Beijing (traditional)	Food
ORANGE07	Shanghai (traditional)	Food
PEAR04	Beijing (non-traditional)	Food
PEACH05	Shanghai (traditional)	Food
YOUNGERBROTHER03	Shanghai (traditional)	Family member
FATHER01	Beijing (traditional)	Family member



































YOUNGERBROTHER04	Beijing (traditional)	Family member
FATHER02	Shanghai (traditional)	Family member
GRANDMOTHER01	Beijing (traditional)	Family member
YOUNGERSISTER02	Beijing (non-traditional)	Family member
WHITE01	Beijing (traditional)	Colour
YELLOW03	Shanghai (traditional)	Colour
WHITE03	Shanghai (non-traditional)	Colour
BLUE02	Shanghai (traditional)	Colour
BLUE01	Beijing (traditional)	Colour
BROWN02	Shanghai (non-traditional)	Colour
YELLOWZS	ZS	Colour
BROWNZS	ZS	Colour

Appendix X: Responses for lexical variants in Lexical Comprehension Task

ID	Prompt	Response 1	Response 2	Response 3	Response 4
1	ORANGE0 7				
2	PEACH05				
3	PEAR02				
4	PEAR04				
5	MILK04				
6	WHITE01				
7	WHITE03				

8	YELLOW0 3				
9	BLUE01				
10	BLUE02				
11	BROWN02				
12	BROWNZS				
13	YELLOWZ S				
14	MANTOU0 2				
15	MANTOU0 4				
16	NOODLE0 1				

17	NOODLE0 2				
18	MILK03				
19	GRANDMO THER01				
20	FATHER01				
22	FATHER02				
22	YOUNGER SISTER02				
23	YOUNGER BROTHER0 4				
24	YOUNGER BROTHER0 3				
25	CHONGQI NG02				

26	HANGZHO U01				
27	HANGZHO U02				
28	SHANGHAI 01				
29	SHANGHAI 02				
30	FUJIAN02				
31	FUJIAN05				
32	NEXT WEEK01		 2018		
33	NEXT WEEK06		 2018		
34	AFTERNO ON01				

35	AFTERNO ON03				
36	CENTURY ZS	实际	世纪	时间	世界
37	HUBEI ZS				
38	MORNING ZS				

