

Making Sight Translation Dynamic: Eliciting Summarization as a Strategy for Simultaneous Interpretation

Kun Yan^{*} · Zhongwei Song^{}**

Focusing on the specific exercise intended for eliciting summarization strategy to mitigate content omission for novice SI trainees, this article captures and analyses relevant longitudinal data from an action research conducted to investigate the extent to which sight translation (ST) facilitates skill development and transfer for simultaneous interpreting (SI) and to explore what specific strategies novice SI students could elicit from doing a dynamic type of sight translation (DST). Based on the action research conducted with three groups of student participants enrolled in Master of Conference Interpreting Program, a one-year program in 2014, 2015 and 2016 respectively, this article specifically reports the actions in eliciting the strategy of summarization via DST exercise and examines how the students responded to such a new teaching tool in a teaching environment. While the finding confirms that the progression from declarative knowledge to procedural knowledge takes time, it also supports that DST can be a useful driver of skill development and strategy application for novice interpreters at the beginning of conference interpreting training due to its similarities to SI.

Keywords: Simultaneous interpreting teaching, action research, sight translation, dynamic sight translation, summarization strategy

* Department of Linguistics, Macquarie University, Lecturer

** Department of Linguistics, Macquarie University, Lecturer

1. Introduction

This article reports investigation as a part of an action research designed to explore the extent to which sight translation (ST), a common interpreting exercise tool facilitates skill development and transfer for simultaneous interpreting (SI). Considering that the one common difficulty facing the novice students would be content omission due to cognitive overload, this article focuses on how the students have been prompted to apply summarization strategy, a useful strategy for all modes of interpretation under the help of newly designed exercise tools. Specifically, it is to explore how novice SI students can be made aware of the necessity of using summarization at an initial stage of SI training and how they could be elicited from doing a variant of ST-dynamic sight translation (DST). DST is designed based on the similarities of ST in cognitive processes to SI. By dynamic, as opposed to traditional ST, we refer to the newly added time constraining features to traditional ST that render ST closer to SI in cognitive demands for information processing. In other words, while keeping the essential nature of ST intact, which is immediacy in oral rendition of text written in one language into another language (McDonald & Carpenter, 1981: 231), the newly designed DST is manipulated to such an extent that, when uploaded, a text can appear on screen unfolding itself segment by segment or even word by word for students to interpret; and in the same vein, it can either disappear all at once or fade away gradually in a set time (according to the progress of students in skill development). Unlike traditional ST, DST is no longer an interpreter-paced activity, thus making itself more resemblant to SI.

Using skill acquisition theory and cognitive theories, this article firstly justifies the potential didactic effectiveness of DST in SI training and importance of using summarization strategy. Further, this article reports the actions of using DST to elicit the use of summarization strategy and longitudinal data from three groups of student participants newly enrolled in Master of Conference Interpreting, a one-year program of Macquarie University from 2014 to 2016¹). Finally, the findings from analysing

1) All the students enrolled met a prescribed linguistic competency threshold as following: <https://mq.edu.au/study/find-a-course/courses/master-of-conference-interpreting#entry-requirements>

these data are reported with limitation of the study discussed.

2. DST design for the purpose of practising summarization in SI

The rationale of DST design includes two folds: the conformity with cognitive pattern of acquiring complex skills in terms of task comparison between DST and SI, and the significance of summarization in SI.

2.1. DST as a step for skill transfer

According to the cognitive load theory, initial training with learning tasks that represent the full complexity of an authentic task can hardly succeed, because the complexity can easily overload learners' cognitive system (Mayer & Moreno, 2003; Paas, Renkl & Sweller, 2003; Paas & van Gog, 2009; Sweller, 1994; Wickens et al., 2013), thus negatively affecting learning, performance and motivation (Salden, Paas & van Merriënboer, 2006; Sweller, van Merriënboer & Paas, 1998).

Such principle can be particularly applicable in teaching of SI which is deemed a cognitively demanding task given the extremity of time pressure and the simultaneity of listening and interpreting occurring in parallel sub-processes (Pöschhacker, 1994, 1995). Its cognitive demands are also characteristically manifested in skills and strategies involved in the processes (Lonsdale, 1997). Therefore, it can be a crucial time when students are initially introduced to the mode of SI. Imposing SI on them without proper preparation may lead to unnecessary frustration and demotivation, given the complexity of the task and the lack of integrated skills in these students (Gile, 2005).

Instead, a great number of researchers show their support for a skill-based componential approach (Behr, 2014; Chmiel, 2006; Camayd-Freixas, 2011; Gile, 2009; Kalina, 1992; Kutz, 1992; Lambert, 1992; Patrie, 2004; and Sandrelli, 2005, just to name a few). The exercises proposed by them are in the same spirit of the componential skill approach that serve as a "preparatory phase" (Sandrelli, 2005: 3) to develop and forge specific skills separately before the whole task of SI is introduced. Kalina (2000:

20) justifies this approach by arguing that: “[it is helpful] if this complex activity (SI) is to be decomposed in individual processing steps or stages to be taught separately. Only then does it seem reasonable to expect students to cope with the real task in its entire complexity”. To reinforce her view, Moser-Mercer (2008: 14) echoes that “...breaking down of the interpreting process into sub-tasks which can be tackled one by one and ultimately be brought together again when performing the whole task” or “structuring of sub-tasks” can be an effective method for skill acquisition.

To make sure the skills practiced in the sub-tasks can also function in SI, conditions of skill transfer must be available. When a skill is practiced and obtained in training task A, such skill can continue to be available in task B if it is also a subskill in task B (Vanlehn, 1996: 532). In achieving such effect of skill transfer, the more two tasks share in knowledge and skill components, the better (Singley & Anderson, 1989). Besides, the transfer efficacy is higher when the transfer flows from easier to more difficult tasks (Stevens et al., 2012). Therefore, to maximize the effect of transfer from Task A to B, the prerequisite is that Task A should share knowledge with Task B as much as possible and it should be cognitively easier than Task B. At this point, the DST comes in as a useful tool based on its proximity to SI in terms of cognitive components included and skills required.

2.2. Design of DST to simulate SI

Although traditional ST has long been commented and used in SI teaching (Donovan, 2002; Gile, 2005; Pöchhacker, 2013; Sandrelli, 2005; Setton & Dawrant, 2016; Yan, 2019; Weber, 1984) due to its resemblance with SI in terms of cognitive processes and skill components, its value is limited and even becomes sceptical primarily on two grounds: 1) the constant availability of complete input text reducing the external time pressure; and 2) the lack of input/output channel interference (Gile, 1997, 2009; Lambert, 2004; Viezzi, 1989). Despite the second concern arising from the inherent and unchangeable characteristic of ST, the concern about time pressure can be addressed by tweaking the information presentation in ST. With continuous segments of in-coming information to be analysed and translated in SI, the input speech features linear and partial presentation of information segments and the

evanescence of input information, thus requiring simultaneity in comprehension and external-paced delivery (Baddeley, 2003; Bajo, Padilla & Padilla, 2000). To simulate these input features in ST, dynamic textual display can be adopted (Song, 2010). The core is to change the constant input text availability into evanescent, imposing time limit on information analysing and interpretation rendition in ST.

The term “dynamic” refers to the textual display on screen with the appearing and disappearing effects available in the function of animation setting provided in PowerPoint. Included in dynamic display are two features: 1) the dynamicity level of display; and 2) the rate of unfolding text and the interval time between the unfolding and fading of text to keep the processing of textual information going only forward in ST and discourage backtracking and self-correction, thus resembling SI (Viaggio, 1995: 35).

The dynamicity level of display refers to the pattern a text set to appear and disappear visually, which simulates SI input to various extents. A text can either appear all at once or unfold segment by segment or even word by word; and it can disappear all at once or fade away gradually after its appearance. The effects of gradual appearance/unfolding simulate the linear and partial input presentation in SI, and those of disappearance is an attempt to replicate the evanescence of audio input information to a certain extent.

2.3. The importance of summarization in SI

Moser-Mercer (2000: 340) considers that a novice should have “tactic learning... (to) learn specific rules for solving specific problems”. The use of strategies, as research shows, is associated with skill levels of interpreters. De Feo (1993) conducted an experiment involving both interpreting students and professional interpreters and found choices of strategy and outcomes of strategy use varied between the two groups due to the different skill levels and expertise. As it was also discovered, however, to relieve cognitive load, both students and professional interpreters use strategies to simplify the production.

Summarization, among such strategies, refers to the act where several propositions are merged into a summarized proposition (Tryuk, 2010: 190) to simplify the output. This strategy requires skills in identifying multiple propositions before merging them

by extracting the relevance and delivering the most essential message. Researchers explicitly acknowledge it as a strategic approach to communicate complex ideas or dense information more efficiently and effectively (Leeson, 2005; Setton & Dawrant, 2016). Even though both professionals and students used summarisation, the professional interpreters favour subordination and tend to chunk up propositions by segment or clause (De Feo, 1993), whereas the students are less successful in extracting the meaning of main ideas for summarization (Setton & Dawrant, 2016).

One possible cause for the students' failure in meaning extraction in SI is that they are inclined to overly segment the input information during the online processing for comprehension, making the segments too short to contain adequate information when their translation is enunciated (Riccardi, 2005). As a result, students have no time to identify the relevance among the segments and even have no alternative but to leave some segments behind in order to keep up.

To address those issues, summarization can help streamline information to be delivered. While encouraging intra-segment information processing to go beyond words, it also helps with necessary inter-segment integration.

To practice summarization strategy with didactic tools, Viaggio (1992) proposes ST-based exercises to develop the relevant skills, including sight-compression and ST-gist, which were also suggested by Setton & Dawrant (2016) as on-line compression and on-line summarizing exercises that are deemed to be particularly useful in practicing the relevant skills for SI. These exercises of various types intend to steer the students' processing focus away from individual lexical items to larger meaning units involving one or more propositions, supported by skill components enabling analysis of meaning units and identification of primary information. Since novice students are always on the verge of or in cognitive saturation, it is thus hypothesised that practice of this strategy could be an immediate reliever to them and should be discussed and practiced early in training.

2.4. DST design for practicing summarization

To streamline incoming information dynamically by the means of summarisation is centred on practice of comprehension-related skills. Receptive competence, i.e.

analysis and comprehension of the source text, as Kalina (2000) argues, paves the way for the rest of interpreting process, and therefore calls for focused training on the comprehension component at the beginning. Setton (2006: 64) maintains that summarising is a good practice for “detachment” techniques in SI, helping students to quickly grasp the meaning and intention from the surface structures of texts.

In this vein, “unilingual” or “intra-language” tasks were suggested to practise summarizing for developing comprehension skills (Anderson, 1994; Malakoff and Hakuta, 1991), which does not require the detailed transfer of source information into the target language, thus allowing students to allocate more mental resources to information analysis and consolidate the relevant skills. This is well reflected in Baxter’s (2014) design of integrated synchronised ST exercises.

For the present design, however, the acknowledged value of practising summarization in developing comprehension skills is supplemented by the dynamic features added, which brings in a new dimension characteristic of externally driven time pressure and makes the exercises more pro-SI. The integrated exercises are planned to be practiced for the first two or three weeks of teaching and learning. With texts dynamically appearing and disappearing on the screen resembling SI in tempo, students are ushered to quick comprehension in a linear way. In this design, the display patterns of appearance and disappearance are combined in different ways to generate different levels of textual dynamicity, i.e. Level 1 to Level 3, respectively, as shown in Table 1. The display patterns are sequenced with a view to constituting incremental progressiveness of textual dynamicity.

Table 1. List of text display patterns for DST

Dynamicity Level	Textual Display Action	Display Pattern
Level 1	Appear	Unfold all at once
	Disappear	Fade away gradually
Level 2	Appear	Unfold gradually
	Disappear	Fade away all at once
Level 3	Appear	Unfold gradually
	Disappear	Fade away gradually

The time intervals between appearance and disappearance and the rates for textual unfolding and fading can be set at the discretion of the instructor to fit the stages of skill acquisition. With the input rates ranging from 90-130 words/minute, which makes backtracking and correction of interpretation less possible, students have to develop skills to adjust to the visual reception, among which strategy use is most likely.

3. Action research design and implementation

3.1. Framework of action research design

To include DST in the class teaching in order to test its efficacy, a pedagogical action research was followed, featuring disruptive, collaborative and democratic, and cyclical arrangements. By disruptive we mean the research is designed to be change driven, seeking innovation to the existing knowledge and practice, allowing for adjustments and change to “teaching actions” during and after each round.

By collaborative and democratic, the research is thus managed to include and consider different perspectives and the interpretation of the multi-source inputs is acknowledged to be open to possible subjective bias. Specifically, the source of data mainly derived from the feedback of the participants where qualitative data including students’ reflective journals, three questionnaires and one interview were the main source of assessment. Such assessment aims at integrated analysis of individually self-rated cognitive loads and performances by the students themselves. In addition, the data also include performance analysis of three tests conducted respectively at the beginning, mid-way and end of the first semester and instructor’s in-class observations during the teaching-learning interaction. The two sets of data have jointly contributed to the integrated analysis leading to conclusions of the research.

In regard to cyclicality, the research involved three upwardly iterative cycles, with data collected from the teaching and learning interaction in the first cycle leading to adjustments of hypotheses and improvements in the following two cycles, thus establishing a more comprehensive understanding of the value as well as limitations of

the designed DST exercises in developing strategy of summarizing in SI teaching.

3.2. Implementation of action research

Three rounds of actions have been implemented spanning over three academic years from 2014 to 2016. In each round, the teaching and learning action took place in the first semester of each academic year and the same timeline was followed as it is outlined in Table 2. The teaching was officially conducted from Week 2 to Week 12, with 11 sessions in total and each taking up one hour out of the four hours allocated to the unit of Introduction of Simultaneous Interpreting per week. In this one-hour teaching session, DST-related exercises focusing on specific skills were practiced and subsequent discussions held in class.

Table 2. Action arrangement of the semester

Time	Exercises and Activities
Week 1	1. Introduction of exercises and class arrangement 2. Pre-test with conventional ST and 1 st questionnaire
Week 2	1. Comments of pre-test 2. Dynamic Summary at Level 1 dynamicity
Week 3	Dynamic Summary and dynamic paraphrasing at Level 1 dynamicity
Week 4	Dynamic paraphrasing and DST with preparation at Level 1 dynamicity
Week 5	DST with preparation at Level 2 dynamicity
Week 6	1. DST at Level 2 dynamicity 2. Assignment for mid-break
Week 7	1. Mid-test: DST at Level 3 dynamicity 2. 2 nd questionnaire
Week 8	1. Feedback of mid-test 2. DST at level 3 dynamicity
Week 9	DST at Level 3 dynamicit
Week 10	DST at Level 3 dynamicity
Week 11	DST at Level 3 dynamicity
Week 12	1. DST at Level 3 dynamicity 2. 3 rd questionnaire
Week 13	1. Final test (DST at Level 3 dynamicity and SI) 2. Interview

Each one-year cycle included three sequential tests as, pre-test, mid-test and final test, and the actions implemented between each test. Supplemented between every two tests were the subsequent questionnaire and/or interview, thus constituting a micro-cycle of action. Therefore, there were two micro-cycles in each yearly cycle of action. The three tests, along with three questionnaires and one interview as opinion collection tools, were used to profile the skill status of the students, with a view to identifying their skill deficiencies and monitoring their skill development at different stages. After each test, remedial actions were taken, during which the researcher used various DST-related exercises as intended solutions to address those skill deficiencies discovered from the test. The efficacy of these exercises was assessed in the following test, which, in turn, continued with another new micro-cycle of identification of skill deficiency, remedy actions and testing of effectiveness.

Among other skills and strategies intended to be developed during the action, the DST exercise focusing on summarization was the focus of teaching and practice in the first two weeks. The strategy was first introduced to students along with its benefits in information processing in SI. Then DST exercise at Level 1 dynamicity was utilized where the text appears on the slide all at once and gradually disappears from the start after a set time interval. Students were required to render the summary before the text on the slide completely disappeared, in the source language in the first week and in target language in the second week.

The calculation of the time interval depends on the simulated input rate. For instance, to simulate the equivalent of an input rate of 100 words/minutes in SI, if 50 words are included on one slide, a total of 30 seconds is allowed to finish the rendition of the summary. The text start to disappear gradually 15 seconds after the appearance and the erasing process finishes within 15 seconds. Then the next slide continues to play and the same process repeats. This pushed the students to extract the essential message and produce the verbal summary with presence of time pressure.

After the first two weeks, the dynamicity levels of DST exercises advanced to level 2 and level 3 in the following weeks of the semester, with a simulation of the input rate incrementally increasing from 100 words/minute to 120 words/minute. With text appearing at gradually incremental rates, it either disappeared once the display was

finished or started to disappear when the following sentence started to unfold. Although different skills or strategies were discussed as the focus of the class on the following weeks, the students were encouraged and constantly reminded to use the same materials to practice summarization after class. Then students were invited to comment or raise questions over exercise they practiced with in class to discuss difficulties or confusion encountered by students in such exercise.

Together with the actions of teaching, actions of instant data collection and interpretation along each semester also constituted a significant part of the whole action cycle. Students' feedback in relation to the use of summarization and their performances during the mid-test and final test were analysed to monitor and assess the effects of DST, as well as to inform adjustments to the following teaching actions. From data collected form 3 years, interesting findings were drawn, indicating both positive and less satisfactory outcomes of DST exercise in practicing summarization strategy for SI.

4. Findings and discussion - mixed effects

Of the three cycles of the pedagogical action research, the findings show that the three groups of students all acknowledged that DST exercises were beneficial, claiming that DST exercises as a whole provided a platform for skill transition and that an introduction and simulation of some features of SI enhanced their awareness of and reflection on the use of summarizing.

However, the immediate effects of summarising to achieve information integrity minimally compromised in the SI production were less reported than expected. When interviewed, despite the reported intent and preparedness for summarising the information in DST and subsequently in SI, only a few believed they applied the strategy successfully as they hoped. All the students, with no exception, found themselves leaving out segments here and there despite their efforts to streamline incoming information while maintaining the information integrity. Some attributed such result to the lack of ability in identifying primary information under

overwhelming cognitive stress or in chunking up propositions while such skills are essential for effective summarization, which could have failed the purpose of fully transferring the use of summarization by using DST as a strategy-focused practice. Data collected from various tools supported such findings.

4.1. DST contribution to strategy awareness and application

As a result of actions taken to encourage and develop the use of summarization strategy, students showed elevated awareness and informed reflection on use of summarization. This can be seen from the students’ reports on the choice of useful strategies both at the mid-semesters and the end of semesters, which indicate that summarization was acknowledged by students as one of the leading useful strategies as seen in Table 2. Across all three cycles 10 out of 23 students claimed that they used summarization as a preferred strategy consistently.

Table 3. Useful strategies reported at the mid–semester and end of semester in 2014–2016

Choice of Useful Strategy	Number of Choice in the Mid-semester				Number of Choice at the End of Semester			
	2014 (n=6)	2015 (n=11)	2016 (n=6)	Total (n=23)	2014 (n=6)	2015 (n=11)	2016 (n=6)	Total (n=23)
Summarization	1	4	3	8	1	5	4	10
Segmentation	1	3	3	7	4	4	4	12
Omission	3	3	3	9	5	4	3	12
Anticipation	3	2	1	6	5	3	4	12
Generalization	2	2	0	4	2	4	0	6

The statistics suggest that students generally acknowledged the significance and value of summarization in pressure-driven tasks like DST and SI. The conscious use of summarization by students indicated that they were spurred by the DST exercise to employ this strategy and admitted its usability during information processing. Since summarization is meaning- or segment-based strategy that requires relevant subskills, including quicker information processing and identification of primary information, such segment-based processing units can be an indication of progress in comprehension

(Riccardi 2005).

Such awareness was also detected in students' performance. Examples from their final SI test performance and post-test reflection also indicated that they managed to apply summarization successfully in some cases as a result of awareness of the benefits and techniques of such strategy.

The following text involving multiple segments was taken from the final SI test, showing the use of summarization. Due to the length limit of the article, only one example is selected here for the demonstration purpose. To the same segment, the interpretation transcripts collected in the final SI for one student from each year are listed as following, where the corresponding segments of text were aligned, and the segments completely omitted are marked with X. Each transcript is followed by a literal backtranslation in English in bracket for the convenience of analysis as shown in Example 1:

Example 1 - Example of summarization use

Text Segment / Subject No.	And in too many places she is taught //	there are special limits to what is possible for her, //	so we need to persuade families and nations //	to value girls, //	and to teach the girls themselves //	to understand their own value and their potential.
16B	X	X	我们要说服这些国家和家庭 (We must persuade these countries and families)	让他们重视这些女孩 (make them value the girls)	同时要让孩子们 (also make girls)	自珍自爱, 发挥自己的潜能。 (to value themselves and bring out their potentials.)
15E	而且许多人告诉她们 (Besides, many people told them)	她们的能力是非常有限的。 (their capacities are limited.)	我们需要教育家长以及社会, (We need to educate parents and the society)	教育他们女孩的价值, (Educate them about the value of girls.)	而且要告诉女孩本身 (And tell girls)	她们自己的潜在价值。 (their own potential value.)

14A	在许多地方, (In many places,)	她被限制了可能激发的可能性。 (she is limited in possible potentials.)	所以我们要 (So we must)	实现他们的价值。 (realize their values)	也告诉她们 (And tell them)	了解她们自己的价值和潜力。 (to understand their own values and potentials).
-----	---------------------------------	--	---------------------------	--	------------------------------	---

In the above examples, despite omission of some segments or meaning distortion, the indication of summarization was detected in each. As in highlighted areas in the interpretation of 16B and 15 E, the summarization was achieved by compressing more propositions within a segment. In 16B's interpretation, the meaning of "value themselves" was incorporated with the proposition of "to make them understand"; and in 15E's, "potential value" conveyed the source message of awareness of the values that were not seen or realized. Further, 14A not only achieved summarization within the segment, but streamlined the propositions across segments. By bringing multiple propositions together in chunks, the student cut down the delivery time to the most essential message about limiting girls' potentials by omitting other relatively less important information of the original text.

Admittedly, due to limited cognitive resources and underdeveloped capacity of fusing propositions, the students could not execute summarization strategy like professionals, even when they understood the text well. However, the attempts to chunk up propositions in their renderings revealed the sign of progression under the use of DST.

4.2. Inconspicuous boots to the quality of strategy execution in SI

At the same time, however, it was also found that the effect of boosting the quality of summarization in SI was not distinctive. To determine the consequential skill enhancement of using summarization in SI, i.e. whether and to what extent the focused strategy in DST can function in SI, the final test consisting of both DST at level dynamicity and SI was conducted and the performances of the two tasks were

compared. By dividing each text into segments and evaluating the propositional content conformity between the interpretation and the source segment for each task, the researcher coded the interpreted segments as accurate interpretation (AI), misinterpretation or distortion (MI) or Omission (OI), and then compared the group average rates of AI, MI and OI between the two tasks over the three years, as shown in Figure 1:

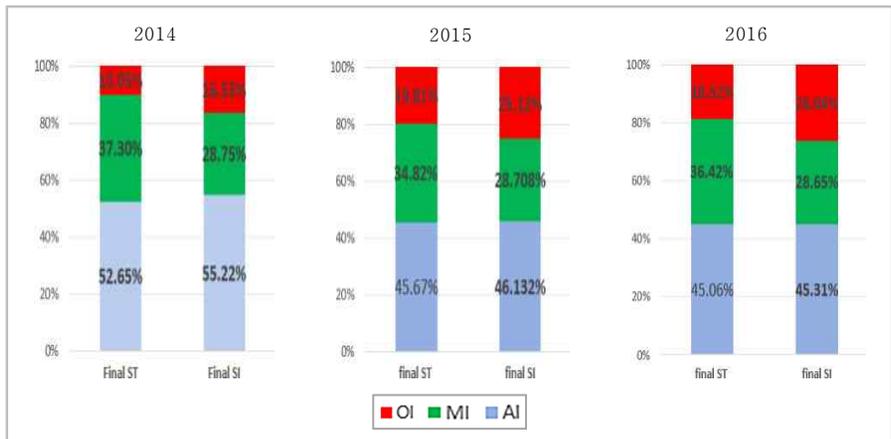


Figure 1. Comparison of group average accuracy rates in final test for 2014–2016

To keep the test materials for the two tasks in the final test roughly at a similar difficulty level, two measures were taken. First of all, the texts for the two tasks were extracted from the same speech and the Flesch Kincaid Grades for the DST and the SI texts are rated 10.8 and 9 respectively, relatively close to each other. Secondly, the two tasks had the same input rate of 130 words/minute.

According to the comparison across the three years, the accuracy rates in the SI task were slightly higher than those of DST, while the omission rates were also higher. With such results, it was unable to claim that overall performance in one task was superior to that in the other.

To consolidate the findings from the performance analysis, the students' report and reflection also confirmed that their awareness of benefits of summarization was not

proportionately reflected in the performances of SI. That is, the students reported that they could not always quickly grasp the gist of the information. Instead of successfully streamlining comprehended segments, they felt unsure of how to immediately piece together information already understood. As a result, omissions occurred in their performances even though summarization was attempted.

This flags the gap in skill integration, which is highlighted by the feedback of Student 14D, who put that “Though I know about the strategies, I can only rely on automatic response”. Such ‘Automatic responses’ at this stage of training were more likely to give rise to information omitted, as Student 14E echoed that “the speed is so fast that omission becomes the best choice to keep up”.

Some students’ comments made in the final interview reinforced the finding. As reported by some, despite understanding how to distinguish between primary and secondary information and using summarization as a strategy to simplify or integrate segments, those students still had the tendency to “miss out” the information when they fell behind. The following comments from the students are telling:

I omitted because the text was vanishing fast and I also wanted to maintain a smooth delivery with the same pace. (15H)

Omitting makes life easier. (15I)

Omission saves time and enhances efficiency to achieve fluency (16A)

Because of fast speed, it is necessary for me to omit something to follow the text. (16D)

As the comments indicate, omissions were mainly committed to reduce mental energy for comprehension, which was too limited for students to pay any attention to the hierarchy and integrity of the content. Even though students knew that information accuracy and integrity could be better maintained by summarization, they had no chance but ended up applying it with omission. This was consistent with the researcher’s assessment of the students’ test performances where segments that could be slimmed up and chunked together were more often omitted. Of the omissions committed, high-risk omissions still accounted for the majority which “jeopardize the fundamental aims of the communication act” (Pym 2008: 91).

All above indicates that, despite the awareness of meaning chunks and knowledge

of distinguishing primary and secondary information, novice SI students still have difficulties in effectively actualizing the strategy of summarization when they are under the cognitive and time pressure.

Such unsatisfactory skill transition could be explained on two levels. Theoretically, it takes time to turn declarative knowledge into procedural knowledge, so the exercises were not adequate in terms of quantity and time to realize the transition. Technically, the actualized summarization largely depends on the capacity for quickly making sense in comprehension and efficiency in mobilizing linguistic and contextual knowledge in production, while DST, by itself, could be a catalyst in inciting quick information analysis and integration but cannot be a cure for such skill deficiencies. As such, the successful use of summarization may require more time and synergy of other deliberate exercises to be achieved or reflected in performances of SI novices.

To consider the outcomes from the declarative-procedural knowledge perspective, it is fair to conclude that the declarative knowledge of summarization strategy, the keen awareness of using it by the students was well-established, thanks to the DST exercises in use. However, such understanding and awareness need to be better developed with relevant cognitive and linguistic skills enhanced through repeated use, error correction and reflection in a longer time frame.

4.3. Limitation of research and solution

The limitation of the current study is also well noted, leading to potential concerns in the generalization and applicability of the findings. Such limitation is associated with the condition of research and the nature of research approach.

Due to the limited subject number available to the researcher, control groups were not able to be involved for a comparison of the outcomes between the teaching with and without DST exercises. Besides, it was understood the subjects involved in the research program cannot fully represent all trainee profiles and thus findings based on their feedback and performance were not necessarily applicable to other trainee cohorts.

With anticipation of such issues, the research was purposefully designed as an action research. In addition to flexibility and inclusiveness that action research can

offer, it is also because of its inherent focus on solution of local issues. The author has no ambition in offering a cure-for-all solution plan of DST-related exercises. Instead, the intention is to provide both SI trainers and students with additional alternatives of didactic tools that are able to enrich SI teaching and learning.

5. Conclusion

Many researchers advocate that skill acquisition in SI is highly reliant on practice and “through helpful exercises” (Behr, 2014: 207) as they can produce cognitive changes that facilitate circumvention of cognitive constraints (Moser-Mercer, 2000). It is just in this spirit that fundamental skills in interpreting are taught “within the framework of practical exercises” (Gile, 2009: 191). To achieve goals like this, cognitive findings provide an effective guidance for the design and choice of teaching tools in SI in the initial learning stage of interpreting (Moser-Mercer, 2008: 13). With the emphasis on the role of exercises in skill development, the design of DST is a proactive search of this purpose.

Summarization, as a good example, demonstrates that DST can be a useful driver of skill development including strategy use for novice learner in SI. During the actions, through application of and reflection on relevant knowledge via targeted DST exercises, better knowledge of why and how to streamline information was formulated and the underlying skills of segmentation and evaluation of semantic value of information were practiced. This, in general, contributes to developing a positive and proactive approach of information processing under time pressure from the outset of SI teaching.

However, to enhance the role of targeted DST in improving the quality of strategy use in SI, it should be better integrated with other exercise components in the course and measured control of the variables of exercises, i.e. the combination of dynamicity levels and input/output rates is absolutely essential, subject to specific student cohort and learning needs. The relevant information is subject for further exploration and will be discussed in more in depth elsewhere.

References

- Anderson, L. (1994). Simultaneous interpretation: Contextual and translation aspects. In Lambert S. and B. Moser-Mercer (eds.), *Bridging the gap: Empirical research in simultaneous interpretation*. Amsterdam: John Benjamins, 101-120.
- Baddeley, A. (2003). Working memory: looking back and looking forward. *Nature Reviews Neuroscience*, 4(10): 829-839.
- Bajo, M. T., Padilla, F., and Padilla, P. (2000). Comprehension processes in simultaneous interpreting. *Benjamins translation library*, 39: 127-142.
- Baxter, R. N. (2014). A simplified multi-model approach to preparatory training in simultaneous interpreting. *Perspectives*, 22(3): 349-372.
- Behr, M. (2014). How to Back the Students–Quality, Assessment and Feedback. In Andres D. and M. Behr (eds.), *To Know How to Suggest...: Approaches to Teaching Conference Interpreting*. Frank and Timme GmbH, 201-217.
- Camayd-Freixas, E. (2011). Cognitive theory of simultaneous interpreting and training. In Proceedings of the 52nd Conference of the American Translators Association (online). Retrieved from <http://dll.fiu.edu/people/faculty/erik-camayd-freixas/cognitive-theory-2011.pdf> on 03 April 2014.
- Chmiel, A. (2006). A skill-based approach to conference interpreting. *Translation Ireland: New Vistas in Translator and Interpreter Training*, 17: 47-64.
- De Feo, N. (1993). *Strategie di riformulazione sintetica nell'interpretazione simultanea dall'inglese in italiano: un contributo sperimentale*. Unpublished PhD dissertation, SSLMIT, University of Trieste.
- De Groot, A. M. (2000). A complex-skill approach to translation. In Tirkkonen-Condit S. and R. Jääskeläinen (eds.), *Tapping and mapping the processes of translation and interpreting: Outlooks on empirical research (Vol. 37)*. John Benjamins Publishing, 53-68.
- Donovan, C. (2002). European Masters Project Group: Teaching simultaneous interpretation into a B language. Preliminary findings. *Interpreting: International Journal of Research and Practice in Interpreting*, 6(2): 205-216.
- Gile, D. (1997). Conference interpreting as a cognitive management problem. In Danks J.H., G.M. Shreve, S.B. Fountain and M.K. McBeath (eds.), *Cognitive processes in translation and interpreting*. Thousand Oaks/London/New Delhi: Sage, 196-214.
- Gile, D. (2005). Teaching conference interpreting. In Tennent M. (ed.), *Training for the new millennium: Pedagogies for translation and interpreting*. John Benjamins Publishing, 127-151.
- Gile, D. (2009). *Basic concepts and models for translator and interpreter training*. Amsterdam and Philadelphia: John Benjamins Publishing Company.
- Gile, D. (2009). Conference interpreting, historical and cognitive perspectives. In Baker M. and G. Saldanha (eds.), *Routledge Encyclopedia of Translation Studies (2nd ed.)*. London/New York: Routledge, 51-56.

- Kalina, S. (1992). Discourse processing and interpreting strategies: an approach to the teaching of interpreting. In Dollerup C. and A. Loddegaard (eds.), *Teaching Translation and Interpreting: Training, Talent and Experience*. Amsterdam/Philadelphia: John Benjamins, 251-257.
- Kalina, S. (2000). Interpreting competences as a basis and a goal for teaching. *The Interpreters' Newsletter*, 10: 3-32.
- Kurz, I. (1992). Shadowing exercises in interpreter training. *Teaching Translation and Interpreting*, 1: 245-250.
- Lambert, S. (1992). Shadowing. *Meta: Journal des traducteurs*, 37(2): 263-273.
- Lambert, S. (2004). Shared attention during sight translation, sight interpretation and simultaneous interpretation. *Meta: Translators' Journal*, 49(2): 294-306.
- Leeson, L. (2005). Making the effort in simultaneous interpreting. In Janzen T. (ed.), *Topics in Signed Language Interpreting: Theory and Practice*. John Benjamins Publishing, 51-68.
- Lonsdale, D. (1997). Modeling cognition in SI: Methodological issues. *Interpreting*, 2(1): 91-117.
- Malakoff, M., and Hakuta, K. (1991). Translation skill and metalinguistic awareness in bilinguals. *Language processing in bilingual children*, 141-166.
- Mayer, R. E., and Moreno, R. (2003). Nine ways to reduce cognitive load in multimedia learning. *Educational Psychologist*, 38(1): 43-52.
- McDonald, J. L., and Carpenter, P. A. (1981). Simultaneous translation: Idiom interpretation and parsing heuristics. *Journal of Verbal Learning and Verbal Behavior*, 20(2): 231-247.
- Moser-Mercer, B. (2000). The rocky road to expertise in interpreting: Eliciting knowledge from learners. In Kadric M., K. Kaindl and F. Pöchhacker (eds.). *Translationswissenschaft*. Tübingen, Germany: Stauffenburg Verlag, 339-352.
- Moser-Mercer, B. (2008). Skill acquisition in interpreting: A human performance perspective. *The Interpreter and Translator Trainer*, 2(1): 1-28.
- Paas, F., Renkl, A., and Sweller, J. (2003). Cognitive load theory and instructional design: Recent developments. *Educational Psychologist*, 38(1): 1-4.
- Paas, F., and van Gog, T. (2009). Principles for designing effective and efficient training of complex cognitive skills. *Reviews of Human Factors and Ergonomics*, 5(1): 166-194.
- Patrie, C. J. (2004). Sign and spoken language interpreting: a componential approach to skills development (online). Retrieved from <http://aiic.net/p/1513> on 1 March 2016.
- Pöchhacker, F. (1994). Quality assurance in simultaneous interpreting. *Teaching Translation and Interpreting*, 2: 233-242.
- Pöchhacker, F. (1995). Simultaneous interpreting: A functionalist perspective. *HERMES: Journal of Language and Communication in Business*, 8(14): 31-53.
- Pöchhacker, F. (2013). Teaching interpreting/Training interpreters. In Gambier Y. and L.V Doorslaer (eds.), *Handbook of Translation Studies, Volume 4*. John Benjamins Publishing Company, 174-180.
- Pym, A. (2008). On omission in simultaneous interpreting: Risk analysis of a hidden effort. In Hansen, Gyde, A. Chesterman and H. Gerzymisch-Arbogast (eds.), *Efforts and Models in Interpreting and Translation Research: A tribute to Daniel Gile*. Amsterdam/Philadelphia: John Benjamins, 83-105.

- Riccardi, A. (2005). On the evolution of interpreting strategies in simultaneous interpreting. *Meta: Translators' Journal*, 50(2): 753-767.
- Salden, R. J., Paas, F., and van Merriënboer, J. J. (2006). A comparison of approaches to learning task selection in the training of complex cognitive skills. *Computers in Human Behaviour*, 22(3): 321-333.
- Salvucci, D. D. (2013). Integration and reuse in cognitive skill acquisition. *Cognitive Science*, 37(5): 829-860.
- Sandrelli, A. (2005). Designing CAIT (Computer-Assisted Interpreter Training) Tools: Black Box. In *MuTra-Challenges of Multidimensional Translation. Conference Proceedings-EU High Level Scientific Conference Series*. Proceedings of the Marie Curie Euro conferences. Saarbrücken (online). Retrieved from http://www.euroconferences.info/proceedings/2005_Proceedings/2005_Sandrelli_Annalisa.pdf on 5 February 2014.
- Setton, R. (2006). Context in simultaneous interpretation. *Journal of Pragmatics*, 38(3): 374-389.
- Setton, R., and Dawrant, A. (2016). *Conference interpreting: A complete course* (Vol. 120). John Benjamins Publishing Company.
- Singley, M. K., and Anderson, J. R. (1989). *The transfer of cognitive skill* (Vol. 9). Harvard University Press.
- Song, Z. (2010). Skill transfer from sight translation to simultaneous interpreting: a case study of effective teaching technique. *Conference of Interpreter Trainers*, 2: 120-134.
- Sweller, J., (1994). Cognitive load theory, learning difficulty, and instructional design. *Learning and Instruction*, 4(4): 295-312.
- Sweller, J., Van Merriënboer, J. J., and Paas, F. G. (1998). Cognitive architecture and instructional design. *Educational Psychology Review*, 10(3): 251-296.
- Tryuk, M. (2010). Strategies in Interpreting. Issues, Controversies, Solutions. *Applied Linguistics*, 2: 181-194.
- VanLehn, K. (1996). Cognitive skill acquisition. *Annual Review of Psychology*, 47(1): 513-539.
- Viaggio, S. (1992). Cognitive Clozing To Teach Them To Think. *The Interpreters' Newsletter*, 4: 40-44.
- Viaggio, S. (1995). The praise of sight translation (and squeezing the last drop thereof). *The Interpreters' Newsletter*, 6: 33-42.
- Viezzi, M. (1989). Information retention as a parameter for the comparison of sight translation and simultaneous interpretation: An experimental study (online). Retrieved from <https://www.openstarts.units.it/bitstream/10077/4806/1/ViezziIN2.pdf> on 6 September 2013.
- Weber, W. K. (1984). Training Translators and Conference Interpreters. Language in Education: Theory and Practice. Orlando, FL: Harcourt Brace Jovanovich (online). Retrieved from <https://files.eric.ed.gov/fulltext/ED246696.pdf> on 1 May 2013.
- Yan, K. (2019). *An action research study on dynamic sight translation as a pedagogical tool for skill development and transfer in simultaneous interpreting teaching*. Unpublished PhD dissertation, Macquarie University.
- Wickens, C. D., Hutchins, S., Carolan, T., and Cumming, J. (2013). Effectiveness of part-task training and increasing-difficulty training strategies: a meta-analysis approach. *Human Factors*, 55(2): 461-470.

This paper was received on 4 October 2021; revised on 21 November 2021; and accepted on 29 November 2021.

Author's email address

sandra.yansyd@gmail.com

About the authors

Dr. Kun Yan obtained her doctoral degree from Macquarie University, currently teaching interpreting and practicing as professional translator and interpreter in Australia. Her research areas include T&I teaching pedagogy, conference interpreting and skill acquisition and development.

Dr. Zhongwei Song was lecturer at Macquarie University, convening and teaching Master of Conference Interpreting. His research interests cover Translation Studies, T&I Teaching and Conference Interpreting.