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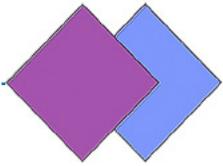
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Dynamic Sight Translation: A Simultaneous Interpreting Strategies Driver

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Abstract

This paper reports on eliciting anticipation strategy, a common strategy in simultaneous interpreting (SI) via sight translation (ST). A new ST variant, the dynamic type, was designed in a modular and progressive manner to facilitate the trainees' transition into SI at the early stage of learning. The new tool was used and tested under a framework of action research that was conducted continuously over 3 years. Despite some limitations, the longitudinal study finds that the newly designed set of exercises is not only a skill development and transfer enabler but also a contributor to eliciting SI-related strategies. This article explains the validity of the exercise design for SI teaching. It then presents data analysis indicating the efficacy of dynamic ST in helping students draw on anticipation strategy.

Keywords: simultaneous interpreting teaching, action research, sight translation, dynamic sight translation, anticipation strategy

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1. Introduction

Sight translation (ST), a mode of interpretation commonly demanded in the interpreting market (Stansfield, 2008), is seldom a focal point of pedagogical discussion or research in interpreting studies (Mikkelsen, 1994). The literature on interpreting pedagogy is predominantly devoted to the teaching of consecutive interpreting (CI) and simultaneous interpreting (SI) (Moser-Mercer, 2005), with only a meager proportion on ST as an exercise element in interpreting teaching (Angelelli, 1999; Lim, 2006). Even among the limited research on ST used as a measuring tool in aptitude tests (Lambert, 1991; Moser-Mercer, 1994) or as a preparation exercise for SI (Gile, 2009b; Pöchhacker, 2013), little is proposed on its systemic use for specific SI teaching purposes (Li, 2015), and even less on how to manipulate ST to assist in developing SI-related skills and strategies.

This study sheds light on the usefulness of dynamic sight translation (DST), a text-to-speech mode of interpretation in teaching SI, a speech-to-speech mode of interpretation. We argue that DST can not only assist in developing shared skills with SI but also elicit strategies for SI. Using longitudinal action research (AR) over three first semesters of master of conference interpreting, this study has two objectives. The first objective is to justify the increased approximation between ST and SI in cognitive processes by manipulating some features of ST for potential skill transfer to SI. The second is to uncover what strategies for SI could be elicited from DST when it is thus designed and made closer to SI in temporal and cognitive pressure. To this end, this article reviews different types of ST and discusses it as a didactic tool in SI-related teaching and, more importantly, its cognitive relations to SI in operation. Based on the analysis of the data collected from the student participants, the article argues for the value of DST in SI teaching by highlighting how it helps drive students into using the strategy of anticipation in SI.

2. Literature Review

2.1 Sight Translation

There is a good number of definitions for ST as an interpreting mode, each focusing on certain features in line with the specific purposes of research. McDonald and Carpenter (1981, p. 231), for example, describe ST as “simultaneous translation,” as they focus on two features of ST: immediacy in oral rendition of text written in one language into another language, and a shift between modes of input and output. Howard (1986) labels ST as interpretation with text, which suggests that ST can take place with audial stimulus and visual text input at the same time. Howard includes an extra mode of information input—audial stimulus, differentiating his definition from that of McDonald and Carpenter, even though he does not mention simultaneity in delivery. Viezzi (1989a, p. 66) describes ST as an activity where translating starts “as soon as possible when the text has been handed to them.” The focal point is once again placed on immediacy of interpreting and text-only input. The above definitions have only revealed a limited number of features of ST in use, which make no allowance for preparation time, different modes of input and output, and time lag between receiving source texts and delivering. The multiplicity of ST forms, as Moser-Mercer (1995) speculates, might be the factor contributing to the difficulties in defining it in a comprehensive and consented way.

In view of the multiple features of ST in practice, researchers have categorized the types of ST. Lambert (1988) briefly distinguishes two types of ST—namely, unrehearsed ST and ST in simultaneous mode, or sight interpretation. The former is delivered at the interpreter’s pace, which is “internally controlled,” while the latter is delivered at the speaker’s pace, or “externally paced” (Lambert, 1988, p. 77). Moser-Mercer (1995) further classifies ST into four types: (1) oral translation of parts of or the complete written text with preparation allowed, (2) oral translation of the gist of text without preparation, (3) detailed translation of what is included in the text, and (4) simultaneous ST with text in hand, with or without preparation. The first three types are all delivered at the interpreter’s pace, whereas the last one is at the speaker’s pace. Moser-Mercer also includes an additional variable in her categorization: conformity between source and target texts—namely, whether ST is delivered in summary or otherwise—stressing that the list may not exhaust all possible forms of ST tasks. Largely agreeing with Moser-Mercer, Jiménez Ivars (1999) groups ST in a somewhat similar way, but with more defining conditions: (1) prompt ST without preparation allowed, (2) prepared ST with text obtained beforehand and preparation allowed, (3) consecutive ST in the form of a summary of

a written text or an explanatory reformulation by adding some necessary information, (4) ST in consecutive mode (i.e., CI with transcript, while impromptu divergence from the transcript by the speaker is possible), and (5) ST in simultaneous mode—that is, sight interpretation. Compared with Moser-Mercer’s classification, Jiménez Ivars adds one more ST variant—ST in consecutive mode.

By extracting all variables of the existing ST forms from the cited literature and displaying them in one matrix, Table 1 outlines possible ST variants and their different combinations.

Table 1

List of variables of ST

Input mode		Lag between receiving and delivering information		Conformity between source and target text		Preparation	
		Consecutive	Simultaneous	Summarized	Detailed	Prepared	Unprepared
Visual only	Visual and audio						

These various forms of ST, however, all share one conventional feature: static text display. This current study is thus tasked with exploring how the static text display of these conventional STs can be dynamically manipulated to better serve the purpose of SI teaching.

2.2 Conventional Sight Translation as a Didactic Tool in Simultaneous Interpreting Teaching

Conventional ST is a common element or mode of interpretation in interpreting teaching (Angelelli, 1999; Chen, 2015; Lim, 2006; Sawyer, 2004; Wan, 2005) and increasingly adopted as an exercise tool for transition from CI to SI (Bacigalupe, 1999; Déjean le Féal, 1998; Gile, 2009b; Kalina, 2000; Kim, 2001; Lambert, 2004; X. Liu, 2012; Noel & Song, 2006; Song, 2010; Viaggio, 1995; Viezzi, 1989b). Described as a “subsidiary or complementary component aimed at providing students with at least an overview of one more possible application of their newly acquired or developed communicative skills” (Sampaio, 2015, p. 63), ST is regarded and used as a preparatory transition tool. For instance, Kalina (1992) reports the inclusion of ST in her teaching to help students deal with adverse conditions encountered in SI. Bacigalupe (1999) suggests a progressive use of ST featuring different preparation time (i.e., ST with long, short, or no preparation). Baxter (2014, pp. 354–355) also proposes ST exercises as the “backbone” in his simplified multiple-model approach for SI training and suggests “synchronized ST” to enable students to acquire simultaneity and crucial strategies at the same time. The most current account of ST application in conference interpreting teaching can be found in Setton and Dawrant (2016). In their work outlining a proposed complete course of conference interpreting, ST is a crucial component in the transition to SI (Setton & Dawrant, 2016, p. 205). Viaggio (1995, p. 33) highly commends ST as perhaps the most effective and complete tool that precludes and prepares for SI.

Despite the didactic usefulness of conventional ST in SI-related skill development, its drawbacks are noticeable. In ST, the text is constantly available to interpreters, making it more likely to be drawn to the lexical items. Therefore, there is an inclination to process information literally and with less time pressure in conventional ST (Viezzi, 1989b). Analyzing the pros and cons of interpreters having the input text before them, Gile (1997, p. 203) believes that because an interpreter has more control in a ST task than in other interpreting tasks, they suffer much less time pressure and enjoy more flexibility to deliver.

Furthermore, the constant access to text gives rise to visual interference during ST, which, as Gile (1997) argues, can be more demanding cognitively due to the visual interference. Such interference is potentially manifested in two ways: linguistic interference in the target language from the source language and the temptation of focusing on words rather than meaning (Brady, 1989; Gile, 1997; Martin, 1993; Mikkelsen, 1994). As such, the implications can be linguistically and cognitively related.

In the face of these issues, changes are necessary to offset or minimize the effect of the constant textual interference for the benefit of SI teaching. Gile (2005) suggests, as an easier solution, posing extra requirement in delivery—namely, with the use of conventional ST, students are required to deliver the interpretation at a fast pace. While reducing their dependence on written text, this approach also encourages students to avoid simple transcoding.

In this study, however, the researchers aim at manipulating the ST to resolve the issues. The review provides a groundwork to change the status quo of the pedagogical use of ST in SI. As it shows, the current ST variants mostly fall into the category of conventional ST. The differentiations between conventional ST and SI on the one hand and the current teaching practice of mainly using the conventional ST in SI on the other hand indicate that the role of ST in SI training is stifled if it continues to be kept in the current forms.

2.3 Making Conventional Sight Translation Unconventional—Dynamic Sight Translation

In the era of technology-impacted teaching and learning, ST proves to be as useful as ever, if not more. In Black Box, the computer-assisted interpreter training system designed for the University of Hull, for example, ST is included “as a preparatory exercise for SI” (Sandrelli, 2005, p. 7). The designers provide two types of ST for exercise: conventional ST and timed ST. For the latter, the texts are scrolled up at a pace controlled by the trainer to simulate the time pressure of SI (Sandrelli & Jerez, 2007).

An innovative method proposed by Song (2010) is more consistent with the direction of the current study and thus serves as the main inspiration for the exercise design in the current project. The new method recommends that new features be added to the ST to “share some on-line information processing attributes” (Song, 2010, p. 121)—that is, to make information only available for a brief period through text display to resemble closer simulation of SI. Detailed justifications can also be found in Yan (2019).

In this spirit, a new variant of ST is designed to differentiate itself from the conventional ST that features the static text display for the input mode. The new variant in this study is DST, which is essentially characterized by the dynamicity of text displayed and timed.

Briefly, unlike conventional ST, DST generally works in resemblance to autocue. Once a text is imported into a computer, it can appear on screen all at once or unfold itself segment by segment or word by word; likewise, it can disappear all at once or fade away gradually. These dynamic features are achieved by the researcher’s employing the appearing and disappearing effects available in the animation setting in PowerPoint. The effects of the gradual appearance or unfolding of text simulate the continuously revealing source input in SI, and those of disappearance conjure resemblance to the effect of evanescence of audio input information. Accordingly, the time lag between the sight of text and production of interpretation in DST resembles the time lag between the hearing of a valid segment and the rendition of interpreting (i.e., ear-voice-span in SI), and both require working memory to compute and retain undelivered segments. The display patterns of appearance and disappearance are combined in different ways to generate different levels of textual dynamicity. Three textual dynamicity levels are set in the exercise design in this study, from Level 1 to 3, as preliminary, intermediate, and advanced level, respectively, shown in Table 2.

Table 2

Three dynamicity levels designed for the DST in this study

Dynamicity level	Textual display action	Display pattern	Embedded input rate (in english)
Level 1	Appear	All at once	90–110 words/minute
	Disappear	Fade gradually	
Level 2	Appear	Unfold gradually	100–120 words/minute
	Disappear	All at once	
Level 3	Appear	Unfold gradually	110–130 words/minute
	Disappear	Fade gradually	

The three levels are set with different input rates as shown above, leading the trainees to gradually adapt to information linearity and evanescent information availability in SI. Level 1 starts by giving students a gentle nudge to process information linearly with minimal time pressure. Level 2 escalates to the add-ons of a progressive presentation of incoming information in addition to the externally paced delivery. Level 3 features the highest resemblance to SI, with simulation of the continuous and evanescent audio input in SI, pushing students to process forward for delivery with an almost equivalent presence of time pressure with SI. As for the English input rate setting, the range is largely kept between 90 and 120 words per minute, as suggested by Seleskovitch (cited in Gerver, 1976, p. 172) as a comfortable range for novice interpreters in training, whereas rates higher than 120 words per minute are used to find out to what extent students can utilize relevant strategies as a specific task requires.

2.4 Importance of Strategy Practice in Simultaneous Interpreting

SI's characteristic difficulties impose cognitive constraints on interpreters, warranting the use of specific strategies. These attributes include time constraints, gradual and linear unfolding of information, and limits in the shared knowledge of discourse (Gile, 2009a; Kalina, 1994; Kohn & Kalina, 1996; Shlesinger, 1995). Among skills required to handle these difficulties in SI (see Biela-Woloncej, 2007; Donovan, 2002; Gile, 2005, 2009b; Lambert, 2004), skills related to strategy use should be emphasized in teaching. Such advocacy can be found in Gile (2009b, p. 221), who defines strategies in interpreting as “deliberate decisions and actions aimed at preventing or solving problems” and states that use of “coping tactics” is a fundamental practical skill in interpreting.

It is widely recognized that use of strategies is quite common in interpreting practice when the task gets challenging in all modes of interpreting, and they contribute to the interpreting performance in all aspects (Gile, 2009b; Li, 2015). M. Liu (2008) also empirically confirms that the adequate use of various strategies is a prominent feature that distinguishes experts from novice interpreters. In ST, Wan (2005) particularly accentuates the use of strategies in performing English-to-Chinese interpreting among other skills.

Unquestionably, conventional ST has some similar, if not the same, cognitive processes and skills required in SI thanks to common features, thus making itself a possible tool to progressively introduce students to the skills and strategies in SI. However, conventional ST fails to prompt the use of strategies in SI due to absence of sufficient simulation to cognitive constraints of SI, as analyzed in Section 2.2. In this context, DST is designed to meet the gap.

2.5 Exercise for Application Strategy for SI as an Example

2.5.1 Significance of Anticipation Strategy

Among useful strategies in SI, anticipation is considered to be deserving of special attention in training. *Anticipation* is defined as “the target language production by the interpreter of a (string of) word(s) before (or simultaneous with) the speaker’s production of the corresponding (string of) words,” which is manifested as an oral production in an “advanced” way (Vandepitte, 2001, p. 324). It is considered to be a common yet crucial strategy in SI (Bacigalupe, 1999; Chernov, 1992; 2009b; Lederer, 1981; Setton & Dawrant, 2016; Setton, 1999; Vandepitte, 2001).

When it is successfully executed, anticipation helps interpreters juggle the concurrent efforts of listening, analysis, production, and memory (Andres et al., 2014; Arumí Ribas, 2012; Baxter, 2014; Gile, 2009b; Lambert, 1988; Setton, 2008). Anticipation can neutralize delays in delivery resulting from noticeable structural disparities between the source and target languages (Choi, 1990; Setton, 1994; Setton & Dawrant, 2016; Van Besien, 1999). It thus can be a valuable strategy for English-to-Chinese SI, where the structural disparities are colossal (Setton, 1998, 1999).

Anticipation is largely classified into two types. One type is product-based, depending on the time lag between the delivery directed by anticipation and the actual appearance of the corresponding segments in the source language. By this standard, anticipation is further divided into “proper anticipation” (where the production of one constituent appears before it is delivered in the source language) and “freewheeling anticipation” (where the production of one constituent is basically concurrent or a bit later than the constituent in the source speech); hence, the time lag is not the only measurement to identify anticipation (Lederer, 1981, p. 253).

The other type is clue-based (Van Besien, 1999). By the function of clues, anticipation is thus further divided into linguistic and extra-linguistic anticipation (Bacigalupe, 1999; Lederer, 1981; Setton, 1999). Linguistic clues stem

from syntactic/semantic information of the source language, while extra-linguistic clues refer to the situational or general knowledge available to the interpreter (Van Besien, 1999). In the practice, Van Besien (1999, p. 258) argues that extra-linguistic knowledge provides more clues for anticipation, while linguistic knowledge plays a minor but indispensable part.

2.5.2 Existing Exercise to Practice Anticipation

To practice anticipation, the cloze procedure is an effective exercise because clozing is conducive to detecting and using contextual clues, syntactically and semantically, for meaning construction in interpreting (Baxter, 2014; Chernov, 1994; Lambert, 1992). Those skills match the purpose of anticipation training: to motivate students to make active inference ahead and to develop the deeper processing required in SI.

In this spirit, Lambert (1992) further suggests how to design the cloze exercise for teaching and assessment, reinforcing that a text with mainly nouns and verbs missing is more difficult than one with only verbs missing and that anticipation of words missing in the later part is easier than that of words appearing earlier. In the same spirit, Baxter (2014, p. 356) proposes an exercise called “integrated synchronized sight translation,” which requires students to fill in blanks in real time in the source language or the target language. With the integration of new elements not typically associated with conventional ST, Baxter (2014, p. 357) contends that this type of exercise contributes to “internalizing a series of key strategies designed to overcome problems arising in the main linear translating process,” as required in SI, and enables the students to develop simultaneity of input processing and output production in a natural way. Pöchhacker (2016, p. 118) also nominates Syn(synonymic)Cloze to measure subskills, such as “online comprehension, oral expressional fluency constrained by contextual appropriateness, and fast reaction times.”

These existing exercise types form the basis of the DST exercise called “Clozing DST” for the practice of anticipation strategy in this study.

3. Methodology

3.1 Background Information

The research was carried out as a pedagogical AR, and the first author was the teacher-researcher. AR is increasingly recognized as beneficial for pedagogical studies conducted as a part of everyday interpreting teaching (Burns, 1999; Schjoldager, 1994). This is because AR is constructed such that the exploration not only is integrated into but also stimulates the teaching and learning processes—that is, teachers can reflect on and modify teaching practices for constant improvement, while students can instantly provide feedback that can feed into and thus construct the teaching process simultaneously, ultimately leading to more tailored and needs-focused learning and teaching activities (Takeda, 2010).

With features of pedagogical AR (Carr & Kemmis, 1986; Cravo & Neves, 2007; Kember, 2000; Norton, 2007; O’Brien, 1998), this study was designed and conducted in a disruptive, collaborative, democratic, and cyclical way. By being disruptive, the research was aimed at seeking innovative changes to the existing knowledge and practice. By being collaborative and democratic, the research managed to include and consider different perspectives and interpretations of the multisource, and it acknowledged that these data and their interpretation are open to possible subjective bias. By being cyclical, the research involved three upwardly iterative cycles, with data collected in the first cycle leading to adjustments of hypotheses and improvements in the two cycles that followed.

3.2 Action Research Design

As a 3-year longitudinal AR, the teaching and learning action was conducted and observed in the first semester of each academic year from 2014 to 2016, with the same timeline in each of the three rounds. Each round included three sequential tests conducted at the beginning, midpoint, and end of each semester, and the actions were implemented between each test. Supplemented between every two tests was the subsequent questionnaire, constituting a micro-cycle of action. In other words, each round consisted of two micro-cycles, concluding with an interview at the end of the semester. The three tests, three questionnaires, and one interview—the 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 various DST-related exercises were used as solutions to address those skill deficiencies discovered from certain tests. The efficacy of these exercises was also assessed in the follow-up test, which, in turn, continued with another micro-cycle of identification of skill deficiency, remedy actions, and tests of effectiveness. Among the three cycles, teaching actions varied from year to year in line with changes in circumstances, such as specific needs of the students and their progress, or based on the researcher's reflection drawn from the previous round(s) of action.

The participants composed three cohorts of Chinese students enrolled in master of conference interpreting at Macquarie University in 2014, 2015, and 2016, respectively. The student participants, who agreed to participate in the research on a voluntary and informed basis, were considered to present consistent linguistic profiles because they were admitted to the program after having met threshold requirements in language proficiency and interpreting skills, despite variations in gender and age. Prior to their enrollment in the conference interpreting program, all participants had finished interpreting courses at the undergraduate or postgraduate level. Ethics approval (approval number: 5201400072) was obtained before the recruitment started. The overview of participants is listed in Table 3.

Table 3

Student participants' profiles, 2014–2016

Year	Student participant number	Gender distribution	
		Male	Female
2014	7	1	6
2015	11	3	8
2016	6	2	4

The source of data included two parts. One part mainly derived from feedback from student participants. This collected feedback was quantitative, including students' reflective journals, three questionnaires, and one interview after assessment tasks. Such assessments aimed at integrated analysis of individually self-rated cognitive loads and performances by the students themselves.

The other part came from the teacher-researcher, including performance analysis via three tests conducted at the beginning, midpoint, and end of the first semester, respectively, and in-class observations during the teaching-learning interaction. The two sets of data jointly contributed to the integrated analysis, leading to research conclusions and thus establishing a more comprehensive understanding of the value as well as limitations of DST-related exercises in SI teaching.

The data collection and analysis methods are summarized in Table 4.

Table 4

List of data sources and types of data analysis

Data source	Data collection tool ¹	Analysis method	Analysis type
Student participants	Three questionnaires	Content analysis Thematic analysis	Qualitative
	End-of-semester interview	Content analysis	Qualitative
	In-class discussion Post-test self-reflection	Content analysis	Qualitative
Teacher-researcher	Weekly teaching observation Journals	Content analysis	Qualitative
	Performance analysis of three tests: (1) Level 1 DST; (2) Level 3 DST; (3) Level 3 DST + SI	Content analysis Thematic analysis Descriptive statistics	Qualitative Quantitative

¹ For detailed questions of the questionnaires and interview, please refer to Appendix 3 of the full dissertation about this action research by following <http://hdl.handle.net/1959.14/1269762>.

3.3 Clozing DST—A New Exercise Designed for Anticipation

Clozing was integrated into the DST exercise to urge the students to anticipate the direction of subsequent information based on the event context and wider general knowledge (Baxter, 2014).

This design included the exercise built upon Baxter's "integrated synchronized sight translation," where students are led to practice with DST with clozing blanks and to fill these blanks semantically based on various clues to produce an uninterrupted delivery.

The dynamicity levels adopted were Levels 1 and 2. With the external time pressure added and the deliberately set clozing construction based on linguistic and extra-linguistic clues, inference skills for anticipation strategy used in SI were expected to be enhanced.

In addition to its use in teaching, DST clozing was also included in the final DST test as an assessment of students' skill development in anticipation. The interpretation for these set clozing blanks was assessed for accuracy. There are three quality levels in assessing anticipation accuracy—namely, exact anticipation, general/generic anticipation, and incorrect/false anticipation (e.g., Bevilacqua, 2009; Jörg, 1995; Kurz & Färber, 2003). Although exact and incorrect/false anticipation types are self-explanatory, general/generic anticipation refers to an approximation or a hypernym of the source text, which represents "a meaning similar to that of the source text but does not cover every nuance of the late-appearing constituent" and where the meanings of the output are either "weaker" or "stronger" in expression weighting than the meanings of the source texts anticipated (Liontou, 2012, p. 161). Although time lag was not the only measurement, students were also asked to reflect on failures in anticipation in cases where they made inferences about a segment and possible causes for such failures.

3.4 Hypothesis

The value of ST in skill development for SI lies in equipping students with skills that can be transferred (Li, 2015, p. 179). With the DST designed to visually simulate the information input in SI on the basis of shared cognitive processes and skill components between the two modes, we hypothesize that by involving similar-to-SI constraining conditions in DST, the strategies required in SI can be effectively elicited via DST and then transferred to SI. Therefore, a clozing DST exercise strategy aimed at developing an anticipation strategy can boost and transfer such strategy use in SI.

4. Findings and Discussion

4.1 Effect of DST Exercise on Anticipation

To verify the hypothesis, the deliberately designed DST exercises were adopted in the teaching as part of the AR. As demonstrated in three AR cycles, students generally became more conscious about the benefit and use of anticipation as a result of the deliberate DST design. When reporting strategies that should be used or deemed crucial to deal with the evanescence of text partially presented at the beginning of the semester, students showed, with no exception, ignorance of strategies to be chosen. When asked "What did you do when you found yourself lagging behind?" in the first questionnaire, most students chose to leave the unfinished segment out or speak faster to catch up. However, when surveyed with questions about the strategies they adopted or found useful after the midpoint test and final test, more students reported use of or intended use of anticipation, indicating a better awareness of its usefulness and enhanced deliberation in its use.

Such findings are consistent with the researcher's observation during teaching. The researcher noticed that students started to experiment with anticipation after they were convinced of its value in lessening their cognitive load. Evidence of students' reflection on anticipation including their raising more questions during in-class discussion regarding how to make quick use of contextual or linguistic clues.

By the end of the semester, the value of anticipation in enhancing input processing was more acknowledged by the students as a skill to be transferred to SI. In response to the question "Which DST exercise is the most or

least useful to you in practicing SI?” in the final interview, clozing DST was nominated as one of the most valuable exercise types in all 3 years. Specifically, students commented in English that “anticipation makes it easier to organize sentences and shorten the time for waiting” (14A), and “I am able to produce complex sentences [with anticipation], especially when the structure needs to be adjusted” (14D). These comments show that students understood why and how to actively use anticipation to reduce their cognitive load in input processing, thus allowing more leeway for syntactic manipulation in delivery.

With an earlier introduction and more drilling of anticipation-targeted exercises, students in 2015 and 2016 commended anticipation for benefiting SI comprehension more often in the interviews, with typical comments including “[it is] really helpful in understanding the source text (16A),” and “[it] helps me to catch up the speed and produce complete and intelligible sentences” (16D). These underlined comments demonstrate that anticipation was perceived by the students as contributing to greater agility and accuracy in comprehension for SI. Such incremental awareness is a telling sign of enhanced proactiveness in the students’ information processing because the strategy can reduce uncertainty and relieve cognitive load before difficulties appear (Gile, 2009b, p. 175).

The performance of students in clozing DST also corroborated their ever-developing capacity of anticipation. To assess the students’ skill in making inferences, six clozing blanks were included in the final DST task. Despite high unfolding and erasing rates of text (to simulate an input rate of 130 English words/minute), students demonstrated the skills needed for inferences with the pretext clues. The following example involved one clozing blank (underlined) arranged at the end of the paragraph:

She lived with a fierce intelligence, a passion, a sense of purpose. She was not only devoted to family and friends, but also to improving health care and finding a cure for cancer for once and for all. And she would have appreciated this event, where we are coming together to look for solutions.

For this clozing blank, the quality of anticipation based on the types identified above was assessed across 3 years; the results are presented in Table 5.

Table 5

Results for the clozing blank in the example text, 2014–2016

Number of anticipation type	Years	2014 (n=7)	2015 (n=7)	2016 (n=6)
Extract anticipation		1	3	2
Generic anticipation		2	3	2
Erroneous and missed anticipation		4	5	2

Most anticipation types for this clozing blank combined exact and generic anticipation. In the erroneous and missed anticipation category, and on several occasions, students missed a whole sentence in the interpretation and had no chance to make an inference at all. This result indicates that students who succeeded in accurate generic anticipation could identify contextual clues and make inferences under the time pressure.

Nevertheless, it is important to note that the improved consciousness of applying anticipation did not necessarily lead to better results, as shown in the assessment of the six clozing blanks in the final DST. Compared with the 2014 results, the percentage of accurate anticipation, including extract and generic anticipation, did not increase significantly; see Table 6.

Percentages of different types of anticipation	Years	2014	2015	2016
Extract anticipation		33.33%	28.13%	33.33%
Generic anticipation		9.53%	6.675%	5.66%
Erroneous and missed anticipation		57.14%	65%	61.1%

Table 6 shows that, compared with 2014, the number of erroneous and missed anticipation opportunities still accounted for the majority, and the percentage of extract anticipation did not increase in 2015 and 2016; these results suggest that the earlier introduction of anticipation in the strategy teaching sequence does not necessarily result in immediate improvement on the quality of anticipation.

That being said, the acknowledgment of value in anticipation, the increase in voluntary attempts, and reflections on anticipation from students demonstrated that the clozing DST provided them with more incentives for active listening and led them to make inferences and, it is hoped, accurate anticipation with clues. Therefore, the hypothesis is only partially proved.

The unsatisfactory anticipation quality and efficiency of its transfer in SI could depend on multiple factors, such as the amount of practice and students' overall comprehension capacity, which are not discussed in detail in this article. Therefore, the focus of this review is on limitations of the exercise that could have contributed to the results.

4.2 Limitations of the Exercise

Two factors limited, to varying extents, the expected value of DST (i.e., a simulation to SI that is easier in task condition). The first factor involved two design-related defects, and the second factor related to an intrinsic feature in DST itself, leading to difficulty in finding an inclusively adequate unfolding rate and the lack of concurrent vocalization of input and output, respectively.

In this AR project, feedback from students generally indicated that when the unfolding rate increased to 120 words per minute and above, the time lag was reduced to such an extent that the window space became too small, leaving the display length of the text too short. Regarding the difficulties arising from the DST exercise set at Level 3 dynamicity with high unfolding and erasing rates, 15J complained that “I immediately forgot about what appeared before me and I had to try extremely hard to retrieve the message while seeing the upcoming information slip away right in front of my eyes. . . . I was completely lost.” This frustration was shared by 15I as well, who grumbled that “[t]he text disappeared too fast that there might be only one word remaining on the screen before I could manage to do anything.” Following the final DST task featuring the combination of Level 3 dynamicity and an input rate of 130 words per minute, 16D reflected in dismay that “I only could see one word clearly at a time when previous words already had disappeared.”

These comments suggest that it is problematic to mechanically set up the input rate range in DST in line with that in SI. Although an input rate of 90–120 English words per minute is suggested to be a “comfort zone” in SI teaching, this range is not necessarily completely applicable in DST, considering the discrepancy between reading comprehension and listening comprehension. The issue with text displayed at fast speed directly impinges on comprehension and production processes in DST, and it becomes detrimental to the original training purposes.

In terms of comprehension, the display issue could aggravate the imbalance between ear-voice span (EVS) and working memory (WM) with novice students: If they choose short EVS to reduce cognitive load on WM, they might not acquire enough information for delivery (Goldman-Eisler, 1972). If they keep a longer EVS for a more comprehensive and clearer view of the evolving message, they may experience overload in WM, in information storage and computation (MacWhinney, 1997). This explains why in this research, more than half of the students reported increased temptation to interpret based on whatever information was visually available at a given moment of reading when DST was run at 120 words per minute or more. When the length of text displayed was excessively short, students were likely to be forced to adopt a short EVS, having had inadequate information to constitute adequate rendition, or to clarify meaning ambiguity before delivering. Visually subject to the condition, students' WM was strained, with memory demanding more input information for analysis and comprehension.

In terms of production, short EVS induced by the above visual influence could put students under more pressure. This is likely because short EVS is associated with increased numbers of syllables in the production, which means that more words are uttered, and longer time is required in production (Lee, 2012).

The research also found that students had different degrees of preference or tolerance for visual stimuli in comparison to audio stimuli. Students who preferred for audio stimuli could find visually distracting the display effect of the Level 3 dynamicity at high rates. Some students reported that it was visually uncomfortable, and they

tended to miss lines when reading the fast-changing text displayed at Level 3 dynamicity, causing much more anxiety and pressure than processing audio input at a similarly fast speed. Complaining about the text going at lightning speed, 14E was of the view that SI was easier and “[w]ith pauses, stress, etc., from the speaker, it is easier to get the idea.” Similarly, 15B reported in the interview that “[d]ue to my slower processing in reading than in listening and poor eye-sight, I am under huge visual pressure when the unfolding and disappearing occur at the same time.” Obviously, reading the dynamic text displayed at Level 3 dynamicity could require extra time and effort for these students to adapt to the textual display visually before they could start discerning and analyzing the texts cognitively. This difficulty confronted them as early text reading.

The dynamic textual display also caused an extra burden on WM among students who preferred audio stimulus. These students reported that the information temporarily stored disappeared faster in reading (i.e., the visual decay was reported to be faster than audio decay in their WM). Given that information staying active in WM is the prerequisite for computation to accomplish reading comprehension (Daneman & Carpenter, 1980), it is reasonable to assume that faster decay of stored information would make the retrieval and computation more difficult and affect the speed and accuracy of comprehension.

The above issues could impose extra cognitive loads on or set barriers to visual perception, making DST harder than SI to some students and thus undermining the design’s intention of providing an easier simulation of SI for scaffolding purposes. Given that students had various tolerance thresholds for the text display at high rates, simply keeping the display under a prescribed rate would not be a cure-all.

On top of that, the intrinsic characteristic of input in DST could limit the simulation achieved by DST, compromising the effect of skill transfer. As Lambert (2004) and Moser-Mercer (1997) argue, the concurrent vocalization of input and output in SI is a unique feature, making the simultaneity involved special. Such simultaneity of SI involves articulatory suppression to keep apart the audio input and vocal output, which requires extra attention to execute (Christoffels & De Groot, 2005). To manage this, SI interpreters have developed superior coordination for concurrent processes that involve articulatory suppression (Padilla et al., 2005). Although DST and SI involve the execution of coordinated concurrent subprocesses, the presence of articulatory suppression in SI requires extra attention to manage the channel interference, which demands extra coordination in comparison to DST. As a result, the simultaneity required for DST exercises is at a lower hierarchy than that for SI.

The implication of the channel interference for simultaneity was not able to be mitigated by the manipulation of dynamic features in the DST-related exercises. The unfolding rate and the dynamicity level could only contribute to practicing agility for the subprocesses at lower-level simultaneity that would not cause channel interference. In other words, if properly designed, DST could be an easier simulation in SI, making it appropriate to function as a scaffolding tool to lead students to gradually transition to SI.

5. Conclusion

This study involved the use of DST exercises for teaching SI in postgraduate students interpreting between Chinese and English. The findings suggest that DST exercises are beneficial to practicing anticipation in SI in that, thanks to clozing blanks integrated in DST, students were incentivized to detect and utilize various clues for anticipation and managed to implement the strategy under the SI-like and SI circumstances to some extent. Students’ performances and statements unambiguously indicated that they were purposefully guided to practice the strategy with the well-defined simulation and thus consciously used anticipation in practicing SI. Even though the exercises might not have yielded immediate and significant improvement in execution results, they helped heighten the consciousness of students regarding the use of anticipation and other strategies and kept them proactive in input processing for comprehension. Given the value of anticipation in reducing uncertainty and relieving cognitive load before difficulties appear (Gile, 2009b), it would be more beneficial to use clozing DST to develop proactive comprehension approaches among novice learners.

By adopting the DST exercise and measuredly selecting the combination of dynamicity levels and text display/disappearing rates, it is possible to achieve the skill component teaching that serves “to isolate a student’s cognitive

strengths and weaknesses and, subsequently, developing interpreting strategies that will maximize the former and compensate for the latter” in SI (Moser-Mercer, 2000, p. 85).

The DST-related exercise, including clozing DST designed for anticipation, does require fine-tuning to better accommodate students’ skill-development needs. To improve skills in novices, a demanding task condition that features advanced dynamicity levels and high input rates may not always be the optimal choice. Instead, the two variables should be considered in a concerted way, manipulating the exercise features to jointly keep the task condition stimulating yet not too demanding. From the present findings, the combination of an unfolding rate of 100 words per minute and Level 3 dynamicity made an optimal task condition, which was more conducive to skill development and transfer. Taking into account the pros and cons, the greatest number of students nominated the DST exercises featuring this variable combination to be the most useful for skill development and transfer over the course of the 3-year study. Its applicability in other contexts is still open to testing, which makes DST valuable as a tool to be studied in SI teaching.

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