

The Impact of Grammatical Differences on English-Mandarin Chinese Simultaneous Interpreting

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Abstract—This paper examines the impact of grammatical differences on simultaneous interpreting from English into Mandarin Chinese by drawing upon an empirical study of professional and student interpreters. The research focuses on the effects of three grammatical categories including passives, adverbial components and noun phrases on simultaneous interpreting. For each category, interpretations of instances in which the grammatical structures are the same across the two languages are compared with interpretations of instances in which the grammatical structures differ across the two languages in terms of content accuracy and delivery appropriateness. The results indicate that grammatical differences have a significant impact on the interpreting performance of both professionals and students.

Keywords—Grammatical differences, simultaneous interpreting, content accuracy, delivery appropriateness.

ABBREVIATIONS

3sg	Third person singular pronoun
ASSOC	Associative (-de)
BEI	Passive maker, e.g. bei
BT	Back translation
CG	Good in content
CL	Classifier
CO	Omission in content
COMP	Comparative
CRS	Currently relevant state (le)
CS	Substitution in content
CSC	Complex stative construction (de)
DC	Correction in delivery
DCO	Complete omission in delivery
DG	Good in delivery
DGE	Grammatical error in delivery
DUR	Durative aspect (-zhe)
GEN	Genitive (-de)
GS	Gloss
LP	Long passive or passive with agent
M	Mean
N	N position
NOM	Nominalizer (de)
NP1	Noun phrase with pre-modification only
NP2	Noun phrase with post-modification only
NP3	Noun phrase with both pre- and post-modification
P	P-value
PL	Plural (-men, -xie)
SD	Standard deviation
SI	Simultaneous interpretation
SP	Short passive or passive without agent

ST	Source text
TT	Target text
Y	Y position

I. INTRODUCTION

SIMULTANEOUS INTERPRETING (SI) is the immediate on-site oral translation from one language to another, which requires the interpreter to listen and speak at the same time, and to split attention between listening to and comprehending the input from the speaker, transferring the source language input into output in the target language, and self-monitoring the output [11]. This simultaneity, multi-tasking and attention splitting make SI a challenging task that places considerable demands on the interpreters' language processing capacity.

A number of scholars have discussed factors that could affect SI including factors pertaining to the input such as the speaker's accent [8], [18], [26], [34], rate ([3]-[5], [7], [21], [23], [27], [38], [40], [41], and noise level of the environment [6], and factors pertaining to the interpreter, including "how much is grasped, work habits, familiarity with the language and the desire to be faithful to the original" [25], [28], age of bilinguality [13] and earedness [19], [20].

Apart from the factors mentioned above, the effects of word order or grammatical differences between the two languages involved have also been debated among scholars in the interpreting field. A small number of representatives of the Paris School, such as [21], [37], who believe that simultaneous interpreters should convey the meaning or sense rather than interpreting words, therefore, differences in surface syntactic structures should not cause problems for interpreters. As long as interpreters master comprehension and production simultaneously well, SI should be achievable without the help of language-related strategies. However, there are far more scholars in favour of the argument that word order or grammatical differences between the two languages involved in an interpreting event have a significant impact on SI [1], [9], [12], [14]-[17], [22], [32], [35], [36], [39], [42], [43], [46]. According to [16], "the cognitive load in simultaneous interpreting between structurally similar languages is lower than that of a monolingual paraphrasing task, despite the need for recoding", however, structurally divergent languages will require interpreters to restructure, increase their cognitive load and entail a high probability risk. Also according to [9], syntactic differences will require the interpreter to lag further behind the speaker before encoding into target language, which will require extra memory effort and might cause problems in SI including "deterioration of the content of the

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target-language speech” in the form of errors and omissions, and “deterioration of its delivery” which would affect “linguistic output, voice and intonation “[10].

The impact of German-English asymmetrical structures on SI has been investigated by a number of scholars [9], [15], [17], [32], [35], [36], [39], [42], [43], and the effects of grammatical differences in other language pairs such as English-Arabic [1], English-Japanese [9], English-Korean [22], English-Italian [46], and English-Mandarin Chinese [39] have also been discussed widely. Setton’s small corpus-based study [39] presents qualitative analysis of English simultaneous interpretations of Mandarin Chinese asymmetrical structures. In contrast, this article combines error analytical qualitative and quantitative comparisons between the simultaneous interpretations of symmetrical and asymmetrical structures between English and Mandarin Chinese, presenting empirical evidence of the impact on SI from English into Mandarin Chinese. The focus is on three grammatical differences between Mandarin Chinese and English which have been identified as particularly striking by scholars including [33], [45], [24], namely passive voice structures, the position of adverbial components, including adverbs and adverbial clauses, and the composition of noun phrases.

The paper is divided into three main parts, namely Part A on passives (PVs), Part B on adverbial components (ACs) and Part C on noun phrases (NPs). It compares interpretations of instances of these features in which the grammatical structures are the same across the two languages with interpretations of instances in which the grammatical structures differ across the two languages to see whether there is correlation between grammatical differences and the content accuracy and delivery appropriateness of simultaneous interpretations. The following analytical categories are used for error analysis: good in content (CG)², omission in content (CO), substitution in content (CS), good in delivery (DG)³, grammatical error in delivery (DGE), correction in delivery (DC) and complete omission in delivery (DCO), focusing particularly on omissions in content (CO), substitutions in content (CS), grammatical errors in delivery (DGE) and corrections in delivery (DC) in this paper.

II. METHODOLOGY

A. Subject

Twelve trainees and nine professional interpreters were invited to participate in the experiment. All of them had Mandarin Chinese as their native language and English as their strongest foreign language. The nine professional subjects, aged 37 on average, had been working as simultaneous interpreters for at least five years and their working diaries recorded at least 80 days per year of SI; the group of 12 students, aged 24 on average, comprised trainees

²Good in content (CG) means the original meaning has been well preserved in the target texts.

³Good in delivery (DG) means the original meaning has been changed but the target texts are grammatically correct and fluent.

who were prospective graduates of the one-year MA interpreting programme in a UK university and had been trained as simultaneous interpreters for roughly four months but had no real-life experience of SI.

B. Material

Given that there are other variables which may affect SI such as the quality of input, the rate of input, the accent of the speaker, and individual factors as mentioned above, the choice of experimental materials was afforded careful attention.

The English speech used in the experiment was addressed to the UN 2005 World Summit by the former UN Secretary-General, Kofi Annan, on 14 September, 2005 in New York. The content of the speech is general, without specific terminology or specific background knowledge requirements, and therefore suitable for both novices and experts.

In the experiment, the original video recording of the speech was used to simulate a real-life experience. The English source text, a 14.4-minute speech with 1603 English words, was delivered at a rate of roughly 111 wpm (words per minute). According to [5], [21], [38], for interpretation to be effective, the optimal speech rate for English speeches should be between 100 and 120 words per minute (wpm). According to the standard, the speech rate of the speech is acceptable, even optimal. The speaker has a slight non-native accent, which however never obscures meaning.

C. Procedure

All the subjects were asked to fill in a pre-experiment questionnaire asking their age, their gender, the extent of their training in SI and the extent of their experience working in SI.

All the subjects simultaneously interpreted the video-recorded English speech into Mandarin Chinese. Their output in both languages was audio-recorded and later transcribed. The author was present during the experiment.

All subjects also filled in a post-experiment questionnaire on the level of difficulty in terms of the content, accent and input rate of the experimental speech. The results have shown that almost all the subjects believed that the experimental speech was acceptable, even ideal for SI in terms of the variables mentioned above.

III. PART A⁴

This part focuses on the impact of grammatical differences between English and Mandarin Chinese passives (PVs) on SI. According to [2], [44], PVs can be divided into two groups in terms of the existence of agents: PVs with agents are called “long passives” and those without agents “short passives”. The terms “long passive” and “short passive” will be used here and will be referred to as “LP” and “SP” for the sake of convenience.

The typical constructions of English LPs and Mandarin Chinese LPs are presented as in example a) and b), according to [31], [24], respectively.

⁴ In Part A, recipients are underlined as recipients; agentive verb phrases are underlined as agentive verb phrases; agents or added subjects in the target text are underlined as agents or added subjects.

a) Noun Phrase1+ Auxiliary+verb+ (by+Noun Phrase 2)

This violin was made by my father.⁵

b) Noun Phrase1+BEI+ (Noun Phrase 2)+verb

ST: Qìqiú bèi fēng

chuīzǒu LE

GS: BallonBEI wind

blow away PFV/CRS

TT: The balloon was blown away by the wind.⁶

As shown in the above examples, the two Noun Phrases numbered 2, introduced by the preposition *by* in English and by the passive marker *BEI* in Mandarin Chinese, respectively, function as agents in LPs. Mandarin Chinese and English are structurally different in terms of the position of agents in LPs. The agent is placed before the verb in Mandarin Chinese while the agent is placed after the verb and connected to the verb with the preposition “by” in English. This view is also shared by [44]. According to [44, p.142], “the agent in the long passive normally follows the passivized verb in English but occurs before the verb in Chinese”.

Both English and Mandarin Chinese PVs can occur without agents. Such constructions are called short passives (SPs) as mentioned above, as shown in example c) and d) respectively.

c) Noun Phrase1+ Auxiliary+verb

This difficulty can be avoided in several ways.⁷

d) Noun Phrase1+BEI+verb

ST: wǒ bèi qiǎng LE

GS: I BEI rob PFV/CRS.

TT: I was robbed.⁸

In example c) and d), the syntactic structures of Mandarin Chinese and English are almost the same. As [44, p.142] point out, compared with LPs, there are few changes: English SPs do not include the agents which are present in LPs, or the preposition *by*, while in Mandarin SPs, given *BEI*'s “double role of marking passive constructions as well as introducing the agent”, there is no agent, but *BEI* remains as the passive marker.

This part of the article will focus on the syntactic difference between passives with and those without agents (LPs and SPs respectively) in Chinese and English as illustrated in examples a) and b) to see whether the presence of agents has a significant impact on SI; in other words, whether the SI of the instances of LPs and SPs are significantly different. In order to achieve this aim, the SI of instances of SPs will be compared with that of instances of LPs. The experimental English source text has 20 instances of PVs in total, among which 15 are agent-less (SPs) and five include agents (LPs). Twenty-one participants interpreted the experimental English source text. Each participant produced a group of interpretations of 15 SPs and of 5 LPs. This means that the total number of interpretations of SPs is 315, and that of interpretations of LPs is 105.

The discussion will focus on changes of recipients and agentive verb phrases and agents if there are any from the perspective of the seven parameters mentioned above. The

hypothesis is that instances of LPs may cause problems in SI so that:

1. In terms of content (CG) and delivery (DG), the percentage of good SI of LPs is higher than that of SPs.
2. Interpretations of LPs will display more omissions in content (CO) and substitutions in content (CS) than those of SPs.
3. Interpretations of LPs will include more grammatical errors in delivery (DGE) and more corrections in delivery (DC) than those of SPs.

Four scenarios showing typical problems caused by grammatical differences including omissions in content (CO), substitutions in content (CS), grammatical errors in delivery (DGE) and corrections in delivery (DC) are illustrated with examples from the experimental output here.

Scenario A: Omission in content (CO)

If recipients or agentive verb phrases or agents if there are any or the entire PV have clearly been omitted, the SI will be considered to display an omission as shown in the experimental example below.

ST: The challenges of our time must be met by action.

SI: 我们目前的挑战必须能够得到解决

GS: We current NOM challenge must can gain solve.

BT: Our current challenges must be solved.

In e), the original sentence is a LP with the agent “by action”. In the SI, the agent is omitted. According to the experimental findings, among all the professionals’ and students’ interpretations of LPs, there are 45 omissions, of which 18 or 40% are omissions of agents, nine or 20% are omissions of recipients, nine or 20% are omissions of agentive verb phrases, four or 8.9% are omissions of both agents and verbs, and one or 2.2% is the omission of the entire passive voice structure. It is obvious that the omission of agents is the most frequent incidence of all the omissions in the interpretations of LPs, which could possibly be attributed to the grammatical differences mentioned above. One possibility is that the interpreter first interpreted the recipient and the verb phrase of an English PV into Mandarin Chinese and then heard the agent whose interpretation should be placed before the verb phrase in Chinese, when, however, it would be too late to restructure the interpretation or to make any major correction, and therefore, the agent would simply be omitted.

Scenario B: Substitutions in content (CS)

If recipients or agentive verb phrases or agents if there are any have been substituted by something else, either close to or far away from the original meaning, but not omitted, the SI will be counted as substitution as illustrated by the experimental example below.

ST: Weapons of mass destruction pose a grave danger to us all, particularly in a world threatened by terrorists.

SI: 这样大规模杀伤武器带来巨大的危险、也威胁我们的世界。特别是那些被恐怖主义威胁的国家。

GS: This kind large scale kill harm weapon bring huge NOM danger, also threaten we GEN world. Particular be those BEI terrorism threaten NOM country.

⁵ Example a) is from [31, p.808].

⁶ The example, its gloss and its translation in b) are from [24, p.505].

⁷ Example c) is from [31, p.808].

⁸ The example, its gloss and its translation in d) are from [24, p.493].

BT: These weapons of mass destruction pose a grave danger and threaten our world, particularly those countries threatened by terrorism.

As shown in f), the original phrase is a LP. In the SI, the meanings of the agentive verb “threatened” and the agent “terrorists” are, to a large extent, preserved, however, the recipient “a world” was interpreted into 那些... 国家 “those...country” and the meaning is slightly changed; therefore, it is a substitution.

Scenario C: Grammatical error in delivery (DGE)

Cases in which the interpretation of recipients or agentive verb phrases or agents if there are any is ungrammatical, or the target texts of the original PVs are not acceptable according to Mandarin Chinese grammar, will be considered as grammatical errors in delivery as illustrated by the experimental example below.

e) ST: The challenges of our time must be met by action.

SI: 我们的时代的挑战必须要通过我们的行动来应对

它.
GS: we GEN time ASSOC challenge must need through we GEN action come deal with it.

BT: the challenges of our time must be met by our action it.

In g), the original sentence is a LP. In the interpretation, the recipient “the challenges of our time” was interpreted correctly first, however, at the end of the Chinese interpretation, 它 “it” was added and it seems to recall “the challenges of our time”, but it makes the interpretation ungrammatical. This type of errors could be related to the grammatical difference between English and Chinese. In an English LP, the agent “by action” comes after the verb phrase “must be met”, while in the Chinese LP, the verb phrase “must be met” comes after the agent “by action”, therefore, the interpreter may just want to make the verb-object phrase complete by adding an object after the verb, forgetting what has already been interpreted.

Scenario D: Correction in delivery (DC)

Correction in delivery including repetitions and restarting refers to both corrections in the interpretations of recipients or agentive verb phrases or agents if there are any. The details are illustrated in the examples below:

f) ST: You will condemn terrorism in all its forms and manifestations, committed by whomever, wherever, for whatever purpose.

SI: 大家会谴责各种各样的恐怖主义, 致力于, 不管是谁, 不管是以什么目的从事的恐怖活动.

GS: Everyone will condemn every kind every type NOM terrorism, committed to, no matter BE who, no matter BE for what purpose carry out NOM terrorist activity.

BT: You will condemn all kinds of terrorism, committed to, terrorist activities committed by whomever, for whatever purpose.

In h), the original structure is a LP and in the SI, the agentive verb phrase “committed” was first interpreted into 致力于 “committed to” and then reinterpreted into 从事 “carry out”. Also, the original recipient “terrorism in all its forms and manifestations” was partially repeated as 恐怖活动 “terrorist activity”. Both the reinterperation and the partial repetition are regarded as cases of correction in delivery.

The examples above have shown typical examples of errors related to English-Chinese differences in LPs. These were submitted to a *Paired T-test*⁹ which was carried out to compare the interpretations of LPs with those of SPs to see whether there was a correlation between the type of PVs and the interpreting performance. The test also produced a P-value for each parameter. Only if the P-value is less than 0.05 (P<0.05), can we conclude that there is a statistically significant difference. Given that there are two groups of participants who differ in terms of expertise, the data produced by professionals and those produced by students was analysed separately.

TABLE I
PROFESSIONAL: LONG PASSIVES (LP)-SHORT PASSIVES (SP)
ANALYSIS/PAIRED T-TEST

Scenario	Agent	Mean	Standard Deviation	P-value
CG	LP	12.98	16.20	<0.01 (0.009)
	SP	40.47	19.87	
CO	LP	35.19	26.94	<0.05 (0.029)
	SP	15.86	12.77	
CS	LP	51.86	25.60	>0.05 (0.497)
	SP	43.66	10.98	
DG	LP	49.99	20.43	<0.05 (0.019)
	SP	76.98	12.79	
DGE	LP	35.19	17.56	<0.01 (0.002)
	SP	5.54	5.95	
DC	LP	22.23	20.41	<0.05 (0.018)
	SP	2.37	3.55	
DCO	LP	1.86	5.57	<0.05 (0.017)
	SP	15.06	13.10	

The following analysis is based on the test on data produced by professionals.

As shown in Table I, in terms of content accuracy, professionals performed worse in dealing with LPs (M=12.98, SD=16.20) than SPs (M=40.47, SD=19.87) and the difference is statistically significant (P<0.01).

Overall, LPs caused more omissions in content (M=35.19, SD=26.94) than SPs (M=15.86, SD=12.77) and the difference is significant (P <0.05).

In terms of professionals’ interpretations, LPs resulted in more substitutions in content (M=51.86, SD=25.60) than SPs (M=43.66, SD=10.98), however, the structural difference did

⁹ We used a paired t-test for matched data. For instance, each subject needed to produce the SI for a group of 15 long passives and also for a group of five long passives, which means the SI of the two different groups was produced by the same participant. In this case, the data of the two groups are called matched data, and a paired t-test is the appropriate choice.

not have a statistically significant effect on the occurrence of substitutions ($P > 0.05$).

In terms of good delivery, the proportion of well-interpreted LPs ($M=49.99$, $SD=20.43$) is lower than that of well-interpreted SPs ($M=76.98$, $SD=12.79$), and the difference is statistically significant ($P < 0.05$).

Professionals made more grammatical errors in interpreting LPs ($M=35.19$, $SD=17.56$) than SPs ($M=5.54$, $SD=5.95$) and the correlation between grammatical difference and grammatical errors is statistically significant ($P < 0.01$).

From the perspective of corrections in delivery, the overall performance of professionals shows that LPs ($M=22.23$, $SD=20.41$) caused more corrections in delivery than SPs ($M=2.37$, $SD=3.55$), and there is a significant correlation between the form of passive voice structures and corrections in delivery ($P < 0.05$).

It is not surprising to see that due to structural complexity, LPs ($M=1.86$, $SD=5.57$) caused fewer complete omissions than SPs ($M=15.06$, $SD=13.10$) and the impact of the grammatical difference was significant for professionals ($P < 0.05$). As shown in Table I, LPs caused more omissions including both partial omissions and complete omissions, but fewer complete omissions than SPs. It was concluded, therefore, that LPs resulted in far more partial omissions (e.g. the omissions of recipients, passive verb phrases or agents) than SPs.

TABLE II
STUDENT: LONG PASSIVES (LP)-SHORT PASSIVES (SP) ANALYSIS/PAIRED T-TEST

Scenario	Agent	Mean	Standard Deviation	P-value
CG	LP	2.78	6.50	<0.001 (0.000)
	SP	25.00	7.15	
CO	LP	36.11	13.90	<0.01(0.001)
	SP	18.45	9.87	
CS	LP	61.13	10.86	>0.05 (0.114)
	SP	56.53	8.32	
DG	LP	30.56	18.57	<0.05 (0.011)
	SP	53.56	14.45	
DGE	LP	56.94	20.68	<0.01 (0.003)
	SP	27.38	11.35	
DC	LP	22.23	10.83	<0.01 (0.006)
	SP	8.91	10.60	
DCO	LP	0.00	0.00	<0.01 (0.002)
	SP	13.69	11.98	

The following analysis is based on the test on data produced by students.

As shown in Table II, with regard to content accuracy, students performed worse in dealing with LPs ($M=2.78$, $SD=6.50$) than SPs ($M=25.00$, $SD=7.15$) and the difference is statistically significant ($P < 0.001$).

Students made more omissions in content in dealing with LPs ($M=36.11$, $SD=13.90$) than with SPs ($M=18.45$, $SD=9.87$) and the difference is significant ($P < 0.01$).

LPs caused more substitutions in content ($M=61.13$, $SD=10.86$) than SPs ($M=56.53$, $SD=8.32$), however, the

correlation between the structural difference and the occurrence of substitutions is not significant ($P > 0.05$).

In terms of good delivery, the percentage of well-interpreted LPs ($M=30.56$, $SD=18.57$) is lower than that of well-interpreted SPs ($M=53.56$, $SD=14.45$), and the difference is statistically significant ($P < 0.05$).

Students made more grammatical errors in interpreting LPs ($M=56.94$, $SD=20.68$) than SPs ($M=27.38$, $SD=11.35$) and the grammatical difference had a significant impact on the occurrence of grammatical errors ($P < 0.01$).

In terms of corrections in delivery, students' performance shows that LPs ($M=22.23$, $SD=10.83$) caused fewer corrections in delivery than SPs ($M=8.91$, $SD=10.60$), and there is a significant correlation between the form of passive voice structures and corrections in delivery ($P < 0.01$).

LPs ($M=0.00$, $SD=0.00$) caused no complete omissions, whereas SPs ($M=13.69$, $SD=11.98$) caused far more complete omissions and the impact of the grammatical difference was significant ($P < 0.01$). As shown in Table II, LPs caused more omissions, both partial omissions and complete omissions, but fewer complete omissions than SPs, therefore, we conclude that LPs resulted in far more partial omissions (e.g. the omissions of recipients, passive verb phrases or agents) than SPs. The results are consistent with those of professionals.

To conclude this part, the structural differences between PVs in Chinese and in English correlated significantly with the performance of both professionals and students. Compared with the interpretations of SPs, those of LPs have a lower percentage of content accuracy and delivery appropriateness, to be more specific, LPs caused more partial omissions such as the omissions of recipients, passive verb phrases or agents, but fewer complete omissions than SPs, and more grammatical errors and more corrections in delivery than SPs.

IV. PART B¹⁰

This part focuses on the impact of the position of English ACs on their SI into Mandarin Chinese. If an English AC, either an adverb or an adverbial clause, and its Mandarin Chinese translation have the same position in the English sentence and the Chinese sentence, we will consider the English AC in Y (Yes) position; if they have different positions in the English sentence and the Chinese sentence, we will regard the English AC as being in N (No) position. These situations are illustrated by the examples below. Examples i) and j) show adverbs in Y position and N positions and example k) and l)¹¹ illustrate adverbial clauses that are in Y position and N position, respectively.

g) ST: In recent months, a Democracy Fund has been created.

TT: (在)最近几个月, (一个) 民主基金创立了。

GS: (at) closest some CL month, (one CL) Democracy Fund create PFV/CRS.

BT: In recent months, a Democracy Fund has been created.

¹⁰ In Part B, ACs are underlined as ACs.

¹¹ Examples i), j), k) and l) are from the experimental source speech and the target text; the gloss and the back translation of these examples are mine.

In i), “In recent months” of the source text is also placed at the beginning of the sentence in its Chinese translation, modifying the whole sentence, so it is in Y position.

h) ST: I put forward, six months ago, a balanced set of proposals for decisions at this Summit.

TT: 六个月前, 我提出了一套平衡的提议, 在这次峰会上做决定。

GS: Six CL month before, I put forward PFV one CL balance NOM proposal, at this CL Summit make decision.

BT: Six months ago, I put forward a balanced set of proposals for decisions at this Summit.

In j), “six months ago” of the source text can be placed either before the subject “I” or between the subject “I” and the verb phrase “put forward” in its Chinese translation, but not after the verb phrase as it is in English, therefore, it is in N position.

i) ST: Because our world is imperfect, we need the United Nations.

TT: 因为我们的世界是不完美的, 所以我们需要联合国。

GS: Because we GEN world be not perfect NOM, so we need United Nation.

BT: Because our world is imperfect, we need the United Nations.

The Chinese translation of the original adverbial clause in k) is in the same position as it is in the original English sentence. The adverbial clause of the source text in k) will be considered in Y position.

j) ST: I believe they were achievable, if the political will was there.

TT: 我相信如果有政治意愿, 他们是可以实现的。

GS: I believe if have politics will, they be can achieve NOM.

BT: I believe if there was the political will, they were achievable.

In l), the adverbial clause of the source text is placed after the main clause while the translation of the adverbial clause is put before the main clause to conform to Chinese grammar as adverbial clauses often go before their main clauses in Mandarin Chinese. According to [29, p.246], in Mandarin Chinese, if an adverbial clause is placed after the main clause, it will have two features: first, it will have a strong flavor of translation and be regarded as an import from English; second, although, semantically speaking, the adverbial clause can be added intentionally to explain something, and usually be linked with the main clause with an em dash “—”, it will still sound foreign and unnatural to Chinese audience.

Pan’s view is shared by [24]. According to [24, p.632], Mandarin Chinese sentences can be composed of two clauses, one of which is dependent on the other. Each of the clauses may contain a linking element to show the dependent relationship between the two clauses as shown in example m);

ST: Tā suīrán méi qián, kěshì tā hái shì hěn kāngkǎi.

GS: 3sg although not money, but 3sg still very generous.

TT: Although s/he has no money, s/he’s still very generous.¹²

According to [24, p.632], “suīrán” (although) is a linking element in the first clause, therefore, it is a forward-linking element and “kěshì” (but) is a linking element in the second clause, so it is a backward-linking element.

According to [24, p.632], “jiārú” (if) is a forward linking element in Mandarin Chinese sentences, therefore, it always appears in the first clause as shown in example n).

ST: Jiārú xià yǔ, wǒménjiù zài wūlǐ chī-fàn.

GS: If descend rain, we then at indoors eat-food.

TT: If it rains, we’ll eat indoors.¹³

Obviously, the if-clause of the English sentence in l) is in a different position from the if-clause in the Mandarin Chinese sentence in example n), and as mentioned above, the adverbial clause in example l) is considered in N position.

In this section, we will seek to establish whether the N position English ACs have a significant effect on their interpretation, compared with those in Y position by comparing the SI of the ACs in Y position with those in N position.

The experimental English source text has 94 ACs, 45 of which are in Y position and 49 in N position. 21 participants interpreted the experimental English source text. Each participant produced a group of SI of 45 ACs in Y position and a group of SI of 49 ACs in N position. This means that the total number of SIs of Y-position ACs is 945, and the total number of SIs of N-position ACs is 1029.

According to [31, p.268], in English, an adverb is a part of speech that can modify verbs, adjectives (including numbers), clauses, sentences and adverbs. Adverbial clauses which are subordinate clauses to main clauses also have adverbial functions, providing information on place, time, manner, cause, comparison, degree, purpose, condition, result and concession, according to [31, p.743]. In the analyses below, the assessment of content accuracy will focus on the interpretation of ACs themselves and also the semantic relationship between ACs and the parts they modify in term of the seven parameters mentioned above; examples of four scenarios will be shown below.

The prediction was that ACs in N position will create problems for simultaneous interpreters, and this prediction is supported by the results:

1. In terms of good content (CG) and good delivery (DG), the percentage of the SI of ACs in N position is lower than that of those in Y position.
2. SIs of ACs in N position display more omissions (CO) and substitutions (CS) in content than SIs of ACs in Y position.
3. SIs of ACs in N position display more grammatical errors (DGE) and corrections (DC) in delivery than SIs of ACs in Y position.

Scenario A: Omission in content (CO)

¹² Example m) and its gloss and its translation are from [24, p.632].

¹³ Example f) and its gloss and its translation are from [24, p.632].

If an AC, either an adverb or an adverbial clause, was completely omitted, it is considered as an omission in content. However, even partial omission of an adverb or an adverbial clause is an error in interpretation; it will be regarded as a substitution rather than an omission because the current research is dedicated to the changes of grammatical units we are focusing on and in this case, the grammatical unit is the AC.

k)

ST: Action must be collective if it is to be effective.

SI: 行动必须是共同协作的。()

GS: Action must be common coordinate NOM. ()

BT: Action must be coordinated. ()

In o), the original English if-clause is in N position and is placed after the main clause “action must be collective”. However, a Mandarin Chinese if-clause is supposed to be placed before the main clause to make sure the sentence is natural and grammatically acceptable to listeners. One possibility of the omissions of N position ACs is that the interpreter hears the English main clause first and interprets it into Chinese and then hears the subordinate clause, in which case restructuring would be necessary but it would take more time than available. Therefore, omission could be the last resort, though this type of omission is not recommended in interpreting.

Scenario B: Substitution in content (CS)

If an AC, either an adverb or an adverbial clause, was not interpreted accurately in terms of content, it is considered as a substitution in content. Partial omission of an adverb or an adverbial clause is an omission of parts of an AC rather than the complete omission of the AC; therefore, it will be regarded as a substitution as well.

l)

ST: The organization remains fully engaged in conflict resolution, peacekeeping, humanitarian assistance, defence of human rights, and development around the world.

SI: 那联合国, 一直是在做维和的工作, 人道主义的援助的工作, 维护人权的工作还有全世界发展的工作。

GS: That United Nation, always be at do peacekeeping NOM work, humanitarian NOM assistance NOM work, defence human right NOM work and whole world development NOM work.

BT: The United Nations, as always, is engaged in peacekeeping, humanitarian assistance, defence of human rights, as well as the development of the whole world.

In p), semantically speaking, the adverb modifies the whole sentence rather than “development”. Therefore, the SI “the development of the whole world” alters the semantic relationship between the adverb and the part it modifies, and we regard it as a substitution. Indeed, this kind of adverbs is a problem for simultaneous interpreters as they often cannot wait for the whole sentence before beginning to interpret. Jones [14, p.66] describes this dilemma as “intellectual difficulty” which occurs when simultaneous interpreters have

limited knowledge of what is coming next. It may be possible to do the SI as shown in q):

m)

ST: The organization remains fully engaged in conflict resolution, peacekeeping, humanitarian assistance, defence of human rights, and development around the world.

SI: 该组织仍然全力参与冲突解决, 维护和平, 人道主义援助, 捍卫人权和发展并在全世界从事于这些工作。

GS: That organization still fully participate conflict resolution, keep peace, humanitarian assistance, defence human right and development and at whole world engage in these work.

BT: The organization remains fully engaged in conflict resolution, peacekeeping, humanitarian assistance, defence of human rights, and development and is engaged in these around the world.

As illustrated in q), this would require the interpreter to segment the long sentence into two shorter chunks, and place the adverb “around the world” in a complete and new sentence with the meaning preserved. However, it would take some time to reorganize the sentence, but it might jeopardize the interpretation of the following stretch of speech. Practice and experience could help interpreters deal with this scenario more effectively.

Scenario C: Grammatical error in delivery (DGE)

If the interpretation of an AC, either an adverb or an adverbial clause, was ungrammatical, it will be considered as a grammatical error in delivery. However, if the interpretation of the AC is grammatically correct, but its structural position is not available in the target language, it will still be regarded as a grammatical error in delivery.

n)

ST: I will be giving you more details in the near future.

SI: 我将给你们细节. 在不久的将来。

GS: I will give you detail. At not long NOM future.

BT: I will give you details. In the near future.

In r), “In the near future” in the source text is an adverb in N position, in other words, its corresponding Chinese translation usually pre-modifies the whole sentence in Mandarin Chinese. In terms of content, it is correct, however, clearly, the interpreter preserved the grammatical structure when s/he interpreted into Chinese and ended up with a complete sentence “I will give you details” and an incomplete sentence “in the near future”. It is ungrammatical in Chinese.

Scenario D: Correction in delivery (DC)

Correction in delivery including repetitions and restarting refers to both corrections in the interpretations of ACs, either adverbs or adverbial clauses, and corrections in the interpretations of the closest parts that the ACs modify.

o)

ST: You will make clear your willingness to take timely and decisive and collective action through the Security Council.

SI: 那大家会清楚地表明, 大家决定采取及时, 集体的措施, 通过安理会来采取这样的一种措施。

GS: You will clearly show, you decide take timely, collective NOM action, through security council come take this NOM one kind action.

BT: You will make it clear that you decide to take timely and collective action, and to take such kind of action through the Security Council.

In s), "Through the Security Council" modifies "take timely and decisive and collective action" and its Chinese translation usually occurs before the verb phrase in Mandarin Chinese. The interpreter first interpreted the verb phrase into Chinese, therefore, s/he briefly added "to take such kind of action" after "through the Security Council" in SI as a correction.

Having done the assessment, Paired T-tests and P-values as mentioned in Part A were used again to establish whether there is a correlation between the position of ACs and the interpreting performance. Again, we will interpret the data produced by professionals and those produced by students separately.

TABLE III
PROFESSIONAL: N POSITION (N)-Y POSITION (Y) ANALYSIS/PAIRED T-TEST

Scenario	Position	Mean	Standard Deviation	P-value
CG	N	39.68	10.31	<0.001 (0.000)
	Y	58.02	12.74	
CO	N	21.76	11.26	>0.05 (0.069)
	Y	17.49	8.17	
CS	N	38.54	6.87	<0.01 (0.001)
	Y	24.44	5.78	
DG	N	60.24	10.74	<0.001 (0.000)
	Y	77.02	8.37	
DGE	N	10.66	2.43	<0.001 (0.000)
	Y	2.70	2.89	
DC	N	10.60	5.57	<0.001 (0.000)
	Y	2.70	2.42	
DCO	N	21.76	11.26	>0.05 (0.069)
	Y	17.51	8.19	

The following analysis is based on the test on data produced by professionals.

As shown in Table III, in terms of content accuracy, the proportion of ACs in N position (M=39.68, SD=10.31) which were accurately interpreted is lower than that of ACs in Y position (M=58.02, SD=12.74) and the difference is significant (P<0.001).

With regard to content errors, interpretations of ACs in N position display more omissions (M=21.76, SD=11.26) and more substitutions (M=38.54, SD=6.87) than interpretations of ACs in Y position (Omissions: M=17.49, SD=8.17; Substitutions: M=24.44, SD=5.78). However, the effect of position on omissions is insignificant (P>0.05) while that on substitutions is significant (P<0.001).

From the perspective of good delivery, the percentage of ACs in N position (M=60.24, SD=10.74) which are interpreted well is lower than that of ACs in Y position (M=77.02, SD=8.37) and the difference is statistically significant (P<0.001).

Interpretations of ACs in N position included more grammatical errors (M=10.66, SD=2.43) and more corrections

(M=10.60, SD=5.57) than interpretations of those in Y position (Grammatical Errors: M=2.70, SD=2.89; Corrections: M=2.70, SD=2.42). The correlation between position and grammatical errors and corrections is significant (Grammatical Errors: P<0.001; Corrections: P<0.001).

The results on complete omissions in delivery are the same as those on omissions in content.

The following analysis is based on the test on data produced by students.

As shown in Table IV, in terms of correctness in content, fewer ACs in N position (M=26.01, SD=7.60) were accurately interpreted than ACs in Y position (M=41.48, SD=8.86) and the difference is significant (P<0.001).

TABLE IV
STUDENT: N POSITION (N)-Y POSITION (Y) ANALYSIS/PAIRED T-TEST

Scenario	Position	Mean	Standard Deviation	P-value
CG	N	26.01	7.60	<0.001 (0.000)
	Y	41.48	8.86	
CO	N	26.37	9.74	>0.05 (0.076)
	Y	22.22	10.03	
CS	N	47.62	6.12	<0.01 (0.002)
	Y	36.31	8.66	
DG	N	40.48	8.02	<0.001 (0.000)
	Y	67.23	7.84	
DGE	N	21.94	9.60	<0.001 (0.000)
	Y	7.96	6.32	
DC	N	13.60	5.65	<0.001 (0.000)
	Y	2.94	1.97	
DCO	N	26.37	9.74	>0.05 (0.076)
	Y	22.22	10.03	

With regard to content errors, interpretations of ACs in N position include more omissions (M=26.37, SD=9.74) and more substitutions (M=47.62, SD=6.12) than interpretations of ACs in Y position (Omissions: M=22.22, SD=10.03; Substitutions: M=36.31, SD=8.66). However, the effect of position on omissions is insignificant (P>0.05) while that on substitutions is significant (P<0.01). Surprisingly, the correction between position and omissions and substitutions of students is consistent with that of professionals.

In terms of good delivery, the proportion of ACs in N position (M=40.48, SD=8.02) which are interpreted well is lower than that of ACs in Y position (M=67.23, SD=7.84) and the difference is statistically significant (P<0.001).

Interpretations of ACs in N position generated more grammatical errors (M=21.94, SD=9.60) and more corrections (M=13.60, SD=5.65) than interpretations of those in Y position (Grammatical Errors: M=7.96, SD=6.33; Corrections: M=2.94, SD=1.97). The correlation between position and grammatical errors and corrections is significant (Grammatical Errors: P<0.001; Corrections: P<0.001).

The results on complete omissions in delivery are the same as those on omissions in content.

The conclusion of Part B is that the grammatical position of ACs seems to have a significant impact on the interpreting performance of all the participants, both professionals and students, in terms of content accuracy and delivery

appropriateness. If the position of ACs in English is not a permitted position in Mandarin Chinese, both professionals and students make more substitutions in the content of their interpretations, more grammatical errors, and more corrections in delivery.

V. PART C¹⁴

This part discusses the impact of post-modifiers of English noun phrases (NPs) on the simultaneous interpretations of the entire phrases into Mandarin Chinese. According to [31], English nouns can be pre-modified or post-modified or modified in both ways at the same time, as illustrated by example t), u) and v) below. English NPs which only have pre-modification or post-modification are called simple NPs, whereas those with both are called complex NPs. According to [24], the most striking and well-recognized distinction between English NPs and Mandarin Chinese NPs is that there is only pre-modification in the latter. However, in Chinese, there can be a pre-modified NP followed by another pre-modifier plus the Chinese particle “de” as shown in the example w)¹⁵ below,

w)

ST: 旁边的代表们，希腊的，保加利亚的……

GS: neighbour NOM delegate PL, Greece ASSOC, Bulgaria ASSOC……

TT: The neighbouring delegates who are from Greece, Bulgaria……

Peng [30, p.362] suggests that 希腊的，保加利亚的 “are from Greece, Bulgaria……” should be regarded as pre-modifiers in another two NPs in which the head nouns are omitted because they remain the same as in the first pre-modified NP 旁边的代表们 “the neighbouring delegates”. The first complete NP and the latter pre-modifiers are separated by a comma. According to [31, p.362], these two modifiers are resumptive modifiers of the previous head noun rather than post-modifiers, adding information or explanation to the head noun, and the type of usage is seldom seen in Mandarin Chinese.

As Peng [30, p.362] points out, if English NP modification is a word, it is usually positioned as pre-modification; if it is a phrase or a subordinate clause, it is likely to be positioned as post-modification. However, Chinese nouns are only pre-modified. Therefore, according to Peng [30, p.362], in the process of translation from English into Chinese, English post-modification is often “re-positioned” to pre-modify the translated Chinese head noun. However, depending on the meaning of a specific sentence, English post-modification may also be translated into a compound sentence, an independent sentence or an adverbial component.

¹⁴In this section, head nouns are underlined as head nouns; pre-modifiers are underlined as pre-modifiers; post-modifiers are underlined as post-modifiers.

¹⁵The original ST of example w) is from [30, p.362] and the gloss and the translation of the ST are from the author.

Now let us return to the main types of NPs, namely NPs with pre-modification (NP1s) only as in t), NPs with post-modification (NP2s) only as in u) and NPs with both pre- and post-modification (NP3s) as in v)¹⁶.

p) ST: our interdependent world.

TT: 我们相互依存的世界。

GS: we each other depend NOM world.

BT: our interdependent world.

The source text in t) is an NP1. “Our interdependent” pre-modifies the head noun “world” in the source text, and the Chinese translation of the source text is also a NP with pre-modification.

q) ST: the failures of the Human Rights Commission.

TT: 人权委员会的失败。

GS: human right commission ASSOC failure.

BT: the failures of the Human Rights Commission.

The original phrase in u) is an NP2. “of the Human Rights Commission” post-modifies the head noun “the failures” in the source text and the post-modified NP is translated into a pre-modified one in Chinese.

r) ST: deep divisions among Member States.

TT: 成员国之间严重的分歧。

GS: member state ASSOC middle serious NOM division.

BT: deep division among member states.

The source NP in v) is an NP3 with a pre-modifier “deep” and a post-modifier “among member states” and its Chinese translation is an NP with only pre-modification. In the target NP, the translation of the English pre-modifier “deep” remain as a pre-modifier “serious” and the English post-modifier “among member states” is translated into a pre-modifier of the Chinese head noun.

Given the limited time and limited processing capacities of simultaneous interpreters, they are very likely to prefer to preserve the word order of the original text with minimal changes. In the case of the first type of NPs as illustrated by example t), interpreters can easily follow the original word order, while in the case of the second and third types of NPs as illustrated by examples u) and v) respectively, interpreters must either reorganize the original NPs by changing the position of post-modification or resort to other means, such as translating a NP into a compound sentence, or an independent sentence or an adverbial component given the meaning of a specific sentence. In this part, the author will try to identify whether the post-modification in an English NP has a significant effect on the simultaneous interpretation of the entire phrase and we will compare the SI of NPs with pre-modification only, those with post-modification only and those with both.

The experimental English source text has 84 pre-modified only NPs (NP1), 52 post-modified-only NPs (NP2) and 30 NPs with both types of modification (NP3). 21 participants interpreted the experimental English source text, of whom

¹⁶Example t), u) and v) are from the experimental source speech and the target text, the gloss and the back translation of the examples are from the author.

nine were professionals and 12 were students. Each participant produced a group of SI of 84 NP1s, a group of 52 NP2s and 30 NP3s, which makes the total number of SIs of NP1s 1764, that of NP2s 1092 and that of NP3s 630. The analysis of simultaneous interpretations of the three types of NPs will be based on the seven parameters as mentioned above and the hypothesis was that post-modification would pose challenges to simultaneous interpreters and the expected results are that:

1. The percentage of SIs of NP1s with good content (CG) and good delivery (DG) would be significantly larger than both that of NP2s and that of NP3s.
2. The SIs of NP1s would display fewer content omissions (CO) and content substitutions (CS) than both the SIs of NP2s and the SIs of NP3s.
3. The SIs of NP1s would display fewer grammatical errors (DGE) and corrections (DC) in delivery than both the SIs of NP2s and the SIs of NP3s.
4. The percentage of the SIs of NP3s displaying good content (CG) and good delivery (DG) would be smaller than that of simple NPs (NP1s and NP2s), however, the difference between NP2s and NP3s would not be as significant as that between NP1s and NP3s, because the key problem lies in post-modification, which NP2s and NP3s both have.
5. The SIs of NP3s would display more content omissions (CO) and content substitutions (CS) than the SIs of simple NPs (NP1s and NP2s), however, the difference between NP2s and NP3s would not be as significant as that between NP1s and NP3s for the same reason as in 4).
6. The SIs of NP3s would display more grammatical errors (DGE) and corrections (DC) than the SIs of simple NPs (NP1s and NP2s); however, the difference between NP2s and NP3s would not be as large as that between NP1s and NP3 for the same reason as stated in 4) above.

Scenario A: Omission in content (CO)

If the head noun or the modifications of a NP or both are omitted, it is considered as an omission in content.

x)

ST: ...meet the threats we face and seize the opportunities before us.

SI: ...应对挑战, 创造机会。

GS: ...meet challenge, create opportunity.

BT: ...meet challenges and create opportunities.

In x), there are two post-modified NP2s in the English text. The first “the threats we face” was translated into “challenges”. In this case, the head noun “threats” was changed into “challenges” and it could be counted as a substitution, however, the post-modifier “we face” was omitted, so it is regarded as a partial omission in content. The second modified NP “the opportunities before us” was translated into “opportunities” and the post-modifier was omitted as well. Therefore, it is a case of omission.

Scenario B: Substitution in content (CS)

If the head noun or the modification of an NP or the entire NP is replaced by something else or is not interpreted

accurately in terms of content, it is considered a substitution in content.

y)

ST: ...a convention against nuclear terrorism...

SI: ...这个反对核扩散的公约...

GS: ...this CL against nuclear proliferation NOM convention...

BT: ...this convention against nuclear proliferation...

In y), the original English NP is post-modified. As mentioned above, articles need not be represented by any Chinese forms and representing them is un-natural in Chinese.

In this example, “a” has been translated into 这个 “this”, adding meaning (definiteness and proximal deixis) to the original text. The post-modifier “against nuclear terrorism” was translated into 反对核扩散 “against nuclear proliferation” and the meaning was changed. Therefore, it is a substitution.

Scenario C: Grammatical error in delivery (DGE)

If any part of a NP has not been interpreted grammatical correctly, or if the interpretations of the original entire NPs do not follow the grammatical conventions of Mandarin Chinese, the interpretations will be considered as grammatical errors in delivery. This will be illustrated by the following experimental examples.

z)

ST: a convention against nuclear terrorism has been finalized.

SI: 会议关于恐怖主义已经完结。

GS: conference about terrorism already finalize.

BT: The conference on terrorism has already been finalized.

In z), the original NP is post-modified. Putting aside content accuracy of this translation, it starts with a head noun 会议

“the conference”, followed by a modifier 关于恐怖主义 “on terrorism”, which conforms to the structure of the original English NP. It seems to be two separate and fragmented parts because Chinese NPs can only be pre-modified, therefore, the translation is ungrammatical in Chinese. This type of grammatical error is typical in the simultaneous interpretations of post-modified English NPs, because interpreters tend to save time and processing capacity by following the original structure, which makes the output unnatural and ungrammatical to Chinese audience.

Scenario D: Correction in delivery (DC)

Corrections in delivery include repetitions, restarts or corrections of errors in the interpretations of any part of a NP. This will be illustrated by the following experimental examples.

ai)

ST: the sweeping and fundamental reform that I and many others believe is required.

SI: 一个基础性的一个变革或是非常重要的一个变革, 这种变革恰恰是我们需要的。

GS: one CL fundamental NOM one CL reform or very important NOM one CL reform, this kind reform just BE we need NOM.

BT: a fundamental reform or a very important reform, this kind of reform is just what we need.

In ai), the original NP has both pre- and post-modification; also it has two parallel pre-modifiers “sweeping” and “fundamental”. It seems that the interpreter was struggling to deliver a complete interpretation and to avoid fragmentation; the head noun “reform” was delivered three times as 变革 “reform” in translation. It is obviously an example of repetition or correction. This type of correction or the repetition of head nouns is very common in simultaneous interpretations of pre- and post-modified English NPs as in order to save time and release pressure on memory, interpreters tend to interpret the long NP as shown in the example into shorter NPs rather than placing both original pre- and post-modifications before the interpreted head noun to make a really long Chinese pre-modified NP.

Based on the assessment, Paired T-tests and P-values were adopted to establish whether there is a correlation between the type of NPs and the interpreting performance. Because of the difference in terms of expertise, we will interpret the data produced by professionals and those produced by students separately

TABLE V
PROFESSIONAL NP1S-NP2S ANALYSIS/PAIRED T-TEST

Scenario	Position	Mean	Standard Deviation	P-value
CG	NP1	45.22	8.67	<0.001 (0.000)
	NP2	17.73	6.86	
CO	NP1	30.96	9.59	<0.01 (0.001)
	NP2	42.10	12.61	
CS	NP1	23.80	6.39	<0.001 (0.000)
	NP2	40.18	6.63	
DG	NP1	79.22	8.50	<0.05 (0.034)
	NP2	73.71	8.87	
DGE	NP1	1.07	1.26	<0.001 (0.000)
	NP2	6.44	2.65	
DC	NP1	1.73	1.48	<0.01 (0.008)
	NP2	6.62	3.99	
DCO	NP1	18.40	7.55	>0.05 (0.091)
	NP2	14.98	6.95	

The following analysis is based on the test on data produced by professionals.

As shown in Table V, in terms of content accuracy, there are more NP1s (M=45.22, SD=8.67) interpreted accurately than NP2s (M=17.73, SD=6.86) and the difference is significant (P<0.001).

In terms of content errors, interpretations of NP1s display fewer omissions (M=30.96, SD=9.59) and fewer substitutions (M=23.80, SD=6.39) than interpretations of NP2s (Omissions: M=42.10, SD=12.61; Substitutions: M=40.18, SD=6.63). Also, the effects of the position of modifiers on omissions and substitutions are both significant (Omissions: P<0.01; Substitutions: P<0.001).

With regard to good delivery, the percentage of NP1s which were interpreted well (M=79.22, SD=8.50) is higher than that of NP2s (M=73.71, SD=8.87) and the difference is statistically significant (P<0.05).

Interpretations of NP1s display fewer grammatical errors (M=1.07, SD=1.26) and fewer corrections (M=1.73, SD=1.48) than interpretations of NP2s (Grammatical Errors: M=6.44, SD=2.65; Corrections: M=6.62, SD=3.99). The correlation between the position of modifiers and grammatical errors and corrections is significant (Grammatical Errors: P<0.001; Corrections: P<0.01).

Although interpretations of NP1s display more complete omissions in delivery (M=18.40, SD=7.55) than interpretations of NP2s (M=14.98, SD=6.95), the correlation between position and complete omissions in delivery is insignificant (P>0.05).

TABLE VI
PROFESSIONALS NP1S-NP3 ANALYSIS /PAIRED T-TEST

Scenario	Position	Mean	Standard Deviation	P-value
CG	NP1	45.22	8.67	<0.001 (0.000)
	NP3	14.80	10.68	
CO	NP1	30.96	9.59	<0.01 (0.004)
	NP3	45.92	14.82	
CS	NP1	23.80	6.39	<0.01 (0.002)
	NP3	39.24	10.37	
DG	NP1	79.22	8.50	<0.01 (0.005)
	NP3	69.61	8.57	
DGE	NP1	1.07	1.26	<0.01 (0.001)
	NP3	8.89	4.42	
DC	NP1	1.73	1.48	<0.001 (0.000)
	NP3	15.19	5.81	
DCO	NP1	18.40	7.55	<0.001 (0.000)
	NP3	8.14	6.90	

The following analysis is based on the test on data produced by professionals.

As shown in Table VI, in terms of correctness in content, the percentage of NP1s which were accurately interpreted (M=45.22, SD=8.67) is larger than that of NP3s (M=14.80, SD=10.68) and the difference is significant (P<0.001).

In terms of content errors, interpretations of NP1s display fewer omissions (M=30.96, SD=9.59) and fewer substitutions (M=23.80, SD=6.39) than interpretations of NP3s (Omissions: M=45.92, SD=14.82; Substitutions: M=39.24, SD=10.37). The effects of the presence of post-modification on omissions and substitutions are both significant (Omissions: P<0.01; Substitutions: P<0.01).

From the perspective of good delivery, the percentage of NP1s which were interpreted well (M=79.22, SD=8.50) is higher than that of NP3s (M=69.61, SD=8.57) and the difference is statistically significant (P<0.01).

Interpretations of NP1s generated fewer grammatical errors (M=1.07, SD=1.26) and fewer corrections (M=1.73, SD=1.48) than those of NP3s (Grammatical Errors: M=8.89, SD=4.42; Corrections: M=15.19, SD=5.81). The correlation between the presence of post-modification and grammatical errors and

corrections is significant (Grammatical Errors: $P < 0.01$; Corrections: $P < 0.001$).

Probably due to the length of NPs, interpretations of NP1s display more complete omissions in delivery ($M=18.40$, $SD=7.55$) than those of NP3s ($M=8.14$, $SD=6.90$) and the difference is significant ($P < 0.001$).

The following analysis is based on the test on data produced by professionals.

As shown in Table VII, the proportion of NP2s which were accurately interpreted ($M=17.73$, $SD=6.86$) is larger than that of NP3s ($M=14.80$, $SD=10.68$), but the difference is not significant ($P > 0.05$).

With regard to content errors, interpretations of NP2s display fewer omissions ($M=42.10$, $SD=12.61$) and more substitutions ($M=40.18$, $SD=6.63$) than interpretations of NP3s (Omissions: $M=45.92$, $SD=14.82$; Substitutions: $M=39.24$, $SD=10.37$). However, the effects of the existence of pre-modification and the complexity of NPs on omissions and substitutions are insignificant (Omissions: $P > 0.05$; Substitutions: $P > 0.05$).

TABLE VII
 PROFESSIONALS NP2S-NP3S ANALYSIS/PAIRED T-TEST

Scenario	Position	Mean	Standard Deviation	P-value
CG	NP2	17.73	6.86	>0.05 (0.204)
	NP3	14.80	10.68	
CO	NP2	42.10	12.61	>0.05 (0.454)
	NP3	45.92	14.82	
CS	NP2	40.18	6.63	>0.05 (0.834)
	NP3	39.24	10.37	
DG	NP2	73.71	8.87	>0.05 (0.240)
	NP3	69.61	8.57	
DGE	NP2	6.44	2.65	>0.05 (0.259)
	NP3	8.89	4.42	
DC	NP2	6.62	3.99	<0.01 (0.005)
	NP3	15.19	5.81	
DCO	NP2	14.98	6.95	<0.05 (0.028)
	NP3	8.14	6.90	

In terms of good delivery, the percentage of NP2s which were interpreted well ($M=73.71$, $SD=8.87$) is higher than that of NP3s ($M=69.61$, $SD=8.57$), however, the difference is insignificant ($P > 0.05$).

Interpretations of NP2s include fewer grammatical errors ($M=6.44$, $SD=2.65$) and fewer corrections ($M=6.62$, $SD=3.99$) than those of NP3s (Grammatical Errors: $M=8.89$, $SD=4.42$; Corrections: $M=15.19$, $SD=5.81$). However, the correlation between the existence of pre-modification and the complexity of NPs and grammatical errors is insignificant while that between position and corrections is significant (Grammatical Errors: $P > 0.05$; Corrections: $P < 0.01$).

Probably due to the length and complexity of NPs, interpretations of NP2s display more complete omissions in delivery ($M=14.98$, $SD=6.95$) than those of NP3s ($M=8.14$, $SD=6.90$) and the difference is significant ($P < 0.05$).

To summarize the analysis of data produced by professionals, the comparison of the interpretations of NP1s and NP2s suggests that English post-modification in NP2s has

a significant impact on the interpreting performance of professional interpreters in terms of content accuracy and delivery appropriateness and causes more omissions, grammatical errors, corrections in delivery and substitutions in content.

The comparison of the interpretations of NP1s and NP3s suggest that the presence of English post-modification in NP3s has a statistically significant effect on professionals' interpretations as well in terms of content accuracy and delivery appropriateness and generated more omissions, substitutions in content, grammatical errors and corrections in delivery. Interestingly, possibly due to the length and complexity of NP3s, their interpretations display more complete omissions in delivery than simple and only-pre-modified NP1s.

The comparison of the interpretations of NP2s and NP3s strongly suggests that the presence of English pre-modification in NP3s does not have a significant impact on professionals' interpretations in terms of content accuracy and delivery appropriateness, but only caused more corrections and fewer complete omissions, possibly due to the length and complexity of NP3s.

TABLE VIII
 STUDENTS NP1S-NP2S ANALYSIS/PAIRED T-TEST

Scenario	Position	Mean	Standard Deviation	P-value
CG	NP1	32.35	7.30	<0.001 (0.000)
	NP2	9.93	5.49	
CO	NP1	39.19	7.60	<0.05 (0.046)
	NP2	44.72	8.80	
CS	NP1	27.65	6.62	<0.001 (0.000)
	NP2	45.35	8.14	
DG	NP1	75.00	9.44	<0.05 (0.012)
	NP2	64.89	8.78	
DGE	NP1	2.00	1.39	<0.001 (0.000)
	NP2	17.67	6.70	
DC	NP1	2.30	1.57	<0.01 (0.004)
	NP2	9.29	7.15	
DCO	NP1	21.14	9.54	<0.01 (0.001)
	NP2	10.61	5.08	

The following analysis is based on the test on data produced by students.

As shown in Table VIII, the proportion of NP1s which were accurately interpreted in terms of content ($M=32.35$, $SD=7.30$) is higher than that of NP2s ($M=9.93$, $SD=5.49$) and the difference is significant ($P < 0.001$).

With regard to content errors, interpretations of NP1s display fewer omissions ($M=39.19$, $SD=7.60$) and fewer substitutions ($M=27.65$, $SD=6.62$) than interpretations of NP2s (Omissions: $M=44.72$, $SD=8.80$; Substitutions: $M=45.35$, $SD=8.14$), and the effects of position on omissions and substitutions are both significant (Omissions: $P < 0.05$; Substitutions: $P < 0.001$).

The percentage of NP1s which were interpreted well in terms of good delivery ($M=75.00$, $SD=9.44$) is higher than that of NP2s ($M=64.89$, $SD=8.78$) and the difference is statistically significant ($P < 0.05$).

Interpretations of NP1s include fewer grammatical errors (M=2.00, SD=1.39) and fewer corrections (M=2.30, SD=1.57) than those of NP2s (Grammatical Errors: M=17.67, SD=6.70; Corrections: M=9.29, SD=7.15). The correlation between position and grammatical errors and corrections is significant (Grammatical Errors: P<0.001; Corrections: P<0.01).

Interpretations of NP1s display more complete omissions in delivery (M=21.14, SD=9.54) than those of NP2s (M=10.61, SD=5.08) and the difference is significant (P<0.01).

The following analysis is based on the test on data produced by students.

As shown in Table IX, more NP1s (M=32.35, SD=7.30) than NP3s (M=2.50, SD=3.52) were accurately interpreted and the difference is significant (P<0.001).

Interpretations of NP1s display fewer omissions (M=39.19, SD=7.60) and fewer substitutions (M=27.65, SD=6.62) than interpretations of NP3s (Omissions: M=55.83, SD=9.87; Substitutions: M=41.39, SD=9.25), and the effects of the presence of post-modification on omissions and substitutions are both significant (Omissions: P<0.001; Substitutions: P<0.001).

TABLE IX
 STUDENTS NP1S-NP3 ANALYSIS/PAIRED T-TEST

Scenario	Position	Mean	Standard Deviation	P-value
CG	NP1	32.35	7.30	<0.001 (0.000)
	NP3	2.50	3.52	
CO	NP1	39.19	7.60	<0.001 (0.000)
	NP3	55.83	9.87	
CS	NP1	27.65	6.62	<0.001 (0.000)
	NP3	41.39	9.25	
DG	NP1	75.00	9.44	<0.01 (0.001)
	NP3	55.55	10.68	
DGE	NP1	2.00	1.39	<0.001 (0.000)
	NP3	26.67	14.35	
DC	NP1	2.30	1.57	<0.001 (0.000)
	NP3	14.99	5.78	
DCO	NP1	21.14	9.54	<0.001 (0.000)
	NP3	4.43	4.78	

In terms of good delivery, more NP1s were interpreted well (M=75.00, SD=9.44) than NP3s (M=55.55, SD=10.68) and the difference is statistically significant (P<0.01).

To be more specific, interpretations of NP1s include fewer grammatical errors (M=2.00, SD=1.39) and fewer corrections (M=2.30, SD=1.57) than those of NP3s (Grammatical Errors: M=26.67, SD=14.35; Corrections: M=14.99, SD=5.78). The correlation between the presence of post-modification on the one hand and grammatical errors and corrections on the other is significant (Grammatical Errors: P<0.001; Corrections: P<0.001).

Possibly due to the length and complexity of NP1s, interpretations of them generated more complete omissions in delivery (M=21.14, SD=9.54) than those of NP3s (M=4.43, SD=4.78) and the difference is significant (P<0.001).

The following analysis is based on the test on data produced by students.

As shown in Table X, more NP2s (M=9.93, SD=5.49) were accurately interpreted than NP3s (M=2.50, SD=3.52) and the difference is significant (P<0.01).

TABLE X
 STUDENTS: NP2S-NP3S ANALYSIS/PAIRED T-TEST

Scenario	Position	Mean	Standard Deviation	P-value
CG	NP2	9.93	5.49	<0.01 (0.001)
	NP3	2.50	3.52	
CO	NP2	44.72	8.80	<0.01 (0.009)
	NP3	55.83	9.87	
CS	NP2	45.35	8.14	>0.05 (0.291)
	NP3	41.39	9.25	
DG	NP2	64.89	8.78	<0.05 (0.010)
	NP3	55.55	10.68	
DGE	NP2	17.67	6.70	>0.05 (0.066)
	NP3	26.67	14.35	
DC	NP2	9.29	7.15	>0.05 (0.053)
	NP3	14.99	5.78	
DCO	NP2	10.61	5.08	<0.01 (0.001)
	NP3	4.43	4.78	

Interpretations of NP2s generated fewer omissions (M=44.72, SD=8.80) and fewer substitutions (M=45.35, SD=8.14) than interpretations of NP3s (Omissions: M=55.83, SD=9.87; Substitutions: M=41.39, SD=9.24), and the effect of the complexity of NPs on omissions is significant (P<0.01), while that on substitutions is insignificant (P>0.05).

In terms of good delivery, more NP2s (M=64.89, SD=8.78) were interpreted well than NP3s (M=55.55, SD=10.68) and the difference is statistically significant (P<0.05).

Interpretations of NP2s display fewer grammatical errors (M=17.67, SD=6.70) and fewer corrections (M=9.29, SD=7.15) than those of NP3s (Grammatical Errors: M=14.99, SD=5.78; Corrections: M=13.04, SD=6.26), however, the correlation between complexity of NPs on the one hand and grammatical errors and corrections on the other is insignificant (Grammatical Errors: P>0.05; Corrections: P>0.05).

Probably due to the length and complexity of NPs, interpretations of NP2s generated more complete omissions in delivery (M=10.61, SD=5.08) than those of NP3s (M=4.43, SD=4.78) and the difference is significant (P<0.01).

In summary, the comparison of the interpretations of NP1s and NP2s shows that English post-modification in NP2s has a significant impact on the interpreting performance of student interpreters in terms of content accuracy and delivery appropriateness and caused more omissions, substitutions in content, and more grammatical errors and corrections in delivery, but fewer complete omissions in delivery.

The comparison of the interpretations of NP1s and NP3s, suggests that the presence of English post-modification in NP3s can significantly affect students' interpretations in terms of content accuracy and delivery appropriateness and produced more omissions, substitutions in content, grammatical errors and corrections in delivery. Interestingly, possibly due to the length and complexity of NP3s, their interpretations display more complete omissions in delivery

than simple and only-pre-modified NP1s. Interestingly, these results are consistent with those of the professional group.

The comparison of the interpretations of NP2s and NP3s suggests that the complexity of NP3s has a significant impact on students' interpretations in terms of content accuracy and delivery appropriateness, but only caused more omissions in content and fewer complete omissions in delivery when the NP3s are especially long and complex.

In conclusion, post-modification (which does not appear in Chinese NPs) in English NPs seems to have a significant impact on both professionals' and students' interpretations in terms of content accuracy and delivery appropriateness. The presence of post-modification either in simple or complex NPs correlates with more omissions, more substitutions in content, more grammatical errors and more corrections in delivery. Another interesting finding in both professional's and students' performance is that the more complex the NPs are, the fewer complete omissions in interpretations there will be.

VI. CONCLUSION

The conclusions of Part A, Part B and Part C have consistently shown that grammatical differences in passives, adverbial components and noun phrases have a statistically significant impact on English-to-Mandarin Chinese simultaneous interpretations produced by both professionals and trainees in terms of content accuracy and delivery appropriateness; to be more specific, grammatical differences correlate with more omissions, more substitutions in content, more grammatical errors and more corrections in delivery in general. Although the experiment findings have shown that there is a correlation between grammatical differences and both professionals' and students' interpretations, the present study also shows that professionals dealt with grammatical differences better and more effectively than students, which means that experience and practice could be a solution to problems caused by grammatical differences. A further question is then how training may be shaped to provide a shortcut to the level of expertise exhibited by the professionals in this study.

REFERENCES

- [1] A. M. H. A. Al-Rubai'I, "The Effect of Word Order Differences on English-into-Arabic Simultaneous Interpreters Performance", *Babel*, vol. 50, no. 3, 2004, pp. 246.
- [2] D. Biber, S. Johansson, G. Leech, S. Conrad and E. Finegan, *Longman Grammar of Spoken and Written English*. London: Longman, 1999.
- [3] C. Galli, "Simultaneous Interpretation in Medical Conferences: A Case Study", in *Aspects of Applied and Experimental Research on Conference Interpretation*, L. Gran and C. Taylor, Eds, Udine: Campanotto Editore, 1990, pp. 61-82.
- [4] D. Gerver, "A Psychological Approach to Simultaneous Interpretation", *Meta: Journal des traducteurs*, vol.20 no.2, 1975.
- [5] D. Gerver, "The Effects of Source Language Presentation Rate on the Performance of Simultaneous Conference Interpreters", *Proceedings of the 2nd Louisville Conference on Rate and/or Frequency Controlled Speech*. Louisville (Kty), University of Louisville, 1969, pp. 162-84.
- [6] D. Gerver, "The Effects of Noise on the Performance of Simultaneous Interpreters: Accuracy of Performance", *Acta Psychologica*, vol. 38, no. 3. 1974, pp. 159-67.
- [7] D. Gerver, "The Effects of Source Language Presentation Rate on the Performance of Simultaneous Conference Interpreters", in *The*

- Interpreting Studies Reader*, F. Pöchhacker and M. Shlesinger, Eds. London and New York: Routledge, 2002, pp. 52-67.
- [8] D. Gile, *Basic Concepts and Models for Interpreter and Translator Training*. Amsterdam: John Benjamins Publishing Company, 2009.
- [9] D. Gile, "Conference Interpreting as a Cognitive Management Problem", *Applied Psychology*, vol. 3. London: Sage, 1997, pp. 196-214.
- [10] D. Gile, "Conference Interpreting as a Cognitive Management Problem", in *The Interpreting Studies Reader*, F. Pöchhacker and M. Shlesinger, Eds. London and New York: Routledge. 2002, pp. 162-76.
- [11] A. Gillies, *Note-taking for Consecutive Interpreting: A Short Course*. Manchester: St Jerome Publishing, 2005.
- [12] F. Goldman-Eisler, "Segmentation of Input in Simultaneous Translation", in *The Interpreting Studies Reader*, F. Pöchhacker and M. Shlesinger, Eds. London and New York: Routledge. 1972/2002, pp. 68-76.
- [13] J. F. Hamers, S. Lemieux, and S. Lambert, "Does Early Bilingual Acquisition Affect Hemispheric Preferences during Simultaneous Interpretation? ", *Meta: Journal des traducteurs Meta:Translators' Journal*, vol. 47, no. 4. 2002, pp. 586-95.
- [14] R. Jones, *Conference Interpreting Explained*. Manchester: St Jerome Publishing, 2002.
- [15] U. Jörg, "Bridging the Gap: Verb Anticipation in German-English Simultaneous Interpreting", *Benjamins Translation Library*, vol. 20. 1997, pp. 217-28.
- [16] H. Kirchoff, "Simultaneous Interpreting: Interdependence of Variables in the Interpreting Process, Interpreting Models and Interpreting Strategies", in *The Interpreting Studies Reader*, F. Pöchhacker and M. Shlesinger, Eds. London and New York: Routledge. 1976/2002, pp. 111-19.
- [17] I. Kurz, and B. Färber, "Anticipation in German-English Simultaneous Interpreting". *Forum 1* (2). 2003, pp. 123-50.
- [18] I. Kurz, "The Impact of Non-native English on Students' Interpreting Performance", in *Efforts and Models in Interpreting and Translation Research*, G. Hansen, A. Chesterman and H. Gerzymisch-Arbogast, Eds. Amsterdam: John Benjamins. 2008, pp. 179-92.
- [19] S. Lambert, "Simultaneous Interpreters: One Ear May Be Better Than Two", *TTR: traduction, terminologie, rédaction*, vol. 2, no. 1. 1989, pp. 153-62.
- [20] S. Lambert, "The Effect of Ear of Information Reception on the Proficiency of Simultaneous Interpretation", *Meta: Journal des traducteurs Meta:Translators' Journal*, vol. 38, no. 2. 1993, pp. 198-211.
- [21] M. Lederer, *La Traduction simultanée*. Paris: Minard Lettres Modernes. 1981.
- [22] T. H. Lee, "Ear Voice Span in English into Korean Simultaneous Interpretation", *Meta*, 47. 2002, pp. 596-606.
- [23] C. S. Li, "Coping Strategies for Fast Delivery in Simultaneous Interpreting", in *The Journal of Specialised Translation*, Issue 13. Beijing: Beijing Foreign Studies University. 2010, pp. 19-25.
- [24] C. N. Li, and L. A. Thompson, *Mandarin Chinese: A Functional Reference Grammar*. Berkeley/Los Angeles/London: University of California Press. 1981.
- [25] M. Liu, "How do Experts Interpret? Implications from Research in Interpreting Studies and Cognitive Science", in *Efforts and Models in Interpreting and Translation Research*, G. Hansen, A. Chesterman and H. Gerzymisch-Arbogast, Eds. Amsterdam/Philadelphia: John Benjamins Publishing Company. 2008.
- [26] R. Mcalliser, "Perceptual Foreign Accent and its Relevance for Simultaneous Interpreting", *Benjamins Translation Library*, 40. 2000, pp. 45-64.
- [27] C. Meuleman, and F. Van Besien, "Coping with Extreme Speech Conditions in Simultaneous Interpreting", *Interpreting*, vol. 11, no. 1. 2009, pp. 20.
- [28] P. Oléron, and H. Nanpon, "Research into Simultaneous Translation", in *The Interpreting Studies Reader*, R. Morris (trans), F. Pöchhacker and M. Shlesinger, Eds. London and New York: Routledge. 1965/2002, pp. 42-50.
- [29] W. G. Pan, *An Outline of Chinese-English Contrastive Study*. Beijing: Beijing Language and Culture University Press. 1997.
- [30] K. M. Peng, "A Comparison of Noun Phrases in English and Chinese and Approaches to Their Translation," in *Comparison, Differentiation, and Application: Implications of English-Chinese Contrastive Studies*, Z. J. Yang and J. Q. Wang, Eds. Shanghai: Shanghai Foreign Language Education Press. 1995, pp. 357-67.
- [31] R. Quirk, S. Greenbaum, G. Leech, and J. Svartvik, *A Grammar of Contemporary English*. London: Longman. 1972.

- [32] A. Riccardi, "Language-Specific Strategies in Simultaneous Interpreting", in *Teaching Translation and Interpreting 3*, C. Dollerup and V. Appel, Eds. Amsterdam/Philadelphia: John Benjamins Publishing Company. 1996, pp. 213-22.
- [33] C. Ross, and J. S. Ma, *Modern Mandarin Chinese Grammar: A Practical Guide*. London/New York: Routledge. 2006.
- [34] E. Sabatini, "Listening Comprehension, Shadowing and Simultaneous Interpretation of Two Non-standard English Speeches", *Interpreting*, vol. 5, no. 1. 2000. pp. 25-48.
- [35] K. G. Seeber, "Cognitive Load in Simultaneous Interpreting: Existing Theories – New Models". *Interpreting*, 13. 2011, pp. 176–204.
- [36] K. G. Seeber, and D. Kerzel, "Cognitive Load in Simultaneous Interpreting: Model Meets Data", *International Journal of Bilingualism*, vol. 16, no. 2. 2012, pp. 228-42.
- [37] D. Seleskovitch, and M. Lederer, *Interpréter pour traduire*. Paris: Didier Erudition. 1986.
- [38] D. Seleskovitch, *Interpreting for International Conferences*. Washington, D. C.: Pen and Booth. 1978.
- [39] R. Setton, *Simultaneous Interpretation: A Cognitive-Pragmatic Analysis*. Amsterdam: John Benjamins. 1999.
- [40] M. Shlesinger, M. "Effects of Presentation Rate on Working Memory in Simultaneous Interpreting", *The Interpreters' Newsletter* 12. 2003, pp. 37–49.
- [41] A. M. Treisman, "The Effects of Redundancy and Familiarity on Translating and Repeating Back a Foreign and a Native Language", *British Journal of Psychology*, vol. 56, no. 4. 1965, pp. 369-79.
- [42] F. Van Besien, "Anticipation in Simultaneous Interpretation", *Meta: Journal des traducteurs*, vol. 44, no. 2. 1999.
- [43] W. Wilss, "Syntactic Anticipation in German-English Simultaneous Interpreting" in *Language Interpretation and Communication*. New York: Springer. 1978, pp. 343-52.
- [44] R. Xiao, T. McEnery, and Y. Qian, "Passive Constructions in English and Chinese: A Corpus-Based Contrastive Study," in *Languages in Contrast* 6(1). John Benjamins Publishing Company. 2006, pp. 109-49.
- [45] Z. N. Ye, *Advanced Course in English-Chinese Translation*. Beijing: Qsinghua University Press. 2001.
- [46] R. Zanetti, "Relevance of Anticipation and Possible Strategies in the Simultaneous Interpretation from English into Italian", *The Interpreters' Newsletter* 9, 1999, pp.79–98.

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