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在跟述與同步口譯表現的影響

The effect of non-native accent on
professional and trainee interpreters in performing
shadowing and simultaneous interpreting tasks

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Abstract



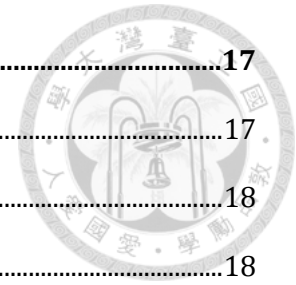
Non-native English has become the standard language of communication in conferences with interpreting services all around the world. Previous studies have shown that interpreters consider non-native foreign-accentedness a factor that adds a layer of difficulty to their every day work. So far, most research done in the area of foreign accentuatedness has centred on student interpreters. This study investigates the differences between professional and trainee interpreters when presented with non-native English speech via an experimental design with a retrospective interview. The subjects are asked to shadow and interpret non-native foreign accented texts, followed by a series of comprehension questions to shed light on the strategies they used during the experiment to understand their decision processes and opinions on interpreting non-native English in general. The results show that professional interpreters' approach and their better command at utilising different interpreting skills, allows them to have higher quality outputs and understand non-native accented speech better. On the other hand, trainee interpreters struggle with the interpreting tasks because they do not yet know how to employ the different skills effectively.

Keywords: Intelligibility, Comprehension, Foreign accent, Shadowing, Expertise

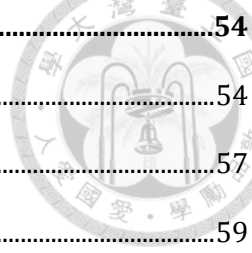
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Figure 2 Correlation of shadowing scores to comprehension 65

Figure 3 Correlation of interpreting scores to comprehension 65



1 Introduction

1.1 English as a Lingua Franca

English has become the Lingua Franca of the world (Kurz, 2008). It is the language most widely taught as a foreign language in over 100 countries and is the chief foreign language to be encountered in schools (Crystal, 2003). The consequence of this is that the number of non-native English speakers is increasing at an unprecedented rate. According to Crystal (2003) 400 million people use English as a native language, and another 400 million speak English as a second language.

This second group of speakers is very diverse, with a wide variety of first languages and proficiency levels. A way of describing these different kinds of Englishes can be found in Kachru (1989), with the “Three Concentric Circles” model (Shown in Figure 1) where native English speakers of varieties such as British or American English are located in the centre, the middle circle encompasses the speakers of Singaporean and Indian English among others, and lastly an outer circle with the millions of learners of English from non-English speaking countries.

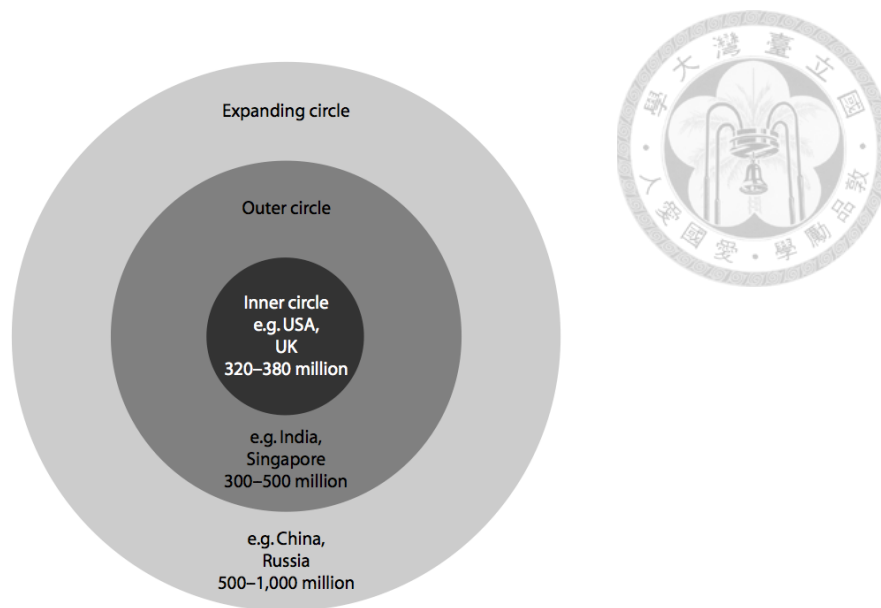


Figure 1: Kachru's concentric circles of English (Crystal 2003)

1.1.1 Effects on Interpreters

The increased use of English in the world has had an enormous impact on the interpreting profession (Gentile & Albl-Mikasa, 2017). Not only has it brought about a decline in interpreter status, but it has also reduced the demand for language combinations without English, making English and another language the most common language combination for interpreters (Donovan, 2004; 2009). Even international institutions like the EU, that advocate for speakers' rights to speak their native language, are moving away from full multilingualism (Gentile & Albl-Mikasa, 2017). Interpreters are thus increasingly confronted with non-native speakers and a diversity of accents (Kurz, 2008). In Taiwan, professional interpreters estimate that in around a third to two fifths of conferences, speakers use non-native English to deliver their speech in spite of interpreting services from their native language being provided (Chang & Wu, 2013).

This is a problem for interpreters, who see English Lingua Franca as one of the three main obstacles for the interpreting profession today together with remote

interpreting and poor communication skills of meeting participants (Jones, 2014). It also takes a psychological toll on the interpreter as can be seen in the AIIC workload survey (AIIC, 2002), in which interpreters rated foreign accent as the fourth most important source of stress. This is due to the fact that speakers using English greatly misjudge their proficiency (Gentile & Albl-Mikasa, 2017) and often do not manage to present their speech in the most appropriate way, causing interpreters to have to adapt to a segmentally and prosodically degraded source text (Mazzetti, 1999).

Since English Lingua Franca and its foreign accents seem to be here to stay, studying the effects of foreign accents of interpreters is of utmost importance.

1.2 The study

In this study, the effect that non-native foreign accent has on interpreters will be analysed through a framework based on the concepts of intelligibility and comprehensibility, explained in Chapter 2. This is because foreign accents have a negative effect on the intelligibility and comprehensibility of a text (Smith and Nelson 1985), which in turn causes problems in the interpreting process, where listening and comprehending the text play a key role (Moser 1978).

In order to be able to see the effects that accent has on intelligibility, comprehensibility and interpreting, this study adopts an experimental design, introducing a variety of methods, such as phonemic (strict) shadowing and simultaneous interpreting to obtain quantitative and qualitative data to answer the following questions:

- 1) How does a non-native foreign accent impact intelligibility, comprehensibility and interpreting?

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- 2) What differences exist between professional and trainee interpreters when dealing with a foreign accent?
- 3) What different processes play a role in strict shadowing and simultaneous interpreting?



2 Literature review



In this section the basic constructs of accent, intelligibility and comprehensibility, will be defined and analysed in terms of their relationship within normal spoken language. These three concepts will then be explained within the context of interpreting, going over general interpreting studies that have attempted to explain the effects of accent on students interpreters. A more specific discussion will follow going over methodological improvements such as the incorporation of expertise and strict shadowing to better understand the phenomenon.

2.1 Defining accent, intelligibility and comprehensibility

2.1.1 Accent

It is difficult to find a good definition of what an accent is (Pennington, 1996). Interpreters tend to use the term accent to refer to the combination of phonemic, prosodic, lexical and syntactic deviations of a speaker (Mazzetti, 1999). However, strictly speaking, that definition which incorporates grammatical and lexical variations would be closer to that of dialect (Crystal, 1995, p. 298). Some authors also use sociolinguistics to explain the phenomenon, using the term accentedness to refer to a pattern of speech sounds that differs from the local variety (Derwing & Munro, 2009) or simply to the characteristics in individual's pronunciation (Stewart & Vaillette, 2001, p. 489). In this piece of research accent will refer solely to deviations in pronunciation which indicate the speakers' geographical origin as defined in Crystal (1995, p. 298).

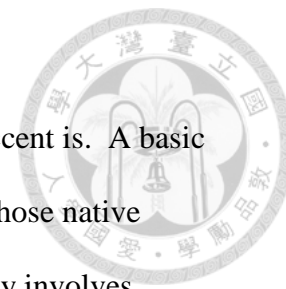
2.1.1.1 *Non-native English accent*

There is also much debate as to what a non-native English accent is. A basic definition would be to say that it is the pronunciation of a speaker whose native language is not English (Wells, 1982). A non-native accent generally involves variations which do not occur in the language, often in an inconsistent manner, in contrast to native accents which are coherent (Floccia, Goslin, Girard, & Konopczynski, 2006; Kao, 2014; Wells, 1982).

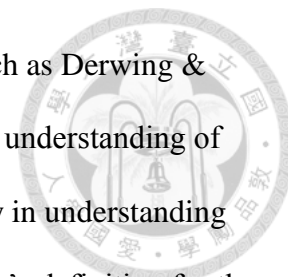
The reason for these differences is because foreign speakers make assumptions about the phonology of their L2 based on their L1 (Derwing & Munro, 2009; Floccia et al., 2006). The vast majority of L2 speakers will have a non-native accent (Derwing & Munro, 2009) because L2 learners face greater difficulty with phonetics than with vocabulary and grammar, which can be learnt in a theoretical manner and immediately produced (Matras, 2009).

2.1.2 *Intelligibility and comprehension*

In this essay the scope of intelligibility and comprehension will be as described in Smith & Nelson (1985), where intelligibility is the phonological recognition of a word or utterance and comprehension involves understanding and making sense of the meaning of the utterance. This definition is akin to the difference between hearing and listening, where hearing is merely differentiating sounds, and listening requires active comprehension (Opitz & Zbaracki, 2004 as cited in Kao, 2014). It should be kept in mind that intelligibility and comprehension are relatively independent concepts, thus a text that is highly intelligible might be incomprehensible, and a text that is comprehensible might be unintelligible (Smith & Nelson, 1985).



Although there are other definitions of these two concepts, such as Derwing & Munro (2009) that use intelligibility to mean the listener's degree of understanding of an utterance and comprehension as the listener's perceived difficulty in understanding such utterance, the author has decided to adhere to Smith and Nelson's definition for the sake of uniformity with other literature on the topic.



2.2 Accent and Intelligibility and Comprehension

Accent is often blamed for miscommunication, since foreign accents can be considered to pose a problem for intelligibility and comprehension (Lin, Chang, & Kuo, 2013); however, just because an utterance is accented it does not mean that it will necessarily cause communication problems (Derwing & Munro, 2009).

Accent on its own is not generally the sole cause for miscommunication, several studies show that when it is combined with other factors like fast or excessively slow delivery, or a high level of technicality, it can cause miscommunication (Chang & Wu, 2013; Derwing & Munro, 2009). The following section includes some of the factors most relevant to this study that affect intelligibility and comprehensibility of non-native accents.

2.2.1 Factors influencing intelligibility and comprehension

2.2.1.1 Segmental features

Segmental features refer to the individual sounds of a language, such as its consonants and vowels. The segmental feature variations of non-native accents lower the intelligibility of a text but they are generally not a trigger for miscommunication since more serious problems only arise when there is deficient comprehensibility (Smith & Nelson, 1985). However, according to (Mazzetti, 1999), if a certain threshold of

intelligibility is passed, the loss in intelligibility might lower the comprehensibility of a segment.



2.2.1.2 *Suprasegmental features*

Suprasegmental features refer to the way in which groups of segments, such as syllables, words and sentences are pronounced in terms of intonation, prosody, pauses, speed and stress. According to Anderson-Hsieh, Johnson, & Koehler, (1992), prosody plays a key role in producing comprehensible utterances and has a bigger effect on listeners' perceived difficulty of understanding the speaker than segmental features, especially at higher speeds. Non-native suprasegmental features such as pauses and intonation all have a big impact on the comprehensibility of an utterance (Lin et al., 2013).

In terms of intelligibility, features like a shifted lexical stress lower the intelligibility of words for both native and non-native listeners (Field, 2005).

2.2.1.3 *Familiarity*

Familiarity with any aspect of the text is an influential factor in every aspect, be it with the topic, with the accented speech or with the speaker (Gass & Varonis, 1984). This is corroborated by other authors such as Smith and Nelson (1985) who emphasize that the greater the active involvement with any of these factors will make the accented speaker more intelligible, and Chang and Wu (2013) whose research showed that listeners find it easier to understand familiar non-native varieties of English.

Moreover, intelligibility and comprehension can also be higher with indirect familiarity, by simply knowing the native language of the speaker (Mazzetti, 1999, Kurz and Basel 2009 as cited in Reithofer 2011).



2.2.1.4 *Native language of listener*

Native and non-native listeners have different intelligibility judgements of the same non-native accented text. For native listeners, native pronunciation is the most intelligible, whereas for non-native listeners, speech from a high-proficiency non-native speaker is just as intelligible as a native speaker (Bent & Bradlow, 2003). In fact, in some cases, non-native listeners can have higher intelligibility ratings than native listeners when the speaker is also non-native (Field, 2005). However, this ‘non-native listener benefit’ has not been consistently attested for; for instance, in Huh (2017), non-native listeners found the native speaker the easiest to understand, whereas they struggled with non-native varieties.

2.2.1.5 *Expectations*

If there is an expectation that the listener is not going to be able to understand the speaker, they will likely not understand them (Smith & Nelson, 1985). As Derwing and Munro (2009) put it, listeners will fail to understand even the clearest non-native speaker, simply because they have made up their minds that they cannot understand accented speech.

2.3 Accent and Interpreting

2.3.1 Interpreting.

Simultaneous interpreting is a highly complex cognitive activity that involves intensive information processing (Kurz, 2008). As a way to explain the SI process Gile’s Effort model identifies several efforts which the interpreter must manage and

adjust according to circumstances, and capacity assigned to each of the efforts varies continually depending on demand.

The interpreting process starts with hearing the input message (Moser, 1978). At this point the interpreter must not just recognise the words in the source text but must also understand the message (Bajo et al., 2001; Gass & Varonis, 1984). From there the other efforts take part in transferring those messages to a target text.

In terms of proportion, it is estimated that around 80% of cognitive resources are devoted to listening and understanding the discourse and only 20% is assigned to speech production (Bajo et al., 2001), which shows how arduous the listening process is. Conversely, a good understanding of a segment of speech leaves more capacity for the other requirements (Kurz, 2008)

2.3.2 Effects of Accent in interpreting

As mentioned above, comprehension is an essential part of interpreting and any added difficulty could cause problems for the interpreter. The non-standard linguistic features of non-native speech causes difficulties in interpreting for this reason (Huh, 2017). The accentedness reduces the intelligibility and comprehensibility of the input text because of its deviating segmental and suprasegmental features. If the accent is particularly strong, it becomes a problem trigger in the Effort Model paradigm because the accented utterance requires more processing capacity, causing the other efforts to suffer.

In order to manage the extra burden on the interpreter's capacity or to compensate for comprehension failures (Field, 2005), interpreters may turn to strategies or survival strategies to alleviate the burden and save output quality. These techniques

include anticipation, inferencing and drawing from background knowledge among others (Kalina, 2000) and become automated with expertise (Liu, 2008).



2.3.3 Past Research

While there are several studies that deal with the issue of how accented input affects interpreting quality, most studies such as Kurz (2008), Lin et al. (2013), Mazzetti (1999) and Sabatini (2000) have been inconclusive due to several methodological factors summarised in Kuo (2012). Some of the concerns raised include the fact that only students were selected as subjects and the experiments consisted of full simultaneous interpreting. This combination of lack of expertise, full interpreting and a reported high difficulty of the original texts which would sometimes cause the output error rate to be above 80% (Mazzetti, 1999), reducing the validity of the experiments. Moreover, some of these studies were not very consistent in controlling all of the variables for the experiment. For instance, when comparing native speech to non-native speech, the recordings used were not adjusted for speed, meaning that the native speech would be faster than the non-native and thus could offset the ‘benefit’ of not having a foreign accent.

The studies also centred mainly on ‘non-native speech’, incorporating lexical and syntactic variations or comparing different versions of non-standard Englishes (Sabatini, 2000).

As Kuo (2012) puts it, there is no way of knowing whether the interpreting failure was due to the accent, the non-standard grammar, the difficulty of the text or the trainees not yet being very good at the interpreting process itself and not being able to allocate their cognitive resources well (Kurz, 2008).

2.4 Expertise in Interpreting and Accent

2.4.1 Expertise and interpreting

According to Ericsson (2008) There are different stages of developing expertise from being a novice at any task and following mentors' instructions, up to becoming an expert where individuals can respond to any situation rapidly and intuitively. This happens because experts can monitor their own performance and identify errors, and in the case of failure can minimize the effects of the disruption and maximize the chances of a successful overall outcome.

This is also the case in the acquisition of expertise in interpreting. Moser-Mercer (1997) describes the transition in three stages, from simply having cognitive knowledge about interpreting, to associating the theory with practice and finally becoming autonomous at deciding the adequate strategies for the occasion to manage cognitive resources efficiently.

As a result of practice, experts' decisions become automatic in terms of choosing the most appropriate strategy in comprehension, translation and production (Liu, 2008).

In terms of comprehension, experts develop strategies that work from the known to the unknown, using a more semantic-based approach, drawing from context and previous knowledge to anticipate where the speaker is going in their talk and alleviate stress put on the listening effort (Moser-Mercer, 1997). Experts are also more selective in processing information, being able to distinguish essential meaning units and linking them together thanks to an awareness of structure of the source speech (Liu, 2008).

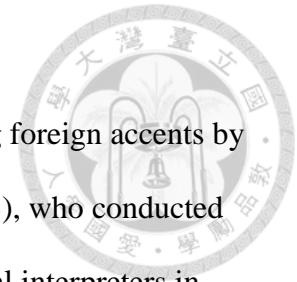


2.4.2 Past research factoring in accent and expertise

One of the first studies conducted on the issue of interpreting foreign accents by professional interpreters in Taiwan was that of Chang and Wu (2013), who conducted interviews to learn more about attitudes and strategies of professional interpreters in conferences with non-native speakers. The results of the interviews suggested that although there are more and more speakers utilising non-native English as a means for communications, professional interpreters are still able to cope with the added difficulty of non-native English. They also offered some insights on the strategies they use to maintain a high-quality output, including keeping a longer EVS span to get the general sense of the speaker, and working from contextual cues, from the known towards the unknown. They also mentioned that despite accent being indeed a factor that makes the task of interpreting harder, it was nonetheless not something that would cause a breakdown of communications, which is also an opinion shared by the professional interpreters in Kuo (2012).

The interpreters also mentioned some preparation strategies for when they know that the speaker is going to be speaking in a language other than their native. The preparation involves becoming more familiar with the content of the speech, rather than the form, or accent itself.

In Kuo's (2012) experiment, strict shadowing was used as a means to test foreign-accented English intelligibility in both trainee and professional interpreters whose B language was English. The results of the study point to both expert and trainee interpreters finding the foreign non-native accented texts less intelligible, the two groups utilised different coping strategies. Although both expert and trainee interpreters mentioned that their general comprehension had not been affected, the foundation for



this claim was based on retrospective interviews and the author calls for further research in that direction.

Kao (2014) builds on the foundation laid down by Kuo (2012), designing a more comprehensive experiment where context was removed by having the subjects shadow lists of words and nonsensical sentences so that word recognition would be completely based on phonology. The subjects were also to carry out smart shadowing (shadowing where paraphrasing and omissions are not penalised) and incorporated listening comprehension questions at the end of each text. The results showed that professional interpreters and trainees both suffered a similar intelligibility loss with the foreign non-native speech. However experts, unlike trainees, did not suffer comprehension degradation due to foreign accentedness.

2.5 The Gap in the Literature

As mentioned in the previous sections, although there have been studies on the effects of foreign non-native accent on interpreters in terms of intelligibility, comprehension and strategies, many of them are limited in their scope and have limited methodological validity; some source texts were too hard or included grammatical variation (Kurz, 2008; Sabatini, 2000), the subject selection was limited to students, sometimes with a variety of language combinations and proficiencies (Mazzetti, 1999), or the interpreting mode was just consecutive (Huh, 2017; Lin et al., 2013).

This study takes on Kuo (2012) and Kao's (2014) approach of comparing the performance of trainees and professional interpreters and goes an extra step in the methodology. These two studies were conducted in a simultaneous-like setting, by using shadowing as a way to test intelligibility. However they provided no data on the effects of foreign accent during a real simultaneous task and we are still left with the

question of whether the conclusions drawn on those two papers are applicable in real simultaneous interpreting.

In addition, some of Kao's (2014) conclusions were drawn from shadowing tasks in which sense and context were removed from the source text, which despite being a valid way to test for intelligibility is not applicable to real-life situations where every utterance has a context and generally makes sense.

2.6 Research Questions

Due to the gaps in the literature highlighted in the section above and on the literature review, the following questions are formulated to better understand the effects of accent on interpreters:

1. What differences exist between professional and trainee interpreters in terms of intelligibility and comprehension when performing simultaneous interpreting of non-native foreign accented text?
2. What strategies and skills do professional and trainee interpreters use to process non-native foreign accented text?
3. How do perceptions of foreign accented speech differ between the two groups?

The answers to these three questions would hopefully shed some light on how interpreters react to difficulties in simultaneous interpreting. The significance of the results which would greatly like lie in interpreting pedagogy, helping to inform and train interpreters to face the reality of non-native English in international conferences all over the world. The study is also a way to expand the knowledge we have on the

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acquisition of interpreting expertise as well as on effects of problem triggers in the task of managing efforts in simultaneous interpreting.



3 Methodology



This section will introduce the different research methods utilised in this study, followed by the experiment materials, participants and the way all the data is processed. This study takes Kuo (2013) and Kao's (2014) methodology as a foundation, combining and adding elements for more complete results.

3.1 Experimental Design

3.1.1 Shadowing

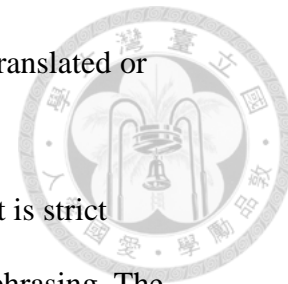
Strict shadowing, the method used in this experiment, is an auditory tracking task which involves the immediate verbatim repetition of the input message word by word (Lambert 1998 as cited in Christoffels & De Groot, 2004; Kurz, 1992).

There are authors that claim that this focus on repeating words is simply a mechanical process of phonetic repetition which is unrelated interpreting and in fact is the absolute contrary of what interpreting is about (Seleskovitch & Lederer, 1989, p. 168). However, there are studies that show that in the process of shadowing, the input text is analysed to a semantic level just as in simultaneous interpreting (Christoffels & De Groot, 2004).

This method was used by Kuo (2012) to assess intelligibility ratings of professional and trainee interpreters shadowing non-native foreign accented speech because the output matches the input language, so it is a useful method to get an insight on subject's problems in recognising lexical items (Sabatini, 2000); that is to say, it can help determine the intelligibility of an input text for a subject by comparing the source and output transcripts word for word, which would be an impossible task to assess if only simultaneous interpreting was used, as there would be no way of knowing whether

a word had been unintelligible but translated, or intelligible but mistranslated or omitted.

It should be noted that the shadowing used in this experiment is strict shadowing, as opposed to smart shadowing, which encourages paraphrasing. The differences between these two will be discussed in Chapter 5.



3.1.2 Simultaneous interpreting

This study uses simultaneous interpreting as a means to get an insight on interpreters' reactions to non-native foreign accented input. This is useful to assess the comprehension of interpreters by comparing their output to the input message, which is often seen as the benchmark for a successful interpretation (Liu & Chiu, 2009). Moreover, interpretation strategies such as EVS lengthening and shortening, summarising and omission can also be observed directly.

3.1.3 Comprehension questions.

After each experiment session, the subjects were asked to answer a set of four comprehension questions about the text. The questions do not ask for specific details of the text but rather focus on the main points or ideas presented in the text. These answers were scored with the help of two experts for a maximum core of four. This is used as an indicator of text comprehensibility.

3.1.4 Retrospective interview

After the experimental shadowing and interpreting tasks are complete, a semi-structured retrospective interview is carried out as a means to triangulate data. By

asking the interpreters about their thought processes, we can get an insight on their decision making, attitudes and comprehension, in a similar way to Kuo (2012).

A set of standardised questions was elaborated separated into three categories:

The first set of questions consists on asking the interpreters about their perceived intelligibility and comprehension as well as pointing out the effect that accent had on their interpreting, and if they were able to discern any specific problem triggers. For a better discussion of these issues, the interpreters will be shown transcripts of the speeches with annotations made by the researcher on specific points the interpreter feels were of particular significance.

The second group of questions consist of better understanding the interpreting strategies and process of each of the participants. They are asked about general opinions on the task, their mind-set and the strategies they adopted to maintain a high quality performance, as well as any strategic failures or problems.

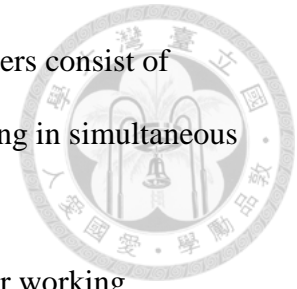
Lastly, the interpreter will ask the interpreters about the pedagogy of accentedness, whether they believe that non-native accents should be included in interpreting curriculums and whether non-native accents and non-native English has an effect on the way they prepare for conferences or classes.

3.2 Participants

The participants consist of professional and trainee interpreters in Taiwan whose A language is Chinese and B language is English, and who do not have knowledge of the native language of the non-native speaker.

In a similar way to Kao (2014) and Kuo (2012), the definition of professional is based on AIIC membership standards. Thus, professional interpreters are defined as having worked as interpreters for upwards of two years and have from 100 to 150 days

of conference interpreting experience (AIIC, 2011). Trainee interpreters consist of current interpreting students who have had at least one year of training in simultaneous interpreting and have not started working as an interpreter.



Basic personal information was also collected, including their working languages as well as other languages that they have studied in the past, education history and experience. They were also asked questions on the frequency in which they interact with non-native speakers of English.

In total eight trainee interpreters (T1-T8) and five professional interpreters (P1-P5) participated in the study.

All trainee interpreters were in the second year of their Master's programs, and were all enrolled in universities in Taipei. Although some could speak or had studied other languages besides English, such as Spanish, French, Turkish, Russian or Southern Min, none had learnt Slovakian or other languages of the West Slavic language family that could have altered the results of the experiment. All of them stated to seldom interact or listen to non-native speakers of English, contact with whom was often limited to using non-native speakers as class or practice material.

As for the professional interpreters, all of them hold master's degrees in interpreting from different universities in Northern Taiwan, and 4 to 10 years of interpreting experience, with the average being 5.4 years. Three of the professionals also stated having some degree of proficiency in other languages besides English and Chinese, including Turkish, Dutch, French and Spanish. Although some of the professionals stated that they had had prolonged interactions with non-native English for long periods of time in some interpreting assignments, they stated that that was the exception rather than the norm and that most of the contact with non-native English speakers occurred in conferences with relative frequency.



3.3 Materials

3.3.1 Text Preparation

Two speeches were adapted from original English speeches. Both are around the same length. Text 1, the text used for the shadowing exercise is 776 words long and Text 2, used for the interpreting task is 744 words long.

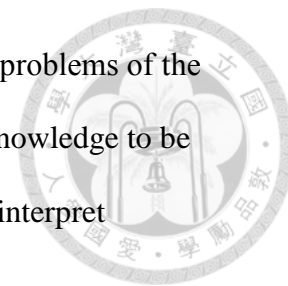
In order to control the difficulty of the texts to be equally challenging, both texts were adjusted in vocabulary and syntax to result in similar Flesche-Kincaid and Dale-Chall readability scores (Table 1). Although it has been suggested that Flesche-Kincaid scores, which rely on word length for its calculations, might have an effect on perceived on simultaneous interpreting difficulty, it should be taken into account that these are readability scores and that a text that is easy in print may not necessarily have the same difficulty when presented orally (Liu & Chiu, 2009).

Table 1

Readability scores of the speech materials.

Text	Flesche-Kincaid			Dale-Chall		
	Words / sentence (average)	Readability score	Difficulty	% of difficult words	Readability Score	Grade level
Text 1 (776 words)	20.6	61.1	Average difficulty	14%	6.8	7-8
Text 2 (744 words)	21.4	61.1	Average difficulty	14%	6.9	7-8

The topics ‘Contradictions in Astronomy’ (Text 1) and ‘The problems of the Fashion Industry’ (Text 2) do not require any specific background knowledge to be understood and no technical vocabulary is necessary to shadow and interpret successfully.



Both texts follow a similar structure, where the speaker introduces himself, follows by giving some background information on the topic that he is going to talk about, which would be reasonably familiar to the listener. At approximately the two-thirds mark of the speech, the speaker introduces some more complex ideas about the two topics that might not be as well known.


The reason for choosing texts of two different topics is to avoid the familiarity effect, where understanding a certain text becomes easier the more the speaker listens to it (Christoffels & De Groot, 2004). By dealing with two different topics, the participants will both start from the same level of unfamiliarity.

3.3.2 Speaker

A non-native speaker of English whose L1 is not Chinese was invited to record non-native accented renditions of the two texts. The speaker was given the texts in advance to become familiar with them and was asked to perform the texts in a natural way as if they were speaking to an audience at an international conference.

The speaker's mother tongue is Slovak because since it has a small number of speakers, it is unlikely that many interpreters in Taiwan are familiar with this accent, as opposed to, say, Japanese or Korean, which are more common in Taiwan (Chang & Wu 2013). A brief non-exhaustive description of the features present in his accent is listed below in Table 2, using Anderson-Hsieh et al's (1992) categorisation of common non-native accent deviations.

Table 2

Phonemic deviations present in Speaker's speech


Deviation Type			Example word	Deviation	Phonemic transcription
Segmental	Consonant	Phonemic	world	[w] → [v]	[vɜld]
			vintage	[v] → [w]	[wɪntɪʒ]
		Subphonemic	individuality	[t ^h] → [t]	[ɪndɪvɪdʒʊəlɪti]
			stores	[ɹ] → [r]	[stɔrs]
	Vowel	Phonemic	total	[ə] → [a]	[tɔʊtəl]
Syllabic	Epenthesis	Consonant	side	[∅] → [ɫ]	[saɪd]
			Vowel	cars	[∅] → [ɑ]
	Deletion	Consonant	its	[t] → [∅]	[ɪs]
			Vowel	focus	[ə] → [∅]
	Metathesis		clothing	[lɔ] → [oɫ]	[k ^h oɫðɪŋ]

In addition to deviations in segmental and syllabic features, the speaker's speech also features many deviated suprasegmental features listed in Field, (2005), and Anderson-Hsieh et al., (1992), including shifted lexical stress, intonation, changing the relative duration of strong and weak syllables, and phrasing and pausing at in unnatural places.

3.3.3 Recording Equipment.

The speeches were recorded in a quiet environment with a microphone linked directly to the computer audio program Audacity. Special attention was taken for the speaker to read each text aloud as is without altering the syntax or structure.

The recordings were then edited in Audacity to remove any background noise and alter the speed so that both recordings have a speech rate of 120 words per minute, which is considered a good speed for simultaneous interpreting (Liu & Chiu, 2009). The resulting speeches are 6:18 for Text 1 and 6:12 minutes for Text 2.

3.4 Procedure

The participants were first asked to fill in their personal information sheet, with items such as their language combination, interpreting experience and frequency of contact with non-native English. The playback equipment was tested and adjusted for volume.

The participants were then provided with a blank sheet of paper to write any thoughts they may have throughout the experiment and given instructions on the tasks that they would have to do.

First, the shadowing task is carried out in which the interpreters were instructed to deviate as little as possible from the words used by the speaker, in other words to do strict shadowing. They were told the topic of the speech and invited to start the experiment by pressing a button on the computer when they felt they were ready.

During the shadowing task, the researcher noted down any omissions, substitutions and anything significant, such as places where the participants seemed to hesitate or struggle to later discuss in the retrospective interview.

After the shadowing task was complete, the participants were asked to type in the answers to a set of comprehension questions written in English on a computer using either English or Chinese. In case of having doubts about an answer, they were asked to write their thoughts and state what part of their answers they were unsure about or what they felt was the reason for not being certain of the answer. If they did not know the answer to the question, they were told to fill in the blank by simply stating the reason why they felt they did not know the answer.

Once the participants felt satisfied with their answers, the instructions for the interpreting task were given. The participants were reminded that the task would be to perform simultaneous interpreting from English into Chinese and they were informed of the topic of Text 2.

Again, they were asked to click a button on the computer to start the exercise when they felt ready. During this task, the researcher also made some annotations on a transcript of the speech, noting down major omissions, pauses or anything deemed interesting for discussion during the retrospective interview. Once again, after the interpreting task was over, they were asked to answer a new set of comprehension questions by typing the answers on the computer in either English or Chinese.

In both tasks, the output of the participants was recorded to be later transcribed for calculations of intelligibility and output quality.

The last section of the experiment is the retrospective interview, which was conducted in a mixture of English and Chinese depending on the preferences of the participant. In this section they were first asked to share any thoughts they had on the task overall.

From that point onwards, the researcher asked questions related to their answers covering all the topics mentioned in section 3.1.4. The questions were not necessarily asked in the same order and were asked in as a conversational and natural manner as

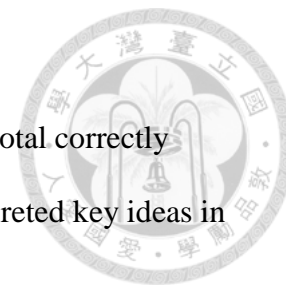
possible. The researcher also showed the subjects the annotated transcripts to aid in some points of the interview and to see whether the participants had heard or understood certain parts of the text. Additional questions were also asked when the researcher deemed it necessary or significant for the research. Overall, the tone of the conversation was kept light and the participants were welcome to provide their own comments and questions.

Each participant was also asked to assess the difficulty the accent posed in terms of recognising words (intelligibility) and understanding the message (comprehensibility) by circling a number on a seven-point Likert scale (Appendix 2). The interviews were recorded, transcribed and translated into English, when applicable.

3.5 Data Analysis

3.5.1 Intelligibility

The output of the shadowing tasks was marked for omissions, changes with respect to the input texts. From these markings, the intelligibility score is calculated by calculating the proportion of correctly rendered words to incorrectly rendered or omitted words in the shadowing task. Incorrect renderings include omissions, paraphrases and unintelligible words uttered by the participant. The first 119 words of input text were not included in the calculations, as a way for the participants to warm up to the topic and accent. The intelligibility scores are then presented in total mis-shadowed words and as a percentage of correctly shadowed words.



3.5.2 Comprehension

Comprehension was measured in two different ways: as the total correctly answered comprehension questions as well as by the correctly interpreted key ideas in the interpreting text.

For the comprehension questions, two experts read the answers with a transcript of the text and calculated a score for each one.

As for the interpreting comprehension results, two experts were called to decide on the key ideas of the source text, resulting in a total of 26 main ideas. With the list in hand, each recording was listened and scored separately by the experts, who afterwards got together to discuss any discrepancies and agree on a final score for each participant. In order to determine whether the propositions are equivalent, the evaluation criteria proposed by (Moser-Mercer, 1997) was followed, taking into account: faux-sense (changing the original meaning), contre-sense (changing the meaning to its opposite), omission and nuance. When deducting points, the experts discussed which of the abovementioned characteristics the output had, if any, and judged whether the difference it had been of a core idea change or a secondary detail, adjusting the scores accordingly.

3.5.3 Retrospective Interview

The retrospective interview transcripts provide qualitative information on the subjects' thought processes and opinions. Due to the nature of the material, it was categorised into different thematic groups such as comments on the relationship between accent and intelligibility and comprehension, attitudes towards the task, strategy use, opinions on the role of accent in interpreting in conferences and in the classroom.

4 Results



This chapter will present the results from the experiment, starting with the quantitative data obtained from the shadowing, interpreting and comprehension question tasks and accent ratings, and finishing with the qualitative data obtained from the retrospective interviews. This combination of data can give a more complete insight of the way interpreters process foreign accented speech.

4.1 Shadowing Results

After the experiments concluded, the researcher listened to the recordings, marking a transcript of the shadowing exercise text in detail. Any words that were omitted, changed or unintelligible were marked as wrong to calculate the total intelligibility score. This penalising of substitutions and paraphrasing is the same method as Kuo (2014). The reason for this is that if they were to be taken into consideration, it would be very difficult to discern whether the participants had indeed recognised the words or whether they were not recognising the words, just comprehending the text and drawing from that. In addition, since the participants were instructed to perform strict shadowing, most of the errors counted were actually not substitutions, but omissions, and with that there is a higher certainty that the words were not recognised.

In order to avoid changes in intelligibility and comprehension caused by unfamiliarity with the speaker's accent or the topic, the first 119 words of the text (1 minute) were not counted. The results for Professionals and interpreters can be seen in Tables 3 and 4 respectively, and their averages can be found on Table 5.

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Table 3

Shadowing intelligibility results arranged from highest to lowest (Professionals)

Participant	Words correctly shadowed (out of 657)	Intelligibility Score (Percentage)
P5	640	97.26%
P1	613	93.16%
P4	591	89.82%
P2	548	83.28%
P3	419	63.68%

Table 4

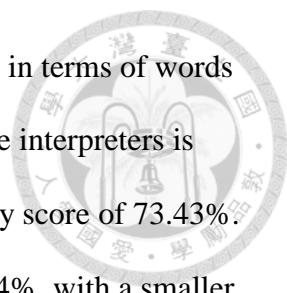
Shadowing intelligibility results arranged from highest to lowest (Trainees)

Participant	Words correctly shadowed (out of 657)	Intelligibility Score (Percentage)
T8	610	92.71%
T1	598	90.88%
T2	587	89.21%
T7	582	88.45%
T6	466	70.82%
T3	395	60.03%
T4	370	56.23%
T5	222	39.08%

Table 5

Descriptive statistics of all participants' intelligibility score

Participants	N	Correctly shadowed average	Standard Deviation
Trainees (T)	8	73.43%	.2004
Professionals (P)	5	85.44%	.1320



As can be seen, there is a wide variation between the subjects in terms of words correctly rendered in the shadowing output. The average score trainee interpreters is 478.5 words correctly shadowed, resulting in an average intelligibility score of 73.43%. For professionals the average intelligibility score was higher, at 85.44%, with a smaller deviation.

An independent T-test was performed to determine whether the differences in shadowing output was significant between trainees and Professionals (Table 6)

Table 6
Statistics of all participants' intelligibility scores

	F-Test		T-Test	
Equal variance Assumed	F	t	df	t-critical (2-tail)
	2.306	-1.180	11	2.210

The T-Test performed between the two groups shows that the two groups do not differ significantly in their shadowing performance, so based on these results alone it cannot be determined whether the performance of Trainees and Professionals differs significantly in this aspect.

However, these results should be taken with caution and simply be used as an approximation for intelligibility as paraphrased sentences and substitutions were marked as errors with this method and the output deferring from the source text does not necessarily mean that the utterance was unintelligible. Likewise, there may be cases where the utterance was unintelligible but the interpreter correctly rendered the word by making use of interpreting strategies.

There were several words that were frequently missed by interpreters as shown on Table 7.

Table 7

Most commonly mis-shadowed words

Word	Number of errors	Substitution	Omission
Wacky	11	wicked (3), worky (2), crazy (1), weird (1), ridiculous (1)	3
Redder (II)	11	water (1)	10
Redder (I)	11	warmer (1)	10
Hotter	11		11
Wavelengths	11		11
Bluer	10	or more (1), lower (1)	8
wavelength	10		10
could	10	can (1)	9
Exoplanets	9	planets (4), existing planets (1)	4
Currently	9		9
Orbit	9	are (3), have (1)	5
Emit	9	have (2), has (1)	6
Redder (III)	9	other (1), lighter (1)	7
Uniquely	9	mainly (1), initially (1), really (1)	6
Interweaving	9	Interviewing (4), the combination (1), using (1), intervening (1)	1

No trainee interpreters rendered the words *bluer*, *redder (ii)* or *wacky* correctly. In addition to this, Trainee interpreters found the word *planet (ii)* challenging as well, with only one trainee interpreter correctly rendering it. A full analysis of the shadowing outputs is discussed in Chapter 5

In addition, there were some phrases in the text which as a whole were seldom fully rendered, shown in Table 8.



Table 8

Most commonly mis-shadowed phrases

Phrase	Correctly rendered
we currently possess	2
what I do picks up where their job ends	2
take the planet Venus	3
whether a planet can support life	4

In some of the phrases mentioned in the table, the failure to fully render the text was due to paraphrasing the whole sentence or individual words. However, some, such as *we currently possess* and *what I do picks up where their job ends* were omitted by almost every interpreter the possible reasons behind this will also be explained in Chapter 5.

4.2 Interpreting Results

As mentioned in the methodology section, the interpreting text was divided into 26 main idea units and the results are shown in Tables 9, 10 and 11.

Table 9

Main idea units correctly interpreted by professional interpreters sorted from highest to lowest

Participant	Main ideas correctly interpreted (out of 26)	Correct main ideas as a percentage
P5	23.5	90.38%
P3	22.5	86.54%
P2	21.5	82.69%
P1	21	80.77%
P4	19	73.08%

Table 10

Main idea units correctly interpreted by Trainees sorted from highest to lowest

Participant	Main ideas correctly interpreted (out of 26)	Correct main ideas as a percentage
T6	22	84.62%
T2	18.5	71.15%
T7	18	69.23%
T3	18	69.23%
T8	17.5	67.31%
T1	14.5	55.77%
T5	13.5	51.92%
T4	9	34.52%

Table 11

Participants' intelligibility score averages

Participants	N	Average Correct	Standard Deviation
Trainees (T)	8	62.98%	.1517
Professionals (P)	5	82.69%	.0065

From these results it can be seen that on average trainee interpreters correctly translated 16.38 sentences out of 26, which gives an average accuracy rate of 62.98%. The results for the Professional interpreters show that their average is much higher, at 21.50 main ideas correctly interpreted on average, resulting in an average score of 82.69%.

A t-test was also performed on this data to determine whether the differences between the two groups are significant (Table 12).

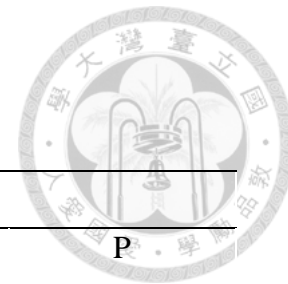


Table 12

All participants' interpreting scores

	F-Test	T-Test		
Equal Variance	F	t	df	P
Assumed	5.409	-2.7178	11	0.02

As shown in the unpaired t-test above, the differences between the two groups are significant in their performance during the interpreting task because $p < 0.5$.

4.3 Comprehension Question Results

Two experts scored the comprehension questions on the basis that only a complete grasp of the source text was counted as a full point. Answers that had partially correct items were also given a partial score depending on the importance of the item, thus there are 5 possible scores for each question. 0, when no answer is given or the answer given is completely incorrect, 0.25 when some keywords were mentioned but not explained, 0.5 for answers that show a partial comprehension of the text, 0.75 for answers that proved the main point but are missing secondary information and 1, for a fully correct answer. Some points may also be subtracted for incorrect information provided. For example, the answer the following question in Text 2 was given the following scores:

Question: Why does the speaker like going to thrift stores?

T4: *I didn't hear it.* (0 points)

T1: *Because he wants to find many types of clothes as an inspiration for him to make new clothes.* (0.25 points)

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T2: *To create his unique piece of clothing.* (0.5 points)

T5: *He likes to hunt for goodies in these stores and put pieces together with his sewing machine. It makes what he wears always a piece of originality.* (0.75 points)

T3: *I think it's because he buys cheap clothes there, takes them home, and redesigns them.* (1 point)

Since each text has four questions, the maximum score awarded for a full comprehension is a 4. See Table 13 and 14 for Trainee and Professional scores and Table 15 for a descriptive analysis.

Table 13

Results of comprehension questions for Trainees

Participant	Shadowing comprehension	Interpreting comprehension
	(Text 1)	(Text 2)
T1	1.75	2
T2	2	3.5
T3	0.5	2
T4	3.75	1.25
T5	2	1.5
T6	2	4
T7	2.75	3
T8	3.25	2.5

Note: Text 1 average = 2.25, Text 2 average = 2.47



Table 14

Results of comprehension questions for Professionals

Participant	Shadowing comprehension (Text 1)	Interpreting comprehension (Text 2)
P1	4	4
P2	3	2.75
P3	4	4
P4	4	2.5
P5	2.75	3.5

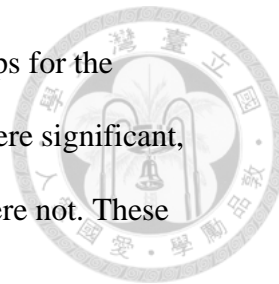
Note: Text 1 average = 3.55, Text 2 average = 3.25

Table 15

Participants' comprehension question scores statistics

	t	df	p
Equal Variance Assumed (Text 1)	-2,5865	11	0.025
Equal Variance Assumed (Text 2)	-1,7580	11	0.106

As can be seen in the three tables above, the average score for correctly answered questions is over 1 point higher for Professional interpreters than for Trainee interpreters. 5 Trainee interpreters (62.75%) had higher scores for the shadowing comprehension questions than for the interpreting questions, whereas most Professional interpreters had higher or equal scores for the shadowing comprehension questions as compared to the interpreting comprehension questions. None of the eight trainees managed to get a full score in any group of comprehension questions except for T6 who got a full score in the interpreting comprehension questions, whereas both P1 and P3 got full scores in both the interpreting and shadowing sections and P5 in the shadowing section questions.



According to the T-test the differences between the two groups for the comprehension questions asked about the shadowing text (Text 1) were significant, whereas the differences in scores for the interpreting text (Text 2) were not. These differences will be addressed in the Discussion section.

To sum up, all the quantitative data has been summed up in Table 16 below.

Table 16

All quantitative scores of participants

Participant	Shadowing Score	Shadowing Comprehension Questions	Interpreting Score	Interpreting Comprehension Questions
T1	90.88%	1.75	55.77%	2
T2	89.21%	2	71.15%	3.5
T3	60.03%	0.5	69.23%	2
T4	56.23%	3.75	34.62%	1.25
T5	39.08%	2	51.92%	1.5
T6	70.82%	2	84.62%	4
T7	88.45%	2.75	69.23%	3
T8	92.71%	3.25	67.31%	2.5
P1	93.16%	4	80.77%	4
P2	83.28%	3	82.69%	2.75
P3	53.68%	4	86.54%	4
P4	89.82%	4	73.08%	2.5
P5	97.26%	2.75	90.38%	3.5

From Table 16 above, it can be seen that professional interpreters overall had much higher scores overall, especially in the interpreting sections. As can be seen, the lowest score for interpreters interpreting output (P4's 73.08%) is already higher than all Trainees except T6. The contrast in the comprehension questions is also quite evident,

with professionals scoring full marks in five occasions, in contrast with only once by trainee interpreters, who are more in number. The scores also show some interesting relationships between the different exercises, for instance T3 has the second lowest shadowing score, but the highest comprehension question mark for that section among the other trainees. A more detailed discussion of these scores and their implications will take place in Chapter 4.

4.4 Perceived difficulty of accent

The subjects were asked to select a point on a seven-point Likert scale (Appendix 2) to judge how hard the accent made it to distinguish words and understand the message, measuring the perceived intelligibility and comprehension of the speeches. The scale starts with a 1, signifying no difficulty and ends in 7, signifying extreme difficulty. These two scores can be used as an assessment for perceived difficulty and compare them to real performance. The individual scores can be seen in Table 17 and 18.

Table 17

Trainees' perceived difficulty of accent

Participant	Perceived intelligibility	Perceived comprehension
T1	6	6
T2	5	4.5
T3	6	4
T4	4	5
T5	3.5	3
T6	5	3
T7	4	3
T8	5	6

Note: Average intelligibility rating = 4.81, average comprehensibility rating = 3.1

Table 18

Professionals' perceived difficulty of accent

Participant	Perceived intelligibility	Perceived comprehension
P1	5	3
P2	5	2
P3	5	3
P4	3	5
P5	n/a	n/a

Note: Average intelligibility rating = 4.5, average comprehensibility rating = 3.1

The tables show that on average Trainee interpreters judged the accent to be neither too hard nor too easy in terms of both intelligibility and comprehensibility, and Professional interpreters judged the accent to be moderately easy in terms of understanding the overall message. Almost all of the interpreters judged the speaker's accent to be less intelligible than comprehensible; only two, T4 and P5 felt that it was harder to understand the message than to recognise the words.

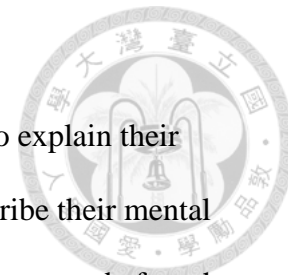
P5 did not directly address the difficulty of the accent by circling numbers on the Likert scale and so, that participant's perceived difficulty results will not be included in the calculations.

4.5 Retrospective interview results

The results of the retrospective interview will be presented in thematic categories 1) Attitudes to the task, 2) Comments on the accent, 3) Comments on strategy choices, 4) Comments on accent training. The comments will later be analysed in the discussion section, relating them to the experiments.

4.5.1 Attitudes to the task

The Trainee interpreters used a wide variety of expressions to explain their mental attitude to the task. Some of the most common words to describe their mental state were *confused* and *stressed*, generally feeling quite apprehensive, even before the task begun.



T2: *I felt stressed when I felt like I wasn't understanding the speaker because of the accent or because of the content.*

T3 tried to change their mind-set before the task as preparation and as a way to fight away the negative feelings.

T3: *I was expecting it to be difficult when you told me there would be an accent, so I decided I would start adding points from zero (...) rather than subtracting points from 100, so I would be satisfied if I felt I had performed at a 50 or 60.*

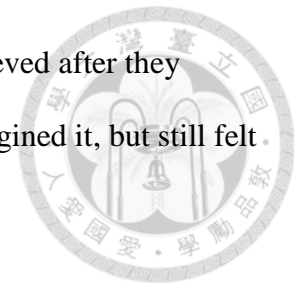
The vast majority of participants also uttered some form of relief when the task was over, and two even went as far as apologizing for what they perceived had been an underwhelming performance.

T1: *It was a mess.*

T2: *I did horrible, I'm so sorry.*

T4: *It was horrible, because it was a total mess and I was quite worried.*

However, there were some interpreters who actually felt relieved after they heard the accent and realised that it wasn't as heavy as they had imagined it, but still felt like the it was a stressful experience.



T5: When I realised that the accent wasn't as heavy as I expected I was kind of relieved, but I still found the parts where I didn't understand the speaker to be quite stressful.

Expert interpreters, on the other hand did not mention feeling any stress before during or after the exercises except for the tasks being somewhat tiring.

P3: After hearing the accent, no matter if it was while shadowing or doing SI I was quite tired.

4.5.2 Comments on the accent

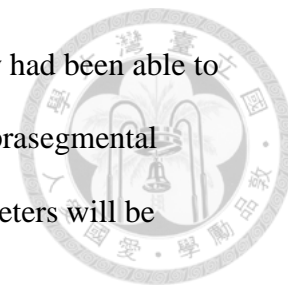
All of the subjects noticed that there was indeed a foreign accent that sounded unfamiliar to them.

T1: Weird accent, [...] it confuses me

T5: The way he speaks is a bit weird.

Most interpreters also attempted locating the accent, with a wide variety of options including: European (T1), Somewhere in the former Soviet Union (T2), Middle east (T3), Argentina (T4), India (T5, P5), Russia (T6), Spain or Portugal (T8), China or Taiwan (P4). None of the participants guessed correctly.

When asked what about the accent made it unclear, or if they had been able to tell apart some characteristics of the accent, some segmental and suprasegmental features were pointed out. The effects of such features on the interpreters will be discussed in Chapter 5.



4.5.2.1 Segmental Features mentioned

Some of the participants mentioned ways in which they thought the sounds of the words were different from what they deem as native English pronunciations.

T1: He pronounces hot as /hat/ and not as /hæt/.

T5: I think his most predominant feature is the [r], I'm not sure, he also has a lot of retroflex consonants. He doesn't tend to drop consonants, but the quality of some of his vowels changes, it's as if they are too far back.

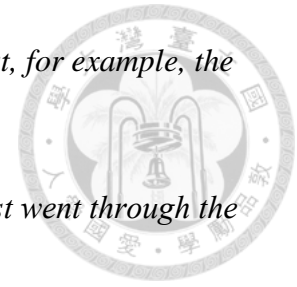
T7: There is quite a big difference between his vowels and American English

P1: He said /lav/ when he pronounces the word love

As can be seen, the participants who made comments on the segmental features of the accent did so with varying degrees of accuracy. T1, T7, and P1 are correct in their analysis, whereas the speaker's accent does not feature any retroflexion of consonants.

4.5.2.2 Suprasegmental Features mentioned

The participants were also able to point out some key features of the speaker's prosody. For instance, three participants made comments on his pauses.



T2: *His accent at sentence level is what bothered me the most, for example, the pauses between words.*

T4: *The speaker doesn't have any clear pauses. I think he just went through the whole text without any stops.*

P1: *There are some unnatural pauses that make it sound weird.*

Some participants also made mention to the speaker's enunciation.

T1: *The way he speaks sometimes becomes mumbling, his enunciation is not very clear and he wasn't very articulate.*

T6: *He doesn't articulate, he doesn't pronounce the words clearly, it's as if he wasn't opening his mouth.*

P2: *There are some parts where he might be rushing a little or parts he might not think are that important and he just starts mumbling away.*

The participants also pointed out some features regarding intonation.

T1: *He sounds so disengaged, because if you hear people who care about their topic, they will change their intonation.*

T3: *It was pretty monotonous.*

T5: *The speaker was being very monotonous. There was no rise or fall in his speech.*

P1: *He has a strange intonation pattern.*

4.5.2.3 *Other comments regarding the speaker's accent*

In addition to the listing of segmental and suprasegmental features some participants made comments about the accent in general. For instance:



T2: His accent isn't very consistent, it changes all the time.

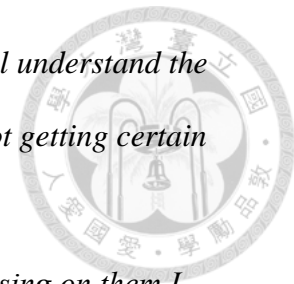
However, one particular case is especially interesting, because the participant claimed that the speaker's non-native characteristics was not just limited to his phonological features, but also included syntactical changes.

T8: He is not a native speaker so his expression is not that "English". He often uses expressions which are not native to English but that are native in their own language. Not just in terms of pronunciation but also syntax.

The reality is that the text was written in standard English as spoken by native English speakers and so this participant's comment may be interesting to analyse from the perspective of listener's expectations of accented speaker's second language proficiency.

4.5.3 Comments on intelligibility and comprehensibility

Most interpreters commented on losses in both intelligibility and comprehension caused by the accent, mostly focusing on the relationship between these two concepts, pointing out that just because intelligibility is low, comprehension is still achievable.



T2: *It is hard to recognise some of the words but you can still understand the message, the big picture, even if you don't get the details. Not getting certain phrases or words is fine within a certain limit.*

T3: *I couldn't understand a lot of the words but without focusing on them I could still understand what he meant.*

P1: *It's impossible that you can get every single word, but you can still understand what the speaker means to say.*

P3: *I think although I wasn't clear on some words I could still grasp the meaning, around 70 to 80%.*

They also mentioned external factors besides accent that would affect the intelligibility and comprehensibility of texts, most notably familiarity or interest in the topic. Different interpreters had different preferences and levels of familiarity with the topics of the two texts.

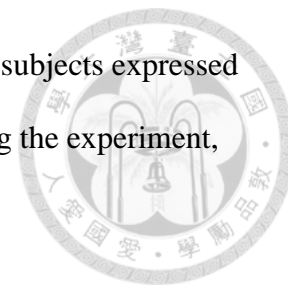
T4: *Personally I am very interested in technology and scientific issues so I got excited.*

T5: *I thought it was going to bore me and it did so I wasn't intrigued to try and understand everything.*

P1: *I don't really know much about this topic so I had to rely on my listening skills to understand the message.*

P4: *I am very interested in astronomy and so I felt like that part was easier, but the fashion industry is not my forte so I found it more difficult to understand.*

When presented with the scripts during the interview, all the subjects expressed surprise at some word or passage that they had not understood during the experiment, going as far as stating that they had not even heard certain words.



T2: When I saw the comprehension questions I thought, Oh, he mentioned

Venus!

T4: Patient zero! I totally missed that.

T5: The part about ice, I did not understand what he was saying.

P4: Vital. I did not hear vital.

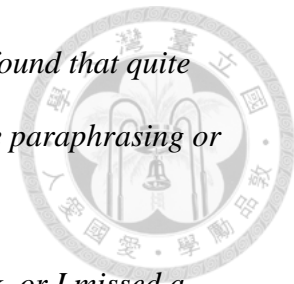
4.5.4 Strategy use

In terms of strategies used in the simultaneous mode, the participants drew from a variety of interpreting skills and strategies, including changes in EVS, drawing from background knowledge and contextual cues, monitoring the output, omission, anticipation and paraphrasing.

4.5.4.1 EVS changes

In terms of changes in the EVS, seven participants mentioned that they had adapted their EVS to help them during the exercises, sometimes in combination with other techniques. Most tried to stay closer to the speaker, whereas two adapted their lag according to the circumstances or the exercise.

T5: I think for this kind of task, the closer you follow the speaker, the better.



P2: *I stuck quite close to the speaker at the beginning, but I found that quite hard so I lengthened my EVS to leave some space to do some paraphrasing or gisting instead.*

P3: *I tend to do chunking but if a sentence was hard to chunk, or I missed a certain connection I tried to leave more space with the speaker to understand the big picture.*

Two of the trainee interpreters stated that adjusting their EVS actually worked against them.

T1: *I am always afraid of not being able to catch up with the speakers so I shortened my EVS. However it backfired because if I can't understand one sentence then the second and third will be harder to understand. I also got too close and so I couldn't understand what he meant.*

T2: *I will keep a distance to feel safe [...]; it's one of my survival strategies. I'm used to being very close to the speaker at the beginning and my accuracy will be quite high but as I start getting tired or the content gets harder, I will keep a distance [...] which will lead to a lot of meaning errors.*

4.5.4.2 Contextual cues

Almost all participants mentioned using contextual cues to disambiguate unintelligible words or try to make sense of the text.



P1: *I didn't hear "thrift store" so I just tried to draw from some contextual information, he said he liked being "cost-effective" so I started from there and looked for something that could fit.*

When trainees were shown their annotated transcripts and questioned about certain points that they had misinterpreted or mis-shadowed, they often pointed out that they had tried drawing from the context but had been unsuccessful, or drew from irrelevant words in the context.

P3: *[Used the word "quantum" instead of "planet" repeatedly] I didn't hear the word planet, I knew was talking about physics and stuff so I just said quantum. I now realise that it's obvious he's talking about planets.*

P4: *I heard the word "intersection" [from a misunderstanding of "for me real style lives in the combination of design and individuality] and so I thought that he liked going to the streets to watch people instead of second hand shops.*

4.5.4.3 Background knowledge

The participants also mentioning drawing from background knowledge in different areas as a way to overcome the difficulties posed by the accent, drawing from different sources or experiences to 'fill in the gaps'.

T4: *I had studied mythology before so I knew that Venus was the goddess of love and beauty. I didn't hear it but I said it.*

T5: *I used to watch Sailor Moon when I was younger and Sailor Venus has an attack called Love and Beauty shock, so I knew it was love.*



However, some of the Trainee interpreters did not use these strategies effectively leading to translation failure, or adding incorrect information, discussed in Chapter 5.

4.5.4.4 Anticipation

Only one interpreter commented that they had utilised anticipation actively throughout the exercises.

P5: Throughout the text I tried to predict what the speaker was talking about and that was a really helpful strategy to understand the text.

The only mentions of anticipation as a strategy by Trainee interpreters were framed in terms of their failure to anticipate the flow of the text correctly such as:

T4: I was really lost because I thought he was going to talk about mythology.

4.5.4.5 Paraphrasing, summarising and omission

Although all participants paraphrased to a certain extent, not all of them mentioned that they actively used paraphrasing as an interpreting strategy. For some of the participants paraphrasing was a tool to alleviate the burden put on them during the shadowing task, substituting complicated words or structures into simpler ones.

T5: The word telescope is too long so I said tool, it's a word I often use. You can substitute a lot of words with it.



P3: *Although I know I wasn't supposed to paraphrase I tried to combine several sentences into one. It's easier for me.*

The expert interpreters also used it as a means to buy time by being vague about parts they were not certain of in one of the harder parts of the text.

P1: *When I'm under pressure I will use broad terms, like "this industry" "this way" and wait until I get information to then clarify what I am talking about.*

P2: *During this passage I wasn't sure what industry he was referring to, so I used vague terms and hoped that he would add a transition sentence like "But, the fashion industry" so that I could then clarify that the vague information I was saying was about the other (petrochemical) industry.*

P3: *I didn't know whether he was talking about the fashion or petrochemical industry so I just spoke very vaguely until I could figure out which one he was talking about.*

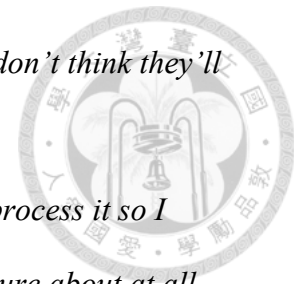
All participants mentioned that they consciously omitted certain pieces of information that they considered unimportant or that they had not understood as a coping mechanism.

T2: *I start summarizing when I feel stressed [...] I'll omit details to give a summary.*

T3: *I hear the chunks and I try making sense of them, maybe I will summarize two or three sentences into one.*

P1: *If I don't understand or can't make out some words, if I don't think they'll affect the overall message, I'll just leave them out.*

P4: *Ethereal, I did hear that word, but I didn't have time to process it so I decided to omit it. [...] I tried to omit the parts that I'm not sure about at all rather than say something wrong.*



4.5.5 Opinions on accent training

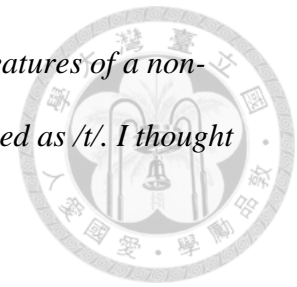
All participants in the study stated that they felt it was important for accent to be incorporated into interpreter training programs because of the predominance of non-native speakers at conferences.

T8: *English is the Lingua Franca of the world now so you will always meet speakers from different language backgrounds, it's inevitable.*

P1: *It can't stress how important it is, because the students for real world conditions where you have for example six speakers in a one-day conference, but only two of them are English natives.*

However, the participants differed in the ways they thought would be most effective or the purpose of introducing non-native speakers in class. Two of the Trainees thought that being given linguistic information on different accents is useful.

T1: *Teachers should give some students tips on what are the most confused words for a certain accent.*



T6: *I once attended a talk where we were told the different features of a non-native accent, for example that in that accent /θ/ is pronounced as /t/. I thought it was quite helpful.*

However, two of the Professional interpreters held an opposite view that explicitly teaching the phonemic differences would not be beneficial or feasible.

P1: *I don't think interpreting teachers would be able to systematically explain the characteristics of, say, a Japanese non-native speaker of English.*

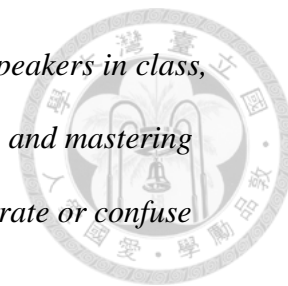
P3: *I doubt it would be useful for the trainees to analyse the specific features of each accent.*

Most of the participants mentioned that the most effective way to teach accents in class would be by simply practicing with source texts from different speakers as a way to accrue experience and get used to non-native speakers.

T8: *As long as you are introducing different accents in class it should be fine, to get some practice.*

P5: *Teachers should include different accents in the class materials for the students to get accustomed to it.*

Some thought that materials with accented speakers should be introduced with care, especially in the early stages of training, in order to allow the students to build a solid foundation of skills before anything else.



T2: Teachers should be careful when introducing accented speakers in class, because the students might still be struggling with improving and mastering their basic interpreting skills and the accents could just frustrate or confuse them further.

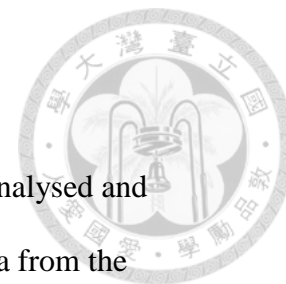
T4: Introducing accents to trainees might be like trying to learn to run before you know how to walk. It's already difficult enough for students to deal with native speakers and if the tasks are too challenging it might cause more harm than good.

Some of the participants also stated that accents should be introduced to students, not only to practice and get accustomed to speakers, but also to serve as mental preparation for when they meet non-native speakers after they finish training.

T2: It's good because it preps you mentally. It's not that you will necessarily understand more after listening to a wide variety of accents, but the teacher can prove to the students that you can still be successful with non-native speakers that have a strong accent, removing the fear. This would the students stay calm and understand more.

T7: To show students that there is no need to panic with non-native speakers, it's more psychological. You won't understand everything but you can still get the job done.

5 Discussion



In this section, the data obtained from the experiments will be analysed and discussed, triangulating the quantitative data with the qualitative data from the retrospective interviews when possible and contrasting the results with previous studies of similar nature. The structure followed in this chapter is similar to Chapter 2, first the results will be discussed in the context of linguistics, and the relationship between accent, intelligibility and comprehensibility. Then, different themes in interpreting will be introduced, starting with the debate on whether shadowing is a kind of simultaneous interpreting and moving on to the differences between experts and trainees in different aspects, once again starting from broader linguistic concepts, to more specific interpreting issues like strategy choice.


5.1 Accent, intelligibility and comprehension

5.1.1 Accent and intelligibility

The results of these experiments show that non-native accent had a negative effect on participant's intelligibility of the text. Like the participants in Kuo, (2012) and Kao, (2014), the subjects had trouble shadowing certain words. There are certain cases where it is particularly visible that the participants did not recognise certain words, like in the following passage taken from Text 1 shown in a Table 19.

Table 19

Unintelligible words resulting in erroneous renditions of “Take the planet Venus, it is named after the Roman goddess of love and beauty”



Participant	planet	Venus	[...]	goddess	of	love	and	beauty.
	/planə/	/finīs/				/laʊ/		
T1	(unintelligible)					/laʊ/		
T3						/laʊ/		
P1						/laʊ/		
T2	Ballerinas			brothers		/laʊ/		/bʊri/
T7	part of Venus					/laʊ/, flower		
T8	part of Venus					/laʊ/		

The participants gave several nonsensical alternatives, merely imitating the sound and pronunciation of the speaker without recognising the words, resulting in nonsensical sentences. It is especially clear in the word *love*. The speaker’s accent causes this word to be pronounced as /laʊ/, which resulted in an unintelligible utterance for many participants. Moreover, T7 realised that /laʊ/ was a nonsensical word and tried to find an alternative that sounded similar, resulting in *flower*. It is also worth mentioning that the number of interpreters who found this word unintelligible might actually be higher, but might have utilised different strategies, like drawing from background knowledge or context to produce the correct word, which will be discussed later on.

The participants’ remarks during the retrospective interview also indicated that they had found several words unintelligible or that at least it had caused extra trouble to recognise the words.

T6: *There were some words that I found unintelligible because of his accent.*

P4: *The accent was not completely unintelligible but it took extra time for me to recognise the words.*



This is also corroborated by the way they scored the accent in the Likert scales, with half of the interpreters rating the recognition of words as moderately hard (5/7) and two participants as hard (6/7).

The most commonly omitted or substituted words (Table 7) also show some interesting patterns. Text 1 contains the word *redder* three times and the word *wavelength* twice, and these five instances appear at the top of the list. This could suggest that there are some phonological features of these two words, which causes them to be unintelligible.

In the case of the word *redder*, it is possible that the rhotic sounds are the problem trigger, as mentioned by T5 “*there is something weird with his r’s*”. This would be in the research carried out by (Huh, 2017), who found that student interpreters had trouble recognising words with the non-native pronunciations of [r].

In the case of *wavelength*, it is possible that one of the speaker’s more prominent features of not differentiating between /w/ and /v/ to cause these words to become unintelligible, this can be expanding upon by looking at the list of most frequently mis-shadowed words in Table 20, where words with those two sounds are common.

Table 20

Words with [w] or [v] present in the 25 most frequently mis-shadowed words.

Word	Times mis-shadowed
wacky	11
wavelengths	11
wavelength	10
love	9
interweaving	9
thriving	8
world	8

From the data presented above, it is clear that accent does indeed have a negative impact on the intelligibility of a text, this is in line with previous research of the effects of non-native accent on intelligibility such as Smith and Nelson (1985) and Anderson-Hsieh et al. (1992).

5.1.2 Accent and comprehensibility

The quantitative data collected in this piece of research suggests that the speaker's accent hindered the comprehensibility of the text as well. As seen from the analysis of output, participants often misunderstood parts of the text:

ST: "I started discovering some of the products we sell hanging at these very thrift stores"

T1: *So I went to a lot of shops.*

[所以我去看各式各樣的服飾店]

T3: *I started to understand some of the products they sell.*

[我開始了解他們賣的一些產品]

T7: *I discovered that some of the products we sell don't get bought.*

[我開始發現有一些我們賣的產品其實賣不出去的]

P4: *I also started finding some problems with the clothes sold in these shops.*

[然後我也開始找到這些商店的衣服的一些問題]



The answers to comprehension questions also hinted that the participants had trouble comprehending some of the key ideas presented in the text, as there were only three cases of a full score in the comprehension questions for Text 1, and three cases for Text 2.

In addition to this, the interpreters' average comprehensibility difficulty score was 3.78 out of 7, indicating that overall they found it not too hard nor too easy to understand the message through the accent.

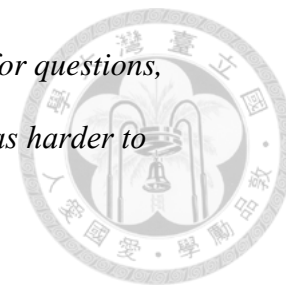
Although the analysis of the three elements mentioned above are an indication that the participants have had their ability to comprehend the text reduced, there is no way to judge whether these difficulties in comprehension were solely due to accent as other factors such as the text itself, the cognitive load of the interpreting process or their ability to remember facts about the text after the task was finished.

However, we can get use qualitative data to get an insight on the interpreter's judgements on whether they thought that accent had played a role in their comprehensibility of the text, thanks to some of the comments that they made during the interview.

T1: *If he had more intonation everything would be easier to understand. The speech itself is not difficult; it's the accent that's difficult.*

T2: *I think the intonation did impact my comprehension.*

P1: *Usually speakers use pauses and intonation as markers for questions, parallelisms or lists, but he didn't use them correctly so it was harder to understand.*



Since these are comments that were made after the fact, we should be weary of making any sweeping statements regarding the impact of accent on comprehensibility. However, these comments all mention intonation as the problem trigger, which is in line with previous research that states that suprasegmental features such as prosody, pauses and intonation may have a bigger impact on the comprehensibility of speech than the segmental features of an accent (Lin et al., 2013).

5.1.3 Intelligibility and comprehensibility

According to Smith & Nelson (1985), intelligibility and comprehensibility are independent concepts. This experiment corroborates that statement.

Taking the results from the shadowing and comprehension questions of Text 1, it can be seen that having a higher intelligibility score does not necessarily mean that comprehension will also be higher just like if a lower intelligibility score does not automatically equate to a low comprehension. This would seem to go against Mazzetti's (1999) claim that after a certain intelligibility threshold is crossed, comprehensibility will suffer. However, it might not necessarily be contradictory due to this study's experimental design and the way the results are calculated. For example, there were a number of Trainee interpreters (most notably T4 and T5), whose intelligibility scores are low (56.23% and 39.08% respectively) but whose comprehension scores are relatively high (3.75/4 and 2/4). This might be because of the way they approached the shadowing exercise, where they would often “freeze” and not say anything, while

simply listening to long passages, sometimes paragraphs of text thereby decreasing their intelligibility scores. Since the cognitive load of Shadowing is no longer an issue for comprehension, they could have potentially understood more information by simply listening to the text attentively and thus answered more questions correctly in comparison to participants who did not stop to listen.

The relative independence of intelligibility and comprehensibility can also be approached from the difficulty ratings and the comments made by the participants in the retrospective interview.

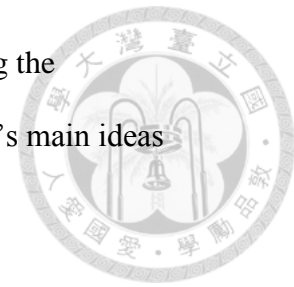
One of the first clues that point to intelligibility and comprehensibility being independent is that only one of the participants rated them as equally difficult, some finding recognising the individual words easier, and some found understanding the message easier. This is confirmed in their comments:

T8: There were some passages in which I could easily recognise the words but I didn't know what he meant. "Patient Zero" I know these words but I don't know what they mean in that sentence.

P4: Listening and recognising every word is hard so I tried to remind myself not to get hogged down by the individual words and just focus on listening to the overall message.

This combination of data also shows that perceived intelligibility and actual intelligibility and comprehension do not necessarily line up, for instance, subject T1 rated the accent as hard (6/7) in terms of both intelligibility and comprehension, but T1's intelligibility performance was among the best (90,88% of words correctly shadowed). On the other hand, T5 claimed that Text 2 had been very easy to

comprehend (1/7), but has the second lowest score in both answering the comprehension questions (1.25/4) and correctly interpreting the text's main ideas (51.92%).



5.1.3.1 Factors that affect intelligibility and comprehensibility of accent

As discussed in the literature review, there are several factors that influence whether speech is intelligible or comprehensible to a listener, including familiarity with the topic, familiarity with the speaker's accent, knowledge of the speaker's native language and interest in the talk (Smith & Nelson, 1985). Analysing these variables is beyond the scope of this study, but it is worthwhile to note that the participants often mentioned these four aspects.

For some of the participants, being familiar with the topic was crucial to disambiguate unintelligible words or comprehend the text whereas some quoted unfamiliarity with the topics as an added obstacle for comprehension.

T3: For accented speakers, familiarising yourself with the topic is very helpful.

P2: I have translated things related to the light colours before so although I didn't know what the speaker was saying, I still could understand that passage.

T8: I'm not familiar with the topic so when I knew it was going to be about the fashion industry I had no idea what he was going to talk about. I know more about astronomy so it was easier to understand.

One's attitude towards the task also played a role, whether they wanted or were interested by the topic, for instance.



T5: *I liked the second speech more. I found the first one very boring so I guess that's another factor that made understanding it harder.*

P4: *I am not that interested in the fashion industry so it was more difficult.*

Although none of the participants spoke Slovak (the mother tongue of the speaker), and thus, there is no way of discerning whether knowing the speaker's language plays a big role or not, many participants mentioned previous experiences that they had had while interpreting for non-native speakers whose native languages they could speak during the retrospective interview. For those who mentioned it, it does seem that knowledge of the speakers L1 makes understanding the message easier. These are some excerpts from T8 who can speak French, P2 who knows Spanish and Dutch and P5 who can speak Japanese.

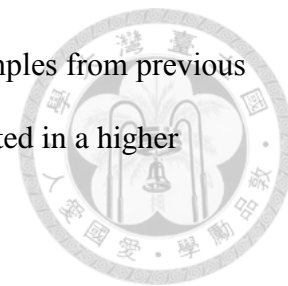
T8: *We did a French speaker in class one time. [Knowing some French] helped a little.*

P2: *I think when you know the speakers native language you can at least make more sense of their pronunciation or way of expressing themselves because you can use the pronunciation and grammar of that language and apply it to English.*

P5: *Knowing Japanese is helpful when listening to Japanese speakers, especially when they pronounce English words in a Japanese way, it is much easier to recognise them.*

However, the one factor that was considered to have the biggest impact on foreign accent comprehension and intelligibility by almost every participant was familiarity with the speaker's accent. The participants expressed that the more familiar one is with

the speaker's accent, the easier it is to understand. Some raised examples from previous experiences working for non-native speakers of English which resulted in a higher familiarity and thus higher intelligibility of that accent.



P2: I worked for an group from India for a couple of months, and after a while I could figure out the way their accent works and could understand them better the more time I spoke with them

P3: I interpreted for a French speaker several times; at the beginning I had some trouble figuring out the different words and pronunciation but after translating for him several times I got used to the accent and had no problems.

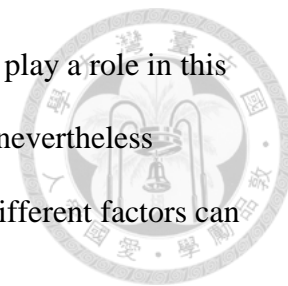
Some of the interpreters also mentioned the importance of becoming more familiar with the accent of the speaker if they knew they were going to be listening to a non-native speaker, and used a wide variety of techniques.

P3: After listening to a person's speech, you end up getting used to it, so if you are in the booth, you can let your partner do the first part while you listen to the speaker's accent.

P1: I can go on YouTube and find videos of the speaker so I can get acquainted with their accent.

P4: Sometimes to familiarize myself with the accent, if there are no videos available, I'll go on Google Translate and type in a passage for Google to read it back to me using the, say, Japanese voice settings. It's not exactly the same but it's useful to train yourself and understand the speaker better.

Analyzing whether the factors mentioned above did or did not play a role in this experiment would be beyond the scope of this study. However, it is nevertheless worthwhile to take into consideration what interpreters deem to be different factors can play a role to be analyzed in further research.



5.2 Shadowing as a type of interpreting

The issue of whether shadowing is an exercise similar to simultaneous interpreting has been heavily debated in the literature between those who think that shadowing is similar to interpreting in terms of cognitive processes (Kao, 2014; Kuo, 2012; Kurz, 1992) and those who claim that it goes against the very principles of interpreting (Seleskovitch & Lederer, 1989).

Despite the focus of this study is not being on the differences between shadowing and interpreting, the data collected can provide some insights on their cognitive processes.

First would be the issue of whether a successful shadowing requires comprehension of the text. Graph 1 shows that higher intelligibility (shadowing) scores do not correlate with the comprehension answer scores, having a correlation coefficient of just 0.25 and an effect size of $r=0.945$. However, as shown in Figure 2 below, it is clear that such correlation is quite strong when comparing successful simultaneous interpreting to comprehension, where the correlation coefficient is 0.86 and an effect size of $r=0.937$. This would suggest that strict shadowing is a very different activity from simultaneous interpreting, which requires understanding the message first (Bajo et al., 2001; Gass & Varonis, 1984).

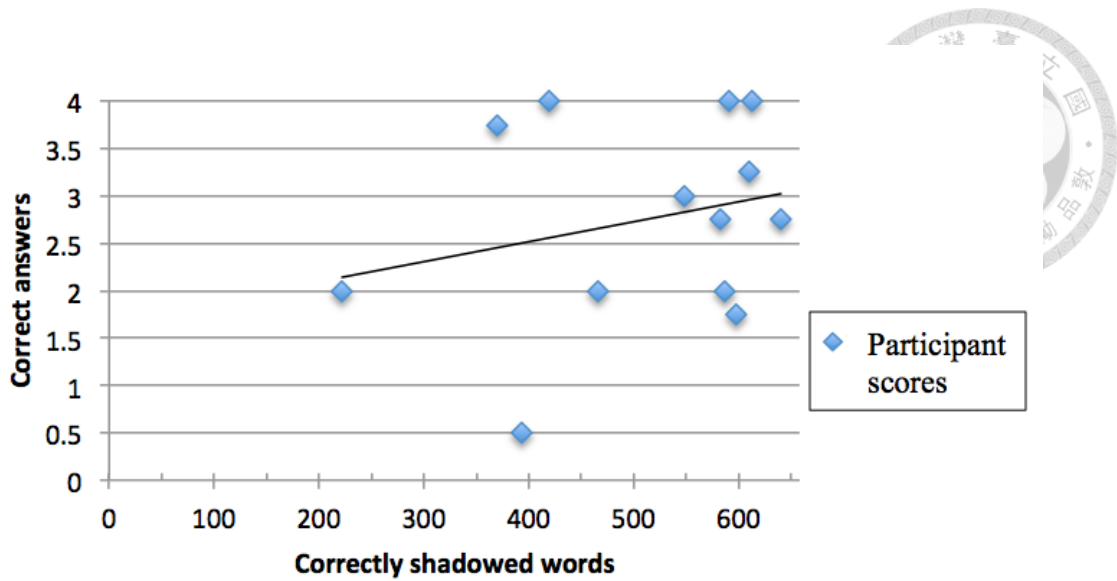


Figure 2 Correlation of shadowing scores to Comprehension answer scores for Text 1.

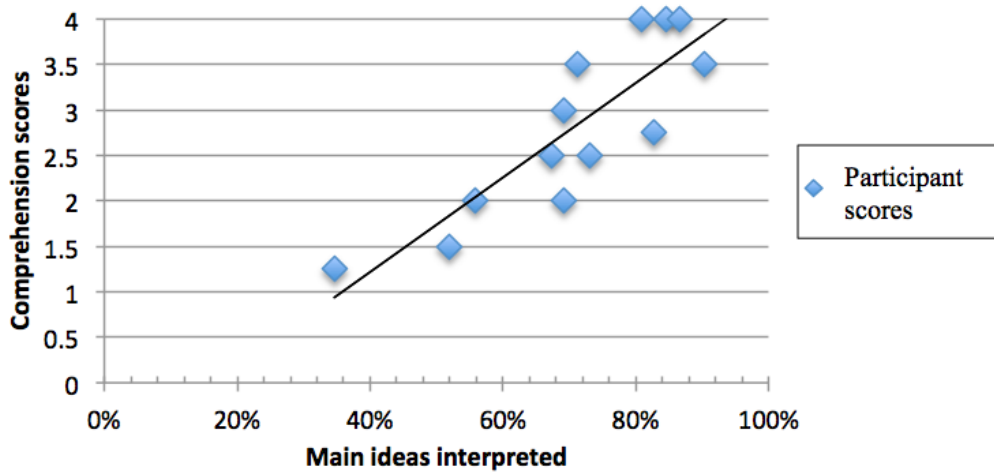
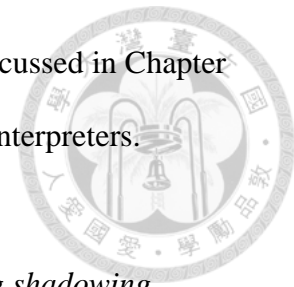


Figure 3 Relationship of interpreting performance with comprehension answer scores in Text 2.

This is because transferring a message from one language to another is a kind of paraphrasing, and a prerequisite to paraphrase a segment successfully is to comprehend it (Smith & Nelson, 1985). The strict shadowing that the participants did, does not necessarily require any comprehension of the message as long as the words are copied,

even if just phonetically, as has been the case for words like *love* discussed in Chapter

4. This phenomenon is also mirrored in the comments made by the interpreters.



T1: I think it's harder to understand the message when doing shadowing because your focus is put on the individual words and it's harder to process those into meaningful units.

P3: For the shadowing exercise when I saw the comprehension questions it took me a lot longer to recall what the speaker had said.

It is necessary to emphasise that these differences only apply to strict shadowing, and not smart shadowing where paraphrasing is necessary. Based on these results and on Kao's (2014) research, where interpreters were asked to answer questions about a text they had performed smart shadowing on, it is safe to say that smart shadowing would indeed activate comprehension due to the fact that paraphrasing requires comprehension (Smith and Nelson, 1985) and that it is thus an activity more similar to simultaneous interpreting than strict shadowing and thus may be useful in interpreter training as pointed out by Wu (1999)

5.3 Comparison of Trainees and Professionals

In this section, the two groups' differences and similarities will be analysed using a mixture of quantitative and qualitative data.

5.3.1 Differences in Intelligibility and Comprehension

5.3.1.1 Intelligibility

The statistical analysis reveals that the Professionals intelligibility scores do not differ significantly from those of the Trainees. This is in line with previous research by Kuo (2012) and Kao (2014), in which Professionals and Trainee interpreters were found to not differ in terms of their ability to recognise and produce words in a simultaneous setting.

Taking into consideration the most frequently misinterpreted words also shows that both groups find the same words unintelligible, with very few variations in order of most frequently mis-shadowed words between the two groups. Moreover, both Trainees and interpreters made similar comments on having suffered from intelligibility loss during the exercises.

5.3.1.2 Comprehensibility

In this study comprehensibility was measured through two different methods, by the scores to answers of comprehension questions and as the amount of main ideas correctly interpreted in the simultaneous interpreting section.

The results show that there is a statistically significant difference in terms of comprehensibility for Text 1 (the shadowing exercise) between Trainees and Professionals, with professionals having an average score of 3.55 out of 4 and trainees only answering 2.25 questions correct on average.

The difference in the number of main ideas correctly interpreted is also statistically significant, with Professionals correctly interpreting an average of 82.69% sentences and trainees only scoring an average of 62.98%. Both of these scores would initially suggest that Professional interpreters do have superior skills to comprehend a



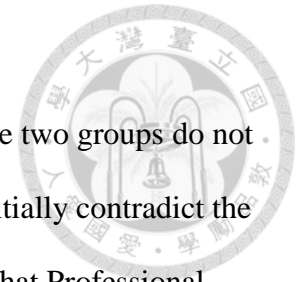
foreign accented text. However, taking the scores for the answers of the comprehension questions for Text 2 (interpreting) into consideration, although the Professional interpreters do have a higher score than Trainee interpreters, this difference is not statistically significant. Table 21 contains a summary of these results and their statistical significance.

Table 21

Summary of comprehensibility results.

Text	Main ideas interpreted	Comprehension questions answered
Text 1 (Shadowing)	n/a	P Average: 3.55 T Average: 2.25 p = 0.025
Text 2 (SI)	P Average: 82.69% T Average: 62.98% p = 0.020	P Average: 3.35 T Average: 2.47 p = 0.106

The fact that the Text 2 comprehensibility results are not statistically significant contradicts the previous statement that Professionals have better comprehensibility skills than Trainees. However, this discrepancy can be explained by taking into account the nature of the shadowing and interpreting exercises and the differences between Professional and Trainee interpreting strategies. Professionals have developed strategies that use previous knowledge to clarify unknown parts, using a more semantic-based approach, drawing from context and previous knowledge to anticipate where the speaker is going in their talk and alleviate stress put on the listening effort (Moser-Mercer, 1997). This will be discussed in more detail in section 5.3.3.



5.3.2 Differences in Shadowing

The statistical analysis carried out in Chapter 4 shows that the two groups do not differ significantly in their shadowing performance, which would initially contradict the research carried out by (Christoffels & De Groot, 2004) suggesting that Professional interpreters would be at a disadvantage when performing shadowing exercises.

Firstly, both Trainees and Professionals agreed that in general they had found the interpreting task to be easier than the strict shadowing task.

T2: I think the interpreting was easier because shadowing requires you to recognise every word that he said

P2: I think shadowing was harder because you have to say everything just as the speaker says it. With interpreting you have some degree of flexibility and you can always add some information that you have missed later.

However as discussed previously, the two groups do differ in their comprehensibility scores for the shadowing exercise. To explain this, the comments made by both groups during the retrospective interview can be taken into consideration.

P8: English is my B language so listening to my B language and also speaking it was extra hard.

T1: Cognitive resources are limited; you often don't have to listen to every individual word.

It seems that although both Trainees and Professionals struggled with shadowing, it is possible that Professionals have had experience speaking in their B

language in simultaneous mode and thus did not find that language was an added difficulty. The comments made by the Professionals, as well as their higher comprehension question scores, suggest that they were also using interpreting skills to lower the burden on their cognitive resources, in a similar way to the Professionals in Kuo (2012), whereas Trainee professionals, not having fully mastered their interpreting skills, could not make use of them and so could not devote energy to comprehending the text.

T2: I wasn't really listening, I could just hear the sounds and repeat them, I didn't understand what I was saying, just parroting the sounds.

A superficial analysis of the outputs also reveals differences in the ways in which the two group's shadowing output was affected. Trainees tended to freeze and be overwhelmed during the exercise resulting in long silences (for instance, T5 has a 70 word-long passage where all words but 7 are omitted, and the ones that are elicited do not form a sentence and have long pauses between them), whereas Professional interpreters had the capacity to draw from different strategies in order to say something that would fit in the parts of the text that they found unintelligible but comprehensible and paraphrase or substitute those parts.

In conclusion, while it is possible that Professional interpreters' performance suffered because of the nature of the strict shadowing exercise, it did not suffer as much as that of the group of Trainees, who had even more obstacles to overcome and suffered in both performance and comprehension.

5.3.3 Differences in Interpreting

As has been mentioned in previous sessions, the performance of Professional interpreters is significantly different from that of Trainees during the Simultaneous interpreting exercise. Professionals managed to correctly interpret an average of 82.68% of main ideas in Text 2, whereas the Trainees only managed an average of 62.98%. The results also show that Trainees and Professionals do not differ significantly in terms of their comprehension scores, in stark contrast with the shadowing exercise. This suggests that although both Trainees and Professionals both process and understand the text, the Trainees are not as able to express the ideas correctly in their output. By analysing the outputs in comparison to the source text, it is possible that the key difference between the two groups lies in the effectiveness of their strategies, skills and coping mechanisms.

5.3.4 Usage of interpreting skills

The aspect in which Trainees and Professional interpreters differed the most was in the choice of strategies. While Professional interpreters tended to use different interpretation skills to overcome difficulties posed by lower intelligibility and comprehensibility, Trainee interpreters did not manage to overcome those difficulties, not making good use of interpreting strategies.

5.3.4.1 Background knowledge

Most participants stated that drawing from background information was the most important part of their strategies when interpreting for accented speakers, be it in class or in conferences, preparing the materials in advance so as to have plenty of information to draw from in case of miscommunication.



T7: *If I know there is an accented speaker I'll be especially careful to get a lot of background knowledge so if I can't make out a word, I can just bring in my background knowledge.*

P5: *If I know that the accent of the speaker is going to be especially strong, I would try to learn as much as I can about his topic to make the job easier.*

Both Professional and Trainee interpreters said that they had also used background knowledge to make up for misunderstandings of the text during the experiment, as can be seen in the examples below.

T2: *I didn't hear petrochemical but since it was talking about polluting industries I thought it was either that or transportation.*

P2: *I knew that different wavelengths get reflected so although I didn't understand him, I could get a few words and start from my background knowledge.*

However, only Trainee interpreters mentioned that they had failed to use their background knowledge or made mistakes when using this skill causing errors in their output.

ST: "Take the Planet Venus, it is named after the Roman Goddess of Love and Beauty"

T2: *Take the Ballerinas, it is named after the Roman brothers of /lau/ and /buti/*

T4: *[...] it is named after the Greek Goddess of Love and Beauty.*

T7: [...] *it is named after the Roman Goddess of /lau/? flower and beauty.*

During the interview, both T2 and T7 said that they knew that Venus was the goddess of Love and beauty, however, as can be seen from their excerpts above, neither of them managed to activate this information in order to decipher the unintelligible text. T2 is especially interesting, as the participant drew from an especially convoluted train of thought based on possibilities, and still decided to go ahead.

T2: *I said Ballerinas because I thought it might be the name of some kind of constellation, and then I thought maybe they are named after some Roman brothers called Law and Buty.*

T4 also claimed to have known that information about the Venus, but as can be seen from the output, failed to recognise Venus as the Roman goddess, as opposed to Aphrodite, the goddess of Love and Beauty in Greek mythology.

Trainee interpreters sometimes also used background knowledge when it might not have been necessary, ignoring other contextual cues and making up information and adding embellishments that were not present in the ST.

ST: “The fashion industry is the second biggest polluter in the world behind the petrochemical industry”

T1: The fashion industry has the 2nd highest carbon emissions behind the petrochemical industry

[流行服飾產業是碳排放第二高的產業，僅次於石化產業。]



T5: Actually, this phenomenon is related to the petrochemical production process.

其實這個現象跟石化工業的生產過程有關係。

It is interesting to note that T1 claimed to have heard the sentence fully while they were interpreting, however T1 still decided to draw from background knowledge and specify which kind of pollution is produced by the fashion industry, which although it might not necessarily be wrong, it is not mentioned by the speaker.

T1: *I just heard polluter and since we do so many talks on pollution I added that it was carbon emissions.*

T5: *I heard petrochemical and I thought of how the materials that are used on cheap clothes are made from plastic.*

5.3.4.2 *Anticipation and contextual cues*

During the retrospective interviews, all participants explicitly mentioned using or trying to draw from context in order to disambiguate words or phrases, and T5 specifically mentioned anticipation as a way to deal with the speaker.

T7: *I heard “It’s not such a xxx idea” I definitely didn’t hear “wacky” but I knew that if he was saying that, that it would probably be something that other people would find unreasonable, so I said “ridiculous”*

P4: *I couldn’t decipher what he had said but he said some kind of unit, so I thought, what could it be? It wasn’t gallons or litres, so I realised that it was likely he had said “bathtubs”*

P5: *Throughout the text I tried to predict what the speaker was talking about and that was a really helpful strategy to understand the text.*



However, although in theory all participants tried to use contextual cues, in practice Trainees seemed to struggle to use them consistently. During the exercise, when professionals found words that they found unintelligible and could not decipher by other strategies, they were able to find synonyms or words that would otherwise fit in well in the context, whereas Trainee interpreters overwhelmingly failed to pick up on the context. This is especially clear in the following segment in Text 1, not including all the correct renditions by T8, P1, P2, P4 and P5 or omission by T5:

ST: “People think that science and art don’t go together but interweaving them...”

T1, T2, T3 T7: *interviewing*

T4: *the combination of them*

T6: *intervening*

P3: *using*

As can be seen from this segment, the Trainee interpreters except T4 used words that do not make sense in the context, such as *intervening* and *interviewing*. Whether it is because they did not pay attention to contextual cues or whether they used them and focused on the wrong information (possibly assuming that “people” is the object of “interweaving”), it cannot be said. However in the case of the only successful substitution of this segment, T4 mentions that they were indeed using contextual cues to recover the unintelligible word.



T4: *I could predict what he was going to say because he said he uses visual arts to teach astronomy so when I heard this I thought that he is going to talk about combining arts and science, so when he mentioned it again later, that was in line with my prediction.*

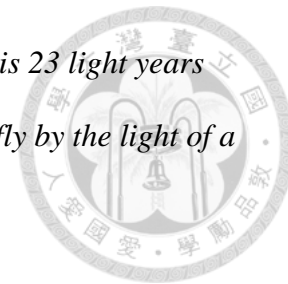
5.3.4.3 *Output control*

Another big difference between Professionals and Trainees was in their output and the way they correct, omit and ensure the quality of the output.

Professionals are much more systematic in the way they control their output. Professional interpreters only omit repeated ideas or concepts which they feel do not contribute to the text, trainees on the other hand, omit important parts of sentences, often leaving sentences unfinished and saying things that do not make sense.

ST: “One of the closest planets that could possibly support surface water is 23 light years away. Thing to measure the atmospheric composition of these planets passing in front of their stars is incredibly hard. It’s like trying to see the precise colour of a fruit fly passing in front of a car’s headlight when that car is 23 light years away”

T3: *One of the causes and supplies that could possibly support surface water is 23 light years away. ... the quantums passing ... the stars is incredibly hard. We try to see the precise ... when the star is 23 light years away.*



P3: *One of the closest planets that could have water and life is 23 light years away, so it is really hard to see. It's like trying to see a fruit fly by the light of a car when the car is 23 light years away.*

It is clear that the omissions and substitutions by the T3 are not systematic at all, resulting in a nonsensical paragraph. On the other hand, when P3 shadowed the same paragraph, although some of the words might have been unintelligible, P3 still managed to get out a steady and succinct stream of information with minor changes in meaning, forming a fully grammatical section. When asked about these sections in the retrospective interview, their answers and strategies were very different:

T3: *If I miss one chunk of the message I can't make sense, I felt like there is no way for me to make it up so just let it go, move on to the next sentence.*

P3: *When the sentences are too long or I don't understand some part I will omit some information that's not as important and piece together something shorter that still makes sense.*

Moreover, only Professional interpreters introduced clarifications and corrections in their outputs when they realised that they had made a mistake whereas Trainee interpreters just let the mistake be.

P4 shadowing: *That light hits the ice... heats the ice.*

P4 interview: *The speaker didn't tense the vowel in "heat" so I initially said "The light hits the planet", but since he was talking about the climate and temperature, I realised he meant to say "heat" so I went back and corrected it.*



T2 shadowing: *People think that science and art don't go together but interviewing them...*

T2 interview: *I realised I said it wrong, because it doesn't make sense. I was aware of it.*

Professional interpreters also used paraphrasing and rearranging elements of their output in different ways to ensure that the information they were getting across was not incorrect.

Two techniques could be identified; first, Professionals were cautiously vague with their word choice when making statements they were not sure of, to later clarify when they were more certain, whereas Trainee interpreters tended to either go ahead and make a statement even when they were not sure or go with a vague approach but never clarify it.

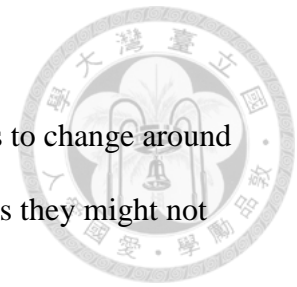
P3 interpreting: *This industry's technology doesn't change and the focus is put on profit rather than whether it can develop sustainably. This is all regarding the petrochemical industry.*

[這個產業的技術不會改變然後重點在於要獲利而不在於是是不是能持續的發展下去。這是有關石化產業]

P3 interview: *When I am not sure I will try to avoid saying something wrong so I just use vague words so that if the speaker drops another clue I can clarify.*

P8 interpreting: *This industry actually won't really pay attention to this issue.*

[這個產業其實不會介意這種事情]



Professional interpreters also made use of paraphrasing skills to change around the order of items in sentences and buy time to process certain details they might not have fully understood.

ST: “On average a household’s purchase of clothing per year requires 1000 bathtubs of water to produce. That’s a lot of water”

P4: *On average the clothes a household buys in a year require a lot of water.*

Around 1000 bathtubs of water.

[平均來說，一家人每年買的衣服會需要耗費掉好多的水。大概是 1000 個浴缸的水]

P5: *The clothes every household buys per year use a lot of water on average.*

Around 1000 tubs.

[每一個家庭平均每一年購買的衣服其實會使用到非常多的水資源，大概是一千桶]

For instance, in the Source text mentioned above, the specific amount is followed by a general comment, but in these two Professional interpreters, the order was switched around to have more time to think about the word *bathtubs*, which was actually left untranslated by all other participants.

5.3.4.4 Overall observations

In general the findings of this study in terms of differences between trainees and professionals line up with the previous literature stating that expertise allows Professional interpreters to make more efficient use of their skills in order to ensure a

successful performance and minimise problems (Ericsson, 2008; Moser-Mercer, 1997). Trainees on the other hand, have not acquired enough experience to get this know-how (Liu, 2008) and thus struggle with the interpreting task itself, and ever more so when an added layer of difficulty, such as accent, is added. T2 shared this idea rather succinctly:

T2: Because we have waged so many battles in the booth and in the interpreter's seat, most of us have accumulated a wide skillset throughout the years. So when we run into speakers with accents, we have a larger arsenal of strategies to help us cope with the situation. Experience also helps us decide quickly what tactics to use and when and how to use them so we don't freeze up when we run into obstacles.

5.3.5 Mind-set

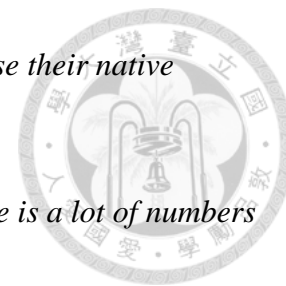
Similar to previous literature featuring a foreign accent (Kao, 2014; Kuo, 2012; Kurz, 2008; Mazzetti, 1999; Sabatini, 2000), trainees in general have negative feelings towards non-native foreign accented speech, causing them to be confused, afraid and stressed. Professional interpreters on the other hand were generally unfazed by the added difficulty. In fact, when asked to share their thoughts about the experiment, they commented that they felt that it was no harder than what they usually encounter in conferences, where other circumstances like accent combined with fast speech, technical concepts or non-standard grammar increment the difficulty, echoing the opinions of the professional interpreters in (Chang & Wu, 2013).

P1: It's so common to get accented speakers we are already used to it. I think there are other accents that are harder. Like Indian, because they are very

proficient and speak a lot faster, or European speakers who use their native language's grammar with English words.

P2: Accents are fine, but if it's a topic like finance, where there is a lot of numbers and every sentence matters, it's a lot harder.

P3: Accents on their own are not that hard, but it becomes a bigger burden on cognitive resources if the speaker speaks very fast or if the content is complicated.



5.4 Accent and pedagogy

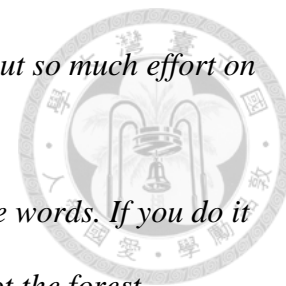
The results in this experiment suggest that Trainee and Professional interpreters possess similar intelligibility levels but different comprehension levels of the same texts, as well as different interpreting performance scores, with professional interpreters doing better thanks to their different usage of interpreting strategies. Several pedagogical implications can be drawn from these results with some comments from the participants.

First, Trainee interpreters seem to adopt a bottom-up approach, where they focus on the individual words to try and understand the message resulting from their sum, without much regard to context while tripping up on individual words. On the other hand, Professional interpreters have a top-bottom approach, in which they first try to understand the message and then use different techniques to recognise or minimise the challenge of unintelligible words. These findings are also in line with the research in Kuo (2012) and Kao (2014).

T3: I think in the middle of a sentence if I didn't recognise a particular words because of its pronunciation, I would just give up on the rest of the meaning. I

don't think I put my focus on understanding the meaning; I put so much effort on getting the phonetic elements.

P4: I try to understand the message first and then focus of the words. If you do it the other way round you might end up seeing the trees but not the forest.



So, one of the main goals for interpreter training programs should be to focus on getting trainees to move on from analysing at the word level to a bigger meaningful analysis so that they can perform better when facing difficulties such as accent. As for accent training itself, all participants felt that it was important to introduce accent to trainees as part of the curriculum, in the form of class materials to get trainees acquainted with the different accents that they will encounter after graduation. However, most agreed that it should not be the main focus on classes, and that the most important thing would be to ensure that trainees first lay a sturdy foundation of skills with simpler non-accented materials and then move on to add the extra layer of difficulty that accent poses.

As can be seen from all the discussions above, all the results confirm corroborate previous research involving the interpretation of languages, especially Kuo (2013) and Kao (2014), which follow a similar methodology to this experiment.

This study, like the two mentioned above, shows that trainee and professional interpreters indeed do not differ in terms of their intelligibility as measured via strict shadowing exercises. This suggests that a higher ability to distinguish and recognise foreign-accented words is not a part of the process of becoming a professional interpreter.

In terms of comprehensibility, there have been similar results, showing that interpreters do try to understand the text in order to be able to paraphrase it as in Kao

(2014) or interpret it as in this study. Although there is no quantitative data participants in Kuo (2013) reported to have understood the text well despite the speaker having a foreign accent. In Kuo (2014) the interpreters' comprehension scores showed that interpreters did indeed comprehend foreign accented English while performing smart shadowing.

However, the most striking similarity with these two studies is the similarities in skill use and thought process of the participants. In both Kuo (2013) and Kao (2014), trainees reported trying to make use of interpreting strategies and skills such as the ones mentioned above, but failing to succeed. They also felt more stressed and did not consider editing their output for the benefit of the listeners, just like in this study. The professionals in the abovementioned two studies also made similar claims of not finding the exercise particularly difficult, and made use of the different interpreting skills and strategies automatically and effortlessly, as well as controlling their output for a smooth interpretation.

6 Conclusion



In this section, a summary of the key points of this study will be presented, followed by the conclusions that can be drawn from the results and discussion in the previous two chapters. Some of the limitations will be presented as well as suggestions for future research that this study did not cover.

6.1 Summary of the study

With non-native speakers becoming more and more frequent in international conferences all around the globe, interpreters have to be ready to face a wide variety of accents in their work (Chang & Wu, 2013; Gentile & Albl-Mikasa, 2017).

Previous studies on the effects of accent have provided some insights on the effect that accent has on interpreters and their performance, however their scope was almost completely limited to student interpreters. This experiment utilised a similar methodological framework to Kuo (2012) and Kao (2014), studying both Trainee and Professional interpreters performance, intelligibility, comprehension and strategy use in shadowing and interpreting exercises.

This study gathered 8 Trainee interpreters currently enrolled in interpreting programs in Northern Taiwan, and 5 Professional interpreters with years of experience who were also trained in these programs.

Both quantitative and qualitative data was collected on their performance shadowing and interpreting a text, answering comprehension questions. An retrospective interview was also carried out at the end of the tasks to get an insight on the thought processes of the participants.

From the data obtained in this study, several conclusions can be reached.

THE EFFECTS OF NON-NATIVE ACCENT ON INTERPRETERS

Firstly, this study shows that accent does indeed lower intelligibility and comprehensibility of a text, with segmental features having an impact on the text's intelligibility and suprasegmental features affecting the comprehensibility more.

Secondly, based on the strategy use and attitudes to the task expressed by the participants in the study, it can be concluded that phonemic (strict) shadowing is different from performing simultaneous interpreting in terms of processing and comprehending the message. Both groups of interpreters found that the strict shadowing task had been harder and that the nature of the task had prevented them from using skills that they would have normally used during interpreting. Moreover, the quantitative results show that a successful strict shadowing does not require comprehension, whereas a successful interpretation does.

Third, the biggest differences between trainee and professional interpreters lies in their ability to efficiently use different strategies and skills to overcome the added difficulty of listening to an accented speaker. Professionals have the know-how to use a wide range of strategies to keep a high-quality delivery, whereas trainee students, whose skills are not as automatized struggle and often fail to use different strategies and succeed at interpreting. The two groups also differ in terms of their attitudes to the task, with trainees generally feeling some kind of distress and professional interpreters considering the task not to be any harder than what they usually face in conferences.

Fourth, accents should be part of interpreter training curriculums as a way to get students ready for the real world. If accents were to be introduced as class materials, trainees would get exposed to the different speech styles and practice and improve their abilities to overcome the loss of intelligibility and comprehension caused by the non-native accent.

6.2 Limitations of the current study

As with most research on interpreters, one of the biggest shortcomings of this study is related to the participants. First of all, their number is relatively small, with just thirteen participants. This is not only because the amount of professional interpreters in Taiwan is relatively small, it is also the case that most professional interpreters with experience are busy, or might not be willing to have their professionalism questioned by researchers and so it is quite challenging to attract large amounts of professionals to take part in an experiment. This issue with the numbers reduces the generalizability and conclusiveness of the results.

The second main limitation lies in the fact that these experiments were carried out in a controlled environment, with controlled exercises. In real-life situations interpreters are used to having previous knowledge of the content, speaker and context of the speech, being able to see the speaker, having a booth mate and an audience. In the controlled environment they might feel rather self-conscious, because of the fact that a researcher is watching their performance closely. Moreover, there are almost no real-life situations in which interpreters are required to shadow, let alone answer comprehension questions about a speech they have just interpreted, so the artificiality of the whole experiment could affect the overall approach of interpreters for the task, who might not feel like it is a 'real' situation and therefore might behave differently under other circumstances.

The third point relates to the methodology employed. The nature of interpreting and the methodology of this study limits the information that can be obtained from observing the experiments as a researcher. The only points where the usage of different skills can be detected by the researcher is when there is a failure. When things are going smoothly, it is almost impossible to know in real time what strategies the interpreter is

using or whether they find a segment incomprehensible or unintelligible, unless the participant points it out in the retrospective interview. Even then, these comments are all subjective and will vary from person to person. They are also based on memories of what happened and so there is no objective way to tell whether the comments made do indeed match up with what transpired. Moreover, only strict shadowing was used in this experiment, and so the nature of the exercise, where the participants have to repeat every word may have already predisposed them to not focus on the comprehension of the message.

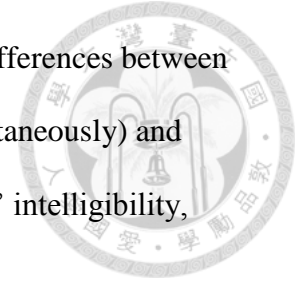
Lastly there are some issues related to the way the scores were calculated, mentioned briefly in the results section. The shadowing section, for instance, can only be taken as an indicator for intelligibility and not as an absolute measure. This is because both omitted words and paraphrased sections were considered as errors in this framework, but it could very well be the case that the words were intelligible but the interpreter chose not to articulate them.

6.3 Directions for future research

There are many aspects that this study has not covered, some important directions that could be taken in the future are the introduction of non-native grammar and lexical variations in combination with pronunciation. Speakers from different accents could be used as materials to see whether different accents pose different problems. Future studies could also include native English accents, or even switch the languages and check for the effects of non-native A languages of interpreters, in this case, non-native Chinese speakers, which are becoming more and more common in both Taiwan and the world.

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Another direction could be taken to further investigate the differences between strict shadowing, smart shadowing (paraphrasing the message simultaneously) and interpreting and see what the differences are in terms of participants' intelligibility, comprehension and strategies used.

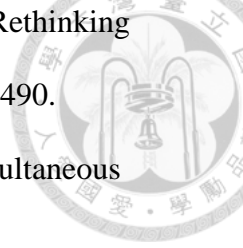




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Appendix

Appendix i: Speech Materials



Speech 1

Contradictions and Astronomy

I am an astronomer, and in my field there are two polarising opinions on the possibility of life existing outside the Earth. There are those who think that we are alone in the universe and sneer at the idea of populations of aliens thriving in distant galaxies. And there are those who, like me, think that there is a plethora of different life forms out there waiting to be discovered. It's not such a wacky idea as you may think; after all there are thousands of millions of galaxies in our universe, each one with up to tens of trillions of planets. If you think about it, what are the chances of us being the only manifestation of life?

I am one of the many astronomers searching for one of these exoplanets in the universe where life exists. I can't see this planet with my naked eyes or even with the most powerful telescopes we currently possess, but I know that it's there, and understanding contradictions that occur in nature will help me find it.

On our planet, where there's water, there's life, so we look for planets that orbit at just the right distance from their stars. At this distance, planets could be warm enough for water to flow on their surfaces in the form of lakes and oceans where life might reside. Most astronomers focus their time and energy on finding planets at these distances from their stars. What I do picks up where their job ends. I model the

possible climates of these planets. And here's why that's important: there are many factors besides distance from its star that control whether a planet can support life.

Take the planet Venus. It's named after the Roman goddess of love and beauty, because of its benign, ethereal appearance in the night sky. However, spacecraft measurements revealed a different story. The surface temperature is close to 500 degrees Celsius, which is hot enough to melt lead. The reason for this is not because its distance from the sun, but because of its thick atmosphere. It causes a greenhouse effect on steroids, trapping heat from the sun and scorching the planet's surface. The reality totally contradicted the initial perceptions that the world had of this planet. From these lessons from our own solar system, we've learned that a planet's atmosphere is crucial to its climate and potential to host life.

We don't know what the atmospheres of these planets is like because the planets are so small and so dim compared to their stars and so far away from us. For example, one of the closest planets that could possibly support surface water is 23 light years away. Trying to measure the atmospheric composition of these planets passing in front of their stars is incredibly hard. It's like trying to see the precise colour of a fruit fly passing in front of a car's headlight when that car is 23 light years away.

So I use computer models to calculate the kind of atmosphere a planet would need to have a suitable climate for both water and life.

Ice on a planet's surface is also decisive for its climate. Ice absorbs longer, redder wavelengths of light, and reflects shorter, bluer light. That's why icebergs look so blue, the redder light from the sun is absorbed by the ice and only the blue light gets reflected back up to our eyes and we see blue ice. Cooler stars emit redder light, and hotter stars emit bluer light. My models show that planets with ice orbiting colder stars could actually be warmer than planets without ice orbiting hotter stars. That also

seems contradictory, but the ice absorbs the longer and redder wavelength light from cooler stars, and that light heats the ice and the planet.

Using climate models to explore how these contradictions can affect planetary climate is vital to the search for life elsewhere.

And it's no surprise that this is my specialty. I'm an astronomer and a trained actor, so I am uniquely positioned to appreciate contradictions in nature and how they can inform our search for the next planet where life exists.

I have an organisation that teaches astronomy to middle school children using theatre, writing and visual art. That's another issue that's often seen as a contradiction because people think that science and art don't go together, but interweaving them can help these children bring their whole selves to what they learn, and maybe one day join the ranks of astronomers who are full of contradictions, and use their backgrounds to discover, once and for all, that we are truly not alone in the universe.





Speech 2

The issues of the fashion industry

I love fashion. I can use different fabrics colours and styles to express myself and show everyone what I stand for. And something that I find even more interesting is that we are all customers of the clothing industry from the moment we are born and we get to wear our first set pyjamas, through to being dressed by our parents and then choosing our own clothes to show the world who we are. No matter if it is an ornate and lavish evening gown or just a simple pair of jeans with your favourite sweater, we all wear clothes.

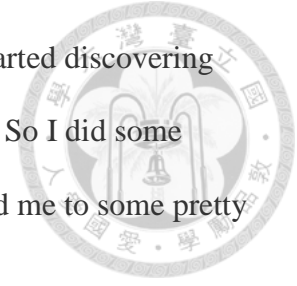
However, some time ago I realised that this industry that gives us so much freedom and joy also has a dark side.

A few years ago, I found myself looking for the most cost-effective way to be stylish. So naturally, I wound up at my local thrift store, a wonderland of other people's trash that was ripe to be plucked and become my treasure. I wasn't just looking for your average vintage T-shirt. For me, real style lives in the combination of design and individuality. So, I bought a sewing machine to tailor the 90's-style garments that I was finding to fit a more contemporary aesthetic. I've been tailoring and making my own clothes from scratch ever since, so everything in my closet is uniquely my own.

But as I was sorting through the endless racks of clothes, I started to wonder what happened to all the clothes that I don't purchase? The stuff that isn't really cool or trendy but kind of just sits there and rots away at these second hand stores?

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I work in the fashion industry on the wholesale side, and I started discovering some of the products that we sell hanging at these very thrift stores. So I did some research and I pretty quickly found a very scary supply chain that led me to some pretty troubling realities.



It turned out that the clothes I was sorting through at these thrift stores represented only a small fraction of the total amount of garments that we dispose of each year. In the US, only 15 per cent of the total textile and garment waste that's generated ends up being donated or recycled in some way, which means that the other 85 per cent of textile and garment waste ends up in landfills. This means that millions of tons of clothing and textile waste end up in landfills every year in just the United States alone. This averages out to be roughly 200 T-shirts per person ending up in the garbage.

What was even more surprising was seeing that the fashion industry is the second largest polluter in the world behind the petrochemical industry. This is an important comparison to make. To be completely honest, I wasn't surprised to hear that the oil and gas industry was the number one polluter. I just assumed, fairly or not, that that's an industry that doesn't really mind sticking to the status quo. One where the technology doesn't really change and the focus is more on profitability at the expense of a sustainable future. But I was really surprised to see that the fashion industry was number two because maintaining the status quo is the opposite of what the fashion industry stands for.

The unfortunate reality is, not only do we waste a lot of the things we do consume, but we also use a lot of resources to produce the clothes that we buy each year. On average, a household's purchase of clothing per year requires a thousand bathtubs of water to produce. That's a lot of water. It seems that the industry that

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always has been and probably always will be on the forefront of design, creates products that are designed to be comfortable, trendy and expressive. But they aren't designed to be sustainable or recyclable.



However, I think that can change. I think the fashion industry's aptitude for change is the exact thing that should make it patient zero for sustainable business practices. And I think, to get started, all we have to do is start to design clothes to be recyclable at the end of their life. And if we want to take fixing the environmental impact that the fashion industry has more seriously, then we need to take this to the next step and start to design clothes to also be compostable at the end of their lives.

Appendix ii: Marking Materials



List of Text 2 idea units

- 1) I seek cheap style
- 2) I go to thrift stores for this
- 3) Style is design and individuality
- 4) I bought a sewing machine to tailor clothes
- 5) Everything is my own
- 6) But what happens to the clothes nobody buys?
- 7) I work for the fashion industry
- 8) I discovered our products at thrift stores
- 9) I did research
- 10) I discovered a scary supply chain
- 11) Thrift store clothes are a small proportion of clothes thrown away.
- 12) In the US 15% is recycled
- 13) 85% goes to landfill
- 14) I was surprised fashion was the second biggest polluter
- 15) Not surprised petrochemical is biggest
- 16) Petrochemical focuses on profit and keeps status quo
- 17) Fashion opposes status quo
- 18) We waste a lot
- 19) We use a lot of resources to make clothes
- 20) A lot of water
- 21) Fashion industry designs trendy clothes
- 22) Fashion industry does not design sustainable or recyclable clothes
- 23) I think this can change

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- 24) Fashion keeps changing
- 25) First design recyclable clothes
- 26) Then design compostable clothes



Appendix iii: Comprehension assessment



Text 1:

How do astronomers start looking for planets that might have life?

What was the misconception around Venus?

What are the difficulties of measuring atmospheres of planets in other stars?

How does ice affect the temperature of a planet orbiting a cold star?

Text 2:

Why does the speaker like going to thrift stores?

What made the speaker start thinking about the problems of the fashion industry?

What are the environmental issues of the fashion industry?

Why is it surprising that the fashion industry has environmental problems?

