Psycho-physiological Components in English-to-Chinese Interpreting Training: A Comparative Study

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ABSTRACT

This empirical study was designed to assess the influence of psycho-physiological components in English-to-Chinese interpreting course. Based on PACET's model of translation competence and its depiction of psycho-physiological components, and with an aim to gain insights into the underlying effective interpretation strategies used by learns to overcome psycho-physiological uneasiness, the study adopted the method of comparative analysis on the differences between student and professional interpreters' strategy-choosing. The study examined how professional and student interpreters perform interpretation from the perspective of psycho-physiology and what attributes to their different strategic choice. Based on the analysis, the results were obtained and the conclusions were drawn about the influences of psycho-physiological components in learners' interpreting process.

1. Introduction

Study on psycho-physiological components in interpreting is important both theoretically and pedagogically. The psycho-physiological process of interpretation is an essential part of understanding what interpretation is and a prerequisite for informing students about how to acquire interpreting strategies and become better interpreters. Interpretation is a complex social and cognitive activity. From a commonsensical view, the process of interpretation is quite highly-stressed which involves listening, storing, information processing and then target verbal language reproducing. During this complex cognitive process, interpreters also bear a great burden to overcome a lot of psycho-physiological uneasiness such as anxiety, mental intensity or something like that. However, interpreters have to try their best to apply some strategies appropriately to cope with that uneasiness and thus to carry on the interpretation.

Review of studies on the cognitive limitation of interpreters, Gile's effort model was considered most widely accepted and verified. Gile constructs his efforts models based on the insights from cognitive science (Gile, 1995). The models focus on cognitive limitations, in which they aim to explain and predict some phenomena, such as the difficulties the interpreters may encounter during the interpreting process and the factors contributing to the deterioration in interpreting quality.

Gerver (1975), if not the only, was definitely the earliest one who had tried his efforts into this field by adopting the psychological approach. Then inspired by Gerver, Deborah A. Garretson (1981) borrowed this method into the study of consecutive interpreting. Both of them concentrated their attention on the importance of some critical psychological factors like short-term memory and long-term memory, the phonetic meaning, or mathematic logic, etc. But none of them had made any empirical researches to confirm their achievements. Moreover, due to the complex mechanism of psycho-physiology and so many variables should be taken into consideration, empirical studies on psycho-physiological components in consecutive

interpreting become a tough and demanding job.

So far, few empirical studies on interpreting process have been carried out in China. One of the few who has conducted an empirical study is Cai Xiaohong (2001), who describes the consecutive interpreting process of three professional French interpreters and six interpreting students of different interpreting competence. Through the qualitative and quantitative analysis of information variable, language variable, time variable, and the strategy variable, she verified her hypothesis that the development of interpreting competence is virtually an interpreting skill acquisition process. Although Cai touches upon interpreting strategies in her study, they only serve as a dependent variable to describe the interpreting process and interpreting competence. The categorization of the interpreting strategies is not systematic and the strategy analyses are mainly quantitative. Her explanation of the differences of the strategies' choice between professional interpreters and the interpreting students are too simplified. Thus, the present study attempts to elaborate the consecutive interpreting strategies and the psycho-physiological components contributing to the strategy choice.

2. Theoretical Background

A psycho-physiological disorder is characterized by physical symptoms that are partly induced by emotional factors. Some of the more common emotional states responsible in forming illness include anxiety, stress, and fear. Psychophysiology is closely related to the field of Neuroscience and Social neuroscience, which primarily concerns itself with relationships between psychological events and brain responses. Psychophysiology is also related to the medical discipline known as psychosomatics. While psychophysiology was a discipline off the mainstream of psychological and medical science prior to roughly the 1960 and 1970s, more recently, psychophysiology has found itself positioned at the intersection of psychological and medical science, and its popularity and importance have expanded commensurately with the realization of the inter-relatedness of mind and body. Psycho-physiological measures are often used to study emotion and attention responses in response to stimuli.

As we have mentioned above, though there were some researchers who had arisen their interests towards the psychological or cognitive influence of translation studies, PACTE (2000) is the first one who presented the main definition of psycho-physiological components in the Model of Translation Competence. In this model, psycho-physiological components were defined as "different types of cognitive and attitudinal components and psycho-motor mechanisms, which include: (1) cognitive components such as memory, perception, attention and emotion; (2) attitudinal aspects such as intellectual curiosity, perseverance, rigor, critical spirit, knowledge of and confidence in one's own abilities, the ability to measure one's own abilities, motivation, etc.; (3) abilities such as creativity, logical reasoning, analysis and synthesis, etc". Since psycho-physiological components was such a complex mechanism and each subject's psycho-physiological components maintained its own characteristics, psycho-physiological components in this research were restricted to the common psycho-physiological features that shared by all the common people. Thus, based on PACTE's research, we categorized psycho-physiological components into three parts, which is (a) cognitive components; (b) attitudinal components; (c) other components. These components exist in an interweaving dynamic way, by which left great influence on the whole process of interpretation.

According to Riccardi (2005), many empirical studies have chosen either an experimental or a case study approach, sometimes a combination of the two. The objective of the case studies is to describe and evaluate consecutive or simultaneous interpretations when they occur in their "natural" environment. Specifically, they aim to describe how various variables in the interpreting settings may influence the interpreting. The advantage of these studies is that they can reflect the interpreter's real time performance, and the results may help validate, confute or question existing theories and may point to new research field. The drawback of this "natural observation" method is that due to the limitation of the conference settings, the researcher cannot approach the interpreter too closely to observe his performance, so the interpreting strategies the interpreter has employed are not easily detected. Besides, the researchers cannot elicit more information directly from the subjects. Therefore, the interpreter's on-line thinking or decision-making process can only be inferred from the interpreting productions and their on-the-spot

performances. Such inferences sometimes tend to be too subjective or even misleading.

3. Research Design

This empirical study was conducted at Hunan City University in China for almost one year, specifically from the beginning of September, 2015 to the end of June, 2016. It involved 4 senior undergraduates who were attending consecutive interpreting courses in the university and 4 freelance or professional interpreters.

3.1 Research Questions

The research was designed to find answers to the following questions:
a) How do the psycho-physiological components influence interpreters' strategy-choosing?
b) What are the differences between student and professional interpreters' strategy-choosing under the influences of psycho-physiological components?

3.2 Subjects

Eight subjects were involved in present study and they are divided into two teams. Team 1 consists of four senior undergraduates, including one male (S1) and two females (S2, S3, S4), aged from 21-23. They were all English majors from a university in Changsha, received some sort of self-training and had taken the course of advanced interpretation in their college. Besides, all of them are conveying a great interest towards interpreting but none of them has experienced as an interpreter. However, the other four (Team 2, P1, P2, P3 are male and only P4 is female) are professional interpreters. They all had passed AIT (Advanced Interpreting Test), aged from 30-38 and had at least more than five years of professional interpreting experiences.

3.3 Procedures

Before the interpretation, one questionnaire would be distributed to all the participants. They are required to read all the questions carefully and necessary explanations would be provided if there are any arising questions. One tape recorder and one video camera were used; the tape recorder was used to play the original speech, and the video camera was used to record the subjects' performance and interpretation. Right after all the source texts were interpreted, the camera replayed the whole process of interpretation to the interpreters and then stimulated recalls were also recorded. After all the recordings were done, the participants were asked to finish the questionnaires and then post in-depth interviews followed.

3.4 Data Collection Instruments

Altogether three kinds of instruments were used to make the experiment possible, namely, questionnaires, stimulated recall, notes and post in-depth interviews.

a) Questionnaires

One questionnaire on psycho-physiological components was designed to check the participants' general impression of the psycho-physiological components on one's own personal interpretation. The questionnaire was made with reference to the categorization of PACTE and all the subjects were required to give answers to the questions according to their most primitive responses.

b) Stimulated Recall

To study inner mental activities during the process of performing a certain task, think aloud method has been widely adopted by the researches because it can reveal the subject's "on-line" mental activity. But due to the time limitations and the limited processing resources of working memory, think-aloud is too demanding for the student interpreters, which may impair the influence of the target language. Therefore, the present study chose a method of "stimulated recall" [4] to reveal the students' inner decision-making process and the factors contributing to their strategy choice. That is, the students were presented with the recorded interpretation they had produced and were asked to recall what they were thinking of when they paused for a relatively longer, repeated some words, reformulated some expressions, etc. One problem with some of the former studies when using this method has been that what has been recorded is not replayed immediately for the subjects to recall their on-line thinking as they perform a task. Thus, what the subjects have recalled may include much of their after-act reasoning. To reduce this problem, the tape-recorder was played immediately after the students had finished interpreting. What they had said was also recorded and transcribed for later analysis.

c) Notes

Notes provided much evidence in digging out the strategies used by the students and professional interpreters. The participants were free to take notes. Taking-notes itself was also a very useful and typical method in interpretation.

d) Post In-depth Interviews

The participants were free to give self-reports and describe their personal feelings that impress them during the interpretation, and the interviews were recorded as well. It was proved that the questionnaires and post in-depth interviews were of great importance to guarantee the reliability and validity of the experiment.

4. Analysis & Findings
4.1 Data Coding

Here we code the psycho-physiological components by resorting to analyzing the questionnaires and self-reports in post interviews. Table 1 below listed specific statistics of psycho-physiological components on Team 1 and Team 2 respectively.

Table 1: Psycho-physiological Components

Components		Team 1				Team 2			
		S1	S2	S3	S4	P1	P2	P3	P4
Cognitive Components	Memory	3	2	2	3	4	4	3	4
	Perception	3	3	3	4	4	4	4	4
	Attention	4	3	2	3	5	5	4	5
	Emotion	4	3	4	5	5	5	5	5
	Mean Score	3.19				3.44			
Attitudinal Components	Curiosity	5	5	5	4	4	5	3	4
	Perseverance	4	3	4	3	5	5	5	5
	Rigour	4	4	3	4	5	5	5	5
	Critical spirit	3	3	3	3	4	4	4	4
	Confidence	3	2	3	4	5	4	5	4
	Self-judgment	4	4	3	3	4	4	4	5
	Motivation	4	4	4	4	5	5	5	5
	Mean Score	3.64				4.54			
Other Components	Health	5	5	5	5	5	5	5	5
	Sex	5	5	5	4	4	5	4	5
	Logic	3	2	2	3	4	4	4	5
	Synthesis	3	3	2	3	4	4	4	4
	Communication	4	4	3	4	5	4	4	4
	Analysis	4	3	3	3	4	4	4	4
	Creativity	4	5	4	4	4	5	5	5
	Mean Score	3.75				4.39			

Table 1 presents the exact results of each subject in both two teams and then a mean score was approached according to the categorization. Team1 differed most from Team2 in the attitudinal components, other components next and cognitive ones come the last. Figure 1 demonstrated in a more intuitive way that among the three aspects.
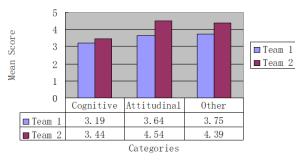

	Cognitive	Attitudinal	Other
Team 1	3.19	3.64	3.75
Team 2	3.44	4.54	4.39

Figure: 1 Mean Score Differences

4.2 Data Analysis & Findings

Here the results were a little bit surprising since the cognitive components had been supposed to be the most prominent ones. People take it for granted that the reason why professional interpreters did better than students is mostly due to their good and skilled command of memories and attention. However, to some extent, they ignored another reason for such a result is that the students just considered this interpretation task as undertaking an experiment, and the final product would only be used for research purpose, thus the accuracy of punctuation was not considered to be important. Besides, as we can infer from the complex working mechanism of interpretation, interpreting is quite a demanding job not partly in the level of language but the integral ability. That is to say, it also values the importance of other psycho-physiological components such as logic, synthesis, analysis and so on. Yet, differ from the cognitive components which were deeply carved by one's nature, most of these components were influenced by one's nurture (except for the component of sex and health, which are more genetically related). Hence, it makes sense that professional interpreters were far more competent than student interpreters in these components.

Figure 2 below presents a detailed P-C comparison between professional and student interpreters in term of each specific component. A panorama comparison was shown through the mean scores and the minus of the mean scores between two teams. Team 1 differs from Team 2 more or less in all components. Among all 17 components, attention and logic ranks the first, perseverance and confidence the second, then comes the components of memory, rigour and synthesis.
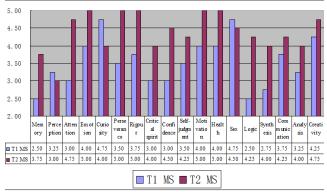

	Memory	Perception	Attention	Emotion	Curiosity	Perseverance	Rigour	Critical spirit	Confidence	Self-judgment	Motivation	Health	Sex	Logic	Synthesis	Communication	Analysis	Creativity
T1 MS	2.50	3.25	3.00	4.00	4.75	3.50	3.75	3.00	3.00	3.50	4.00	4.00	4.75	2.50	2.75	3.75	3.25	4.25
T2 MS	3.75	3.00	4.75	5.00	4.00	5.00	5.00	4.00	4.50	4.25	5.00	5.00	4.50	4.25	4.00	4.25	4.00	4.75

Figure: 2 Differences between Team 1 & Team2

a) **Attitudinal components weigh the most prominent contrast**

According to their self-reports after the experiment, most of the students admitted that though they tried to perform like a professional interpreter, lacking of experience blocked them from knowing how to display a straight attitude toward the task. In other word, they took the task as a "mission", "homework" or something like that from a teacher or a friend. Thus, in their mind, they unconsciously agreed with that they needn't to bear the responsibility of the

task. Hence, with this concept in their mind, they interpreted the passages "freely" and tended to quit the task easily. In addition to the attitudinal components, differences in other components were also obvious. The students also acknowledged that they get a long way to go as to keep up with the better integration of other components of professional interpreters, especially the components of logic, synthesis, communication and analysis.

b) Memory capacity divergence

Memory here includes short-term memory and long-term memory. From table 1 and Figure 1 above we could see that there hardly no one, even professional interpreter would be totally satisfied with his memory. In the stimulated recall and post-interviews, complains also popped up again and again by the students that they couldn't memorize the message exactly since they had "bad memory", especially short-term memory. Through the analysis of the notes, stimulated recalls and reports, a general memorizing rule was found that the students mainly memorized the information on the basis of the words while on the contrary, the professional interpreter were depending on the meaning of the source-language speech. Besides, students also admitted that during the process of their note-taking, they always could not figure out the meaning of the sentence due to more attention was paid to catching the words. Thus, problems occurred when they reconstructed the information. They failed in building his long-term memory and of course they could not recall the whole meaning of the sentence only through a few words. Moreover, variable methods were used by the professional interpreters to enhance their memory while students only got few. In the notes, professional adopted many methods (which they considered as internal language) such as schemata, code-switching and abbreviations to help memorizing the information while most of the students only took down some inapproachable symbols. To sum up, there existed a general approval on the difference of the memory that Team1 distinguished from Team 2 not on the inner intellectual memorizing ability, but on the methods they adopted.

c) Attention

Most of the students commented that they got poor logic in reorganizing language, especially female interpreters. Though they knew well the difference between English and Chinese on all the levels, it was very

hard for them to rebuild the "order" (something like logic) in another language immediately. Hence, during the interpreting process, they had to make adjustment again and again to adapt to new situations. However, sometimes on the one hand they could gradually find their way to go on with their interpretation; but sometimes on the other hand they would easily be misled in confusion and losing their tongues. Unfortunately, students always become the victims.

d) Perseverance and confidence

Professional interpreter presented a more perseverant, flexible and responsible attitude towards the interpretation. As I mentioned above, before the experiment, all the subjects were told to take the task as an authentic one and all of them promised. However, some students failed in keeping their promises. S3 reported after the interpretation that since she had nerve experienced the real environment of consecutive interpretation, it was very hard for her to indulge herself totally into the experiment. As a result, there was always a voice echoing in her mind, that is "it not a big deal, don't take it seriously". Hence, she interpreted randomly and quitted quickly when came across some difficult problems. However, in contrast, professional interpreters did much better, seldom did they appeared or performed impatiently until the last second.

Almost all students complain of not being able to memorize new information or retain certain pieces of important data in their short- and long-term memory. Confidence shed great influence on the performance of the interpreters. Most of the students used to lower their heads to focus on the notes, interpreted hesitantly and appeared upset and intensive while professional interpreters seemed much more at ease. In contrast, they tried their best to make their voice clear and accessible, interpreted fluently and they knew well how to win the audience's recognition by making proper body language and eye contacts. Thus, Team2 left a more positive image in appearances than Team1.

e) Logic and synthesis

Unlike the students, who interpreted in the linguistic forms according to the fragments they noted and memorized, the professional interpreters carried out the interpretation in a more deductive way. They spent much time on the thorough comprehension of the whole text, including

its context and the requirement of the translation task. They worked on the rhetorical and conceptual levels first then moved on to the linguistic form level. They interpreted the text in large context, and then solved the problem in detailed linguistic units. In other words, only after they drew macro structural maps of the ST and the TT did they set to work on details of transferring. However, on the contrary, since students spent so much time on linguistic fragments, they always interpreted accordingly by relying on those fragments. Unfortunately, following the source-language structure and lexical choices was so risky that the interpreters may easily get stuck at a certain point because of syntactic and grammatical differences between the languages. Moreover, of course, they would soon lose their logic in organizing and reproducing the target language and thus vulnerable interpretation also came out.

5. Conclusion

The present study shed influence on interpreters' strategy choice in a direct, dynamic and integrated way. In other word, only with the integration of other components does each small component work out. Among the most prominent components, allocation of memory and attention would directly affect listening, comprehending and note-taking. As a result, it also shed impacts on the memorizing and conceptualizing strategy choice. Logic and synthesis, however, which was proved to be closely related to the expressing and self-monitoring strategy choice, investigated interpreters' external efforts into inter-language transformation. Since the structure of English sentence is like a tree rather than in a liner order, though the students could take some notes, they would soon lose their logic in reorganizing the semantic meaning in Chinese. Furthermore, as too much attention had been put to note-taking and understanding, they used to choose the word-to-word strategy, hardly had they synthesized and analyzed the whole passage semantically, grammatically and functionally. Thus, students would easily find themselves losing the way to make their interpretation rigorous and coherent. Confidence left an overall impact on the whole process of interpretation, which affected nearly all human beings' behaviors and activities, was the most significant psycho-physiological components in interpretation.

The above-mentioned findings suggested some pedagogical implications on interpreter training, which should focus on skill training. In order to take good command of memory and attention, students should be encouraged to memorize information relying on memory at the beginning of the interpreting training, otherwise they may devote too much energy to listening or taking notes and won't concentrate on the meaning of the original speech.

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