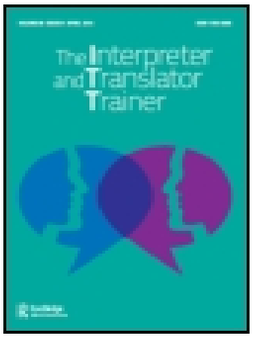

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Acquisition of interpreting strategies by student interpreters

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ABSTRACT

To explore the acquisition of interpreting strategies by student interpreters, the present study first built a framework of 22 strategies based on a thorough literature review, and then identified and compared 21 strategies adopted by 66 student interpreters in a task of B-to-A consecutive interpreting (CI) between two training stages (2nd month and end of an academic year). Quantitative and qualitative analyses of interpreting performance, substantiated by retrospection and interview data, resulted in two major findings. First, as interpreting training proceeded, these students employed more frequently the strategies that interpreting instructors recommended (Type-A strategies, e.g. explicitation), and less frequently the strategies that the instructors advised them to use with caution (Type-B strategies, e.g. approximation) and the strategies that the instructors did not recommend (Type-C strategies, e.g. guessing). Second, the frequency of Type-A strategies positively correlated with interpreting performance, and that of Type-C strategies negatively correlated, especially at Stage 2. In addition, our retrospection and interview data indicated that, for these unbalanced L2 learners, strategy use mostly aimed for better information accuracy and completeness, especially at Stage 2. These results suggest that strategy training is effective, and strategy acquisition is plausible.

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Interpreting strategy; strategy acquisition; interpreting training; student interpreter; longitudinal study

1. Introduction

An interpreting strategy is a method that is used deliberately to prevent or solve potential problems in interpreting or to enhance interpreting performance (Bartłomiejczyk 2006; Gile 1997; Lörscher 1991). Due to the important role that strategies play in interpreting, strategy acquisition, although controversial for some researchers (e.g. Gumul 2006), is generally regarded as an essential part of interpreting training by practitioners and instructors. In spite of the importance of strategy acquisition in interpreting training, not much research has been conducted on this issue. Most research on interpreting strategies is concerned with expert interpreters' use of strategies in simultaneous interpreting (SI) (e.g. Bartłomiejczyk 2006), which helps us identify specific strategies and probably a criterion of successful strategy acquisition. A few studies have investigated how expert interpreters differed from student interpreters in strategy use (e.g. Díaz-Galaz, Padilla, and Bajo 2015) or how student interpreters of different interpreting experiences differed in

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strategy use (e.g. Arumí Ribas 2012). The research on expert interpreters' use of strategies or a comparison between different groups of interpreters in strategy use is apparently significant, but direct research on how the same group of student interpreters progress in the use of interpreting strategies is at least equally significant.

As far as we know up till now, Li's (2013) study is most relevant to the issue of strategy acquisition we are concerned with. After identifying 16 strategies in the interpreting output of 25 student interpreters in a consecutive interpreting (CI) task, the researcher invited three interpreting instructors to rate the strategies on a 5-point scale based on how much they had taught their students about the use of each strategy in class. The results indicated that students' use of interpreting strategies was not necessarily consistent with what their instructors had taught them on strategy use. Although significant on the issue of strategy acquisition, the study itself could not reach definite conclusions yet.

To understand better the issue of interpreting strategy acquisition, the present study adopted a longitudinal design, with student interpreters as research participants, whose A language/L1 was Chinese and B language/L2 was English. To avoid the weakness of a small sample of participants in empirical studies of strategy use and enhance data credibility, we collected data from 66 participants at two stages of their first-year CI training (which mainly focused on B-to-A CI). We had two major research questions, and the dynamic aspect of strategy acquisition was emphasised: *(1) How does student interpreters' strategy use change with interpreting training? Are the changes related to how the strategies are recommended by instructors? (2) How does strategy use relate to interpreting performance? How does this relationship change with interpreting training?* But before we started to answer these questions, we must have a framework of CI strategies that is appropriate for the purpose of encoding student interpreters' strategy use.

2. Definition and categorisation of CI strategies

Defining and categorising the strategies that student interpreters would probably use in CI is essential for empirical studies, especially for a quantitative one like the present study. Nevertheless, existing frameworks that categorise strategies (Gile 1997, 2009; Jones 2008; Pöchhacker 2004; Arumí Ribas 2012) do not meet our needs well. First, the existing frameworks mostly focus on strategies preferred by expert interpreters (i.e. generally those who have worked as professional interpreters for at least two years) instead of strategies preferred by novice interpreters (i.e. generally those who have received interpreting training for less than two years). Second, there are overlapping categories in the existing frameworks, which would be troublesome if the number of strategies is counted. A typical example is the quartering categorisation framework proposed by Arumí Ribas (2012, 826). Within this framework, the specific strategy of 'omitting', for instance, may help and thus fall into any of the four categories of strategies: 'listening and understanding the original speech', 'note-taking', 'decoding notes', and 'expression and reformulation'.

To collect and sort out interpreting strategies that seldom overlap with each other, the present three authors collaborated with another interpreting instructor (i.e. two psycholinguistic researchers and two interpreting instructors) and took the following measures. First, we conducted a careful examination of all available literature on interpreting

strategies, listing their names, definitions and examples (if there is any). Second, we used the strategy names that were easier to understand (e.g. inventing a speech segment when the interpreter fails to catch, comprehend or recall the original source language message is named 'guessing' instead of 'parallel reformulation' as in Gile 2009, 211), and kept names that were more commonly used in the literature (e.g. 'stalling' as in Pöchhacker 2004, 127 was used, while 'delaying the response' as in Gile 2009, 201 was deleted). Third, we merged some specific strategies and deleted superordinate strategies so that the remaining strategies seldom overlapped with each other. For example, 'addition of cohesive devices' and 'explicitation of intended meaning' in Wang (2012, 202–203) were merged into the strategy of 'explicitation'. Superordinate strategies like 'comprehension tactics' (Gile 2009, 201) were deleted. Fourth, a consensus had to be reached between the two interpreting instructors if no obvious conclusion could be reached from the literature.

Altogether, we sorted out 16 strategies preferred by expert interpreters (mostly in SI) and six strategies that novice interpreters tended to use in CI. All the 22 strategies are listed in Appendix 1.

To investigate the use of these 22 strategies by student interpreters, we need to offer each strategy an operational definition, which is critical for any research of a quantitative nature. To achieve this goal, we took the following three steps. First, we collected all existing definitions or descriptions of each strategy that we could access in the literature. Second, we compared the different definitions or descriptions for each strategy, selected what we considered the best version, modified expressions that we thought were either vague or ambiguous or redundant. Third, a consensus was reached among the interpreting instructors and the psycholinguistic researchers after rounds of discussion. Appendix 1 lists all the definitions we finally adopted, with references provided in the brackets.

To sum up, based on a careful examination of all available literature, we sorted out a list of 22 CI strategies, along with their definitions in CI. This framework of 22 strategies paves the way to our empirical study reported below. On the one hand, the framework is indispensable for encoding participants' strategy use. On the other, a careful examination of how student interpreters use interpreting strategies in an interpreting task may help improve this framework, especially when the corpus is large enough.

On the basis of this framework of 22 strategies, we identified and coded strategies in our empirical study by a triangulation of methods: discourse analysis of the transcript of the target text, retrospection and interview. Discourse analysis of the transcript of the target text is frequently used to detect interpreters' use of strategies in the literature (e.g. Wang 2012). In terms of retrospection, it not only helps trace participants' use of interpreting strategies but also their rationales for using them (e.g. Bartłomiejczyk 2006). Although the method of retrospection is controversial on how comprehensively and faithfully retrospective protocols could reflect the interpreting process, this weakness could be diminished when the method is triangulated with other methods (Ericsson and Simon 1993; Ivanova 2000). To preserve the validity and reliability of retrospection, the retrospection in the present study followed the guidelines offered by Ericsson and Simon (1993). As for the method of interview, most criticisms point at the issue of indeterminacy, i.e. the interviewee's uncertainty towards his or her answers to the interview questions (e.g. Miller 2011). Nonetheless, the method was also found reliable when triangulated with other data collection tools (Miller 2011; Shreve and Angelone 2010).

3. Recommendation of strategy use by instructors

To explore the acquisition of interpreting strategies by student interpreters, we first conducted a brief survey on how the instructors of our student participants recommended strategies in class. We collected the instructors' presentation slides and found that the 22 strategies in our framework covered all the strategies mentioned and explained in class. This result of the 22 strategies was further confirmed by one of the instructors, and also by one of the students who had been trained in the same classroom with our participants but who did not take part in the following data collection session.

We then conducted a survey on how interpreting instructors generally recommended strategies. Since our student interpreters were encouraged to practice after class, they were mostly probably influenced not only by their own classroom instructors but also by other sources of instruction such as textbooks and videos. It is therefore important to know the opinions of instructors who were teaching similar student interpreters in similar programmes. Seventeen interpreting instructors (6 male and 11 female who were also professional interpreters) were invited to rate interpreting strategies on the basis of how much they recommended strategies to student interpreters. These instructors had an average of 9.13 years' experience of interpreting training (SD = 3.50), including the experience of teaching first-year student interpreters in CI.

In this survey, the 17 instructors were asked to rate each of the 22 strategies on a 5-point scale based on how much they recommended first-year student interpreters to use these strategies in CI (1 = absolutely not recommend; 2 = not recommend; 3 = advise students to use with caution; 4 = recommend students to use; 5 = recommend students to use frequently). The questionnaire, presented in the instructors' L1 Chinese, was composed of two parts. In the first part, information about the instructors was collected, including how long they had worked as an interpreting instructor, and which type of interpreting (SI or CI) they had taught. In the second (or main) part, the 22 strategies were listed together with a description of each strategy based on Appendix 1. The final version of the questionnaire was decided after rounds of discussion between psycholinguistic researchers and professional interpreters, and was further modified after a pilot study with three instructors.

Table 1, a brief summary of the results of the survey, presents the 22 strategies in the descending order of recommendation scores. As expected, the recommendation scores formed a continuum from the highest score of 5 (for preparing) to the lowest of 1.12 (for guessing). Although it is hard to cut the continuum into parts, the first 11 strategies were rated above 4 which means 'recommended' in the questionnaire, the last three strategies were rated 2 or below 2 which means 'not recommended', and the remaining eight were rated in between which means 'recommended with caution'. For convenience, we labelled the three parts, respectively, Type A, B and C.

4. Acquisition of CI strategies by student interpreters

4.1. Participants

Sixty-six university undergraduate students[1] who majored in English in a foreign studies university in China were asked to finish a B-to-A (English-to-Chinese) CI task when they had just started a one-year interpreting training programme (in the 2nd month, i.e. Stage 1) and after they had finished the training (in the 10th month, i.e. Stage 2). During this

Table 1. Average recommendations of 22 strategies in CI by 17 instructors of interpreting.

Strategy		Average score in descending order (SD)
1	preparing	5.00 (.00)
2	transformation	4.71 (.47)
3	visualisation	4.65 (.61)
4	compression	4.47 (.62)
5	explicitation	4.35 (.70)
6	taking advantage of cohesive and coherent devices in the source language (SL)	4.35 (.86)
7	anticipation	4.29 (.77)
8	addition	4.29 (.85)
9	reproduction	4.18 (.73)
10	adaptation	4.12 (.99)
11	personal association and involvement	4.06 (.97)
12	approximation	3.88 (.70)
13	using formulaic expressions	3.82 (.81)
14	inferencing	3.71 (1.11)
15	informing the client of an interpreting problem	3.47 (.94)
16	not repairing information unless it is critical	3.35 (1.37)
17	offering an optional translation in a parallel structure	3.06 (.83)
18	stalling	2.65 (1.12)
19	skipping	2.24 (.97)
20	substituting	2.00 (1.12)
21	word-for-word translation	1.88 (.99)
22	guessing	1.12 (.33)

academic year, the participants had four translation courses and four interpreting courses. For each interpreting course, the class time was 80 minutes ×16 weeks, exclusive of holidays. Besides, they were required to practice after class for twice as much as the class time. The student interpreters, who learned English as a foreign language in China, were generally unbalanced Chinese-English bilinguals. Before the interpreting training programme, they had learned English for 10 years and had passed the Test for English Majors Band 4 (TEM4), which is administered every year to English majors in China by the National Advisory Commission on Foreign Language Teaching in Higher Education and is recognised nationwide as proof of English proficiency (Cheng 2008; Jin and Fan 2011). Their average score in TEM 4 was 71.52 (SD = 5.33) (marked out of 100), which was higher than the national average 60.09.

4.2. Materials and procedure

4.2.1. Materials

A CI task was adapted from an eight-minute speech on a promotion of laptops for children[2]. The original speech was given by a native English-speaking male at an average rate of 143 words per minute. As the participants were unbalanced Chinese-English bilinguals and first-year student interpreters, the speech was divided into segments, with each consisting of two to three sentences. The segment length seems short when compared with general CI practice in Europe where each segment lasts for six minutes on average. However, the task was considered appropriate for the present participants based on three pieces of evidence collected from three tools: (1) a pilot study with 20 participants from the same population as the participants of the main study, (2) judgments on the task's difficulty

level from five experienced interpreting instructors who were working at the same university as our participants, and (3) a questionnaire on the appropriateness of materials after the task in the main study. Details could be found in Cai et al. (2015) that tested participants from the same population via the same materials.

4.2.2. Procedure of CI test

At Stage 1, the students took the CI test in a lab designed for interpreting training. During the test, they listened to one segment at a time. At the end of each segment, they were cued to start interpreting. Based on our pilot work, the duration allowed for the rendition of each segment was 1.5 times the duration of the segment itself. After another sound signalling the end of the interpreting time and a following brief interval, participants listened to a new segment. Participants were allowed to take notes and refer back to their notes. At Stage 2 when the student interpreters had received another eight months' interpreting training, the participants took the CI test again, with the above procedure repeated.

4.2.3. Scoring

Two interpreting instructors, who were also professional interpreters with years of interpreting experience, listened to recordings of the participant's interpreting output and rated their CI performance. The inter-rater coefficient was .95. The criteria of scoring, listed in Appendix 2, are the criteria of interpreting performance generally accepted in CI training programmes in China. A participant's total score consists of two parts: information accuracy and completeness ('Information' henceforth) taking up 67%, and TL grammar and appropriateness ('TL expressions' henceforth) taking up 33%.

4.2.4. Transcription

Two of the authors of the present paper were mainly in charge of the transcription quality. After rounds of discussion, they set up a set of transcription principles and trained a group of graduate students to transcribe the recordings according to these principles. One of the authors checked accuracy and consistency of all transcriptions.

4.2.5. Retrospection and interview

After the CI test at Stage 2, the participants took part in the retrospection and interview in a language lab individually. In the retrospection, they were required to report only what really happened during the CI test. Immediately after the retrospection, the interview session started. The interview was semi-structured, helping the participants recall more details of their interpreting process, particularly their rationale for using a certain strategy. Before the retrospection and interview, participants were briefed on the purpose of this session and were informed that what they said would be recorded. During the retrospection and interview, participants were free to control the computer, being allowed to play (back) or stop records of their own interpreting output (together with the SL input).

4.2.6. Strategy coding

Two of the authors identified and coded strategies based on the working definitions of the 22 strategies, the students' interpreting output, and their retrospective and interview protocols. After establishing a set of coding principles, the 2 authors coded 10 participants' data separately, discussed about their results of coding and revised the coding principles. With the revised principles, they re-coded the 10 participants' data, discussed about their differences until they reached a consensus. Afterwards, one of them coded the rest of the data twice. The inter-coder reliability was 0.92 ($p < 0.001$) and the intra-coder reliability was 0.96 ($p < 0.001$).

4.3. Results

4.3.1. Strategies used at different stages of training

As shown in Table 2, 21 strategies were identified in total, with one specific strategy (i.e. *using formulaic expressions*) documented in the literature but not found in our data, probably because the speech in the SL had few formulaic expressions. Table 2 lists the average frequencies of the 21 strategies at two stages and the ranking of frequencies at each stage. The average overall frequency of Type-A strategies was 20.26 (SD = 11.66) at Stage 1, which significantly increased to 31.02 (SD = 9.30) at Stage 2 with a strong effect size (Z = −5.48, p = .000, effect size r = −.51). By contrast, the average overall frequency of Type-B strategies

Table 2. Student interpreters' average frequencies of using different strategies at each stage, and statistical comparisons of each strategy between the two stages (N = 66).

	Average frequency (with SD) and relative ranking (R)					
Strategy	Stage 1	R	Stage 2	R	*Z*	*effect size (r)*
Type A						
explicitation	11.14 (7.37)	1	22.46 (7.43)	1	−6.64**	−.58
compression	2.70 (2.49)	2	0.74 (0.83)	6	−5.22**	.46
transformation	1.86 (1.65)	3	2.29 (1.60)	2	−1.29	−.11
reproduction	1.21 (1.09)	4	1.29 (0.67)	4	−0.80	−.07
visualisation	1.09 (2.10)	5	1.15 (1.93)	5	−0.76	−.07
taking advantage of cohesive and coherent devices in the SL	0.88 (1.44)	6	0.39 (1.02)	8	−3.26**	.28
adaptation	0.70 (0.88)	7	1.56 (1.15)	3	−4.26**	−.37
preparing	0.36 (0.69)	8	0.70 (0.68)	7	−2.71*	−.24
anticipation	0.26 (0.75)	9	0.29 (0.76)	9	−0.54	−.05
addition	0.06 (0.30)	10	0.15 (0.44)	10	−1.35	−.12
personal association and involvement	0.06 (0.24)	10	0.06 (0.30)	11	0.00	.00
Overall frequency	***20.26 (11.66)***	***/***	***31.02 (9.30)***	***/***	***−5.48*** **	***−.51***
Type B						
approximation	4.83 (3.71)	1	1.70 (1.41)	1	−5.08**	.44
stalling	1.30 (3.21)	2	0.46 (2.41)	2	−2.92**	.25
inferencing	0.99 (1.27)	3	0.44 (0.68)	3	−2.91**	.25
skipping	0.86 (1.08)	4	0.27 (0.54)	4	−3.80**	.33
offering an optional translation in a parallel structure	0.33 (0.64)	5	0.26 (0.47)	5	−0.77	.07
informing the client of an interpreting problem	0.23 (0.80)	6	0.05 (0.27)	7	−1.68	.15
not repairing information unless it is critical	0.06 (0.24)	7	0.06 (0.24)	6	0.00	.00
Overall frequency	***8.61 (7.12)***	***/***	***3.23 (2.83)***	***/***	***−5.62*** **	***.49***
Type C						
guessing	11.46 (6.39)	1	4.89 (3.66)	1	−6.71**	.58
word-for-word translation	2.41 (2.44)	2	0.24 (0.53)	3	−5.63**	.49
substituting	0.70 (1.07)	3	0.53 (0.73)	2	−1.03	.09
Overall frequency	***14.56 (7.48)***	***/***	***5.62 (3.87)***	***/***	***−6.86*** **	***.60***

was 8.61 (SD = 7.12) at Stage 1, which decreased significantly to 3.23 (SD = 2.83) at Stage 2 with a medium effect size (Z = −5.62, p = .000, effect size r = .49). Similarly, the average overall frequency of Type-C strategies, which was 14.56 (SD = 7.48) at Stage 1, decreased significantly to 5.62 (SD = 3.87) at Stage 2 (Z = −6.86, p = .000, effect size r = .60). At both stages, the overall frequency of Type A remained the highest, followed by the overall frequency of Type C and that of Type B.

As demonstrated in Table 2, the overall frequency of both Type-A strategies (20.26) and Type-C strategies (14.56) was more than 10 at Stage 1. Therefore, it would be useful to locate the most 'popular' Type-A and Type-C specific strategies and to further investigate how frequently these specific strategies were used at Stage 2 and why so.

Among the 11 Type A specific strategies, five (*explicitation, compression, transformation, reproduction*, and *visualisation*) reached a frequency above 1.00 at Stage 1. At Stage 2, there were two significant changes. First, the frequency of explicitation doubled (from 11.14 to 22.46, Z = −6.64, p = .000, effect size r = −.58), though it was already the highest among the Type-A strategies at the previous stage. Second, the frequency of compression dropped significantly (from 2.70 to 0.74, Z = −5.22, p = .000, effect size r = −.46). Thus, qualitative analyses are needed for these two strategies.

4.3.1.1. Explicitation. To find out why the participants used explicitation frequently at Stage 1 and even more at Stage 2, we examined six participants whose increases in the frequency were among the top two of all the participants. Each of these six students used explicitation at Stage 2 over three times more frequently than they did at Stage 1 (e.g. one student's frequency was 12 at Stage 1 and 37 at Stage 2). An investigation on when and how these participants employed the strategy of explicitation revealed two possible reasons behind the doubled frequency of this strategy at Stage 2. First, the participants became more audience-oriented at Stage 2 and thus eager to transmit information adequately at this stage. The example in Table 3 illustrates how the use of explicitation (the underlined part) at Stage 2 makes the underlying logic in this segment more explicit. Second, the participants may understand the SL input better at Stage 2, and they were able to make a more explicit rendition. The example in Table 4 demonstrates that the participant did not understand the SL message at Stage 1, so there was no way to use the strategy of explicitation. To sum up, the high frequency of explicitation at Stage 2 and its significant increases from Stage 1 to Stage 2 indicate participants' priority given to information accuracy and completeness, and their improved SL comprehension at Stage 2.

Table 3. Participant 081's use of explicitation (underlined part) at Stage 2 instead of at Stage 1 for more explicit rendition of information.

SL segment	They are highly protected. They are not government property, they are not school property. They belong to the kids.
Interpretation at Stage 1	*他们被很好地保护着。呃, 他们不是政府的财产, 不是学校的财产, 他们是孩子们的。*(They are well protected. Uh, they are not the government's properties. They are not the school's properties. They belong to the kids.)
Interpretation at Stage 2	*他们被很好地保护起来, 因为他们不是政府的财产, 也不是学校的财产, 这些都是属于孩子们的。*(They are protected very well *because* they are not the government's properties or the school's properties. These all belong to the kids.)
Report about Interpretation at Stage 2	*加上'因为'以后, 逻辑更清晰一些, 这样听众也更好理解。*(With 'because' added, the logic becomes more explicit, and thus the audience could understand better.)

Table 4. Participant 036's use of explicitation (underlined part) at Stage 2 instead of Stage 1 due to more sufficient SL comprehension at Stage 2.

SL segment	It's time to rethink these even though it's human nature.
Interpretation at Stage 1	*我们必须重新思考人类的本性。*(We must think about human nature again.)
Interpretation at Stage 2	*即使推陈出新是人类的本性, 现在也是我们重新考虑这个问题的时候了。*(Although we *innovate* out of nature as a human being, now it is the time for us to think about this problem again.)
Report about Interpretation at Stage 1	*前一部分的长句不太理解, 然后就影响了这句话的理解, 特别是第二个it指代的内容。*(As I did not understand the long sentence in the previous segment, my comprehension of this sentence was affected, in particular what the second 'it' refers to.)

4.3.1.2. Compression. In order to understand the significant decrease in the frequency of compression from Stage 1 to Stage 2, we examined three participants whose decreases in the frequency were among the top three. The retrospection and interview protocols of these participants provide clear indications of why this strategy was used less frequently at Stage 2. When interpreting the segment shown in Table 5, the participant reported that he had caught all the SL messages at Stage 1 but did not have enough time to deliver them all, so he decided to transmit only what he considered important. By contrast, the same participant not only felt that he had more time at Stage 2, but also considered it safer to interpret all the information, including both the critical ideas and the details not so important, and thus he did not compress any information this time. Table 6 illustrates another typical case. The participant explained that he did not compress the repetitions in the SL input at Stage 2 because at this stage, he believed that using compression may reduce the original effect of those repetitions in the SL. To sum up, the student interpreters in the present study did not use the strategy of compression at Stage 2 as much as at Stage 1 mainly because they had the time and resources at Stage 2 to interpret all the information in the input due to their improved interpreting efficiency. If they thought it better to faithfully transmit the original information heard so as to achieve whatever effect in it, they would not use the strategy of compression.

Among the three Type-C specific strategies, two (guessing and word-for-word translation) had a frequency above 1.00 at Stage 1. Consistent with the general tendency, these two strategies significantly decreased in their frequencies at Stage 2, with

Table 5. Participant 054's use of compression (underlined part) at Stage 1 but not at Stage 2 mainly due to a stronger feeling of time pressure at Stage 1.

SL segment	We want to make big displays, 0 defects, perfect color, very bright, large.
Interpretation at Stage 1	*我们要做大显示器, 做出在坏点□亮度等性能方面完美无缺的产品。*(What we aim to do is to make big displays, to make *perfect products in aspects of defect, color, etc.*)
Interpretation at Stage 2	*现在我们的目标是尽量把显示器做大, 呃, 尽量消除坏点, 将颜色做得非常的完美, 使得它们有足够的亮度, 而且够大。*(Now our goal is to make displays as large as possible, uh, to try our best to remove the defects, to make colors perfect, and to ensure they are bright enough and large enough.)
Report about Interpretations at Stage 1 and Stage 2	*第一次感觉时间不够, 所以这里只能精简。其实那只是一些细节描述, 不太重要。第二次和第一次的感觉不一样, 感觉没那么赶了, 那我想只要是我能听到的, 我想还是尽量译出来, 忠实原文吧。*(In the pre-test I felt I did not have enough time, and so I had to compress. They are, in fact, descriptions of details and are not very important. The post-test was different, and I felt I was not in such a hurry this time. Therefore, I thought it would be better to deliver all the information I had caught, and I'd better be loyal to the SL.)

Table 6. Participant 014's use of compression (underlined part) at Stage 1 (the underlined part) but not at Stage 2 due to a stronger concern about keeping the SL style at Stage 2.

SL segment	[When writing a computer program] we do this and we add that and we embellish this and we embellish that.
Interpretation at Stage 1	*我们不断地修改□美化电脑程序。*(We *kept editing and embellishing* the computer program.)
Interpretation at Stage 2	*我们不停地在程序中加这个, 加那个, 不断地美化这个, 美化那个。*(We kept adding this and adding that, embellishing this and embellishing that.)
Report about Interpretation at Stage 2	*他原来就是这么说的, 我觉得这是他的一种语气, 他想强调加了很多不必要的东西, 所以我想跟他一样重复, 体现他的语气。*(This is just the way he expressed himself. I feel this is his tone, and he wants to emphasise that a lot of unnecessary features are added. Therefore, I wanted to repeat like he does, showing his tone.)

guessing from 11.46 to 4.89 ($Z = -6.71$, $p = .000$, effect size $r = -.58$) and word-for-word translation from 2.41 to 0.24 ($Z = -5.63$, $p = .000$, effect size $r = -.49$). These results indicate that the students had to some extent followed interpreting instructors' recommendations, and the frequency decrease in Type-C strategies was due to participants' improved SL comprehension at Stage 2.

To summarise, the above analyses indicate that acquisition of interpreting strategies was plausible and, after more interpreting training at Stage 2, the acquisition of interpreting strategies was successful to some extent, as shown by the significant increase of the use of Type-A strategies and the significant decrease of the use of Type-B and Type-C strategies. Apart from interpreting instructors' recommendations on interpreting strategies, other factors such as students' concern with 'information accuracy and completeness' in interpreting and their improved SL comprehension are also part of the reasons underlying the increase or decrease of the use of specific strategies (e.g. explicitation, compression and guessing). In addition, at Stage 2, they may have reached a certain critical point of acquiring interpreting strategies, and were more capable of making decisions on which strategy to use or not to use.

4.3.2. Strategy use and interpreting performance

As shown in Table 7, the participants' interpreting performance as indicated by the overall CI test score ('Overall score' henceforth) improved significantly from Stage 1 to Stage 2 with a medium effect size (from 60.89 to 66.24, $Z = -4.63$, $p = .000$, effect size $r = -.40$). A closer inspection shows a significant increase in the sub-score of Information from Stage 1 to Stage 2 (from 37.01 to 41.99, $Z = -5.15$, $p = .000$, effect size $r = -.45$). As for the sub-score of TL expressions, however, there was no improvement ($Z = -.77$, $p = .359$, effect size $r = -.08$).

Table 7. Student interpreters' interpreting performance at two stages, and statistical comparisons of the performance between the stages (N = 66).

	interpreting performance (with SD)			
	Stage 1	Stage 2	*Z*	*effect size (r)*
sub-score 1: Information	37.01 (11.21)	41.99 (9.59)	−5.15**	−.45
sub-score 2: TL expressions	23.89 (4.29)	24.25 (4.46)	−.77	−.08
Overall score	***60.89 (14.76)***	***66.24 (13.13)***	−4.63**	−.40

**: $p < 0.01$; 'Information': information accuracy and completeness.

Table 8. Correlations (r values) between use frequencies of the three types of strategies and interpreting performance (Overall score and two sub-scores) at two stages (N = 66).

Strategy (use frequency)	Interpreting performance at Stage 1			Interpreting performance at Stage 2		
	Overall score	Information	TL expressions	*Overall score*	Information	TL expressions
Type A	.39**	.38**	.41**	.44**	.40**	.48**
Type B	−.02	−.04	.04	−.04	−.08	.09
Type C	−.40**	−.41**	−.28*	−.48**	−.46**	−.42**

**: $p < 0.01$; *: $.01 \leq p < 0.05$.

As Table 8 illustrates, at Stage 1, the participants' overall interpreting performance had significant positive correlation with their use of Type-A strategies ($r = .39$, $p = .001$), and significant negative correlation with their use of Type-C strategies ($r = -.40$, $p = .001$). This contrast was not only maintained at Stage 2 but also somewhat enlarged, with both the positive correlation ratio and the negative one raised (respectively, from .39 to .44 and from −.40 to −.48). A similar pattern was found in the changes of the two sub-scores, i.e. Information and TL expressions (see Table 8 for details).

The correlation results indicate that as interpreting training proceeded, interpreting performance became more closely related to both Type-A strategy use and Type-C strategy use. At Stage 1, the use of Type-A strategies explained 15.2% of the variances of interpreting performance (.39 × .39 = .152 = 15.2%), and that of Type-C strategies 16% (- .40× – .40 = .160 = 16%). At Stage 2, the use of Type-A strategies explained 19.4% of the variances of interpreting performance (.44 × .44 = .194 = 19.4%), and that of Type-C strategies 23% (.48 × .48 = .230 = 23%).

5. General discussion

The main purpose of the present study was to investigate the acquisition of interpreting strategies by student interpreters. Two major findings answered the two research questions raised in the introduction. First, compared with Stage 1, and after more interpreting training at Stage 2, our participants used more frequently the strategies that interpreting instructors recommended (e.g. explicitation), less frequently the strategies that interpreting instructors advised them to use with caution, and also less frequently the strategies that interpreting instructors did not recommend (e.g. guessing) (see Table 1). The overall frequency of the recommended strategies was 31.02 at Stage 2 (compared to 20.26 at Stage 1), and a large portion of that strategy use came from just one strategy 'explicitation', which was observed 11.14 times at Stage 1 and 22.46 times at Stage 2. For the strategies not recommended by interpreting instructors, the corresponding frequency decreased from 14.56 at Stage 1 to 5.62 at Stage 2, and again a large portion of that decrease came from just one strategy 'guessing', which was observed 11.46 times at Stage 1 and 4.89 times at Stage 2. The results indicate that at least during these earlier stages of interpreting training, there was a strong relationship between interpreting instructors' recommendations and students' strategy acquisition.

In fact, the relationship between our student interpreters' strategy use and interpreting instructors' strategy recommendations was further supported by the students' reports in their interviews. Table 9 illustrates two examples.

Table 9. Participant 034's report on how she knew the strategies used in the CI test, and Participant 095's report on how her beliefs of using strategies were formed.

Interview with Participant 034	Interviewer: *你是怎么知道这些策略或者技巧的*□(How did you know these strategies or skills?) Interviewee: *其实这些都是课堂上的。我考试之前还把那个笔记给翻了一遍。*(They were all taught in class. To prepare for the test, I read through my notes from the beginning to the end.)
Interview with Participant 095	Interviewer: *你认为应该如何使用口译策略*□(How do you think we should use interpreting strategies?) Interviewee: *对比了老师对策略的使用, 我认为他们就是用得好。他们遇到困难时, 就会故意放慢语速, 而不是停顿。另外, 他们翻译不会字对字地遵循原文*□ (When I compared my strategy use with the instructors', I think they use strategies more properly. When they are faced with difficulties in interpreting, they will intentionally slow down in order to avoid silent pauses. Besides, they will not translate the SL input word for word.)

Our second major finding is that student interpreters' interpreting performance positively correlated with how frequently they used the strategies recommended by interpreting instructors, and negatively correlated with how frequently they used the strategies not recommended by the instructors, especially at Stage 2 (see Table 8). The percentage of variances of interpreting performance that could be explained by the use of strategies recommended increased from 15.2% at Stage 1 to 19.4% at Stage 2, and the corresponding percentage for the use of strategies not recommended increased from 16% at Stage 1 to 23% at Stage 2. In other words, how well the students performed in the interpreting task was partly due to their use of interpreting strategies, which was especially true at Stage 2. This finding suggests that the appropriate use of interpreting strategies is indeed significant for interpreting performance.

Besides the two major findings answering the two research questions, one more significant finding is the different developmental trends in the students' use of explicitation and compression. Although the two strategies, respectively, ranked first and second in frequency among the recommended strategies at Stage 1 (Table 2), the frequency of explicitation doubled from 11.14 at Stage 1 to 22.46 at Stage 2, while the frequency of compression dropped significantly from 2.70 at Stage 1 to 0.74 at Stage 2. This finding may seem contradictory to the fact that both strategies were recommended by interpreting instructors, but it can be explained by the students' retrospective and interview protocols. Specifically, the protocols indicate that *these students, as unbalanced bilinguals in their first year of interpreting training, were mainly concerned with better information accuracy and completeness in interpreting performance*. Because of this concern, the students used explication extensively at Stage 1 and even more so at Stage 2 so long as they could get the messages (Tables 3 and 4). And because of this concern, the students explained that they tried to be as faithful as possible in their renditions, as long as they had the time to transmit everything, leading to fewer uses of compression at Stage 2 than at Stage 1 (see Tables 5 and 6). In a word, the quantitative and qualitative data indicate that our students' use of strategy (including a frequency increase in explicitation and a decrease in compression at Stage 2) aimed at better interpreting performance which was mainly reflected in better information accuracy and completeness (see Table 7). This conclusion is consistent with the second major finding in the present study (i.e. significant correlation between strategy use and interpreting performance).

Since both explicitation and compression were recommended by interpreting instructors, their contrastive developmental trends suggest that frequency itself is not the whole story in

the acquisition of interpreting strategies. The *appropriate* use of each strategy is the ultimate goal. For the student interpreters in the current study, 'appropriateness' was mainly determined by their ability to achieve better information accuracy and completeness in interpreting performance. If they did not have the time to transmit everything (Table 5), they may use compression, but their use of compression may differ drastically from the use of compression by professionals who must be more capable of judging the relative importance of different pieces of information. Different from our beginning student interpreters who were overwhelmingly concerned with information accuracy and completeness, professional interpreters may be able to take more into consideration, such as a balance between explicitation and succinctness because explicitation may lead to redundancy. Indeed, it has been shown that expert interpreters generally use compression more frequently than explicitation (Bartłomiejczyk 2006). Since our student interpreters (even at Stage 2) were at best novice interpreters, it will be interesting to explore when, how and why the developmental curve starts to drop for explicitation and to increase for compression, which is a topic for future research.

6. Conclusion

The present study empirically examined student interpreters' developmental features in interpreting strategy use in the task of CI and the relationship between strategy use and interpreting performance. The results indicate that, for our participants who were tested at the beginning and end of their first year of interpreting training, the strategies recommended by interpreting instructors were used more frequently after interpreting training, and those not recommended by the instructors were used less frequently after interpreting training. In addition, the students' use of strategies recommended by interpreting instructors was positively correlated with interpreting performance, while the use of strategies which they were advised to avoid was negatively correlated with interpreting performance, especially at the end of the training. Retrospective and interview data indicate that these student interpreters were mostly concerned with information accuracy and completeness in their renditions, which could account for their use of interpreting strategies and its changes after interpreting training (including a frequency increase in explicitation and a decrease in compression at Stage 2). In a word, the present study indicates that strategy training was effective and that strategy acquisition was plausible.

Notes

1. The participants of the present study were exactly the same group of participants as in Dong and Lin (2013) that studied their parallel processing of the target language (TL) during SL comprehension. And the English-to-Chinese CI task was the same as used in Cai et al. (2015). For better readability, major information of the participants and of the task is repeatedly reported here.
2. The present paper used the same materials both in the pre-test and the post-test mainly due to three reasons. First, strategy use, which is closely related to SL expressions and messages (e.g. Kohn and Kalina 1996; Pöchhacker 2004), cannot be compared between two tests of CI (especially with quantitative analyses) if the test materials are different. Second, topic familiarity was not likely to cause significant difference in the participants' performance between the two tests since the topic of the CI task used (laptop promotion) was relatively common, and since the

participants were provided with preparation materials before both tests. Third, with an interval longer than eight months between the two tests, it was unlikely that the participants would remember significant details of the task in their first test, especially when they did not know that they would have the same test again.

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Appendix 1. Definitions of strategies in consecutive interpreting (with relevant literature in brackets at the end of each strategy)

(1) *Adaptation*: adjusting word choices in TL output on the basis of context when a literal translation of the SL expressions is considered inappropriate in the TL or in the target culture (Kohn and Kalina 1996);

(2) *Addition*: adding words or clauses in the TL output in order to complement an SL message that may be difficult for the audience to understand (Kohn and Kalina 1996; Wang 2012).

(3) *Anticipation*: anticipating upcoming SL information or expressions according to the intra-lingual or extra-lingual context (Bartłomiejczyk 2006; Kohn and Kalina 1996; Pöchhacker 2004; Riccardi 1996);

(4) *Approximation*: paraphrasing or using an approximate translation when the interpreter cannot access the 'ideal' translation in time (Bartłomiejczyk 2006, 160; Bertone 2011; Kohn and Kalina 1996; Li 2013);

(5) *Compression*: expressing succinctly and concisely in the TL by removing redundancy (Chernov 2002; 'omission' in Bartłomiejczyk 2006, 161; 'skipping' or 'to skip' in Moser-Mercer 1997, 257), by compressing loose structure ('reduction' in Wang 2012, 206), or by using pronouns and other pro-forms in the output instead of nouns (Chernov 2002);

(6) *Explicitation*: making what is conveyed in the SL more explicit in the output of the TL by, for example, using connectives to explicitate implicit or vague logic or employing nouns in the TL for a corresponding pronoun in the SL (Baker 1996; 'addition' in Bartłomiejczyk 2006; Kenny 2005; Olohan and Baker 2000; Tang and Li 2016; 'addition of cohesive devices' and 'explicitation of intended meaning' in; Wang 2012, 202–203);

(7) *Guessing*: inventing a speech segment so as not to pause or leave sentences unfinished when failing to catch, comprehend, or recall the original SL message ('parallel reformulation' as in Gile 2009, 211 and in; Bartłomiejczyk 2006, 161);

(8) *Inferencing*: reconstructing SL information according to context, background knowledge, or world knowledge (Bartłomiejczyk 2006; Gile 2009; Seleskovitch 1978b);

(9) *Informing the client of an interpreting problem*: using verbal or non-verbal language to indicate that the interpreter cannot receive or understand the SL or they cannot find a translation equivalent. This is usually followed by asking the speaker to repeat or asking the audience to refer to other information sources if allowed (Gile 2009; Herbert 1952);

(10) *Not repairing information unless it is critical*: intentionally giving up repairing mistakes when these mistakes are not critical ('no repair' in Bartłomiejczyk 2006, 164, 170; Moser-Mercer 1997). When identifying this strategy, coders not only compare the SL input and the TL output (to locate mistakes) but also triangulate the mistake they find with the interpreter's retrospective protocols and interview data to decide whether the mistake was indeed left unrepaired as a strategic move by the interpreter;

(11) *Offering an alternative translation in a parallel structure*: offering more than one translation in a parallel structure when the input has more than one possible or popular translation; or when the interpreter offers a repair to a mistake in a parallel structure so as to reduce the harm done on the delivery of output (Herbert 1952; Kohn and Kalina 1996; 'repetition' in Li 2013, 113; Yang and Deng 2011).

(12) *Personal association and involvement*: imagining oneself as the speaker so as to better understand the speaker's intention and to translate more efficiently (Bartłomiejczyk 2006; Seleskovitch 1978a);

(13) *Preparing*: making pre-task preparation for an interpreting task, including but not limited to exploring the background of the speaker and the speech and getting familiar with technical terms or expressions in the speech (Bartłomiejczyk 2006; Kalina 1994; Pöchhacker 2004);
(14) *Reproduction*: using SL expressions directly in the TL (e.g. specific terms like *Word, Excel, PowerPoint*) when these expressions are more familiar to the audience than their translation equivalents (Bartłomiejczyk 2006; Gile 2009);
(15) *Skipping*: omitting a certain SL segment when failing to understand this segment or failing to find the proper translation (Li 2013; Riccardi 1996);
(16) *Stalling*: buying time to recall SL messages, to read notes, or to look for a proper TL expression by slowing down the speech rate, using filled pauses, adding parentheses or connectives that do not exist in the input, or by employing long translations deliberately (Li 2013; Pöchhacker 2004; Riccardi 2005; Setton 2002; 'delaying the response' as in Gile 2009, 201 and as in; Bartłomiejczyk 2006, 160);
(17) *Substituting*: paraphrasing or repeating previous interpreting output instead of translating the current SL segment so as to avoid embarrassment, when failing to understand the SL message (Kirchhoff 2002; Kohn and Kalina 1996);
(18) *Taking advantage of cohesive and coherent devices in the SL*: making use of cohesive and coherent devices in the SL in order to improve the efficiency of SL comprehension (Kalina 1994);
(19) *Transformation*: departing from the word order, sentence structure or sentence order in the SL and expressing the meaning of the input with a different word order, sentence structure or sentence order in the output (Bertone 2011; Kalina 1994; Kohn and Kalina 1996; Moser-Mercer 2000; Riccardi 1996; 'syntactic transformation' in Bartłomiejczyk 2006, 162);
(20) *Using formulaic expressions*: employing formulaic or routine expressions in the TL so as to improve interpreting efficiency (Riccardi 1996, 2005);
(21) *Visualisation*: generating mental pictures of the SL message in order to recall the SL information more efficiently (Bartłomiejczyk 2006; Jones 2008);
(22) *Word-for-word translation*: translating (almost) word by word and joining these fragments of translation linearly without understanding the meaning of the input sufficiently or without considering the grammaticality, cohesion or coherence of the output (Yang and Deng 2011). This strategy is different from the strategy called 'transcodage' or 'transcoding' mainly used in SI (Bartłomiejczyk 2006: 162; Gile 2009, 208). The use of word-for-word translation in CI usually results from failures in SL comprehension, while transcodage/transcoding is mainly used to deal with the input ephemerality and output immediacy in SI.

Appendix 2. Rating criteria of consecutive interpreting performance

	90–100	80–89	70–79	60–69	Lower than 59
Information Accuracy and Completeness (67%)	Reproduced all the information (as well as the exact tone and style) in the SL	Reproduced all the information in the SL except for a few insignificant details, and in a tone and style generally consistent with the tone and style in the SL	Reproduced key information in the SL, with a few omissions and mis-intepretations, lacking ideal accuracy and completeness	Made several major mis-interpretations and/or omissions, resulting in some degree of incoherence, but with acceptable accuracy and completeness	Made serious mis-interpretations and/or omissions, and misrepresented the content and intension of the SL
TL Grammar and Appropriateness (33%)	Appropriate use of the TL, with no grammatical and lexical mistakes; very fluent in TL expressions	Proper use of the TL, with very few grammatical and lexical mistakes; fluent in TL expressions	Some literal translations unidiomatic in the TL, with several grammatical and/ or lexical mistakes; noticeable disfluencies	Many literal translations unidiomatic in the TL; major disfluencies	Incorrect use of the TL, with many grammatical and lexical mistakes, resulting in difficulty in transmitting SL information to the audience