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Effects of Domain Knowledge on Consecutive Interpreting Performance

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Effects of Domain Knowledge on Consecutive Interpreting Performance

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Abstract

This paper presents some of the results of an empirical study that aims to explore the effect of domain knowledge on both interpreting quality and the use of strategies. This study compared the consecutive interpreting performance of two groups of students, eleven in each group. One group was provided only a list of terminology, while the other group was provided, apart from the list, a portfolio of background articles to study before the interpreting experiment. The latter group was thus set as the group possessing domain knowledge. The experiment took place in an interpreting lab where the students would normally have their interpreting classes. The result of this study indicated that students who read the portfolio of background articles performed better in the interpreting task. They achieved higher scores in terms of interpreting quality, and used higher-level strategies to solve interpreting problems.

Key words: consecutive interpreting, domain knowledge, interpreting quality, interpreting strategies

1 Introduction

Knowledge, both linguistic knowledge and extra-linguistic knowledge, is one of the interpreting competences in various theoretical models. This is because interpreting is not an effortless activity of converting two languages; it involves information processing (e.g. Barik, 1973; Gile, 2004), especially problem-solving and decision-making actions during the comprehension, transfer and reproduction phases of the interpreting process. To execute these cognitive activities, interpreters need to have a comprehensive set of skills including, but not limited to, linguistic skills, memory skills, note-taking skills, strategic text processing skills, terminological knowledge, and broad general or specialised domain knowledge, among many other things (Austermüehl, 2012; Choi, 2003; Kaczmarek, 2010; Kalina, 2000; PACTE, 2003). The PACTE Translation Competence Model, for example, believes that extra-linguistic sub-competence is one of core skills translators must have, among five other competences. Gile, drawing on Jean Maillot (1981), also proposes that Translation (both translation and interpreting) competence includes

1) good passive knowledge of their passive working languages

2) good command of their active working languages

3) sufficient knowledge of the themes and subject-matters addressed by the texts or speeches

4) declarative and procedural knowledge about Translation (2009, pp. 8-9).

Sufficient knowledge of the themes and subject-matters refers to domain knowledge (including declarative and procedural knowledge) (Gile, 2009, p. 8; Kalina, 2000, p. 6; PACTE, 2003), and/or terminological knowledge (Faber, León, & Prieto, 2009; Kalina, 2002; Martinez & Benitez, 2009, p. 89), which is supposed to greatly facilitate specialised interpreting tasks. However, there is little empirical evidence to prove such an assumption. Moreover, the literature seldom distinguishes terminological knowledge and knowledge at a higher level, i.e., contextualised domain knowledge acquired through reading specialised subject-matter articles. The purpose of my interpreting experiment was to test the effect of domain knowledge on student interpreters' consecutive interpreting performance.

2 Interpreting performance

This study examines both the interpreting process (problems and strategies) and the interpreting product (quality). In particular, the hypothesis here is that after reading the

portfolio of background articles, student interpreters would have fewer interpreting problems and use more high level interpreting strategies to solve problems. I also hypothesize that after reading the portfolio of background articles, student interpreters would achieve higher interpreting scores, assessed by both the holistic method and propositional analysis.

2.1 Interpreting strategies

Strategies are "goal-directed procedures that are planfully or intentionally evoked either prior to, during, or after the performance of a task" (Alexander & Judy, 1988, p. 377). Specific to interpreting studies, Gile states that interpreting "tactics and strategies are deliberate decisions and actions aimed at preventing or solving problems, as opposed to spontaneous, perhaps unconscious reactions" (2009, p. 201). The underlying presupposition is that strategies come into play when there are problems to be dealt with, with an intentional and goal-directed nature (Bartłomiejczyk, 2006; Falbo, 2002; Riccardi, 2005). The factors that may potentially cause interpreting problems are called "problem triggers" (Gile, 2009, p. 192). When interpreters realise that they are facing problems, they may or may not intentionally use interpreting strategies. In addition, they may have used some of the strategies so many times that those executions became automatic; as a result, the interpreters may not be aware of the fact that they have used strategies to tackle a particular problem.

Studies that cover the topic of interpreting strategies generally exemplify these strategies without further categorising them (e.g., C.-c. Chang, 2005; H. Chang, 2011; Gile, 2009; Kohn & Kalina, 1996). Here, for the purpose of my study, I propose to categorise interpreting strategies, especially consecutive interpreting strategies into four categories: micro-level strategies, macro-level strategies, note-related strategies, and psychological strategies. Micro-strategies refers to strategies that operate at word or phrase level, primarily word-level strategies including transcoding, referring to the terminology list, guessing the meaning of an unknown word, imitating the sound, interpreting according to the key words, making up an equivalent to an unknown word, speaking out the first word that comes to mind, only interpreting the given name, dropping out certain words, or searching the unknown word in memory. Cases where they realised the problem later but did not have an opportunity to repair it were also considered to be micro-strategies.

Macro-strategies were defined as strategies that operate at the sentence or discourse level. Kintsch and van Dijk (1978) summarized three macro-rules regarding discourse comprehension: deletion, generalization, and construction. Setton and Motta further applied

these rules in interpreting studies, and specified four deverbalising indicators. They were: 1) lexical elaboration (sophisticated, contextualised lexical choice), 2) pragmatic or cohesive elaboration (extra connective, explanatory or cohesive devices, reference clarification), 3) reordering (of sentence constituents), and 4) recasting (of source-text meaning in different target-text syntax) (2007, p. 213). Sun (2011), drawing on Setton and Motta (2007), categorised four types of strategies that indicate macro-level processing of the target speech. They were: 1) reordering sentence structures in the target speech; 2) explanation when there were no equivalent rhetoric devices or cultural concepts; 3) addition, deletion, or change of cohesive devices; and 4) innovative expressions, where interpreters were not constrained in the reproduction by the source speech vocabulary. In this study, macro-strategies included most of the above-mentioned categories, namely, additions and explanations, compressions and deletions, and sentence restructuring, yet also took into consideration the knowledge factor. Therefore, strategies closely related to the use of existing knowledge, such as anticipation, parallel reformulation and resorting to existing knowledge, were counted as macro-level strategies. Specifically, the macro-strategies used in this study encompassed additions, explanation and paraphrase, omission and deletion, compression, generalisation, anticipation, adjusting sentence structures, parallel reformulation, and resorting to existing knowledge.

Note-related strategies and psychological strategies are not mentioned as frequently as the two previous categories. Note-related strategies are the strategies participants use when they find note-related problems, for instance, delaying the note-taking, and taking fewer or more notes. Participants use psychological strategies primarily to try to solve attention problems. When they find that they were distracted by external noise, or a difficult word or segment, they will try to focus and reallocate their attention in order to minimise the effect of the distractions.

I hypothesise, as mentioned earlier, that after reading the portfolio of background articles, participants would use more high level strategies, i.e., macro-level strategies to solve interpreting problems, whereas participants who did not read the portfolio would rely on the lower level strategies, i.e., micro-level strategies.

2.2 Interpreting quality

Interpreting quality is the central topic in interpreting studies. After discussing the topic for more than forty years, researchers still do not agree on the key elements in assessing

interpreting quality and on how to accurately measure it (Anderson, 1979; Barik, 1971; Grbić, 2008; Hansen, 2009; Macdonald, 2013; Moser-Mercer, 2008; Pöchhacker & Zwischenberger, 2010). This concept is "elusive" (e.g., Krämer, 2006; Shlesinger et al., 1997), and to some extent, subjective, with the judgement of "excellence" relying much on the assessors' subjective judgements. Nevertheless, researchers have agreed on a few core "linguistic aspects" (Kopczynski, 1994, p. 190), such as "equivalence", "fidelity", and "accuracy (Pöchhacker, 2002, p. 96), when assessing interpreting quality. Others also propose pragmatic or contextual issues that need to be taken into consideration (Moser-Mercer, 1996, p. 44).

As the concept of interpreting quality is elusive, it is natural that different user groups would have different expectations. Here, I will focus on how interpreting quality is measured in empirical studies. Andrew Clifford (2001), drawing on Berger and Simons (1995), points out five fundamental principles in evaluating interpreting performance: validity, reliability, equity, utility, and comparability. Under these principles, quality measurements in experimental studies have shown three trends: holistic assessment, error count, and a combination of holistic assessment and error count. The holistic method assesses interpreting quality on a macro-level by using a descriptive sheet (Riccardi, 2002) or rubrics (Angelelli, 2009). Error count was initiated by Barik (1971), and later developed by Falbo (2002), using primarily the propositional analysis method. Holistic assessment embraces as many aspects as possible and assesses the interpreting quality at a very general level, whereas error counts reflect mainly the linguistic aspect of the target language, focusing on sense consistency and logical coherence, but excluding pragmatic and contextual issues. To overcome the disadvantages of the above two methods, a few researchers propose combining the holistic method and error count/propositional analysis (B. Turner, Lai, & Huang, 2010). My study uses this combined method.

3 The Experiment

3.1 Participants

Participants were recruited from Beijing University of Foreign Studies. After a selection process, 22 undergraduate students (2 male students, 20 female students) majoring in Translation and Interpreting took part in the experiment. These students were in their third year of a four-year BA program, and had similar educational backgrounds, interpreting training and English competency, as well as interpreting experience. Participants' background knowledge on the topic of the source speech was also tested during the selection process:

only those who achieved similar scores in the test were admitted into the experiment. The participants finally chosen were randomly assigned into two groups.

3.2 Procedures

This experiment follows the research design shown in Figure 2. The background questionnaire and the pre-test of their domain knowledge served the purpose of pre-selecting participants, so that their English competence, interpreting experience, and level of domain knowledge were relatively homogenous. When such participants were selected, they were randomly assigned into two groups, and received different treatments before the interpreting task. The control group received a list of terms related to the source speech topic, while the experimental group was provided, apart from the list of terms, a portfolio of background articles to study before the interpreting task.

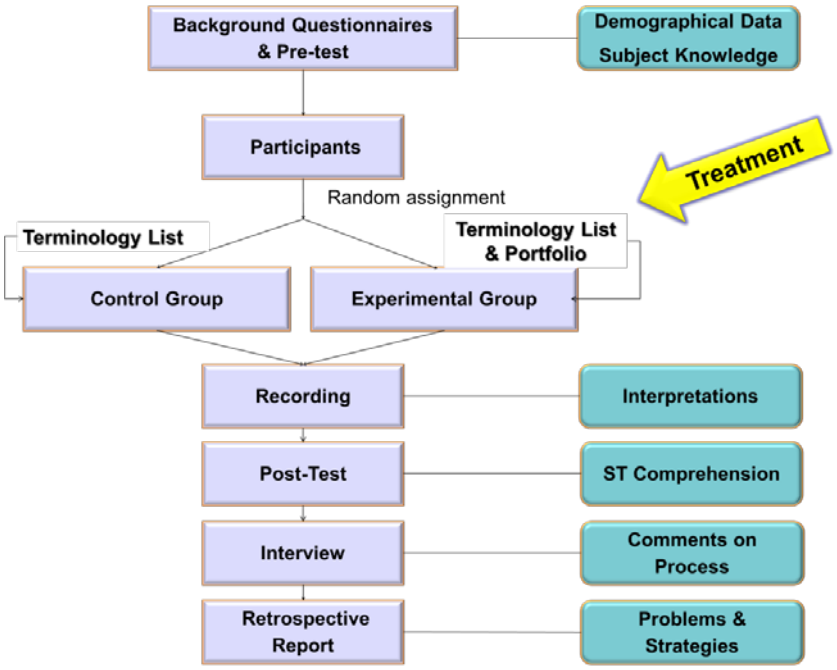


Fig. 1. Experiment design

Participants' interpretations were recorded by using the laboratory recording system. Immediately after the interpreting task, all the participants took a post-test, which was the same as the pre-test, to see whether they had gained more knowledge after interpreting the source speech. Then I conducted structured interviews and invited participants to comment on the interpreting process. Finally, I asked the participants to fill in the retrospective reports, where participants reported their problems and strategies.

3.3 Material

When choosing suitable articles or speeches as the final experimental material, I took into consideration of the difficulty level and suitability (Liu, Schallert, & Carroll, 2004). After comparison, the one finally chosen was an article published in The Economist, entitled "Catching a Few More Rays" (Monitor, 2012). It introduces a new type of solar panels and their working mechanism, as well as the material used to make the solar panels. Choosing one discourse from a vast collection of articles available was not an easy task. As Van Dijk states " [t]he choice of such a passage is difficult and rather arbitrary, because the textbook has many passages that are comprehensible without any or much specialized knowledge, and other passages which are highly "technical" for non-specialists" (2003, p. 49).

However, the article finally chosen was not entirely arbitrary, in the case of this study. I conducted a pilot study, which used a different article, which the participants complained about being quite difficult to interpret. They ranked the difficulty level of the pilot article slightly higher than four, on a 1-5 scale. This set a benchmark for the difficulty level of the source material for the main study. A number of potential articles were compared with the pilot one, to make sure that the difficulty level of the article for the main study was lower than that of the pilot. The comparison was carried out by referring to the Flesch-Kincaid Grade Level.

Admittedly, written texts have features that are different from speeches, for example, complex grammar, long sentences, and special vocabulary etc. However, adopting written texts as source material for interpreting experiments is a common practice in interpreting studies (e.g., Liu & Chiu, 2009; Liu et al., 2004). The source material was also adjusted for this study to become more speech-like. Some sentence structures were adjusted, some words were replaced by more colloquial ones and extra connecters were added to be more natural and closer to spoken language. This re-written text was manipulated in such a way that the text kept the original logical and well-structured features of a scientific technical article.

3.4 Assessment

This experiment uses both the holistic assessment method and propositional analysis to evaluate participants' interpreting quality. For holistic assessment, two interpreting teachers assessed the participants' interpreting recordings according to the following criteria. The percentage in the brackets represents the weights of each criterion in the total holistic score.

Table 1. Criteria for Holistic Assessment

Semantic Content (80 percent)	**Linguistic performance (20 percent)**
Sense consistency, accuracy (50 percent)	Grammatical correctness (25 percent)
Terminological adequacy (20 percent)	Adherence to TL norms (25 percent)
Logic, coherence (10 percent)	Fluency (25 percent)
Clarity (10 percent)	Stylistic adequacy (25 percent)
Completeness (10 percent)	

I also used propositional analysis to reflect the detailed semantic content of the target speeches, focusing especially on sense consistency, terminological adequacy, logic and completeness. Propositions are the smallest unit that can express a complete meaning. Kintsch (1972) proposes that each proposition contains a predicate, which is also called relations (A. Turner & Greene, 1978), plus one or more arguments. Predicates often take the form of verbs or other relational terms, whereas arguments correspond to nouns. Taking an example given by Singer and Leon (2007, p. 10), for the sentence:

The car pulling the trailer climbed the steep hill.

there are three underlying propositions, as shown in the following brackets, with the predicates listed first, followed by one or more arguments:

a. (PULL, CAR, TRAILER),

b. (CLIMB, CAR, HILL),

c. (STEEP, HILL).

Some propositions have to take other propositions as their argument to express a complete meaning; such propositions are called embedded propositions. Turner and Green (1978), working from Kintch (1970, 1972, 1974), list three types of proposition or relation: predicate relation, modification relation, and connective relation. Predicate propositions express ideas of actions or states. Modifier or modifications change a concept by restricting it or limiting it, by means of another concept, which either modifies its attributes or quantity, or indicates a partial or complementary relationship. Connective propositions relate propositions or facts in

the text to each other, the purpose of which is to provide coordination and coherence to the text.

Following Turner and Greene's guidelines for constructing propositions (1978), the whole speech was divided into one hundred propositions. Each proposition was then assessed as either correctly rendered or lost in interpretation. If the proposition was correctly rendered, then the participant was given one point for that proposition. If the proposition was not adequately reproduced in the target speech, no point was given. The highest score participants could get was one hundred and the lowest zero. The main advantage of conducting propositional analysis is that it allows the researcher to trace the difficult segments of the source speeches, by looking at the propositional scores. In the following, I present some of the results obtained from the experiments.

4 Results

4.1 The Effect of Domain Knowledge on Interpreting Quality

Holistic assessment

The two assessors had very high inter-rater reliability, with a Cronbach's alpha of .898. Table 2 shows that, in general, assessor 1 tended to give participants higher scores than assessor 2. Nevertheless, both assessors agreed that participants in the portfolio group performed better than participants in the terminology group. This difference is significant at .01 level (independent-samples T test), and has a large effect size, tested by Cohen's d value.

Table 2. Mean (holistic assessment) between two groups

Holistic Assessment	**Terminology** (Control) Group	**Portfolio** (Experimental) Group	**P-value**	**Effect Size** (Cohen's d and effect-size correlation r)
Assessor 1	6.087	7.460	.000 **	d=1.79, r=.67
Assessor 2	4.544	6.655	.001 **	d=1.66, r=.64
Mean	5.315	7.058	.000 **	d=1.77, r=.66

*: p<.05 (statistical significance at .05 level); **: p<.01 (statistical significance at .01 level)

Participants in the experimental group obtained higher scores for all nine assessed criteria, among which accuracy, coherence, clarity, completeness, fluency, and stylistic adequacy were the ones in which participants in the experimental group showed an advantage over the control group. With regards to terminology adequacy, grammatical correctness, and target language norms, participants in the experimental group again outperformed the control group, but this difference is not as obvious as the above-mentioned criteria. This indicates that reading the portfolio of bilingual background articles may have helped participants in the experimental group to better reproduce the source speech with more accurate, coherent, clear, complete, and fluent target speeches. Yet, because all the participants were native Chinese speakers and were provided a terminology list, they did not show much discrepancy in their performance in terms of terminology adequacy, grammatical correctness, and target language norms. Propositional analysis reveals at a detailed level, exactly which part of the speech caused performance differences.

Propositional analysis

The source speech was divided into 100 propositions, 52 predicates, 34 connectives, and 14 modifications. Table 3 shows that participants achieved significantly higher score than participants in the control group in all three types of propositions. In addition, participants in the experimental group achieved slight higher scores for predicates, and lower for connectives; whereas participants in the control group obtained the higher scores for modifications, and lower for connectives. However, these differences were not minimal.

Table 3. Proposition Type and Propositional Scores

Group	**Mean**		**Std. deviation**		**P-value**	**Effect Size** (Cohen's d and effect-size correlation r)
	Control	Experimental	Control	Experimental		
Predicate	6.019	8.403	3.184	2.107	.000**	d=.883, r=.404
Modification	6.765	8.323	3.276	2.495	.000**	d=.535, r=.258
Connective	5.714	8.071	3.361	2.731	.001**	d=.770, r=.359

*****: P<.01*(statistical significance at .01 level)**

The common low score for connectives may indicate that for both the control group and the experimental group, connectives were the most difficult to reproduce. Indeed, to successfully

reproduce a connective proposition, one has to have a very good understanding of the preceding propositions as well as the following ones, so that one can grasp the logic between the sentences before reproducing it in the target language. This can be supported by participants' propositional scores for simple and complex propositions, shown in Table 4.

For both the control and the experimental groups, participants achieved higher scores for the simple propositions than for the complex propositions. And this difference is significant for only the control group. This might mean that after reading the portfolio of background articles, participants in the experimental group had a better understanding of the subject matter, so that they could manage to interpret successfully more complex sentences.

Table 4. Proposition Type and Interpreting Quality

Group	**Simple**	**Complex**	**P-value**	**Effect Size** (Cohen's d and effect-size correlation r)
Control	6.809	5.243	.018 *	0.5091, r=0.2466
Experimental	8.556	7.946	.205	0.2684, r=0.1330
p-value	.001**	.000**		

***: p<.05 (statistical significance at .05 level)**

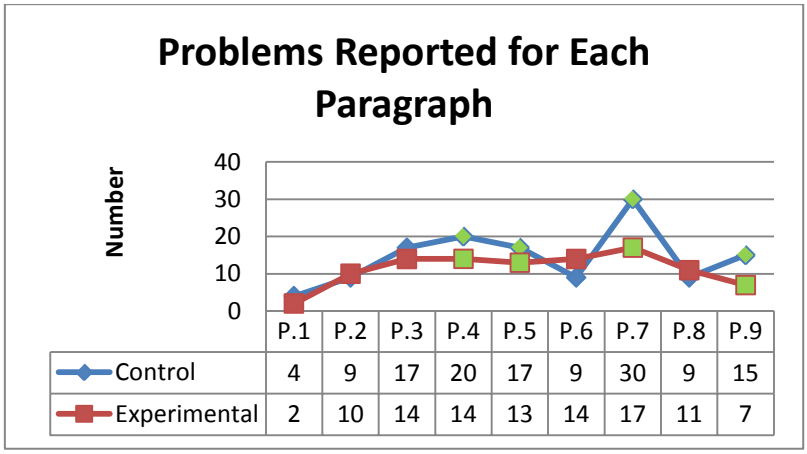
4.2 The Effect of Domain Knowledge on Interpreting Problems

In their retrospective report, participants were asked to written down any interpreting problems they had and interpreting strategies they used (see 4.3) during the interpreting process. They also rated the difficulty level of each of the nine paragraphs of the source speech. According to their rating, the source speech paragraphs were divided into easy paragraphs (paragraphs 1, 2, 3, 6, and 8, difficulty level <=3, out of 5) and difficult paragraphs (paragraphs 4, 5, 7, and 9, difficulty level >3). Paragraphs 4, 5, 7, and 9 were more difficult, because they contained more specialised contents and more propositions.

Figure 2 represents the number of problems reported by the control group and the experimental group for each paragraph. It revealed: 1) generally speaking, participants in the control group reported more problems than the experimental group; 2) participants reported more or less the same number of problems for easy paragraphs; 3) for difficult paragraphs, participants in the control group reported more problems than the experimental group. This

indicates that for easy paragraphs, participants in both groups interpreted quite well, but for more difficult paragraphs, reading the portfolio of background articles appeared to have a positive impact on participants' interpreting process. On the surface level, at least, they reported fewer problems.

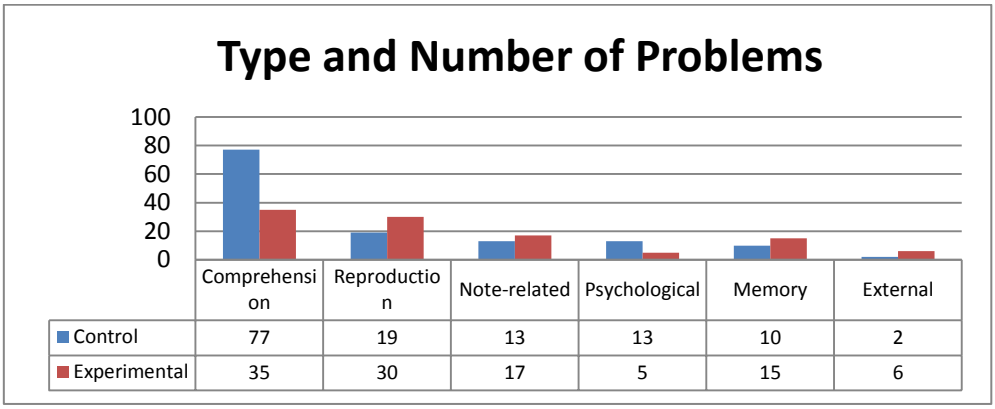
Fig. 2. Interpreting problems



	P.1	P.2	P.3	P.4	P.5	P.6	P.7	P.8	P.9
Control	4	9	17	20	17	9	30	9	15
Experimental	2	10	14	14	13	14	17	11	7

I then categorized all the reported problems, into comprehension problems, reproduction problems, note-related problems, psychological problems, memory problems, and external problems. Figure 3 shows the allocation of these problems. It shows that for the control group, most of the problems, i.e., 56 per cent of the problems they had, fell into the category of comprehension problems; whereas for the experimental group, comprehension problems only reached about 32%. Participants in the experimental group also reported large numbers of reproduction problems, such as looking for more suitable equivalent expressions, or more natural expressions.

Fig. 3. Problem type and number of problems



	Comprehension	Reproduction	Note-related	Psychological	Memory	External
Control	77	19	13	13	10	2
Experimental	35	30	17	5	15	6

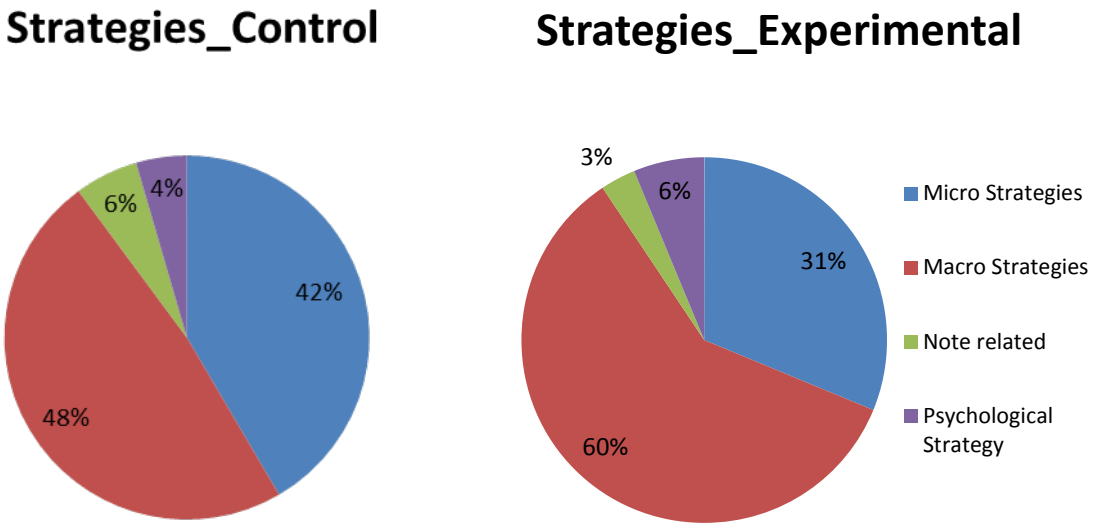
This might mean that reading the portfolio of background articles reduced the cognitive load for participants in the first phase of consecutive interpreting, and the difficulty lay more in the

memory, note-taking, and reproduction processes (Gile, 2009). The following section focuses on the strategies participants used to solve problems.

4.3 The Effect of Domain Knowledge on Interpreting Strategies

Participants reported altogether 153 strategies, which was less than the number of problems they reported. This means that they did not use strategies for every problem they had; sometimes they were aware of the problems, but did not try to solve them. As mentioned earlier, I recognised four types of strategy in the literature, and I used the same categories for my study. Figure 5 shows that participants in both groups used mainly micro and macro strategies; note-related and psychological problems took only 10 per cent of all the strategies. Specifically, the charts show that participants in the experimental group used 12 per cent more macro-level strategies than participants in the control group.

Fig. 4. Percentage of different types of strategy used



Not every strategy that participants used was successful in addressing the problems they had. Table 5 summarises the success rate of the strategies. It shows that in general, the success rates were higher for the experimental group than the control group. Combining the data from Figure 5, it seems that after reading the portfolio of background articles, participants in the experimental group were able to use more high-level strategies, and the strategies they used were more likely to be successful in solving the problems they had. This is especially true for macro-strategies. Participants in the experimental group, as Table 5 shows, had a very high success rate when they applied high-level interpreting strategies, such as generalizing,

compressing, restructuring the sentence order, etc. Participants in the control group, on the contrary, when they applied such strategies, experienced information loss, and therefore, were unsuccessful.

Table 5. Success rate of different types of strategy

Strategy Type	Control			Experimental		
	Unsuccessful	Successful	Rate	Unsuccessful	Successful	Rate
Micro-strategies	12	23	65.7%	5	18	78.3%
Macro-strategies	16	26	61.9%	5	30	85.7%
Note-related strategies	3	2	40%	1	1	50%
Psychological strategies	5	2	28.6%	1	4	80%
Total	**48**	**41**	**46.1%**	**14**	**50**	**78.1%**

The higher success rate might be a positive effect from reading the portfolio of background articles. Several participants did comment on the fact that reading the articles made them feel more confident, and most importantly, as they were familiar with the subject matter and especially with the expressions in both the source and target language, they had fewer comprehension problems and could spend more effort on reproducing a more acceptable target output.

The result of this study also demonstrated a strategic difference for easy and difficult paragraphs. Figures 4.3.2 and 4.3.3 depict the interpreting problems participants reported, as well as the corresponding strategies they used to solve these problems, for easy and difficult paragraphs respectively. Comparing these two figures, we can see that participants reported similar problems and corresponding strategies in the categories of reproduction, note-taking, psychological, and external problems; the main difference is in comprehension and memory problems, and the use of macro strategies to solve these problems. Participants reported twice the number of comprehension and memory problems for the difficult paragraphs as for easy paragraphs. We can also see that participants reported twice the number of macro strategies to solve comprehension problems in difficult paragraphs.

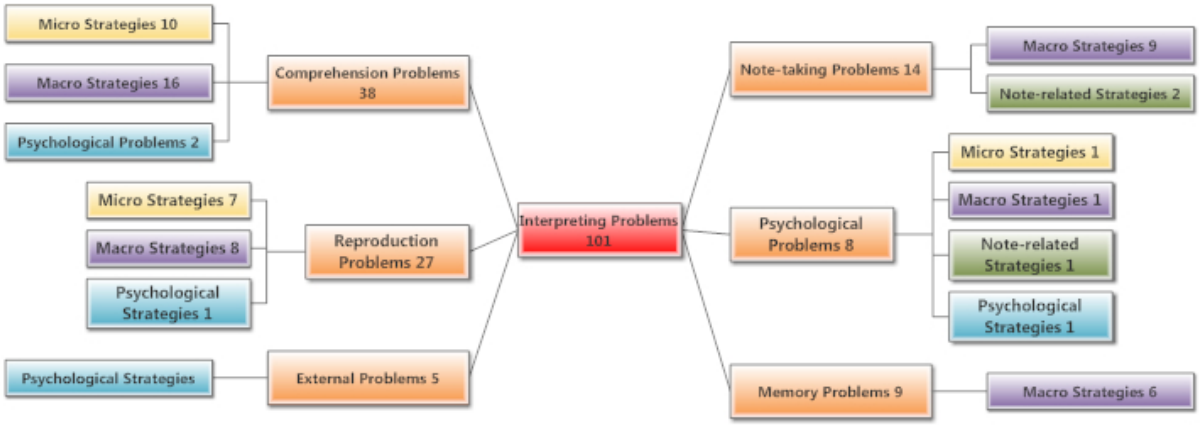


Fig. 5. Interpreting problems and strategies for easy paragraphs.

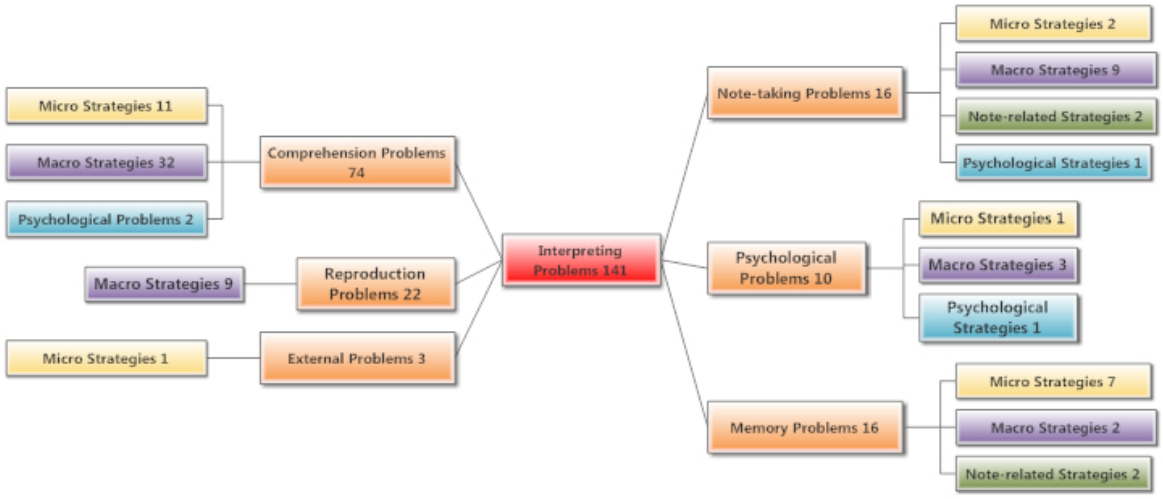


Fig. 6. Interpreting problems and strategies for difficult paragraphs

Figures 5 and 6 describe the general patterns of the types of strategy participants used to solve different problems. It seemed that participants used micro-level strategies predominantly to solve comprehension problems. Macro-level strategies had a wider application. They were applied to solve almost every type of problem, but it seems that for reproduction problems and memory problems, macro-level strategies outnumber others, and sometimes only macro-level strategies were applied to solve these two types of problem.

5 Discussions and Conclusion

This study used a strict two group experimental design to test the effect of domain knowledge on student interpreters' consecutive interpreting performance. The effect was twofold. First of all, reading the portfolio of background articles allowed student interpreters to achieve

better interpreting scores, which were assessed by both the holistic method and propositional analysis method. Second, reading the portfolio of background articles eased the interpreting process, reflected by the fact that participants in the experimental group had fewer interpreting problems, especially fewer comprehension problems, and that they were more likely to be successful when they applied interpreting strategies to solve problems.

The effect of domain knowledge on interpreting performance is more obvious if we examine the difficult paragraphs. In fact, student interpreters' interpreting performance did not differ much for the easy paragraphs; they obtained similar scores and reported similar numbers of problems and strategies. Yet for difficult paragraphs, participants in the control group, who did not read the portfolio of background articles, reported that they had more problems, especially comprehension problems, and that their interpreting scores were also much lower than participants who read the background articles. Most importantly, participants who read the background articles generated more accurate, coherent, clear, and fluent target speech.

It seems, from the results of this study, that domain knowledge has a positive effect on student interpreters' consecutive interpreting performance. Further studies are recommended to extend the scope of this study, to cover more participants, and to use professional interpreters as subjects. Another line of research could be carried out to study what preparation materials are the most beneficial to interpreters. The background articles used in this study included both texts and graphs, and a few participants commented that the graphs were very useful. It could be important to know what difference texts and graphs make in terms of helping interpreters to better understand something they were not very familiar with, so that they could be enabled to do their job better.

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