

# Impacts of Directionality on Disfluency of English-Chinese Two-Way Sight Translation

Fan Yang, Shaanxi Normal University, China\*

 <https://orcid.org/0009-0009-8868-5262>

Fen Gao, Shaanxi Normal University, China

Kexin Zhang, Shaanxi Normal University, China

## ABSTRACT

This study explores the impacts of directionality on disfluency of sight translation (ST) between English and Chinese. The author adopts four disfluency indicators, namely silent pause (SP), filled pause (FP), repetition (Rt), and repair (Rr) to answer: (1) What are the features of disfluency in ST in two directions? (2) What is the correlation between directionality and disfluency in ST? The results show: (1) The incidence of SP is the highest in both E-C and C-E ST, followed by FP, then Rr, and finally Rt; many student interpreters do the most basic pre-task preparation poorly, leading to a large number of SPs; many SPs coincide with respiration and those over 10 seconds occur only in E-C ST; (2) There are no statistically significant differences between E-C and C-E ST in terms of the four disfluency indicators. In other words, directionality exerts no significant effect on disfluency of student interpreters' ST.

## KEYWORDS

Directionality, Disfluency, Filled Pause, Repair, Repetition, Sight Translation, Silent Pause

## 1. INTRODUCTION

Sight translation is widely used in interlingual conferences and on other occasions. It is also a useful pre-training for consecutive interpreting and simultaneous interpreting. Directionality, as an inescapable aspect in interpreting and translation study, has always been a topic of debate among interpreting practitioners and scholars. Disfluency, as an important indicator, measures the quality of interpreting and ST (Setton & Motta, 2007). Previously, there are plenty of studies on disfluency in simultaneous interpreting and consecutive interpreting (Tommola & Helevä, 1998; McAllister, 2000; Al-Salman & Al-Khanji, 2002; Zhang, 2004; Mead, 2005; Chen, 2008; Xu, 2010; Fu, 2013; Huang & Bao, 2016). However, there are few studies on interpreting directionality and ST, and even fewer ones combining ST, disfluency, and directionality.

DOI: 10.4018/IJTIAL.323448

\*Corresponding Author

This article published as an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and production in any medium, provided the author of the original work and original publication source are properly credited.

The significance of this research lies in three aspects: First, it probes into interpreting disfluency and ST, which have received little attention in China. Related researches only show that ST training can improve the ability of simultaneous interpreting and consecutive interpreting (Agrifoglio, 2004; Zhang, 2004; Dragsted & Hansen, 2009; Fang & Wang, 2022). Second, it contributes to filling the gaps in the research on the impacts of interpreting directionality, in that the studies combining “sight translation”, “interpreting disfluency”, and “interpreting directionality” are even scarcer. Third, pedagogically, the findings about the impacts of directionality on disfluency of E-C bidirectional ST may help optimize interpreting teaching, and aid student interpreters to practice more efficiently and effectively.

## **2. LITERATURE REVIEW**

### **2.1 Sight Translation**

ST is a hybrid between written translation and interpreting in that the source text is written and the target text is spoken (Agrifoglio, 2004; Setton & Motta, 2007). In ST, the source text remains visually accessible to the interpreter (Gile, 1997; Agrifoglio, 2004).

Compared to CI and SI, ST has some added difficulties, and ST’s cognitive demands are in no way less than those of CI and SI. First, the information contained in written materials may mostly be much more intensive than that in improvised oral expression, and the wording in written materials is often more sophisticated, and vocabulary richer. Besides, spoken language promotes instant understanding of ideas, which written text cannot match. Second, in many cases, the speaker does not speak exactly according to the text, but uses it as an outline of the speech, with additions and deletions, or other improvisations. Third, there is serious source language interference in ST, which has been confirmed by several scholars. Gile (1997) claims that in ST, source-language interference may be greater than in CI and SI, because in translation from oral source, once uttered, the exact words articulated by the speaker die away more quickly from memory, but in ST, source text is all along presented before the sight translator.

### **2.2 Interpreting Disfluency**

Disfluency is a key criterion for evaluating interpreting quality. Goffman (1981) calls these disfluencies “linguistically detectable faults”, and claims these “faults” mirror the efforts made by interpreters to search for the corresponding expression, figure out the logic, organize output, etc. Mead (2005) proposes to adopt quantitative methods for assessing interpreting disfluency. The methodology proposed by Mead makes the assessment of interpreting disfluency more scientific and standardized.

The classifications of disfluency are diverse. Maclay and Osgood (1959) first categorize disfluency into 4 types: false start, repeat, silent pause and filled pause. Later Garnham (1985) identifies “disfluencies” as false start, correction, interjection, pause, hesitation, repetition, slip of the tongue, etc.

Most of domestic researches on interpreting disfluency were carried out in the past two decades. Xu (2010) studies the types, duration, frequencies and causes of their pauses in C-E consecutive interpreting, and finds that pauses caused by information organizing account for the largest proportion, and pauses caused by retrieving target language have the longest duration. Qi (2021) reviews the development of interpreting disfluency studies, and identifies six major dimensions: interpreting quality evaluation, fluency predictors and influencing factors, interpreting commonalities, disfluent feature descriptions, and interpreting cognition. Yet, few researches in China studied the reasons of disfluency and there is much room for domestic disfluency research.

### **2.3 Directionality in Interpreting**

Directionality has always been a topic of debate among interpreting practitioners and scholars studying interpreting. Some scholars are in favor of B-A interpreting (Nicholson, 1992; Seleskovitch, 1999); while other scholars prop up A-B interpreting (William, 1995; McAllister, 2000).

Tommola and Helevä (1998) conduct a two-way interpreting experiment with interpreting-majored students as subjects, which confirms that better understanding of native language in interpreting will advantage output, and points out that the impacts of directionality in interpreting depends on specific language combination. Tommola et al. (2000) study the effects of simultaneous interpreting directionality on the neural activity of professional interpreters' brains. It shows that A-B interpreting will trigger more cognitive load than the other way round. Jänis (2002) analyzes Finnish-Russian student interpreters' performance and finds that student interpreters have more energy to process the output in higher accuracy when interpreting into Language A. While interpreting into Language B, they employ generalization and compression strategies more frequently owing to lack of cognitive energy.

Related studies have shown that the greater the difference in language structures, the more difficulties in information receiving, understanding, storage, extraction, etc. Thus, output quality will be greatly affected (Rothe-Neves 2003). Therefore, there are reasons to believe that the disfluency characteristics in E-C two-way interpreting may be greatly different from other language pairs.

Domestically, Chen (2008) studies the impacts of directionality on E-C two-way simultaneous interpreting. Chen finds that interpreters perform better when interpreting from Chinese to English than conversely, and prefer A-B interpreting. Fu (2013) conducts E-C two-way CI experiments involving 15 senior English majors in China. The results show that compared to E-C ST, the frequency of pause and proportion of pause in all disfluencies in C-E interpreting increase significantly, while Rr has opposite outcomes. Compared to C-E ST, the frequency of Rt when interpreting into Chinese is significantly lower, but the proportion of Rt in all disfluencies does not show significant difference. Using pause, repetition and repair as disfluency indicators, Yuan and Wan (2019) conduct an empirical study on English-Chinese two-way ST of 20 student interpreters, and find that directionality has a significant impact on the disfluency of student interpreters' ST. Student interpreters have fewer pauses but more repairs in E-C ST than in C-E ST. Their study does not confirm that student interpreters' E-C ST is generally more fluent than C-E ST. Later, He, Li, and Li (2020) conclude that interpreting directionality has a significant impact on the cognitive load in the task of ST, and compared with E-C ST, C-E ST entails greater cognitive load.

To summarize, interpreting studies, whether at home or abroad, mainly focused on SI and CI, and little attention is paid to ST. Foreign studies related to interpreting rarely involve Chinese, and most of which are languages used in European and American countries. In addition, most disfluency studies focus only on pauses, and neglect other disfluency types such as Rt and Rr. Motivated by the gaps in this area, the author conducts this experiment to probe into the impacts of directionality on four indicators of disfluency in E-C bidirectional ST.

### **3. RESEARCH METHODOLOGY**

#### **3.1 Research Questions**

The purpose of the experiment is: to analyze the types, frequencies, duration, distribution of different disfluency forms; and to explore what correlations exist between directionality and disfluency in ST. Based on the objectives, the author attempts to address the following questions: (1) What are the features of disfluency in ST in two directions? (2) What is the correlation between directionality and disfluency in ST?

#### **3.2 Research Design**

##### **3.2.1 Research Subjects**

The subjects of this experiment are 17 MTI students in a normal university in western China. Among them, 5 are of class 2019, 12 of class 2020. They have taken MTI courses for 2 years and 1 year separately. They all speak Chinese as their mother tongue. Since this study probes into the potential effect of directionality on disfluency, please be noted that the interpreting competence differences between the 2 classes does not undermine the representativeness of the sample.

### 3.2.2 Research Materials

As shown in Table 1, the author selects two excerpts from political leaders' speeches as experiment materials.

According to the "Grading system for the difficulty degree of C-E/E-C sight translation materials" (in Table 2) modified from Huang and Bao's (2016) "Grading System for the Difficulty of C-E/E-C Consecutive Interpreting Materials", the two experimental materials are of equal difficulty (see Table 3), and can be used as experimental materials to investigate the impacts of directionality on the disfluency of ST.

### 3.2.3 Experiment Procedures

The interpreting experiment was conducted in the Simultaneous Interpreting Laboratory of the university.

**Table 1. Comparison between English and Chinese materials**

|                  | Speaker                          | Title                                                                         | Date of speech | Length                 |
|------------------|----------------------------------|-------------------------------------------------------------------------------|----------------|------------------------|
| English material | Lee Hsien Loong, PM of Singapore | Remarks at the Special ASEAN Summit on COVID-19                               | April 14, 2020 | 615 English words      |
| Chinese material | Li Keqiang, Premier of China     | Remarks at the Special ASEAN, China, Japan and South Korea Summit on COVID-19 | April 14, 2020 | 780 Chinese characters |

**Table 2. Grading system for the difficulty degree of C-E/E-C sight translation materials**

| Indicators                        | 0                                                                                                                                                                               | 1                                                                                                                                                                                                              | 2                                                                                                                                                                                          |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vocabulary                        | With few low-frequency words, complex technical terms, proper nouns, abbreviations, numbers, etc.                                                                               | With some low-frequency words, including more complex technical terms, proper nouns, abbreviations, numbers, etc.                                                                                              | With many low-frequency words, complex technical terms, proper nouns, abbreviations, numbers, etc.                                                                                         |
| Syntax                            | Simple sentences are dominant, and the syntactic structure is simple.                                                                                                           | The proportions of single sentence and compound sentence are equal, and the syntactic structure is relatively complex.                                                                                         | Compound sentences are dominant, and the syntactic structure is very complex.                                                                                                              |
| Length of sentence/ clause        | Most sentences and clauses are short, of which interpreter's eye can grasp every word, e.g., shorter than 3/4 line of Times New Roman or 宋体printed on A4 paper in 五号 font size. | Most sentences and clauses are of medium length, of which interpreter has difficulty in covering a complete sentence or clause, e.g., 1-1.5 lines of Times New Roman or 宋体printed on A4 paper in 五号 font size. | Many long sentences or clauses, of which are extremely difficult for interpreter to grasp every word, e.g., 1.5 or more lines of Times New Roman or 宋体printed on A4 paper in 五号 font size. |
| Logic                             | The logical relationship between different chunks and units is relatively simple, and conjunctions are used frequently.                                                         | The logical relationship between different chunks and units is complex, and conjunctions are not often used.                                                                                                   | The logical relationship between different chunks and units is very complex, and conjunctions are rarely used.                                                                             |
| Cultural factor                   | The cultural information contained is of small amount. SL and TL have little difference regarding cultural information.                                                         | With moderate amount of cultural information. SL and TL differ regarding cultural information                                                                                                                  | With large amount of cultural information. SL and TL differ greatly regarding cultural information                                                                                         |
| Thematic & encyclopedic knowledge | With little and easy thematic knowledge or encyclopedia knowledge                                                                                                               | With moderate amount of and complex thematic knowledge or encyclopedia knowledge                                                                                                                               | With large amount of and very abstruse thematic knowledge or encyclopedia knowledge                                                                                                        |

Table 3. Scale of experiment materials' difficulty

| Indicators                        | Score for difficulty (English material)                                                                                                                                                                                                                                       | Score for difficulty (Chinese material)                                                                                                                                                                               |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vocabulary                        | 1 (Contains several organization names, agreement names, low-frequency place names, and low-frequency words, which have been presented in preparation for translation; some common terms in the economic, financial, and political fields; 2 abbreviations, 2 simple numbers) | 1 (Contains many common terms in the economic, financial, and political fields; 2 proper nouns (English abbreviations have been given in the original speech); 5 Chinese four-character expression, 3 simple numbers) |
| Syntax                            | 1 (Simple sentences and compound sentences have similar ratio, and the syntactic structure is complex.)                                                                                                                                                                       | 1 (Although simple sentences make up the majority, there are many sentences without subject and typical Chinese parallel sentences.)                                                                                  |
| Length of sentence/ clause        | 1 (Due to the characteristics of English words and the preference for sentence making, the sentence span is large, increasing reading effort.)                                                                                                                                | 0 (Due to the characteristics of Chinese characters and the preference for Chinese sentence making, the sentence span is small, and the reading effort is little.)                                                    |
| Logic                             | 0 (The logical relationship between different chunks and units is simple, and conjunctions are used frequently.)                                                                                                                                                              | 1 (Chinese is a parataxis language using few conjunctions, and the logical relationship between different chunks and units is not obvious.)                                                                           |
| Cultural factor                   | 0 (with little cultural information and very small cultural difference)                                                                                                                                                                                                       | 0 (with little cultural information and very small cultural difference)                                                                                                                                               |
| Thematic & encyclopedic knowledge | 1 (involves some thematic knowledge)                                                                                                                                                                                                                                          | 1 (involves some thematic knowledge)                                                                                                                                                                                  |
| Sum                               | 4                                                                                                                                                                                                                                                                             | 4                                                                                                                                                                                                                     |

Before interpreting, 10 minutes was given to the subjects to get familiar with the material. They were allowed to annotate based on the terms and words given in the preparation. Then the subjects started interpreting and recorded. After that there was a 10-minute break. Then C-E ST continued.

After checking, all ST recordings were valid, thus 17 pairs of samples were collected.

### 3.3 Disfluency Indicators Applied in the Research

Given the purposes and needs of this experiment, disfluencies were finally divided into SP, FP, Rt, and Rr.

SP refers to silence in the stream of speech, which happens when the interpreter gets stuck while interpreting and does not make any oral sound. In the previous literature at home and abroad, there are two most commonly used minimum thresholds for SP: 0.25s and 0.3s. Considering that the subjects in this research are student interpreters, the author determined 0.3s as the minimum threshold for SP.

FP is audible evidence proving that the interpreter cannot produce the target language for a while but is still in the language activity. 5 kinds of FP found are marked as: uh [FP], um [FP], (throat-clearing) [FP], (sigh) [FP], and “Chinese” [FP]. “Mixed” pauses which comprise both SP and FP were counted separately.

Rt includes non-semantic occurrence of a phrase, word, or even part of a word again and again. An example in the delivery, “share a common share a common [Rt] destiny.”, is a Rt of phrases. What’s more, “contribute to the negotiation of China, China [Rt], Japan, and South Korea trade zone.”, “China” is a Rt of a word. In the delivery “not lose the pre prevention [Rt] and control of epidemic” is the Rt of part of the word “prevention”.

Lastly, correction, false start, restoration of links, etc., are generalized as Rr. For example, “Respected fellows and colleges, colleagues”.

### 3.4 Data Collection and Processing

#### 3.4.1 Data Collection

After the experiment, the author transcribed the 34 recordings of 17 subjects and then marked disfluencies.

FP, Rt, and Rr were identified manually first. SP and its duration were identified and calculated by Adobe Audition CC 2019, and the duration of SP was marked in square brackets like “[1.779s]” inserted in the transcripts.

### 3.4.2 Data Processing

After transcribing subjects’ recordings, proofreading the transcripts and identifying disfluencies, the author calculated the data including each subject’s recording time and frequencies of the four disfluency indicators, and analyzed the law of disfluencies in ST in two directions from different angles, and the correlation between directionality and disfluency.

## 4. RESULTS AND DISCUSSION

### 4.1 Examples of Disfluencies in Both E-C and C-E ST

#### 4.1.1 Examples of SP

There are pauses about mistranslation of terminology, super-long SP and SP within a word.

The pause about mistranslation of terminology means the subjects make disfluencies when translating some terms even though their standard translation is given in advance, e.g.,

*Subject 8:* 东盟[2.337s]协调.[1.489s]东盟协调[Rt] [2.698s]公共卫生[0.408s]紧急[0.692s]事件[0.725s]工作小组[1.655s]也应该保持对这个问题的密切关注。

For super-long SP, the author means that the interpreter pauses for far more than the minimum threshold because of various reasons, e.g.,

*Subject 8:* 总的来说,[0.716s]全体各方,[28.334s]国际法规[Rr] [0.437s]将会[1.708s]维持[0.371s]并且得到尊重。[5.631s]在这方面,[0.493s]我很害怕[1.028s]公众的信心会有所下降。

For SP within a word, the author finds that the interpreters pause between a complete word in C-E ST. For example:

*Subject 2:* [0.742s] and to com[0.668s]-municated [1.247s] about [1.989s] sharing [0.882s] epidemic informations and entry[0.422s]-e [0.944s] exit [Rt] personnel [0.345s] control,  
*Subject 15:* to form [0.929s] a situation [0.947s] of [0.445s] collabo, [0.941s] of collabo[0.445s]-ration[Rt] [1.855s] to [0.820s] con[0.570s]-trol the pandemic.

#### 4.1.2 Examples of FP

The author finds 5 types of FP: uh, um, throat-clearing, sigh, and some Chinese, which are marked as: uh [FP], um [FP], (throat-clearing) [FP], (sigh) [FP], and “Chinese” [FP].

For the “Chinese” [FP], the author means the interpreters say Chinese in C-E ST. It only occurs in Subject 1’s delivery:

*Subject 1:* Third, we should [2.331s] make efforts to the [4.385s] um [FP], 哎呀我去,这个也好难呀 [FP],

#### 4.1.3 Examples of Rt

There are repetitions of syllable, repetitions of words, repetitions of phrases, and repetitions of sentences in the subject’s delivery. Take repetitions of syllable as examples:

*Subject 1: make efforts to [1.461s] (sigh) [FP] [0.528s] let south As south [Rt], [1.283s] 诶不是 [FP] north 诶不是 [FP] ea east [Rt] Asia [0.487s] against uh [FP] [0.477s] fight against [Rr] [0.387s] epidemic.*

#### 4.1.4 Examples of Rr

When analyzing Rr, the author finds that the Rr methods used by the student interpreters can be divided into five categories: self-monitoring Rr, slips of tongue Rr, false Rr, unnecessary Rr, grammatical Rr.

For the self-monitoring repairs, the interpreters are aware of their interpreting mistakes during the interpretation process and can correct them in a timely manner. For example:

*Subject 7: We need to strengthen the cooperation between [0.567s] uh [FP] among [Rr] countries [0.934s] and guarantee [0.646s] the security of [1.782s] crops and market,*

For the slips of a tongue Rr, it means that some Rrs occur after the slips of tongue, for example:

*Subject 15: 对于过,各成员国[Rr]来,[0.371s]之间[Rr],[0.953s]我很担心[2.294s]这会[0.301s] [0.839s]国际规则[1.355s]产生[2.148s]影响,*

In this example, “过” actually combines the intonation of “各” and the pronunciation of “国”.

For the false Rr, it means that some Rrs occur after false starts, for example:

*Subject 1: And the econo, the world economy [Rr] [0.858s] has been [0.755s] hurt seriously.*

For the unnecessary Rr, it means that repairing for optimizing word diction is completely unnecessary. Accuracy and fluency are of top importance for interpreting output, and there is no need to spend cognitive resources on wording. Here are some examples:

*Subject 17: 同时也会伤害,损伤我们的,损害我们的[Rr]经济,[0.499s]以及加剧失业问题。“伤害”“损伤”“损害” are of totally same meaning, so it is totally unnecessary to commit Rr.*

For the grammatical Rr, it means that some Rrs can be avoided by adopting the principle of syntactic linearity, for instance:

*Subject 1: [1.049s]将会使控制[Rr] [0.453s]跨国的人口。*

By adopting syntactic linearity, we can translate it as “将会使跨国的人口得到控制”, avoiding an obvious disfluency.

## 4.2 Analysis of Disfluencies in Both E-C and C-E ST

Based on examples, the author analyzes specifically the 4 types of disfluencies in Both E-C and C-E ST, and their corresponding frequencies and duration.

### 4.2.1 Analysis of SP cases

The author finds that 14 of all 17 subjects translate “The ASEAN Coordinating Council Working Group on Public Health Emergencies” inaccurately or non-fluently, reflecting that these student interpreters are lack effectiveness when doing pre-task preparation. Subject 8 even commits 6 SPs and 1 Rt when translating the organization’s name.

There is a 28.334s-long SP of Subject 8. The source text is “And on all parties, I fear that there will be diminished confidence that international rules will hold and be respected in a crisis.” But in

C-E ST, there is no SP longer than 10s. This reflects the structural and word-order differences between English and Chinese. Chinese sentences are mostly short and simple. In contrast, English has more longer compound sentences with complex structures. Moreover, English words extend spatially longer than Chinese characters on paper, which leads to a longer span. Chinese sentences, by contrast, are usually of small space span on paper, thereby interpreters can grasp more content at one sight. We can apply syntactic linearity when interpreting to avoid Super-long SP. We can also add adhesive components in E-C interpreting to make the translation smooth and coherent.

There are several reasons behind the occurrence of SP within a word. Some occur because subjects intend to earn some time to understand the following sentences, to figure out the logic, to search for the corresponding words in English, or to organize their output, and forget what they are articulating. For example, the “com[0.668s]-municated” of Subject 2, and the “collabo[0.445s]-ration” of Subject 15 may be attributed to subjects’ poor command of a specific word, being not sure about a word’s part of speech, pronunciation, etc.

#### 4.2.1.1 Frequency of SP

In E-C ST, each subject has 22.107 SPs per minute on average. Among them, Subject 2 has the highest number of SP per minute, which is 30.731 times/min, and Subject 14 has the least number of SP per minute, which is 17.176 times/min. In C-E ST, each subject has 22.519 SPs per minute on average. Among them, Subject 13 and Subject 15 have the highest number of SP per minute, both of which are 26.462 times/min, and Subject 9 has the least number of SP per minute, which is 17.484 times/min.

The above indicates a higher frequency of SP in C-E ST. Moreover, statistically, even if the incidence of some subjects’ FP, Rt, and Rr is very low, they still have a lot of SPs in their output. SP seems to be somewhat inevitable. On the other hand, the author finds that of all SPs, a large number coincide with respiration, which means it takes a subject more than 0.3s to finish a respiration, leading to a SP. Interpreters should train themselves to breathe at syntactic and grammatical boundaries such as between sentences, clauses, and sense groups or meaning units.

#### 4.2.1.2 Duration of SP

Time variables of SP include SP total time and its percentage, SP duration and average SP duration.

1. *Description of SP Duration in E-C ST.* In E-C ST, the total time of SP of Subject 8 is the longest, which also directly led to her recording time being the longest. At the same time, total time of SP affects the values of SP total time/recording time, SP time/min (s/m), and average SP duration. These three values of Subject 8 are all also the largest of all subjects, while Subject 1 has the shortest total time of SP. Likewise, Subject 1 enjoys the smallest SP total time, SP time/min and average SP duration among all subjects. Interestingly, Subject 1’s recording time is not the shortest, which is 0.06 minute longer than the shortest 6.346 minutes of Subject 14.

The author divides E-C SP total time/recording time into three intervals: lower (0~25%), intermediate (25%~50%), higher (50%~) (see Table 4). We can find that the total time of SP accounts for a large proportion in student interpreters’ E-C ST. 4 of 17 subjects’ SP time even exceed half of their recording time.

2. *Description of SP Duration in C-E ST.* In C-E ST, Subject 6 has the longest total time of SP, which ranks the third largest. The law of SP time/min is consistent with SP total time/recording time. In terms of average SP duration, Subject 6 lasts an average of 1.337s per SP, which is the third

Table 4. Distribution of SP total time/recording time in E-C ST

| SP total time/ recording time | Lower (0~25%)    | Intermediate (25%~50%)                    | Higher (50%~)        |
|-------------------------------|------------------|-------------------------------------------|----------------------|
| Subjects                      | Subject 1, 5, 14 | Subject 3, 4, 6, 7, 9, 10, 11, 15, 16, 17 | Subject 2, 8, 12, 13 |

longest. Subject 3 has the shortest total time of SP. We can see from Table 5 that the total time of SP accounts for a larger proportion in student interpreters' C-E ST than in E-C ST. All of 17 subjects' SP time are beyond 25%. 3 subjects' SP time exceeded half of their recording time.

## 4.2.2 Analysis of FP Cases

### 4.2.2.1 Frequency of FP

The frequency of FP is much smaller than that of SP. In both E-C and C-E ST, FP is the second frequent disfluency indicator.

In E-C ST, each subject has 1.902 FPs per minute on average. Among them, Subject 4 has the highest number of FP per minute. In contrast, Subject 5, 8 and 16 have no FP at all during the whole E-C ST process. Among all 17 subjects, 8 subjects have 3 or less FPs during the E-C ST.

In C-E ST, each subject has 2.045 FPs per minute on average. Among them, Subject 4 also has the highest number of FP per minute. In contrast, Subject 5 and Subject 12 have no FP at all during the whole C-E ST process. We can find that Subject 5 committed no FP in both E-C and C-E ST, showing that she has good control over FP. Among all 17 subjects, 9 subjects have 3 or less FPs during the C-E ST.

## 4.2.3 Analysis of Rt Cases

Some syllable Rts are caused because the subject is unfamiliar with and fails to recall the corresponding expression of certain words in target language, such as “ea east [Rt]” of Subject 1. Prior to this, Subject 1 had several amendments such as “south” and “north”, which reflects that the basic knowledge of some student interpreters is not solid. And when they see the source language, they cannot immediately think of its corresponding expression in target language, namely, the language conversion is not automatic. Some syllable Rts occur because interpreters ignore what they are saying when reading the following sentences, which reveals that the unskilled multitasking.

### 4.2.3.1 Frequency of Rt

It is found from the data that Rt has the smallest proportion among four disfluency indicators studied in this research.

In E-C ST, subjects have 0.900 Rt per minute on average. Subject 11 has the highest number of Rt per minute, while in contrast, Subject 16 has no Rt at all during the whole E-C ST process. Among all 17 subjects, 7 subjects have 3 or less Rts during the E-C ST.

In C-E ST, subjects have 1.399 Rts per minute on average. Subject 1 has the highest number of Rt per minute, while in contrast, Subject 5 and Subject 8 have no Rt at all during the whole E-C ST process. Admittedly, subject 5 committed no FP in both E-C and C-E ST, no Rt in C-E ST, only 1 Rt in E-C ST, showing that she has good control over disfluencies, making her interpreting output relatively fluent. Also, her recordings are comfortable for the audience to listen to. Among all 17 subjects, 9 subjects have 3 or less Rt during the C-E ST.

## 4.2.4 Analysis of Rr Cases

### 4.2.4.1 Frequency of Rr

Rr is the third-most indicators among four disfluencies.

**Table 5. Distribution of SP total time/recording time in C-E ST**

| SP total time/ recording time | Lower (0~25%) | Intermediate (25%~50%)                                  | Higher (50%~)    |
|-------------------------------|---------------|---------------------------------------------------------|------------------|
| Subjects                      |               | Subject 1, 2, 3, 4, 5, 7, 9, 10, 11, 13, 14, 15, 16, 17 | Subject 6, 8, 12 |

In E-C ST, subjects have 1.818 Rrs per minute on average. Among them, Subject 2 has the highest number of Rr per minute. In contrast, Subject 16 has the least number of Rr per minute—only 1 Rr during the whole E-C ST process. In C-E ST, subjects have 1.555 Rrs per minute on average. Among them, Subject 1 has highest number of Rr per minute. In contrast, Subject 5 has the least number of Rr per minute.

It is necessary for student interpreters to further enhance self-monitoring so as to avoid unnecessary errors before they occur. It is also necessary for them to, when reading the source text, increase reading speed, expand the sight coverage, and understand the original text correctly at fast rate, so as to avoid false starts.

### 4.3 Correlation Between Interpreting Disfluency and Directionality

Three statistical approaches namely, Tests of Normality, Paired-Samples Test, and Rank Sum Test are employed to analyze the correlation between interpreting disfluency and directionality.

#### 4.3.1 Comparison of SP Between E-C and C-E ST

The author analyzes impacts of directionality on ST disfluency from the perspective of times of SP/minute, SP duration/minute and average SP duration.

##### 4.3.1.1 Times of SP/minute

The results (in Table 7) of the analysis of the data of times of SP/minute (in Table 6) indicate that there is no statistically significant difference between the two sets of data.

##### 4.3.1.2 SP Duration/minute

The results (in Table 9) of the analysis of the data of Times of SP/minute (in Table 8) shows that there is no statistically significant difference between the two sets of data.

##### 4.3.1.3 Average SP Duration

The results (in Table 11) of the analysis of the data of each subject's average SP duration (in Table 10) show that there is no statistically significant difference between the two sets of data.

Table 6. Times of SP/minute in E-C and C-E ST

|     | S1    | S2    | S3    | S4    | S5    | S6    | S7    | S8    | S9    | S10   | S11   | S12   | S13   | S14   | S15   | S16   | S17   |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| E-C | 19.83 | 30.73 | 22.53 | 21.70 | 20.60 | 22.04 | 20.91 | 19.77 | 20.66 | 24.63 | 21.82 | 17.33 | 23.50 | 17.18 | 26.21 | 19.50 | 26.99 |
| C-E | 21.41 | 22.91 | 22.27 | 23.82 | 20.38 | 22.53 | 22.31 | 22.57 | 17.48 | 25.10 | 21.06 | 21.44 | 26.46 | 20.12 | 26.46 | 19.16 | 25.26 |

Table 7. Results of paired-samples test for times of SP/minute

| Paired-Samples Test |           |                    |                   |                       |                                           |       |       |    |                    |  |
|---------------------|-----------|--------------------|-------------------|-----------------------|-------------------------------------------|-------|-------|----|--------------------|--|
|                     |           | Paired Differences |                   |                       |                                           |       | t     | df | Sig.<br>(2-tailed) |  |
|                     |           | Mean               | Std.<br>Deviation | Std.<br>Error<br>Mean | 95% Confidence Interval of the Difference |       |       |    |                    |  |
|                     |           |                    |                   |                       | Lower                                     | Upper |       |    |                    |  |
| Pair 1              | E-C - C-E | -.284              | 2.799             | .679                  | -1.723                                    | 1.155 | -.418 | 16 | .681               |  |

Table 8. SP duration/minute in E-C and C-E ST

|     | S1    | S2    | S3    | S4    | S5    | S6    | S7    | S8    | S9    | S10   | S11   | S12   | S13   | S14   | S15   | S16   | S17   |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| E-C | 11.93 | 36.77 | 19.73 | 22.04 | 14.24 | 21.71 | 26.33 | 37.70 | 17.82 | 19.23 | 23.28 | 31.46 | 30.37 | 13.10 | 28.58 | 21.69 | 25.80 |
| C-E | 22.37 | 26.44 | 15.84 | 17.22 | 16.58 | 30.13 | 23.95 | 31.20 | 17.92 | 19.27 | 25.65 | 30.41 | 27.53 | 15.44 | 28.27 | 21.02 | 27.68 |

**Table 9. Results of paired-samples test for SP duration/minute**

| Paired-Samples Test |           |                    |                   |                       |                                              |       |      |    |                    |
|---------------------|-----------|--------------------|-------------------|-----------------------|----------------------------------------------|-------|------|----|--------------------|
|                     |           | Paired Differences |                   |                       |                                              |       | t    | df | Sig.<br>(2-tailed) |
|                     |           | Mean               | Std.<br>Deviation | Std.<br>Error<br>Mean | 95% Confidence Interval<br>of the Difference |       |      |    |                    |
|                     |           |                    |                   |                       | Lower                                        | Upper |      |    |                    |
| Pair 1              | E-C - C-E | .285               | 5.007             | 1.214                 | -2.289                                       | 2.860 | .235 | 16 | .817               |

**Table 10. Average SP duration in E-C and C-E ST**

|     | S1   | S2   | S3   | S4   | S5   | S6   | S7   | S8   | S9   | S10  | S11  | S12  | S13  | S14  | S15  | S16  | S17  |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| E-C | 0.60 | 1.20 | 0.88 | 1.02 | 0.69 | 0.99 | 1.26 | 1.91 | 0.86 | 0.78 | 1.07 | 1.82 | 1.29 | 0.76 | 1.09 | 1.11 | 0.96 |
| C-E | 1.05 | 1.15 | 0.71 | 0.72 | 0.81 | 1.34 | 1.07 | 1.38 | 1.03 | 0.77 | 1.22 | 1.42 | 1.04 | 0.77 | 1.07 | 1.10 | 1.10 |

**Table 11. Results of test statistics<sup>a</sup> for average SP duration**

| Test Statistics <sup>a</sup> |           |
|------------------------------|-----------|
|                              | C-E - E-C |
| Z                            | -.734B    |
| Asymp. Sig. (2-tailed)       | .463      |

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

#### 4.3.2 Comparison of FP Between E-C and C-E ST

The results (in Table 13) of the analysis of the data of each subject's times of FP/minute (in Table 12) show that there is no statistically significant difference between the two sets of data.

**Table 12 Times of FP/minute in E-C and C-E ST**

|     | S1   | S2   | S3   | S4   | S5   | S6   | S7   | S8   | S9   | S10  | S11  | S12  | S13  | S14  | S15  | S16  | S17  |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| E-C | 3.12 | 1.32 | 3.25 | 8.29 | 0.00 | 0.45 | 0.34 | 0.00 | 0.17 | 1.48 | 0.23 | 0.30 | 5.11 | 3.47 | 0.32 | 0.00 | 3.48 |
| C-E | 4.32 | 0.22 | 1.87 | 8.98 | 0.00 | 0.78 | 0.25 | 0.35 | 0.93 | 1.17 | 0.10 | 0.00 | 9.37 | 0.17 | 0.13 | 0.14 | 2.74 |

**Table 13. Results of test statistics<sup>a</sup> for times of FP/minute**

| Test Statistics <sup>a</sup> |           |
|------------------------------|-----------|
|                              | C-E - E-C |
| Z                            | -.052B    |
| Asymp. Sig. (2-tailed)       | .959      |

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

### 4.3.3 Comparison of Rt Between E-C and C-E ST

The results (in Table 15) of the analysis of the data of times of Rt/minute in both E-C and C-E ST (in Table 14) show that there is no statistically significant difference between the two sets of data.

### 4.3.4 Comparison of Rr Between E-C and C-E ST

The results (in Table 17) of the analysis of the data of times of Rr/minute (in Table 16) indicate that there is no statistically significant difference between the two sets of data.

## 5. CONCLUSION

### 5.1 Major Findings

This study examines the characteristics of disfluency in two directions in terms of SP, FP, Rt and Rr, and figures out the correlation between directionality and disfluency in ST. It reveals that:

First, among the four disfluency indicators examined in this research, the incidence of SP is the highest in both E-C and C-E ST, followed by FP, then Rr, and finally Rt. Most SPs are formed

Table 14. Times of Rt/minute in E-C and C-E ST

|     | S1   | S2   | S3   | S4   | S5   | S6   | S7   | S8   | S9   | S10  | S11  | S12  | S13  | S14  | S15  | S16  | S17  |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| E-C | 0.62 | 2.65 | 0.76 | 0.61 | 0.15 | 2.03 | 0.11 | 0.44 | 0.17 | 0.30 | 3.15 | 1.60 | 0.81 | 0.32 | 0.32 | 0.00 | 0.70 |
| C-E | 3.96 | 2.12 | 0.56 | 2.88 | 0.00 | 1.85 | 0.50 | 0.00 | 0.16 | 0.73 | 2.76 | 1.62 | 1.27 | 0.83 | 0.65 | 0.57 | 0.83 |

Table 15. Results of test statistics<sup>a</sup> for times of Rt/minute

| Test Statistics <sup>a</sup> |           |
|------------------------------|-----------|
|                              | C-E - E-C |
| Z                            | -1.207B   |
| Asymp. Sig. (2-tailed)       | .227      |

a. Wilcoxon Signed Ranks Test  
b. Based on negative ranks.

Table 16. Times of Rr/minute in E-C and C-E ST

|     | S1   | S2   | S3   | S4   | S5   | S6   | S7   | S8   | S9   | S10  | S11  | S12  | S13  | S14  | S15  | S16  | S17  |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| E-C | 2.81 | 4.26 | 1.72 | 2.15 | 0.87 | 3.84 | 0.67 | 0.44 | 1.02 | 1.03 | 2.25 | 1.60 | 2.78 | 1.42 | 1.61 | 0.15 | 1.74 |
| C-E | 3.33 | 1.34 | 2.06 | 2.53 | 0.39 | 2.44 | 0.63 | 1.38 | 0.93 | 1.31 | 1.28 | 0.07 | 3.03 | 0.66 | 0.51 | 0.86 | 1.07 |

Table 17. Results of paired-samples test for times of Rr/minute

| Paired-Samples Test |           |                    |                   |                       |                                              |       |       |    |                    |
|---------------------|-----------|--------------------|-------------------|-----------------------|----------------------------------------------|-------|-------|----|--------------------|
|                     |           | Paired Differences |                   |                       |                                              |       | t     | df | Sig.<br>(2-tailed) |
|                     |           | Mean               | Std.<br>Deviation | Std.<br>Error<br>Mean | 95% Confidence Interval<br>of the Difference |       |       |    |                    |
|                     |           |                    |                   |                       | Lower                                        | Upper |       |    |                    |
| Pair 1              | E-C - C-E | .326               | .950              | .230                  | -.162                                        | .815  | 1.415 | 16 | .176               |

because some student interpreters are unprofessional in pre-task preparation. A large number of SP coincide with respiration; SP over 10s occurs only in E-C ST. Second, from the aspect of FP, sighing and speaking Chinese in C-E ST are extremely unprofessional, which should be absolutely avoided. Third, some Rts are caused because the subject is unfamiliar with, or fails to recall the corresponding expression of certain words in target language, or ignores what they are saying while reading the following source text. Fourth, in terms of Rrs, there is still much room for student interpreters to enhance self-monitoring. Fifth, disfluencies are prone to occur before terminologies, notional words, and long sentences with subordinate clauses.

In addition, correlation analysis displays that there are no statistically significant differences between E-C and C-E ST with respect to the frequency of SP, FP, Rt, Rr, SP duration/min, and average SP duration. To summarize, directionality exerts no significant effect on the disfluency of student interpreters' ST. This is not in accordance with Yuan and Wan's (2019) outcome, which may be attributed to the fact that the types of experimental materials are different (study and life stories vs. politics), or other variables. It can't be asserted which is right and which is wrong. In fact, it just calls for further research in this area.

## 5.2 Implications

The findings of this study can help student interpreters make more targeted improvements in their training and provide guidance for teachers.

On the one hand, student interpreters can enhance their efficiency of interpreting training by following the suggestions: (1) Spend time improving the agility of thinking, and increase reading speed; (2) Sufficient pre-task preparation should be done by making annotations, for instance, underlining the main verbs, using slashes or brackets to segment compound sentences according to the meaning units and sense groups and to separate subordinate clauses, etc.; (3) Adopt syntactic linearity, which means following the syntactical word order in the source text when interpreting. But adhesive components, like conjunctions, pronouns, or prepositions, should be properly utilized to make the output smooth and coherent. Converting part of speech is also an important technique. (4) Repeatedly practice phrases and set phrases, so as to develop the quick interpretation reflexes, establish an automatic connection between the source and target language chunks, and achieve high-speed and efficient conversion.

On the other hand, interpreting teachers can better train student interpreters, make their interpreting courses more pertinent from the following aspects: (1) Train students to split attention; (2) Cultivate student interpreters' strong sense of fluency; (3) Ask students to keep memorizing language chunks to improve the automaticity of interpreting output.

## COMPETING INTERESTS

The authors of this publication declare there are no competing interests.

## FUNDING

This research was supported by Shaanxi Normal University: [grant number 21ZHWY01].

## REFERENCES

- Agrifoglio, M. (2004). Sight translation and interpreting: A comparative analysis of constraints and failures. *Interpreting*, 6(1), 43–67. doi:10.1075/intp.6.1.05agr
- Al-Salman, S., & Al-Khanji, R. (2002). The native language factor in simultaneous interpretation in an Arabic/English context. *Meta*, 47(4), 607–626. doi:10.7202/008040ar
- Chen, Q. R. (2008). *Directionality and its impact on Chinese/English simultaneous interpreting* [Master's thesis, Shanghai International Studies University]. China National Knowledge Infrastructure.
- Dragsted, B., & Hansen, I. G. (2009). Exploring translation and interpreting hybrids. The case of sight translation. *Meta*, 54(3), 588–604. doi:10.7202/038317ar
- Fang, J., & Wang, J. H. (2022). Student interpreters' strategies in dealing with unfamiliar words in sight translation. *Translation & Interpreting*, 14(1), 42–65. doi:10.12807/ti.114201.2022.a03
- Fu, R. B. (2013). Directional effects on disfluencies in consecutive interpreting. *Modern Foreign Languages*, 36, 198–205.
- Garnham, A. (1985). *Psycholinguistics (PLE: Psycholinguistics): Central Topics*. Psychology Press. doi:10.4324/9780203729946
- Gile, D. (1997). Conference interpreting as a cognitive management problem. In J. H. Danks, G. M. Shreve, S. B. Fountain, & M. K. McBeath (Eds.), *Cognitive Processes in Translation and Interpreting* (pp. 196–214). Sage.
- Gile, D. (2011). *Basic Concepts and Models for Interpreter and Translator Training* (Revised Edition). Shanghai Foreign Language Education Press.
- Goffman, E. (1981). *Forms of Talk*. Pennsylvania University Press.
- He, Y., Li, D. F., & Li, L. Q. (2020). Directionality and the cognitive processing in sight translation—An fNIRS-based empirical study. *Foreign Language Research*, 213, 95–101. doi:10.16263/j.cnki.23-1071/h.2020.02.015
- Huang, X. J., & Bao, C. Y. (2016). Exploring the difficulty grading of consecutive interpreting teaching materials-taking the national high-end applied translation talent training base construction project as an example. *Chinese Translators Journal*, 37, 58–62.
- Jänis, M. (2002). From the A language to the B language and from the B language to the A language: What is the difference? In G. Garzone, P. Mead, & M. Viezzi (Eds.), *Perspectives on Interpreting* (pp. 53–64). CLUEB.
- Maclay, H., & Osgood, C. E. (1959). Hesitation phenomena in spontaneous English speech. *Word*, 15(1), 19–44. doi:10.1080/00437956.1959.11659682
- McAllister, R. (2000). Perceptual foreign accent and its relevance for simultaneous interpreting. In B. Englund Dimitrova & K. Hyltenstam (Eds.), *Language Processing and Simultaneous Interpreting* (pp. 45–64). John Benjamins. doi:10.1075/btl.40.05mca
- Mead, P. (2005). Methodological issues in the study of interpreters' fluency. *The Interpreters' Newsletter*, (13), 39–63.
- Nicholson, N. S. (1992). Linguistic theory and simultaneous interpretation: Semantic and pragmatic considerations. *Babel*, 38(2), 90–100. doi:10.1075/babel.38.2.05sch
- Qi, T. Y. (2021). A Review of studies on interpreting fluency. *Foreign Languages Research*, 38, 69–75.
- Rothe-Neves, R. (2003). The influence of working memory features on some formal aspects of translation performance. In F. Alves (Ed.), *Triangulating Translation: Perspectives in Process Oriented Research* (pp. 97–119). John Benjamins. doi:10.1075/btl.45.09rot
- Seleskovitch, D. (1999). The teaching of conference interpretation in the course of the last 50 years. *Interpreting*, 4(1), 55–66. doi:10.1075/intp.4.1.07sel
- Setton, R., & Motta, M. (2007). Syntacrobatics: Quality and reformulation in simultaneous-with-text. *Interpreting*, 9(2), 199–230. doi:10.1075/intp.9.2.04set

Tommola, J., & Helevä, M. (1998). Language direction and source text complexity: Effects on trainee performance in simultaneous interpretation. In L. Bowker, M. Cronin, D. Kenny, & J. Pearson (Eds.), *Unity in Diversity? Current Trends in Translation Studies* (pp. 177–186). St. Jerome.

Tommola, J., Laine, M., Sunnari, M., & Rinne, J. O. (2000). Images of shadowing and interpreting. *Interpreting*, 5(2), 147–167. doi:10.1075/intp.5.2.06tom

William, S. (1995). Research on bilingualism and its relevance for interpreting. *HERMES - Journal of Language and Communication in Business*, 8(15), 143-154. <https://doi.org/10.7146/hjlc.v8i15.25371>

Xu, H. M. (2010). Pauses in conference consecutive interpreting from English into Chinese: An empirical study. *Foreign Languages Research*, 119, 64-71+112. <https://doi.org/10.13978/j.cnki.wyyj.2010.01.007>

Yuan, S., & Wan, H. Y. (2019). The impacts of directionality on the fluency of sight translation. *Shanghai Journal of Translators*, 144, 30-37+94.

Zhang, J. L. (2004). Five methods for students to train in simultaneous interpretation. *Chinese Translators Journal*, 25, 82–85.

*Fan Yang, postgraduate of the School of International Studies in Shaanxi Normal University in China. His academic fields are translation and interpreting theory and practice. Fan Yang has published a paper included in the Proceedings of the 6th Annual International Conference on Social Science and Contemporary Humanity Development (SSCHD 2020). He has also participated in national and provincial-level projects regarding translation, which were hosted by his supervisor Fen Gao.*

*Fen Gao, associate professor, works in the School of International Studies in Shaanxi Normal University in China. Her academic fields are translation and interpreting theory and practice, plus English Language teaching. During 2009-2010 and 2015-2016, she stayed in the University of Massachusetts in US and Nottingham University in UK as a visiting scholar. Prof. Gao has successively published more than 20 papers in a number of Chinese and foreign academic journals in the last decade. She has also published 10 translated works and hosted or participated in a dozen of national and provincial-level projects regarding translation and language teaching, including the National Academic Translation project funded by Chinese Fund for the Humanities and Social Sciences in 2015.*

*Kexin Zhang, postgraduate of the School of International Studies in Shaanxi Normal University in China. Her academic fields are translation and interpreting theory and practice.*