

Novice, Paraprofessional, and Professional Translators' Strategy Use  
in Chinese-English Translation Processes:  
Retrospective Reflections, Concurrent Screen-capturing, and Key-stroke Logging

by

Xiaojuan Qian

B.A., Xi'an International Studies University, 2001  
M.A., Xi'an International Studies University, 2006

A Dissertation Submitted in Partial Fulfillment  
of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY

in the Department of Linguistics

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University of Victoria

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## **Supervisory Committee**

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**Supervisor**

Dr. Sonya Bird (Department of Linguistics)  
**Departmental Member**

Dr. Richard King (Department of Pacific and Asian Studies)  
**Outside Member**

## Abstract

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With a multi-method research approach that involves retrospective reflection, concurrent screen-capturing (Camtasia), and key-stroke logging (Translog), this study probed Chinese-English translation processes and investigated the strategy use and pause patterns of 20 translators with different professional designations (i.e., novice, paraprofessional, and professional translators). Through the application of the Translation Competence Model (PACTE, 2007) from the Translation Studies field and of the Language Ability Model (Bachman & Palmer, 1996) from the field of Language Learner Strategies research, this study is the first of its kind to compare the differences in translators' pause patterns in the three different translation phases (i.e., orientation, drafting, and revising phases) and strategy use, and to analyze the relationship of translators' strategy use and pause vis-à-vis translation performance.

The three types of data provided a fuller picture of translators' translation processes, and the use of the two models served to triangulate and cross-validate the multiple sources of data on translators' reported and observed strategy use, which amounted to 97 individual strategies and 3,464 instances. The data examined quantitatively and qualitatively showed that translators of higher professional designations or the high performance level had higher percentages in *professional*, *psycho-physiological*, *bilingual*, and *affective* strategies, and paused longer and more often and spent more time in the revising phase. However, translators of lower professional designations or the low performance level showed higher percentages in *instrumental* and *extralinguistic* strategies, and paused longer and allocated more time in the drafting phase. The analysis revealed no significant correlation between overall

strategy use or pauses and translation performance. The findings inform researchers, trainers, and trainees in the professions of both translation and additional-language teaching about translation strategy use and pause patterns.

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## List of Abbreviations

Aff	Affective Strategies
App	Approach Strategies
ATIO	Association of Translators and Interpreters of Ontario
BLS	Bilingual Strategies
Cog	Cognitive Strategies
Com	Communication Strategies
Cop	Compromising Strategies
CTTIC	Canadian Translators, Terminologists and Interpreters Council
ELS	Extralinguistic Strategies
HP	High Performance
IELTS	International English Language Testing System
IS	Instrumental Strategies
L2	Second Language
LAM	Language Ability Model
LLS	Language Learner Strategies
LP	Low Performance
LTL	Language Teaching and Learning
Met	Metacognitive Strategies
MS	Macro Strategies
NAATI	National Accreditation Authority for Translators and Interpreters
NT	Novice Translator
PACTE	Translation Competence and the Acquisition of Translation Competence
PPS	Psycho-physiological Strategies
PaT	Paraprofessional Translator
PS	Professional Strategies
PT	Professional Translator
SL	Source Language
SLA	Second Language Acquisition
ST	Source Text
STIBC	Society of Translators and Interpreters of British Columbia
TAP	Think-aloud Protocol
TCM	Translation Competence Model
TL	Target Language
TOEFL	Test of English as a Foreign Language
TS	Translation Studies
TT	Target Text
TU	Translation Unit

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## Dedication

To the time when I was longing for the outside world

and

to my little angel

## **CHAPTER ONE – INTRODUCTION**

This dissertation investigated the Chinese-English translation processes of translators from different professional designations with a focus on their strategy use and pause patterns in various phases during the translation process. The first chapter provides the research background and introduces the present study. Section 1.1 situates the study in the context of two fields, Translation Studies (TS) and Second Language Acquisition (SLA). Section 1.2 sets up the research objectives and identifies their significance. The final section outlines this dissertation.

### **1.1 Research Background**

Being a type of cross-cultural, cross-linguistic, and cross-semiotic exchange, translation is a higher order cognitive activity and a special type of language use, during which translators must select appropriate translation strategies (either automatically or consciously) to analyze and solve the problems they encounter in the translation process.

As an important research topic in TS, translation strategy has traditionally been studied from a product-oriented approach (e.g., Baker, 1992/2011; Chesterman, 1997; Newmark, 1988). With this approach, translation strategies have been analyzed at different linguistic levels, such as semantic, syntactic, and pragmatic levels (Chesterman, 1997), or purely at a word-level (Baker, 1992/2011) for non-equivalence. Non-equivalence, which often poses difficulties for translators, occurs when there is no direct equivalent in the target language (TL) for a word or an expression in the source language (SL). From a process-oriented hierarchical approach, Lörcher (1996) deconstructed translation strategy into different problem-solving steps. The appropriate use of translation strategy has been regarded as an essential component of translation competence, and there have been studies on the acquisition, development, and assessment of translation competence (Albir, 2007; Orozco & Albir, 2000; Schäffner & Adab, 2000). To date,

translation strategy has been a longstanding and vague but widely used term in TS, and its relationship with translation competence and translation performance has been rarely or only partially examined.

Process-oriented translation research has been dominant in the field of TS for decades (e.g., Dimitrova, 2005, 2010; Jääskeläinen, 1999; Jakobson, 2002, 2003, 2011; Lörscher, 1991; Tirkkonen-Condit, 1990), and it is “methodology-driven rather than question-driven” since researchers have had to “formulate their questions in relation to feasible methods” (Alvstad, Hild, & Tiselius, 2011, p. 1). The process-oriented approach to TS has witnessed the appearance and popularity of different process-oriented research methods, including think-aloud protocols (TAP) (e.g., Jakobsen, 2003; Krings, 2001; Künzli, 2009; Laukkanen, 1996; Li, 2004; Lörscher, 1991; Tirkkonen-Condit, 1990), retrospection (e.g., Dimitrova & Tiselius, 2014; Hansen, 2006), key-logging and eye-tracking (e.g., Alves et al., 2010; Dragsted, 2012; Jakobsen, 2003, 2011). As will be discussed in Chapter two, each of the process-oriented research methods has its strengths and weaknesses. Therefore, the trend for translation process research is to combine and integrate multiple methods, and triangulate the data from each type of research method (e.g., Alves, 2003; Alves et al., 2010; Hansen, 2002). This study takes the multi-method approach by integrating the process-oriented methods of retrospection, key-logging, screen-capturing, and observation. More importantly, it is the first study examining the Chinese-English translation process with a focus on translators’ strategy use.

Translation and language teaching and learning (LTL) have been trying to break away from or work together with each other as reflected in the history of language teaching methods and the development of the field of TS. Translation has been sometimes used as an effective tool for LTL and at other times completely banned from language classes as evidenced in different

language teaching methods. In recent years, the field of SLA has witnessed the revival of the use of translation in language classes (e.g., Campbell, 1998; Cook, 2010; Laviosa, 2014; Malmkjær, 1998; Pym & Malmkjær, 2013; Sewell & Higgins, 1996). Being traditionally treated as a branch of Applied Linguistics, translation was affiliated with LTL. Therefore, scholars in TS have made great efforts to shake off the subordinate position of translation and found a separate academic field, TS, for studies of the phenomenon of translation. However, translation can never be examined in isolation without using theories or findings from the field of SLA, or linguistics in general. Strategy use in translation is a relatively higher level of language use and shares some commonalities with language use strategies (e.g., Cohen, 1998; Oxford, 1990). While there has been a rich body of studies on Language Learner Strategies (LLS) in listening, speaking, reading, and writing (e.g., Graham, Santos, & Vanderplank, 2008; Nakatani, 2010; Zhang, Gu, & Hu, 2008), language use strategies have not yet been introduced to translation strategy studies. This study is the first to attempt to study the translation process and analyze translation strategy use by incorporating findings from both the fields of TS and LLS.

## **1.2 Research Objectives and Significance of the Study**

The present study investigates the translation process using the methods of key-stroke logging, screen-capturing, observation, and translators' retrospective reflections to reveal translators' strategy use. In addition, this study examines pauses in translation processes, especially longer pauses, which indicate the presence of translation problems, and hence the use of translation strategies (e.g., Dragsted, 2012; Krings, 1986). It focuses on translation strategy use of three groups of translators from different professional designations, namely, novice, paraprofessional, and professional translators. The present study analyzes the correlation between translation strategy use and translation performance, of which there is little relevant

research in TS (with the exception of Bernardini, 2001; Laukkanen, 1996), but extensive research in the field of LLS studies (e.g., Huang, 2010, 2013; Nakatani, 2010; Zhang, Gu, & Hu, 2008; Swain et al., 2009). There have been few studies on the correlation between pauses and translation performance (e.g., Jakobsen, 2002), although there has been some attention paid to pause in the translation processes in TS (e.g., Angelone, 2010; Dragsted, 2012; Immonen & Mäkisalo, 2010; Krings, 1986; Timarová, Dragsted, & Hansen, 2011).

The findings of the current research will 1) provide a new perspective on translation strategy and the classification of translation strategies; 2) develop an inventory of translation strategies for future reference and application; 3) better understand the relationship between translation strategy use and translation performance; 4) show how translators pause differently in the three phases of the translation process and the relationship between pauses and translation performance; 5) inform future studies to further examine the relationship between pauses and translation strategy use; and 6) raise awareness of translation strategy use in translation processes for translation practitioners, translation students, translator trainers, and translation scholars.

### **1.3 Outline of the Dissertation**

The dissertation is divided into seven chapters. Chapter one has provided the context for the research and pointed out the research objectives and the significance of this study. Chapter two reviews some key terms in TS and the studies of LLS first and then the relation between translation and LTL. It also introduces the two theoretical models for data coding and analysis, namely, Translation Competence Model (TCM) and Language Ability Model (LAM), reviews the research methods for LLS research and TS, and lastly explores relevant pause analysis studies in writing and translation.

Chapter three presents the characteristics and background of the participants, followed by the instruments used for this study and the data collection procedures and data analysis. Chapters four and five address research questions posed in Chapter 2 by applying the TCM and the LAM, respectively, first by professional designation and then by translators' performance level. The final section of Chapter five offers a comparison of the results from both the TCM and the LAM. Chapter six reports on and discusses the results regarding major pause features (pause frequencies, pause durations, time allocations, and percentages of time allocation), and the correlation between pause and translation performance. The final chapter summarizes and synthesizes the results, and discusses the theoretical, methodological, and pedagogical implications of this study. Then, it reports on the limitations of the study and future research directions before concluding.

## **CHAPTER TWO - LITERATURE REVIEW**

This chapter first presents a brief introduction to TS and LLS and the classifications of LLS. Then, it explores the two theoretical models that offered guidance to data coding and analysis: the TCM and the LAM. Third, this chapter reviews research methods in TS and LLS, and discusses their strengths and weaknesses; and introduces and compares relevant studies on pause in monolingual text production and translation. With consideration of the gaps revealed from the literature to date, the final section puts forward four research questions for the present study.

### **2.1 A Brief Overview of Translation Studies**

#### **2.1.1 The emergence and framework of Translation Studies**

The term “translation” can refer to the general field of translation practice, the product of the translating process, and the process of translating a source text (ST) into a target text (TT). The process of translating, also known as “interlingual translation,” is one of the three translation categories proposed by Jakobson (2004, p. 139). These categories include intralingual translation, which is translating verbal signs into other signs of the same language, interlingual translation, which is translating verbal signs into some other language(s), and intersemiotic translation, which is translating verbal signs into non-verbal signs. Translation proper as a means for interlingual communication has been long established in history; however, TS as a discipline is relatively new. It was first described by Holmes (1972/2004) as a nascent academic subject concerned with “the complex of problems clustered around the phenomenon of translating and translations” (p. 181). It was not until the end of the 20th century that TS was recognized as an independent discipline from Applied Linguistics, by centering itself on the ever-growing phenomenon of translation. Ever since then, owing to the efforts of scholars such as Snell-

Hornby (1988), Baker (1992/2011), and Munday (2008/2016), to mention a few, TS has developed and been acknowledged as an independent and dynamic interdisciplinary field.

As for the framework of this field, Munday (2016) cited Holmes's map for TS (see Figure 1). The map shows that TS traditionally covers two branches, the "pure" branch, which aims to describe the phenomenon of translation theoretically and the "applied" branch focusing on translator training, translation aids, and translation criticism. The "pure" branch covers the theoretical studies of translation by establishing general principles and the descriptive studies of translation for the "description of the phenomenon of translation" (p. 17). The latter includes the process-oriented approach (the approach taken in the present study), which examines translators' mental processes in translation, the product-oriented approach, which focuses on the final translation product, and the function-oriented approach, which examines the sociocultural contexts of translation.

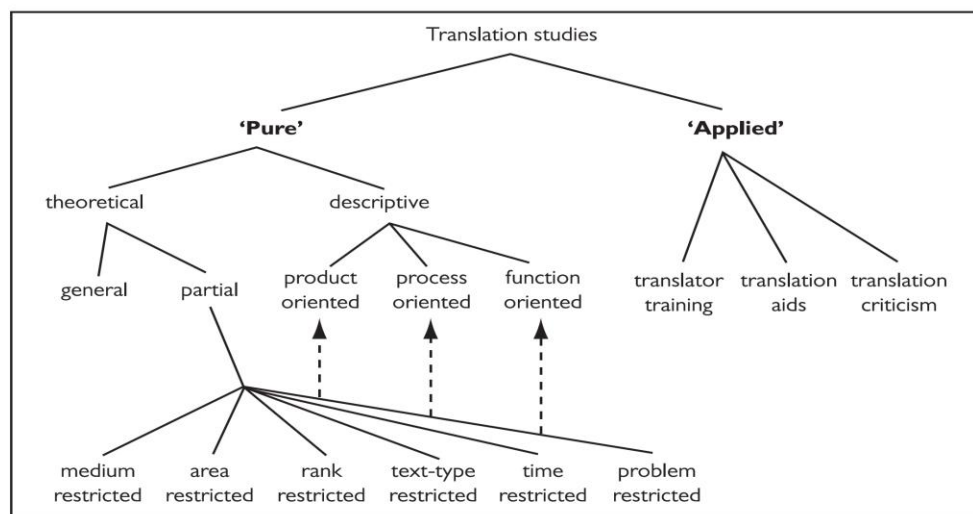


Figure 1. Holmes' 'map' of TS (Munday, 2016, p. 17).

### 2.1.2 Major turns in Translation Studies

Being an interdisciplinary field, TS has taken up new perspectives and new turns from the development of related disciplines. Since the 1950s, translation and the discipline of TS have

taken a great number of turns, including pragmatic, cultural, empirical, ideological, and sociological turns. In the 1960s, the pragmatic turn was inspired by Austin's pragmatic speech act theory (1962), which claimed that any utterance was performative and any speech act contained different aspects of a speaker's intention. The pragmatic turn was later integrated with both social and communicative aspects of language, as well as text-linguistic theories, to approach translation from a holistic and interdisciplinary perspective (Snell-Hornby, 2006). The pragmatic turn, which included the social and communicative aspects of language, emancipated TS from linguistics and comparative literature, and promoted TS to become an independent discipline in the 1970s. Starting from the 1980s, TS underwent a major cultural turn. Susan and Lefevere (1990), in their edited collection of essays *Translation, History and Culture*, introduced the move from comparative linguistic analysis of STs and TTs to the analysis of translation from a cultural angle. They took up the term "the cultural turn", which was introduced by Snell-Hornby in their collection to refer to the focus shift towards the interaction between translation and culture, and the impacts and constraints culture imposes on translation. In the 1990s, the research methodology in the field went through an empirical turn, which brought more empirical studies to translation and interpreting. The research method, TAP, was introduced from cognitive science and then widely used in translation process research. After the major cultural turn, Lefevere (1992) first used the term "ideological" in his work and Leung (2006) identified the ideological turn as "a new focus on the ideological significance of the act of translation," or more specifically, "a changed perspective of seeing translation as a means of ideological resistance" (p. 129). He pointed out that one fruitful direction for the ideological turn in TS was to practice critical discourse analysis. Translators, as mediators between languages and cultures, should exert all their creativity to retain the original and expose the ideology without commentary. The

goal for an ideologically committed translator was to “direct the readers’ attention to the existence of an alternative perspective” (Leung, 2006, p. 141). Between the late 1990s and the early 2000s, there was a great increase in works on TS from a sociological perspective, which was seen as a sociological turn. Scholars in the field began to pay more attention to the agencies of translators and interpreters, the social factors in their translation process, their activities, and the consequences thereof (Angelelli, 2014).

In recent decades, the proliferation of new technologies and new media has changed translation practice and the theorization of translation as evidenced by the new directions in TS, such as computer-aided translation, machine translation, audiovisual translation, GILT (globalization, internationalization, localization, and translation), and corpus-based TS (Munday, 2016). In the year of 2016, a few pieces of news showed that great progress had been made in machine translation. First, in November 2016, Microsoft launched a neural network based translation technology for its Microsoft Translator service and announced that neural networks provide better translation quality than the existing statistical machine translation technology (“Microsoft Translator Launching Neural Network,” 2016). At the 2016 World Internet Conference, a Chinese company Sogou launched a new artificial intelligence translation product. Sogou demonstrated how its real-time machine translation technology could recognize a Chinese speech, do simultaneous translation, and then display real-time transcripts in both Chinese and English on screen to the audience. However, the translation quality has been questioned by experts from the academic field, and the technology has not been widely tested yet.

Even though the quality of machine translation output has increased, the need for post-editing has also increased, and it has been widely used as a form of human-machine cooperation

for translation (O'Brien, 2014). Post-editing, as O'Brien defined it, is an editing process to fix errors in a TT produced by an automatic machine translation system. Hutchins (2001) questioned whether machine translation and human translation are complementary or in competition. He concluded that "there is now no doubt that computer-based translation systems are not rivals to human translators, but they are aids to enable them [translators] to increase productivity in technical translation" (p. 5). More recently, Ortiz-Martínez, García-Varea, and Casacuberta (2010) claimed that current translation systems were still not able to produce ready-to-use texts, and these systems usually demanded human translators to post-edit the output to achieve high-quality translations. Optimistically, the application of modern technologies in translation will bring us "towards a world without Babel" as Chan (2016) foresaw.

TS has become a more developed area in virtue of the major turns including pragmatic (1960s), cultural (1980s), empirical (1990s), and ideological (1990s) turns. With the promotion of machine translation technologies, the need for post-editing increased and directed translation researchers to further studies on human-machine translation. Despite the vigorous development in TS and the popular assumption that almost every scholar in TS must touch upon strategies in one way or another in their research, to my knowledge, there has not been any study on translation strategies that draws lessons from findings in the field of LLS.

### **2.1.3 Equivalence**

The ultimate goal in the translation process is to achieve equivalence between the ST and the TT, either from the perspective of linguistic forms, linguistic function, or communication effect. Equivalence, with a Latin origin and meaning of "equal value," has been a fundamental but controversial concept in TS. Equivalence is the cornerstone of translation because it has been regarded as a crucial criterion to assess the quality of translations and a term to describe the

relationship between ST and TT (Leal, 2012). The controversy about equivalence lies in its ambiguous, impalpable, and subjective notion, which has led to very different interpretations and definitions of the concept. There has been a prescriptive approach to this notion to define equivalence as a goal for translators to pursue and fulfill, and also a descriptive definition to describe the close relationship between ST and TT (Leal, 2012).

Jakobson (1959/2004), who discussed the issue of linguistic meaning and equivalence, defined equivalence as “the cardinal problem of language and the pivotal concern of linguistics” (p. 139), and focused on the structural and terminological differences across languages. Later on, Nida (1964) took a scientific approach to classify equivalence into formal and dynamic equivalence, and proposed the principle of equivalent effect in translation. Formal equivalence is ST-focused, aiming to bring target readers closer to the language structure and culture of the SL. Therefore, ST is the reference to determine whether the TT has accurately and correctly transformed the original message of the ST. Based on the principle of equivalent effect, dynamic equivalence, also known as functional equivalence, aims to achieve the translation effect where “the relationship between receptor and message should be substantially the same as that which existed between the original receptors and message” (Nida, 1964, p. 159). For Nida, “naturalness” is the key requirement, and the ultimate goal of translation is to find the “closest natural equivalent to the source language message” (p. 166). Therefore, the SL message is more often than not tailored and adapted to the target language and culture in order to achieve equivalent response from the TT readers and the ST readers. He believes that a successful translation is “making sense, conveying the spirit and manner of the original, having a natural and easy form of expression and producing a similar response” (p. 164).

Slightly different from but consistent with Nida's equivalence typology, Newmark's (1981) semantic equivalence attempts to transfer the contextual meaning of the ST as closely as possible to the semantic and syntactic structures of the TL. His communicative equivalence, similar to Nida's dynamic equivalence, aims to produce on the TT readers the closest effect to that of the ST on its original readers. Both Nida and Newmark valued the similar responses from the TT readership and ST readership; however, Nida's equivalences have received far more attention than Newmark's classification (Munday, 2016) because of the popularity of the term "dynamic equivalence."

More recently, the translation committee of Holman Christian Standard Bible adopted the translation philosophy of optimal equivalence, which is a balance between the formal equivalence and functional equivalence. Optimal equivalence also values "naturalness" but aims more at the purpose of communication, to achieve the highest level of transference and effective communication between the ST author and the TT readers.

In the history of translation in China, translation scholars have taken various approaches to TS but always used the notion of equivalence to reflect their translation philosophy. While translating Aldous Huxley's *Evolution and Ethics*, the Chinese scholar and translator Yan Fu stated that there were three difficulties in translation: to achieve faithfulness (*xin*), expressiveness (*da*), and elegance (*ya*). These have since been well accepted and regarded as the standard for a good translation in the field of TS. A good translation is one that has achieved optimal equivalence with a well-balanced faithfulness, expressiveness, and elegance. Both translators and scholars have been struggling to balance among these criteria.

As the translator for the 2015 and 2016 Hugo Award-winning science fiction books *The Three-Body Problem* and *Folding Beijing*, Ken Liu, an American Chinese-English translator,

believed that “to translate is to betray” and the definition of “faithfulness” in translation was often contested (Liu, 2015). He questioned what or who the translator should be faithful to, whether the translator should be faithful to the author, the ST itself, the ST readers, the TT readers, the translator himself/herself, or none of them. He shared his thoughts in choosing how to be faithful. For example, to deal with cultural concepts, which are unfamiliar to the target readers, is it more faithful to add in-text explanations or footnotes or just leave those for readers to interpret? Is it more faithful to use a commonly accepted but problematic translation like “filial piety” (a virtue in Confucian philosophy of showing respect to one’s parents, ancestors, and elders) or to coin a new phrase? As he claimed, he preferred to be faithful to his own conception of the work to be translated. His motto of “if a translation is a performance, then I tried to stick to the score...to limit improvised embellishments” explains his understanding of “faithfulness” to some extent (“SF Book Club,” 2015, ¶5).

Equivalence is an unavoidable topic in nearly every classical book on TS, including Munday’s (2016) *Introducing Translation Studies*, Gambier and Van Doorslaer’s (2012) *Handbook of Translation Studies*, and Baker’s (1992/2011) *In Other Words: A Coursebook on Translation*. For example, Baker’s book, which is frequently chosen as the textbook for translation courses and translator training programs, is structured around different kinds of equivalence, including equivalence at the word-level, textual equivalence, and pragmatic equivalence. Equivalence, intangible and illusionary but central to TS, functions as an invisible baton of a conductor in the translation process and translation theories, and a concept to which translation scholars, trainers, and practitioners have become accustomed to. For the convenience and purposes of the present study, equivalence refers to the state in which a word or expression

in the SL stimulates an extremely similar response from the SL readers as the response its TL translation receives from the TL readers.

Whatever terms scholars use to label “equivalence,” the common goal is to achieve the most equivalent TT to the ST from every possible perspective, either in linguistic form, pragmatic function, communicative purpose, or readers’ response, to name a few. In reality, however, there is no 100% equivalence between the ST and the TT because “equivalence is influenced by a variety of linguistic and cultural factors and is therefore always relative” (Baker, 1992, p. 6). As a result, translators have to make a choice of translation strategy to achieve the optimal equivalence to the best of their ability. Thus the appropriate use of translation strategies is an important component of a translator’s overall translation ability.

#### **2.1.4 Translation strategies**

The word “strategy” has been notorious for its confusing and ambiguous definitions in the fields of SLA and TS. Cohen (1998), in his attempt to define the term, noted that it had been used interchangeably with “method,” “technique,” and “tactic” (p. 18). Before redefining the term in the context of translation strategies, this section reviews the important studies related to translation strategies in general and the classifications of translation strategies.

Vinay and Darbelnet (1958/1995) first classified translation techniques into direct or literal translation and oblique translation, both of which they considered to be procedures in their pioneering work. Direct translation occurs when there is lexical, morphosyntactic, or semantic equivalence between the SL and TL. There are three types of direct translation: borrowing directly from another language, calque (which is translating and incorporating a foreign word or phrase into another language), and word for word literal translation. When direct translation is impossible, translators may turn to oblique translation, which has four types: transposition (a

shift of word class), modulation (a shift in point of view), equivalence (using a text of completely different stylistic and structural method to render the same situation), and adaptation (a shift in cultural environment). Vinay and Darbelnet's (1958/1995) classification was mainly of basic types and failed to include more specific techniques. In addition, their classification further confused translation procedures with translation methods and techniques, which had already been a persistent confusion in TS.

Bible translators including Nida (1964) and Margot (1979) proposed several categories of techniques to solve culture-related problems in Bible translation. Those types covered in the categories overlap or are close to most of the techniques or procedures raised by Vinay and Darbelnet (1958/1995). The first category is of adjustment techniques, including additions, subtractions, alterations, and footnotes. The second category was on cultural adaptation of essential differences for unknown items to the target culture, historical framework, or adaptation to target audience's specific situation. The third is on the distinction between legitimate paraphrasing, which is a lexical change to make the TT longer than the ST without changing the meaning, and illegitimate paraphrasing, which "makes ST items explicit in the TT" (Molina & Albir, 2002, p. 503). The fourth is to either add or suppress information to cope with redundancy. The last is to achieve naturalization "for the closest natural equivalent to the source language message" (p. 503) by considering the source language and culture, the cultural context of the message, and the target audience. Their proposal has been an additional contribution to the previous inventory of translation techniques, but it focused mainly on cultural adaptation.

In 1988, Newmark proposed eight major and five secondary translation methods based on their emphasis on the SL or the TL. Some examples include word-for-word translation, free translation, and faithful translation (for a detailed coverage of these methods, see Newmark,

1988, p. 45). Of these methods, he preferred communicative translation, which focuses on the acceptability of the TT to the readership, and semantic translation, which he regarded as a more flexible and less dogmatic approach than other methods. He believed that both methods would help to achieve accuracy and economy in translation. Newmark provided another five secondary translation methods, including service translation, plain prose translation, academic translation, and so on (Newmark, 1988). From a practical point of view, Newmark's eight major translation methods are too general and not applicable to specific translation problems since they serve best as approaches for translators to take in translation. Moreover, the five secondary methods are not the translation strategies being discussed in this study but are more about types of translation tasks.

Baker (1992) also provided eight major strategies for dealing with non-equivalence at the word-level, for example, "a translation using a loan, a paraphrase using a related word, and omission" (p. 36). Furthermore, Baker offered strategies for translating idioms and other issues specifically at the textual-level. Her strategies at the word-level are more specific and immediately applicable in practice compared to Newmark's methods about approaches taken in translation. However, Baker (1992) only proposed strategies to cope with the word- and textual-level non-equivalence but failed to include strategies on how to search and select the equivalent terms. Furthermore, the strategies were not clearly categorized and repetitive in some ways.

Lörscher (1991) offered his own definition of translation strategy as "a potentially conscious procedure for the solution of a problem which an individual is faced with when translating a text segment from one language to another" (p. 76). Lörscher (1996) proposed a three-tier hierarchical approach to reconstruct translation strategies. He identified 22 elements of translation strategies at the lowest level, which are the minimal problem-solving steps of

translation strategies. Those smallest detectable steps, in turn, are the foundation for various structures, either basic, expanded, or complex, which form translation strategies at the highest level. Hierarchically, Lörcher's various levels for translation strategies are dynamic and interactive. However, horizontally, they fail to include linguistic aspects. On the basis of Lörcher's definition, Jääskeläinen (1993) classified translation strategies into global strategies, which are applied to the entire translation task, considering style, readership, and so forth, and local strategies, which target specific items, such as lexical terms.

Chesterman (1997) defined translation strategies as memes, which are "open-ended and amenable to adaptation, variation, and mutation" (p. 87). For him, translation strategy is a process, a form of textual manipulation, goal-oriented, problem-centered, intersubjective, and employed consciously. He proposed a heuristic classification of three main types of translation strategies: syntactic, semantic, and pragmatic. According to Chesterman, these strategies overlap, often co-occur and can be divided into subtypes. He also distinguished global strategies from local strategies, and comprehension strategies from production strategies. His trichotomous classification of translation strategies is purely linguistic in perspective and fails to cover extralinguistic aspects.

Molina and Albir (2002) criticized the presence of terminological confusion, overlapping terms, and fuzzy classifications related to translation techniques, and they made new attempts to distinguish translation techniques, methods, and strategies. By taking a dynamic and functional approach, they defined translation techniques as "procedures to analyse and classify how translation equivalence works" (p. 509) and reckoned that translation techniques affected micro-units of text and the result of translation. For them, "techniques" are reflected and observed in translation products. Translation methods, according to Molina and Albir (2002), refer to "the

way a particular translation process is carried out in terms of the translator's objective, i.e., a global option that affects the whole text" (p. 507). Translation strategies are "the procedures (conscious or unconscious, verbal, or nonverbal) used by the translator to solve problems that emerge when carrying out the translation process with a particular objective in mind" (p. 508), and they are the mechanisms translators use in the solution-searching process to solve a certain translation problem.

All in all, most studies in translation strategies are too broad to be applicable in practice, and therefore not clear enough to offer implications for designing a strategic competence-based curriculum for translator training programs. Gambier (2012) pointed out that most of the publications on translation strategies had categorized translation strategies either by types of texts, such as literary texts, plays, poetry, children's books, and legal documents, or types of problems, such as metaphors, puns, culture-bound terms, and swear words. In addition, the publications mostly prescriptively explain what the strategies are for translating certain types of texts or problems rather than descriptively demonstrating how certain texts or problems have been translated (Gambier, 2012).

In addition, all the above-mentioned categorizations of translation strategies mainly focus on linguistic competence but fail to cover other important factors, such as translators' cognitive, metacognitive, and affective involvement, because they treat translation mainly as a language transfer rather than a communicative activity. The traditional linguistic approach only compares the TT to the ST and considers strategies as "observable phenomena from the translated texts, [which tell] the outcome of a product-to-product comparison", but does not link strategies to a mental process or "how to achieve given results" (Gambier, 2012, p. 414).

To sum up, translation strategies remain to be an area within TS demanding further and more thorough studies. For the purposes of the present study, translation strategy is defined as a process during which the declarative knowledge (*know what*) and procedural knowledge (*know how*) relevant to the translation task is activated and applied through various means (e.g., thoughts, techniques, methods) to fully translate the ST into the TT. This definition takes a dynamic perspective and focuses on the activation and integration of relevant knowledge for translation.

## **2.2 Language Learner Strategies and Strategy Taxonomies**

If translation is a type of high level language use, some features of LLS should be transferrable to translation strategies. To my knowledge, translation strategies have not been investigated by drawing on findings from the studies of LLS.

Language learner strategies, as defined by Cohen (2014), are “thoughts and actions, consciously chosen and operationalized by language learners, to assist them in carrying out a multiplicity of tasks from the very onset of learning to the most advanced levels of target-language performance” (p. 7). LLS, or strategic behaviour as Huang (2010) has termed it, either in the context of language learning or language use, have been defined “theoretically as the conscious, goal-oriented thoughts and actions that learners use to regulate cognitive processes with the goal of improving language learning or language use” (Huang, 2010, p. 246). Oxford (2016) compared and contrasted 33 existing definitions of learning strategies from and outside of the second language (L2) learning field, and found the following common features of learning strategies, “self-directed/self-regulated/autonomous/(self-)managed,” “purposeful/goal-oriented/[to/in order to + verb],” “definitely conscious, fully conscious or to some degree

conscious,” “related to specific aspects of the context,” and “particularly including tasks” (Oxford, 2016, Section A).

In the fields of SLA and language testing, many ways for classifying LLS have been proposed, either by learning versus use, language skill (i.e., listening, speaking, reading, and writing), or function (i.e., such as *cognitive*, *metacognitive*, or *affective*) (e.g., Huang, 2010; Oxford, 1990, 2011; Swain et al., 2009). Oxford (1990) synthesized the strategies used by language learners and grouped them into the following six categories: *metacognitive*, *affective*, *social*, *memory*, *cognitive*, and *compensation*. *Metacognitive* strategies, such as self-monitoring and self-evaluating, are used to manage the language learning or use process. *Affective strategies* can help language learners control their emotions and attitudes by self-encouragement or anxiety reduction. By using *social strategies*, language learners can learn language by interacting with others. Language learners also use *memory strategies*, such as imagery and other mechanical means, to store new information and retrieve existing information. *Cognitive strategies*, such as practicing, analyzing, and summarizing, are also used in the language learning process. Through *compensation strategies*, such as guessing meaning and using synonyms, language learners can overcome knowledge limitations.

Huang (2010) and Swain et al. (2009) also proposed six categories of strategies, although their categories were somewhat different from Oxford's: *approach*, *communication*, *cognitive*, *metacognitive*, *affective*, and *social* strategies. *Approach strategies* are used by language learners to orient themselves to the task. *Communication strategies* involve “conscious plans for solving a linguistic problem in order to reach a communicative goal” (Huang, 2010, p. 251). The present study focuses on the context of language use and takes the functional approach to strategy classification.

Research on LLS shows that learners' deployment of strategies varies as tasks and contexts change (Huang, 2010; Macaro, 2006; Swain et al., 2009). The use of learner strategies, as Weinstein and Mayer (1986) stated, can "affect the learner's motivational or affective state, or the way in which the learner selects, acquires, organizes, or integrates new knowledge" (p. 315). Furthermore, LLS can help students to take more responsibility for their own language learning and personal development (Wong & Dunan, 2011). Macaro (2006) summed up claims made in the field and criticized LLS research. Those specific claims (e.g., Nakatani, 2005; Oxford & Burry-Stock, 1995) include that a) strategy use correlates with various aspects of language learning performance, b) females use more strategies than males, c) experienced language learners may use strategies different from inexperienced language learners, and d) cultural and individual difference may affect learners' strategy use. Another important finding about strategy use and proficiency level is that "more proficient L2 learners draw on a greater variety of strategies to accomplish the different language tasks at hand" (Huang, 2013, p. 7). Macaro's criticisms concern the methods for eliciting, measuring, and classifying strategies, the assumed impact of strategy use, and the lack of theoretical rigour while other researchers, such as Cohen (2014) and Gao (2007), argued that LLS is still a promising research field.

Because translation is a special type of language task or language use, translation strategies should share some of the common features of LLS as these reported above, even though translators' deployment of strategies may be different from those used in other language tasks.

### **2.3 Translation and Language Teaching and Learning**

The ebb and flow of translation as an LTL tool has been closely related to the development of language teaching methods in history. From the 18th to the early 20th century,

with grammar-translation being the dominant teaching method in language classes for centuries, translation into and from the TL was taken as an effective activity for language learners to practice and learn grammar, and then master the TL (Laviosa, 2014). Hence, long before TS gained its independence as an academic discipline, the field of translation had been deemed to be secondary to LTL (Munday, 2016). This perception has been lingering in academia to date in spite of the fact that TS has risen to be a burgeoning field. Also, because of the association between translation and negative perceptions about the grammar-translation method (e.g., the grammar-translation method is teacher-centered, focuses on grammar, and excludes other aspects of language), the non-traditional use of translation in language teaching classes has been discouraged (Carreres & Noriega-Sánchez, 2011). In the late 20th century, to evade the drawbacks of the grammar-translation method, translation was excluded from the then popular direct method and the communicative approach (Munday, 2016). The former shifted the emphasis onto experiencing daily conversational skills while the latter stressed developing communicational skills in real-life situations (Laviosa, 2014).

From the late 20th to the early 21st century, once again, translation has been revived in the context of LTL. Liao (2006) conducted surveys and interviews to investigate the role of translation in language teaching, especially from language learners' point of view. In his study, 351 Taiwanese English-as-a-foreign-language college students were interviewed about their beliefs and strategies about using translation in their English learning process. The data collected showed positive aspects of using translation, such as assisting the comprehension of English, checking the comprehension, easing memory constraints, reducing learning anxiety, and enhancing learning motivation. They also showed negative aspects of using translation in the English learning process, including incorrect translation, generating Chinese-style English, over

dependence on translation, and slowing down comprehension and production. The descriptive data of participants' responses to the belief of using translation in English learning showed that "on the whole, the participants overwhelmingly believe that translating helps them to acquire English language skills such as reading, writing, speaking, vocabulary, idioms, and phrases" (p. 201). In addition, Liao also considered how participants' proficiency level influenced their beliefs about and strategies regarding translation. The results indicated that more proficient English-as-a-foreign-language learners knew better about when and how translation would benefit their learning rather than just writing down word-for-word Chinese translations beside the English texts as the less proficient learners did. The study has inspired promising future research on the comparison of language learners' and language instructors' beliefs about using translation in the language learning process.

Cook (2010) argued for the reassessment of the role translation can play in language teaching and called for the inclusion of translation in language teaching programs. He pointed out the weakness of the then popular monolingual language teaching, which favoured naturalism, native-speakerism, and monolingualism but shunned the use of students' first languages and translation. He described the shifts from cross-lingual to intralingual approaches and from form to meaning in SLA. He also noticed the revival of using students' first languages and translation in language teaching, provided evidence-based technological, educational, and pedagogical arguments to show that using translation in language teaching could develop both language awareness and use (Maley, 2011). Being practical, Cook (2010) also presented six activity types for translation in language teaching, such as using the traditional form-focused close translation, word-for-word translation, and vocabulary teaching in a more communicative sense. He

suggested that rather than aiming for the native speaker ideal of internalizing the TL, success in language teaching is:

the ability to move back and forth between two languages, to have explicit knowledge of each language and of differences between them, to operate in the new language while not losing one's own-language identity, and to have an impact on the new language, making it one's own... (Cook, 2010, p. 100).

Carreres and Noriega-Sánchez (2011) drew on the approach and practice of task-based translator training, focused on the interaction between translator training and language teaching, and aimed to inspire language teaching with communicative and interactive translator training. They believed that task-based translation training was process-oriented rather than product-oriented, learner-centered rather than teacher-centered, and methodologically adaptable. Carreres and Noriega-Sánchez (2011) provided four translation tasks in a language class with a clearly demonstrated task framework, including goals, input, procedures, roles, and settings. Those in-class tasks were designed to train students' translation skills, such as intralingual translation, reflecting on pragmatic factors, cultural and historical references, and contrastive analysis of translations. In turn, those translation tasks can enhance communicative and interactive practices in language learning classes.

Inspired by studies on the revival of translation in language teaching in the 1980s and 1990s (e.g., Campbell, 1998; Malmkjær, 1998; Sewell & Higgins, 1996), Laviosa (2014) underscored the overlap between TS and Foreign Language Education. She described the benefits of using translation as a pedagogic exercise for language learning classrooms as it enables learners to think in their first and second languages, fosters reflections on their learning process, and motivates their language learning. She proposed that “translation was neither a tool

nor an end” (p. 23), but “an ideal context for developing trans-lingual and trans-cultural abilities as an organizing principle of the language curriculum” (p. 29). She expanded the definition of translation from mere transfer to the mediation of the non-transferable cultural paradigms, symbols, codings, and practices of the foreign language, culture, and text. Laviosa also proposed holistic language-translation pedagogy in language teaching classes. She believed that second language learning is intertwined with translation as “essential processes in the formation of the self-reflective, inter-culturally competent, and responsible language professional of the future” (p. 122). Laviosa emphasized that translation has changed from a mere linguistic tool to a separate skill, and it has played a renewed role of developing multilingual competence and introducing translation skills at the same time in the language teaching classroom.

Other than Cook (2010) and Laviosa (2014), the contact between language teaching and TS has been inspired and studied by authors such as Malmkjær (1998), Witte, Harden, and De Oliveira Harden (2009), and Pym and Malmkjær (2013). Translation, which was restricted only to higher level language courses and professional translator training, as pointed out by Munday (2016), is growing in undergraduate language teaching courses (Laviosa, 2014). Laviosa (2014) also edited a special issue on the theory, research, and practice of translation in the language classroom to explore this topic deeper, and included more reflections and experiences in different types of translation activities.

As discussed above, the application of translation in language teaching has been introduced, argued, and practiced. However, there is still a need for further empirical studies on the impact of the use of translation in language learning, as Carreres and Noriega-Sánchez (2011) pointed out.

## 2.4 Translation Competence Model and Language Ability Model

### 2.4.1 Translation Competence Model (TCM)

PACTE (Translation Competence and the Acquisition of Translation Competence), a research group on translation competence and its acquisition in Spain, proposed a holistic TCM (Albir, 2007; see Figure 2). The PACTE group first defined translation competence as the underlying system of knowledge that is required for translating, and then summarized four striking features of translation competence. First, it belongs to expert knowledge as it is not inherently possessed by bilinguals; second, it is predominantly procedural knowledge; third, it comprises a set of inter-related subcompetences, and fourth, it includes a particularly important strategic competence (PACTE Group, 2011, p. 318). Translation competence should include declarative knowledge (*know what*), operative knowledge (*know how*), and conditional knowledge (*know when and why to use knowledge*) (PACTE Group, 2011).

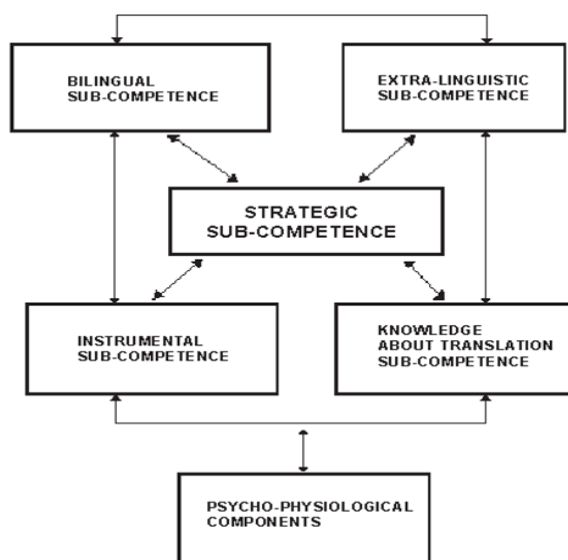


Figure 2. PACTE Translation Competence Model (Albir, 2007, p. 170).

Some authors including the PACTE group use “competence” as a synonym for expertise. Jääskeläinen (2010) reinterpreted expertise from the perspectives of domain specificity (whether

the translation task is within translators' own domain), automated processing (whether the translation process is more or less automated), and segmentation (whether translators work with larger or smaller chunks). PETRA, a research group on expertise and environment in translation, suggested five overlapping dimensions to analyze the competence or expertise in translation: knowledge, adaptive psycho-physiological traits, regulatory skills, problem-solving skills, and the self-concept (Martín, 2014). In the present study, expertise and competence are used interchangeably since expertise is a well-developed and more automatized level of competence.

The TCM proposed by the PACTE group presented translation competence as comprising five subcompetences (Albir, 2007). *Bilingual subcompetence* is “the essentially operative knowledge necessary for communicating in the two languages” (Albir, 2007, p. 170), including pragmatic, sociolinguistic, textual, and lexical-grammatical knowledge. *Extralinguistic subcompetence* is the declarative knowledge about the world, culture, themes, or the topic being translated. *Instrumental subcompetence* comprises “essentially operative knowledge related to using documentary sources and information and communication technology applied in translation” (p. 170). *Translation knowledge subcompetence* is the declarative knowledge about theories and principles of translation as a profession. *Strategic subcompetence*, which “comprises the operative knowledge necessary to guarantee the efficiency of the translation process” (p. 170), plays a central role since it affects other subcompetences and controls the translation process. In addition to the five subcompetences defined above, the PACTE group also presents the *psycho-physiological* components, which are believed to be different from other subcompetences because they form another complete set of expert knowledge (as the PACTE group explained). The *psycho-physiological components* consist of cognitive aspects such as memory and attention, and attitudinal aspects concerning motivation, perseverance, confidence,

and preference. Of the five subcompetences and the *psycho-physiological* components, *strategic*, *instrumental*, and *translation knowledge* subcompetences are specific to translation but the rest are about the knowledge of the SL and TL, which are common for language learners or bilinguals as well. PACTE claimed that *strategic subcompetence* was the most important translation specific competence because it interacted with other subcompetences and was crucial for decision-making and problem-solving.

As Schäffner and Adab (2000) proposed, translation competence is a hierarchical configuration of interrelated subcompetences, while the deployment of translation strategy is a process to externalize translation competence in the translation process. Given the definition of “competence” in the dictionary, translation competence is the possession of the knowledge, skills, and capability acquired for conducting translation. Therefore, a translator’s overall translation competence is a static possession of knowledge that requires activation. Translation strategy, in accordance with the definition of translation strategy previously presented, is a process that activates the translation competence required for a specific translation task. Consequently, the rationale of this study is that every subcompetence or component in the TCM is supposed to be activated by its corresponding strategy category. The application of certain translation strategies may activate the relevant translation competence, coordinate with each other, and then solve the translation problems. The relationship between translation competence and translation strategies proposed in this study is in accordance with what Bachman and Palmer (1996) claimed between language competence and metacognitive strategies, as revealed in their statement that language competence is “a domain of information in memory that is available for use by the metacognitive strategies in creating and interpreting discourse in language use” (p. 67). In other words, they were arguing that language competence is the storage of knowledge

while the use of metacognitive strategies, or LLS in general, can activate and engage language competence in language comprehension and production (see Section 2.4.2 for further discussion).

Guided by the above-mentioned relationship between language competence and LLS, and for the purposes of this study, TCM's five subcompetences and one set of components (i.e., *psycho-physiological* components) were taken and adjusted as translation strategy categories (see Figure 3): *bilingual strategies* (BLS), *extralinguistic strategies* (ELS), *instrumental strategies* (IS), *professional strategies* (PS), *macro strategies* (MS), and *psycho-physiological strategies* (PPS). The category of *professional strategies*, which replaced TCM's *translation knowledge subcompetence*, refers to the activation and application of declarative knowledge about translation and other aspects of translation as a profession. *Macro strategies* replaced *strategic subcompetence* since they are used to approach, plan, and evaluate the translation process to achieve efficiency in translation and solve problems. In addition, the category of *psycho-physiological*, as a set of components in PACTE's TCM, is also treated as a strategy category. The *macro strategies* (instead of *strategic subcompetence*) are in the central position, regulating other translation strategy categories. Apart from being governed by the *macro* category, the remaining five strategy categories interact with each other as well.

Translation competence is the possession of the knowledge required for conducting translation, which covers declarative, operative, and conditional knowledge (Schäffner & Adab, 2000). Only when translation strategies activate translation competence can a translator's overall ability be exerted to perform the given translation task. In real-world translation performance, translators would apply translation strategies from certain strategy categories to act upon and

activate relevant translation subcompetences to solve any potential translation problems and ensure a smooth translation performance.



*Figure 3.* TCM translation strategy categories.

#### **2.4.2 Language Ability Model (LAM)**

Bachman and Palmer's (1996) LAM or strategic competence model in designing and developing language tests proposed that language ability, as one of the most relevant individual characteristics of language use and language test performance, includes two components: language competence or language knowledge, and strategic competence. Language competence is the memory of knowledge about language, which can be activated for language interpretation and production by metacognitive strategies (Bachman & Palmer, 1996). They categorized language competence into organizational knowledge and pragmatic knowledge. Organizational knowledge is for controlling and organizing language's formal structure while pragmatic knowledge is for creating and interpreting discourse by relating to meanings, users' intentions, and language use settings. Bachman and Palmer separated strategic competence from language

competence and described strategic competence as a set of metacognitive strategies, “which are executive processes that enable language users to engage in goal setting, assessment, and planning” (p. 79). Although Bachman and Palmer mentioned that the affective schemata and topical knowledge are also involved in language use, the strategic competence they proposed for the LAM covers mainly metacognitive strategies, which provide cognitive management for language use. However, the LAM fails to cover other aspects of the strategic competence for language use, such as social, affective, cognitive, approach, and communication components.

Drawing on the LAM (Bachman & Palmer, 1996), the six categories of Oxford’s (1990) language learner strategy framework, and Huang’s (2010) and Swain et al.’s (2009) five main strategy categories, six categories are proposed for the purposes of this study: *approach strategies* (App) are strategies employed to approach a translation task; *metacognitive strategies* (Met) involve planning, monitoring, identifying, and evaluating in the process of translation; *cognitive strategies* (Cog) are used to manipulate both the SL and TL to produce a translation; *communication strategies* (Com) “involve conscious plans for solving a linguistic [translation] problem in order to reach a communicative goal” (Huang, 2010, p. 251); *affective strategies* (Aff), similar to those in language use, activate translators’ affect such as attitude and personal preference to better perform the translation task; *compromising strategies* (Cop) enable translators to solve seemingly untranslatable problems by compromising to achieve a less equivalent translation.

In the present study, the reasons for using two models, namely, the TCM and LAM, to analyze participants’ translation strategy use are: a) to validate and cross-check data in order to “map out, or explain more fully, the richness and complexity of human behaviour” (Cohen, Manion, & Morrison, 2000, p. 254), in this case, the complexity of translation performance; b) to

apply theories and insights from both the fields of TS and studies of LLS to investigate strategy use in translation; and c) to compare the results of this study with findings in the field of LLS, especially among advanced language learners.

## **2.5 Review of Research Methods**

This section first focuses on research methods applied in LLS research, and then explores the historical and most recent research methods in the field of TS.

### **2.5.1 Research methods in Language Learner Strategies research**

Cohen (2014) pointed out that although there were a number of studies on research methods in applied linguistics (e.g., Dörnyei, 2007; Ellis & Barkhuisen, 2005; Gass & Mackey, 2000; Green, 1998; Wallace, 1998); none of them devoted attention to LLS research. Despite the lack of theoretical research, multiple approaches have been frequently applied to investigate LLS. Those approaches include, but are not limited to, oral interviews (e.g., Wallace, 1998), written questionnaires (e.g., Dörnyei, 2007), classroom/out-of-class observations (e.g., Mason, 1996), verbal reports (e.g., Egi, 2004), blogs (e.g., Mackey & Gass, 2016), and user-tracking (e.g., Johansson, Wengelin, Johansson, & Holmqvist, 2010), such as key-stroke logging and eye-tracking.

Oral interviews and written questionnaires are similar in the way that they both elicit responses from participants with predetermined questions. Researchers design highly structured, semi-structured, or unstructured questionnaires for data collection. Highly structured oral interviews and written questionnaires seek to elicit specific responses, such as yes-no responses or frequency indications, while less structured ones ask participants to describe or elaborate on their language behaviour (Cohen, 2014). There are pros and cons for using interviews and questionnaires. For example, Cohen argued that highly structured interviews and questionnaires

could grant the researcher complete control over the questioning, ensuring greater consistency of data. Dörnyei and Taguchi (2009) listed some major disadvantages of questionnaires. For example, responses yielded from questionnaires may be superficial and over-simplistic, some of the respondents may be unreliable and unmotivated, and some respondents, especially those with limited L2 proficiency, may have literacy problems in interpreting and responding to the questions.

Observations, as Mason (1996) noted, referred to “methods of generating data which involve the researcher immersing [him/herself] in a research setting, and systematically observing dimensions of that setting, interactions, relationships, actions, events, and so on, within it” (p. 60). Observational data can provide a detailed and comprehensive description of language learners’ behaviour. Usually with no hypothesis to be tested in observational studies, researchers’ attention and perspectives are not restricted and hence observational studies generate hypotheses (Freeman & Long, 2014). However, the major drawbacks of observational studies, as Mackey and Gass (2016) summed up, include offering no access to the internal and mental process of language learners’ behaviour and influencing participants’ performance due to observer’s obtrusive presence (i.e., the so-called Hawthorne effect). As Mackey and Gass (2016) discussed, the Hawthorne effect may occur when participants perform better because of their positive feelings of being included in the study, or because of the observer’s subjective and potentially biased judgement. Moreover, being a human being, the observer can be more or less “perceptive,” “biased,” “objective,” or “experienced” (Freeman & Long, 2014, p. 17). In view of the disadvantages of observational methods, they all suggest that a mixed-method approach may benefit future studies on language learning and use in general.

Verbal reports, as pointed out by Egi (2004), could be roughly classified as concurrent reports, which occur during the task, and retrospective verbal reports, which take place after the completion of the task. Verbal reports have been used to understand language learning and use, and investigate LLS in various language skills (Cohen & Macaro, 2007), such as strategy use in listening (Graham, Santos, & Vanderplank, 2008), oral communication (Nakatani, 2010), and reading (Zhang, Gu, & Hu, 2008). As Ericsson and Simom (1993) argued, verbal reports aimed to reveal in detail what information is being attended to in the task performing process and could provide valuable and reliable data about cognitive process. Verbal reports can reveal information, which is inaccessible to the investigator but has been attended to by language learners while they perform language tasks. However, the major disadvantage of verbal report techniques, such as TAP, is that the introspective reflection on thought processes may put too much pressure on participants' memories and hence may affect their performance, especially on less proficient learners. In addition, verbal report data may not be complete when participants fail to verbalize their ongoing thoughts (Huang, 2014).

Blogs/diaries/journals provide a way to record learners' language learning process over a period of time. In the past, language learners wrote down their leaning experiences via various kinds of diaries (Mackey & Gass, 2016). But thanks to the availability of online blogs or weblogs, such as docs.google.com, language learners can set up their own online blogs to show their learning process and to exchange ideas or comments with their teachers and classmates. As the study of Baker, Latif, and Ya'acob (2010) shows, the implementation of weblogs can enhance language learners' learning skills and communication skills, develop their self-confidence, reduce their anxiety, and promote collaborative knowledge-building activities among learners. Using blogs in the learning process can promote interactive discussions among learners,

but at the same time it can increase the teachers' administrative load. This is because, due to the nature of blogs, learners very often post randomly composed entries which may not reveal their language strategy use (Baker, Latif, & Ya'acob, 2010). To avoid the drawbacks of using blogs, researchers may direct participants to focus on what is being studied and provide more particulars.

In recent years, user-tracking tools, such as the screen-capturing program, Camtasia, used for the current study, Quicktime, and other digital devices have enabled researchers to unobtrusively observe learners' behaviour and collect data about their performance and thus mitigate the interference (Fischer, 2007). The user-tracking methods allow researchers to analyze the relations between LLS and language learning/use activities, including "learner interactions, ... the use of resource functions,... the order of element processing, ...the choice of speed, ...and the processes of resource collection" (Cohen, 2014, p. 92).

As Macaro (2006) reviewed, methods used for eliciting language learners' strategy use, though imperfect, are considered valid and reliable. Effectiveness has been claimed (e.g., Cohen, 2014) for the methods of questionnaires and verbal reports (TAP and retrospective) in L2 strategy research. However, there are criticisms concerning research methods in the field of LLS (Macaro, 2006). For eliciting strategy use, it is questionable whether verbalizations can represent learners' internal reality. With respect to strategy measurement, some question the transferability of strategy inventories to other sociocultural domains, and the analysis of frequency counts and variance. Furthermore, methods used to classify translation strategies should go beyond the existing classifications. Finally, in terms of strategic behaviour interventions, there is a lack of standardization of "either the intervention packages or the outcomes that have been measured" (p. 322).

### **2.5.2 Research methods in Translation Studies**

Lederer (2010) reviewed the research methods applied in TS and divided them into two groups, namely, humanities-oriented and natural-science-oriented methods. The former is argumentative, reflexive, qualitative, and interpretive, while the latter sets up experiments and uses statistics, and is empirical. As Lederer explained, humanistic methods aimed to develop a partial or complete theory to interpret a certain phenomenon based on the conclusions generalized from what had been observed. By contrast, the other type of methods adopts the rules, terms, and tools from natural science, proposes hypotheses on the basis of observation, and aims to validate the hypotheses through experiments and observations. Lederer discussed the strengths and weaknesses of the two groups of research methods, and called on scholars from each group to collaborate rather than reproach each other.

To offer a more detailed review of research methods in TS, the following section reviews some of the major approaches and methods in this field, such as product-oriented, process-oriented, and function-oriented approaches, and the tendency for multiple research methods.

Prior to the 1990s, the dominant research focus in TS was on the final product of the translation process. Product-oriented translation research is mostly approached from the linguistic or cultural perspective (Jakobson, 2003) to examine translation as a static and finalized piece of work and involves “the description or analysis of a single ST–TT pair or a comparative analysis of several TTs of the same ST (into one or more TLs)” (Munday, 2016, p. 17).

Another approach is function-oriented, which describes the functions of translation in the socio-cultural situation and examines the issues about “which books were translated when and where, and what influences they exerted” (Munday, 2016, p. 18). This type of cultural-studies-oriented translation study focuses on cultural, social, and ideological issues, such as translation

and gender, translation as rewriting (the motivations for rewriting), postcolonialism and translation (the power relations), and the invisibility and role of translators.

With the introduction of theories and methods from cognitive science and psychology, translation scholars began to shift their research focus from the translation product to the process of translation (e.g., Dimitrova, 2005; Jääskeläinen, 1999; Lörscher, 1991; Tirkkonen-Condit, 1990). Scholars began to wonder what was going on in the “black box” of translators while they were undergoing the complicated cognitive performance of translation. The aim of translation process research is to “understand the nature of the cognitive processes involved in translating, with a focus on the individual translator” (Dimitrova, 2010, p. 406).

Different research methods have been integrated into process-oriented research in TS. TAP, an introspective method, was borrowed from cognitive psychology. In TS, TAP has primarily been used to examine the cognitive aspect of translation to address questions about problem-solving strategies (Lörscher, 1991), decision making (Tirkkonen-Condit, 1990), and affective and attitudinal factors in translation processes (Laukkanen, 1996). However, controversies have arisen over the methodological limitations (Jakobsen, 2003; Krings, 2001), and usefulness and trustworthiness (Künzli, 2009; Li, 2004) of this concurrent and introspective research method. As reported by Shreve and Angelone (2010), “by the end of 1990s, the methodological limitations of verbal reports and the dangers of relying exclusively on verbal report data, were becoming increasingly recognized” (p. 5).

Soon afterwards, another introspective verbal report form, retrospection, began to gain popularity in translation process research, and it has been widely used in interpreting studies. In retrospection, “an introspective method from cognitive psychology, subjects give verbal reports of their own cognitive processes after having performed a given task” (Dimitrova & Tiselius,

2014, p. 179). Hansen (2006) compared several retrospection methods, such as retrospection with replay with Translog, and retrospection with replay combined with an immediate dialogue, in order to discuss their value on translator training and translation research. He called on TS scholars to combine those methods and use them complementarily. Dimitrova and Tiselius (2014) further argued the strengths and weaknesses of retrospection and pointed out that a challenge for using retrospection in process-oriented research was that participants might forget some of their processes by the time they retrospect. As mentioned by Dimitrova and Tiselius (2014), a cognitive task could only be accurately recalled if the task was shorter than 10 seconds, since immediacy was an important condition for retrospection. However, for most translation process research, any chosen translation task may be at least a few minutes long. Therefore, it is suggested that the retrospection method should be used with precautions, and that it would be better to be used with other complementary methods, such as key-logging and eye-tracking.

To avoid the shortcomings of TAP and to obtain a fuller understanding of the translation process, keystroke logging software, screen-recording software, and eye-tracking equipment have been applied (e.g., Alves et al., 2010; Dragsted, 2012; Jakobsen, 2003, 2011). Translog, a software developed by the Center for Research and Innovation in Translation and Translation Technology of Copenhagen Business School, “ma[de] it possible to study cognitive phenomena such as chunking, based on the distribution of pauses, and such writing-related phenomena as edits and corrections” (Jakobsen, 2011, p. 37). With the addition of eye-tracking to keystroke logging, the newly updated version (TranslogII) can track both translators’ keystrokes and eye movements. Because “eye movement data . . . provide a fine window to the mind” (Jakobsen, 2011, p. 38), they make possible a closer look at the comprehension of ST, the production of TT, and the editing work. In addition to the above mentioned technologically advanced research

tools, other process-oriented research methods include translation diaries, online blogs, and so on.

More recently, to overcome the shortcomings of using either a product-oriented or a process-oriented method in isolation, product-oriented research has been integrated with process-oriented research in order to dig deeper into the phenomenon of translation. Hansen (2002) was the first to tackle the challenges of both process and product data, and Alves (2003), and especially Alves et al. (2010), integrated “methodologies adapted from experimental psycholinguistics and from quantitative corpus-based linguistics” (p. 110).

Even though much work has been done in applying multiple methods in process-orientated translation research, to my knowledge, the present study is the first to investigate translation strategies in Chinese-English translation processes by using keystroke logging and screen-capturing software to capture both the process and product of translation, as well as immediate retrospective reflection to reveal translators’ mental process.

## **2.6 Review of Pause Analysis Studies**

### **2.6.1 Pause studies in writing**

In the late 20th century, psycholinguistic studies on hesitation phenomenon started to capture scientific interest in pause analysis during text production (Immonen & Mäkisalo, 2010). In both monolingual text production and translation, pause has been considered as an indicator of difficulty and cognitive demand (e.g., Dragsted & Hansen, 2008; Krings, 2001; Schilperoord, 1996). It is a process during which the relevant information is retrieved from long-term memory to solve problems in order to continue the task (Schilperoord, 1996). The length of pause, in turn, reflects the cognitive load of the relevant process and the cognitive effort the process demands.

Pause analysis, which mainly concerns pause time distribution and pause frequencies, when being combined with discourse analysis, can reach more objective results than other traditional methods, such as case studies and observational data, for writing process research (Schilperoord, 2002). Longer pauses in writing are normally related to retrieving information from memory, monitoring the so-far-produced text, and repairing the text produced. In his study, Schilperoord (2002) suggested that studies on pauses in text production fit a stimulus-response paradigm (with the detection of a problem as the stimulus, pause as the response time, and production as the response), and a writer's pause pattern corresponds to the planning-execution process in his/her text production. He also raised two rules about pause in writing: the first is that the cognitive necessity for a pause can be detected immediately prior to the location of the pause; the second is that "the length of a pause is the precise time the text producer needs to produce a continuation, to produce a repair, or to monitor the text produced so far" (p. 78).

Pause is an important factor to measure writing fluency. Latif (2013) clarified the confusing definitions of writing fluency, which may refer to the rapid, appropriate, and coherent production of written language, or "the richness of writers' processes and ability to organize composing strategies" (Latif, 2013, p. 99). He listed writing fluency measures, which included pausing and the length of writing between pauses, among others. Latif also pointed out that "writer's pausing may enhance or hinder their fluency depending on its location and the composing processes used in pauses" (p. 4). In a study on the disruption of writing by background noise, Poll, Ljung, Odelius, and Sörqvist (2014) drew the conclusion that writing fluency negatively correlated with pause frequency at a significant level ( $p < .05$ ).

Schilperoord's (1996) study revealed that the duration of pauses in monolingual text production followed a top-down fashion. That is, the pause duration between paragraphs was the

longest, then the pause duration decreased between sentences, clauses, phrases, and then words. A similar top-down pattern of pause duration was reported by Miller (2000) in a study investigating the differences in writing behaviour of participants who were first- or second-language writers of English. Schilperoord also summed up five features fundamental to the research about pause: a) the mental processing, which takes place during the pause, has something to do with the behaviour following the pause, b) pausing is inadvertent, c) pauses are the result of the need for cognitive processing, d) it is not possible to delay them, and e) the length of a pause is unintentional.

### **2.6.2 Pause studies in translation**

In translation, the pausing pattern is different from that of monolingual text production as described in previous section since:

Longer pauses often preceding problematic words or phrases, whereas less macro-planning is required because the semantic and conceptual content of a paragraph or sentence to be translated next is already given in the SL text, leading to shorter pauses at these positions (Dragsted, 2012, p. 86).

Immonen and Mäkisalo (2010) reported the same finding that, in translation, longer pauses occurred between smaller linguistic units, and shorter ones were between larger linguistic units. Krings (1986) used pauses longer than three seconds as one sign of translation problems. He noticed that the occurrence of translation problems was linked to the use of translation strategies, and translation strategies emerged as the consequence of translation problems. In addition, Dragsted (2012) pointed out that the absence of translation problems coincided with the absence of translation strategies. Therefore, it can be predicted that longer pauses indicate the presence of translation problems, and hence the activation of translation strategies. For the present study, the

analysis of pause is to provide an overall picture of how the translation task is conducted in terms of problem-solving and strategy application that may be reflected by pause.

Jakobsen (2002) conducted experiments to examine the effect of TAP on professional and student translators' translation speed, and their time allocation and cognitive effort to different translation phases, that is, orientation, drafting, and revising phases. He concluded that professional translators could produce more durable TT drafts and devoted relatively more time monitoring the task than student translators did. In regard to the effect of TAP on translation, statistical significance was noticed in the drafting phase; that is, the TAP condition seemed to prolong professional translators' drafting phase more than that of the student translators.

As for the revising phase, Shih (2006) reviewed revisions in translation from the point of view of translators and revision checklists followed by translators. For a broader picture of translators' revision, she conducted semi-structured interviews with 26 professional translators in Taiwan, investigating their number of revisions, drawer time (the time translators leave their draft translation aside before revising), revision checklist, and their idiosyncratic revision procedures. The study provides a general picture about what revisions mean to translators and what they check during revising.

Immonen and Mäkisalo (2010) conducted a study comparing the writing processes in monolingual text production and translation by exploring the pause lengths preceding syntactic units. Immonen and Mäkisalo pointed out that, though pauses shorter or longer than certain cutoffs were not included in studies on written text production, their data indicated that translators may pause more than 69 seconds between words. They concluded that there were two types of patterns regarding pause in written text production including monolingual text production and translation: "to pause long enough to process the intended portion of text before

starting to write” and “to begin writing even though the processing may not be finished,” hence “slowing down of the production results in longer phrase medial pauses” (p. 60). The second pattern was used in translation more often than in monolingual text production. They also explained why pauses were longer between smaller units and shorter between larger units in translation compared to monolingual text production. For smaller units, the processing is intensified because the translator may attempt to achieve a better translation, while at the textual-level, less processing is required since paragraph and sentence structure is often copied from the ST rather than created in the translator’s mind.

Aided by eye-tracking and key-logging technologies, pause detection and analyses have also been used to explore time lag in translation, which is named eye-key span and defined as the time elapsing “between visual fixation of the ST input and the typed production of the TT output” (Timarová, Dragsted, & Hansen, 2011, p. 123). Eye-key span is regarded as a sensitive and useful measure for process-oriented translation research. Timarová, Dragsted, and Hansen (2011) synthesized some major findings from studies on eye-key span in translation process research. They suggested that student translators tended to show longer time lag between reading ST and producing TT, while professional translators tended to need relatively shorter time lag because they instantly shift back and forth between ST and TT (Timarová, Dragsted, & Hansen, 2011).

Pause, together with eye-fixation and articulation, as indicators suggesting uncertainty, has been studied in uncertainty management in translation. Angelone (2010) proposed a three-stage behavioural model for uncertainty management in translation, which involves problem recognition, solution proposal, and solution evaluation. He reported that professional translators seemed to be more tolerant of uncertainty and tended to apply monitoring skills more often to

evaluate solutions than non-professional translators. This finding is in line with a general agreement that “translation expertise relies on monitoring, and particularly on the evaluative monitoring of generated solutions” (Angelone, 2010, p. 19). He examined the relationship between the problem recognition-solution proposal-solution evaluation bundles and the comprehension-transfer-production translation process. He then discovered that professional translators showed a more strategic, uninterrupted, and patterned cycling of the three-stage uncertainty management bundles, while student translators showed disrupted and unbundled sequences.

Pauses in the translation process can inform researchers of translators’ translation processes and their strategy use in particular; therefore pause analysis is widely used in process-oriented translation research. However, because of the exploratory nature of the present study, focus was placed only on pause frequency, pause duration, and time allocation in the translation processes.

## **2.7 Research Questions**

As reviewed in the literature, translation strategies have not been thoroughly studied in TS; the multi-method approach of integrating retrospective reflection, concurrent screen-capturing, and key-stroke logging have not yet been applied to investigate the Chinese-English translation process specifically; no study has ever introduced LLS to translation strategies research. This study redefined translation strategies, applied multiple process-oriented research methods, and integrated LLS to address the following research questions in order to examine translators’ strategy use in the Chinese-English translation context and investigate the relationship between strategy use and translation performance.

Question 1: What is the reported and observed strategy use for novice, paraprofessional, and

professional translators?

Question 2: Is there any difference in the strategy use among translators with different professional designations?

Question 3: What is the correlation between translators' strategy use and translation performance?

Question 4: Do translators of different professional designations pause differently during the translation processes? Is there any relationship between pause and translation performance?

The answers to these questions aim to better understand translators' strategy use and pause patterns in the translation process, and further to reveal the relationships between translation strategy use and translation performance and between pause and translation performance.

## CHAPTER THREE - METHODS

This chapter presents the methods applied in the study. Section 3.1 describes participants' backgrounds and characteristics. Section 3.2 introduces the instruments, and Section 3.3 reports on Phase One of the study and explains the data collection procedures for the main study. Section 3.4 describes the data analysis process, including data transcription, data coding, and statistical analyses.

This study took a multi-methods research approach (Creswell & Clark, 2007) that involved retrospective reflections, concurrent screen-capturing, and key-stroke logging to probe the Chinese-English translation processes. Through the application of the TCM (Albir, 2007) from the TS field and the LAM (Bachman & Palmer, 1996) from the field of LLS, this study is the first of its kind to compare the differences in translators' strategy use and to analyze the relationship between their strategy use and their translation performance. It investigated the strategy use of translators from different professional designations through the elicitation of multiple sources of data in order to provide a fuller picture of the translators' translation processes.

### 3.1 Participants

The present study involved three groups of translators for a total of 20<sup>1</sup> participants. The first group, eight novice translators, were second-year translation students from the School of Translation Studies at a university in China. The second group were eight associate Chinese-

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<sup>1</sup> One participant from the professional group in the main study was also a participant for the paraprofessional group in Phase One. The reasons for recruiting the same person twice are as follows. First, she was accredited as a certified Chinese-English translator of STIBC in 2015, and hence she was qualified for being a participant for the professional group. Second, she participated in the Phase One study in March 2013 and the main study three years later in March 2016. Therefore, the risk of practice effect is low. In addition, she expressed that she had no memory of the ST, which once again showed that there was no practice effect risk in this case.

English translators from the Society of Translators and Interpreters of British Columbia (STIBC), and the third group included six certified Chinese-English translators from STIBC and the Association of Translators and Interpreters of Ontario (ATIO). However, the data of one associate translator was excluded from the second group since her first language was English while all other participants' first language was Mandarin Chinese. One certified translator was excluded from the third group due to incomplete data. Altogether, there were 20 participants whose data were used for this study.

Jääskeläinen (2010) pointed out that participant categories were ill-defined in TS. Based on the designations used in early translation process studies, Jääskeläinen re-labelled participants with different characteristics as “naïve translators,” “novice translators,” “professional translators,” and “expert translators.” Naïve translators are language students who are not learning translation, novice translators are students of translation, and professional translators are those who earn “their living by translating” (p. 215). Since “expertise” is defined by Ericsson, Charness, Hoffman, and Feltovich (2006) as “consistently superior performance,” “expert translators” are professionals who consistently exhibit superior performance in translation (p. 3).

This study used the designation “novice translators” for the second-year translation students, “paraprofessional translators” for associate translators with STIBC, and “professional translators” for certified translators. “Paraprofessional translator” is a level of accreditation given by the National Accreditation Authority for Translators and Interpreters (NAATI) in Australia. According to NAATI’s credential outline, paraprofessional translators represent “a level of competence enabling the production of a translation of non-specialized information (for example a birth certificate)” (NAATI, Outline of NAATI Credentials, ¶8). Theoretically, paraprofessional

translators are more professional than translation students but with less expertise than professional translators.

According to the criteria posted on the STIBC website, “an associate member has at least one year of experience as a translator or interpreter, but has not yet met the criteria to become a certified member” (STIBC, Associate Member Directory, ¶1). These associate translators are paraprofessional since they have not passed the certification exam and have less translation experience than the certified translators who “have at least four years of experience or education as a translator or interpreter” and have passed the national Canadian Translators, Terminologists and Interpreters Council (CTTIC) exam (STIBC, Professional Recognition, ¶1). Translators from both STIBC and ATIO were certified either by passing the CTTIC exam or by the “on dossier” process, which is only for those experienced translators who have extensive background in translating. Those who apply for “on dossier” certification do not need to sit for the certification examination but are required to prepare a portfolio of their translation experience for assessment.

As stated in the current curriculum of the School of Translation Studies (2016), courses for the second-year students are primarily designed to build up their knowledge and skills in English, and general knowledge in culture, language, natural science, and the like. To prepare the second-year students for intense training in translation and interpretation in the third and fourth years, a few introductory courses to translation are offered, such as Language Error Analysis and Correction, Sentence Translation, and Paragraph Translation.

As for Language Test Score, for novice translators, the scores are all for the subject of English language in the National College Entrance Examination<sup>2</sup> 2014 in which the total score

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<sup>2</sup> The National College Entrance Examination, also translated as National Higher Education Entrance Examination and commonly known as *Gaokao* (高考, “Higher Education Exam”), is “an academic examination held annually in

for the subject of English is 150 points; for the seven paraprofessional translators, four of them took the paper-based TOEFL (Test of English as a Foreign Language), which has a total score of 677, and the other three had taken neither TOEFL nor IELTS (International English Language Testing System); for the five professional translators, only one took both the paper-based TOEFL and IELTS (IELTS has a total score of 9). For the annual amount of translation: one of the seven paraprofessional translators was working more as an interpreter than a translator, though she was accredited as an associate Chinese-English translator with STIBC; and two of the five professional translators were working more as interpreters as well. In regards to the translation specialty, two of the professional translators mentioned that they had diversified specialization and did translation almost in every field rather than one or two specialized areas as other participants reported.

Three characteristics in Table 1 are not applicable to novice translators: years of experience, annual translation amount, and translation specialty, because they were only the second-year undergraduates in the translation program, and they had only taken some introductory courses in translation at the School of Translation Studies. In addition, none of them had ever been to any English-speaking country; thus, there was no information regarding the length of residence in Canada.

Table 1 presents participants' personal profiles, language and translation related backgrounds and experiences.

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the People's Republic of China. This examination is a prerequisite for entrance into almost all higher education institutions at the undergraduate level.”

([https://en.wikipedia.org/wiki/National\\_Higher\\_Education\\_Entrance\\_Examination](https://en.wikipedia.org/wiki/National_Higher_Education_Entrance_Examination))

Table 1

*Participants' Characteristics*

<b>Characteristics</b>		<b>NT Group (n = 8)</b>	<b>PaT Group (n = 7)</b>	<b>PT Group (n = 5)</b>
<b>Age in Years</b>	<i>M</i>	19.5	41	48
	Range	18-21	28-55	31-63
<b>Gender</b>	Female	8	2	1
	Male	0	5	4
<b>Years of Experience</b>	<i>M</i>	N/A	12.9	21
	Range	N/A	2-23	5-29
<b>Annual Translation Amount (word)</b>	<i>M</i>	N/A	43,833	29,333
	Range	N/A	10,000-150,000	80,000-500,000
<b>Length of Residence (LOR) in Canada (year)</b>	<i>M</i>	N/A	16.4	22.2
	Range	N/A	5-27	19-32
<b>Language Test Score</b>	<i>M</i>	134.4/150	604/677 (TOEFL)	623/677 (TOEFL); 7.5/9 (IELTS)
	Range	125-145	567-640	N/A
<b>Translation Specialty</b>		N/A	technology, law, economy, medicine, investment, finance, literature, business	technology, law, medicine, literature, medicine, finance, literature
<b>Education</b>		Sophomores	BA in English Language and Culture, BSc in Computer Science, MA in Applied Linguistics, BA in Psychology, Bachelor in Business, MBA, PhD in Business Administration	BA in Psychology, MA in political science, MA in anthropology, MA in Applied Linguistics, PhD in Religious Studies

*Note.* *N* = 20. NT Group = Novice Translator Group; PaT Group = Paraprofessional Translator Group; PT Group = Professional Translator Group.

## 3.2 Instruments

### 3.2.1 Individual profile questionnaire

Two slightly different Individual Profile Questionnaires (P and N) (see Appendix 1) elicited participants' personal information, English learning history, educational background, and scores for any language proficiency tests they had taken. For both the paraprofessional and professional translators, the questionnaires raised further questions specific to their translation experience, such as professional training history, years of translation experience, translation speed, annual translation amount, specialized area of translation, and their membership with the translators' associations. The questionnaire designed for novice translators included nine questions, for example, scores for the subject of English as a foreign language in the National College Entrance Examination and any translation related courses they had taken at the translation school (see Appendix 1).

### 3.2.2 Source text for translation

The ST for translation (see Appendix 2) is a 300-word Chinese paragraph, which was one of the original texts for the 2011 STIBC admission translation exam. To avoid potential practice effects, only those associate and certified translators who did not take the 2011 STIBC admission exam were recruited. The Chinese ST was an excerpt paragraph from a prose work written by Shiqiu Liang<sup>3</sup>, a famous Chinese writer, and was on the general topic of interest and learning. Most of the participants expressed in the post-task personal exchanges that the ST was a great choice for translation research since it seemed easy to translate but actually it was challenging and tested the translators' skills.

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<sup>3</sup> Shiqiu Liang (January 6, 1903 – November 3, 1987) was a renowned Chinese writer, literary theorist, educator, translator, and lexicographer. He was most famous for his humorous and broad-minded style in prose writing.

### **3.2.3 Translog, Camtasia, and WebEx**

To record the translation process, two software products, Translog 2006/Translog-II and Camtasia Studio (Version 8.0, 2012), were used. Translog-II, together with its predecessors, Translog 2000 and Translog 2006, were released by the Centre for Research and Innovation in Translation and Translation Technology at Copenhagen Business School. The product was originally designed to collect objective and digital data of human translation processes, and it was subsequently applied to record and study human writing and reading processes. The older version Translog 2006 was used to collect data from five paraprofessional translators and one professional translator. The data from the rest of the participants were all collected using the updated version, Translog II. Both Translog 2006 and Translog-II have two main components, Translog Supervisor and Translog User. Translog Supervisor (see Figure 4) can create projects by setting up how the ST will be displayed to the user and how pauses will be measured. It can also replay the typing process and produce a linear representation of all the keystrokes and other statistical information. As the screenshot of one participant's final product in Figure 4 shows, the upper left hand corner is the ST, the lower left hand corner is this participant's final TT, and the right half of the window is the linear representation of this participant's translation process.

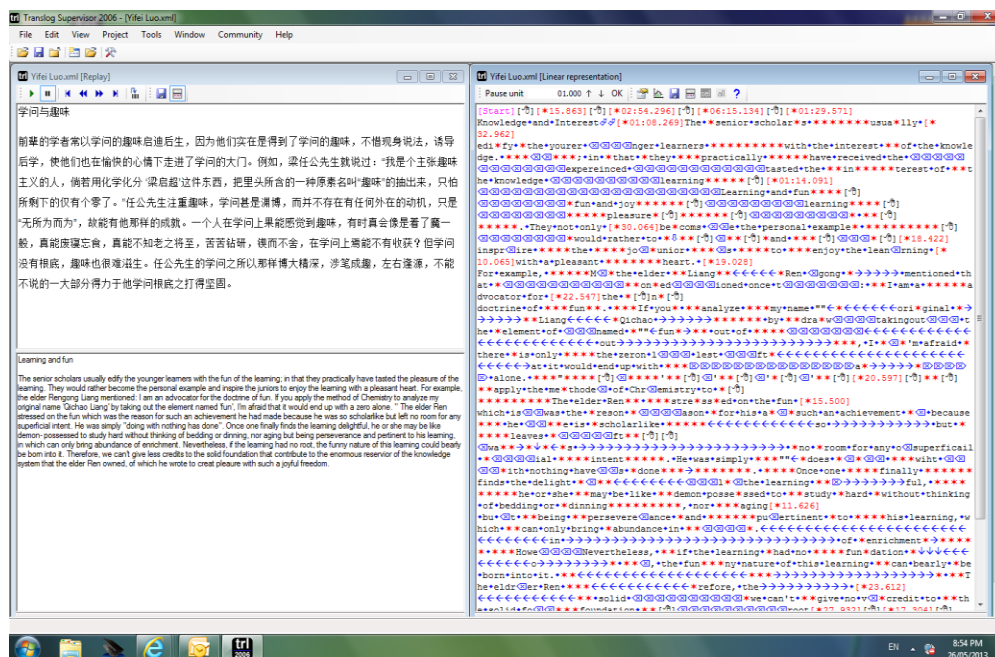


Figure 4. Translog supervisor window.

Translog User (see Figure 5), similar to ordinary word processing software but with some standard features, such as “copy” and “paste” being disabled, can display the ST in an upper window and the TT production in a lower window where participants type their translation. Translog User can save all the data about the typing process in a key-logging file, which can be displayed in the Supervisor module.

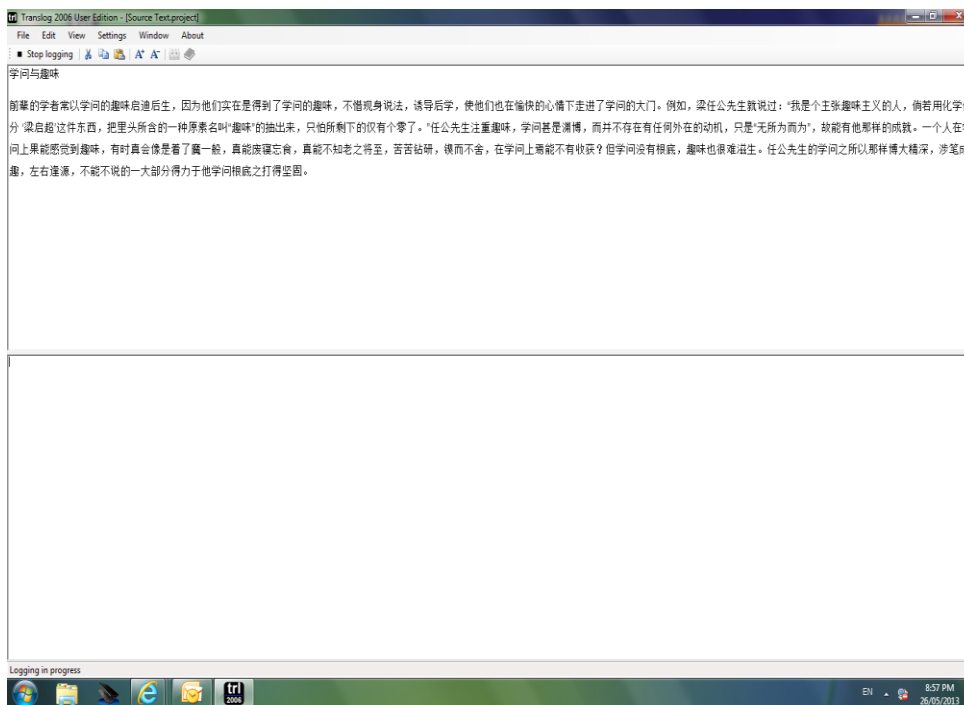


Figure 5. Translog user window.

Another screen capturing software, Camtasia Studio (Version 8.0, 2012; see Figure 6), was used to record participants' screen movements and actions, as a supplement to the keystroke recording of Translog, which cannot keep track of activities other than those done in the Translog User window. By capturing screen movements, Camtasia can audio-visually show the participants' online searches made during the translation processes. Figure 6 shows that the participant was checking the English equivalent for the Chinese phrase '现身说法 *advise others by using one's own experience*' with the online dictionary *iCIBA*.

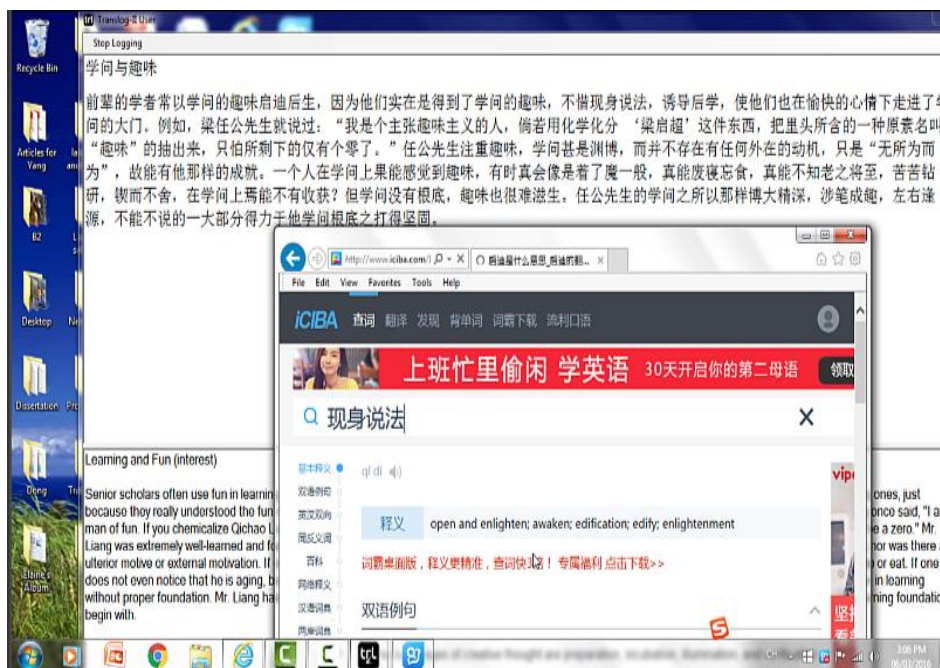


Figure 6. Camtasia recording window.

An online meeting platform WebEx was used to remotely collect data from eight translation students in China, two certified members with ATIO in Toronto, and one associate member with STIBC in Vancouver. Via WebEx, participants could work on both the translation task and the post-task reflection. For the remaining participating associate and certified STIBC members, the data collection was conducted face-to-face either in Vancouver or Victoria.

### 3.2.4 Post-task reflection

Reflection involves “the individual’s active engagement” and “examining the manner in which one responds to a given situation” (Rogers, 2001, p. 41). It includes “identification of a problem and a deliberate decision to seek a solution,” “hypothesizing and reasoning,” and “plan and decision to act” (Rogers, 2001, p. 44). As a conscious effort to re-examine a process in order to learn from experience, retrospective reflection is a form of “reflection-on-action” (Krogstie, 2009, p. 418). For the present study, the post-task reflection was based on participants’ memory and the replay of participants’ translation processes. On one hand, the post-task reflection was

retrospective since participants tried to recall what had already happened in their minds. On the other hand, the post-task reflection was also concurrent because of the real-timeness brought by the replay of the already finished translation performance.

### **3.3 Data Collection Procedures**

For data collection, participants spent ten minutes or so signing the consent form (see Appendix 3) and answering the background questionnaire. Following the university's ethical guidelines, the purposes of the study were clarified to participants before they signed the consent form. After being familiarized with the data collection instruments, participants then translated the Chinese ST into English in 60 minutes either using my prepared laptop in a face-to-face case or accessing my laptop via online platform in a remote case. After the translation was completed, approximately, a 30-minute post-task retrospective reflection was conducted to examine participants' mental processes and strategic behaviours. While watching their replayed translation performance, participants then, ideally at every change or every long pause, recalled and explained what was going on in their minds and why they selected a specific translation strategy over others. In total, each participant roughly took one and half hours to finish both the translation task and the post-task reflection.

#### **3.3.1 Phase one**

Before the main study, a phase one study was conducted to evaluate the feasibility of the research design and also as one of the researcher's candidacy papers. For Phase One, there were two groups of participants: five associate Chinese-English translators from STIBC for the paraprofessional group and five Chinese graduate students at the University of Victoria for the non-translator trainee group. They were non-translator trainees since they were advanced English-as-an-additional-language speakers who were not learning translation at the time of the

Phase One study. The five graduate students were from various education backgrounds, including engineering, telecommunication, and education. As international students, in order to enter the graduate programs at the University of Victoria, they had to meet the minimum test score of 90 for TOEFL iBT (internet-based standard test) or an overall score of 6.5 for IELTS.

The same ST was used for the translation task in Phase One, and each of the data collection session was conducted face-to-face. Participants were regrouped later into the low performance and high performance groups based on their translation performance scores given by two professors in TS from the School of Translation Studies at Xi'an International Studies University in China. For the data analysis, only two types of data were considered, the reported data elicited from participants' post-task reflections and the observed data from Camtasia videos. The third type of data, key-logging data, was not examined in Phase One due to the research scope and limited time for the candidacy paper.

Based on the implementation and results of Phase One, and for the purposes of the main study, several modifications and changes were made.

(1) Professional designations: To present a continuous trajectory of the development of translators' strategy use, that is, moving from novice translators (translation students), to paraprofessional translators (associate members of STIBC), to professional translators (certified members of STIBC and ATIO), the main study involved translators of two additional professional designations (i.e., novice and professional translators). However, the non-translator trainee group was removed from the main study since advanced EAL graduate students were not translators, and most of them had no interest in the translation profession. The data of the five STIBC associate members from Phase One were used for the main study. Furthermore, three more associate translators were recruited.

(2) Translog settings: When participants' translation processes were replayed via Camtasia, the font size which was suitable for the Translog User window became too small. That is because Translog User window was framed within the Camtasia window for display and the font size of Translog User window was naturally minimized to fit the outside Camtasia window. Therefore, for the main study, the font size was enlarged for better visibility. The new setting was also tested by replaying the translation process via the online meeting platform WebEx and adjusted accordingly as the application of WebEx once again would proportionally reduce the font size already set for Translog User window.

(3) Instrument modification and addition: First, based on the background questionnaire designed for paraprofessional translators, the questionnaire was adjusted for professional and novice translators. As mentioned in Section 3.2.1, the two slightly different questionnaires varied in their foci, language learning experience for novice translators and translation experiences for both paraprofessional and professional translators. Second, in order to remotely collect data from participants in Vancouver, Toronto, and China, the online platform, WebEx, was used to collect data remotely in the main study.

(4) Key-logging data: For the main study, key-logging data were used as the third data source to complement and cross-check the other two sources of data. Other than the source of participants' observed strategy use, such as deleting, adding, substituting, and skipping back, key logging data can reveal pause frequency and pause duration, which are indicators of difficulty encountered by participants during the translation processes (Dragsted, 2012).

(5) Reflection questions: Transcriptions in Phase One showed that too many questions had been asked to prompt participants to reflect more in detail on their translation processes. Especially, in a few reflections from Phase One, there occurred several broken and unfinished sentences

because of the interruption of untimely questions for prompting. For the main study, during the reflection session, fewer questions were asked and participants were only prompted when they skipped too many details or were stuck during reflection.

(6) Coding scheme: By synthesizing the findings from Phase One, TCM's six subcompetences were renamed as *bilingual strategies (BLS)*, *extralinguistic strategies (ELS)*, *instrumental strategies (IS)*, *professional strategies (PS)*, *macro strategies (MS)*, and *psycho-physiological strategies (PPS)*. For the LAM, the reason for choosing the term *compromising strategies* over Oxford's (1990) *compensation strategies* is that the *compromising strategies* employed by translators in Phase One involved giving up without resorting to other solutions. Overall, in the coding scheme for Phase One, there were 71 individual strategies. For the main study, there were 97 individual strategies derived from participants' reflections and observed from both video data and key-logging data.

### **3.3.2 Main study**

With the minor modifications and changes, the main study followed the same data collection procedures as Phase One: recruiting participants, performing translation task, and reflecting on the translation processes.

#### ***3.3.2.1 Recruiting participants***

The first step in recruiting associate and certified translators was to retrieve contact information from the online directories of STIBC, ATIO, and other provincial translators' associations. Afterwards, an invitation email (see Appendix 4) was sent to all Chinese-English associate and certified members. For those with only phone numbers listed under their names, phone calls were made to approach those potential participants. For those who volunteered to participate and agreed with the face-to-face mode, meetings were scheduled in both the

participants' and the researcher's convenience either in Vancouver or Victoria to collect data. In order to recruit translation students in China, a request to distribute the letter of invitation was sent to a translation instructor (see Appendix 4), and the interested participants were reminded to contact the researcher directly via email. For both face-to-face and remote data collection sessions, the study was briefly introduced, and the software programs were demonstrated. In particular, for the remote sessions, the internet connections and the interoperability among the three instruments were tested. According to the university's ethical guidelines, the purpose of the study was explained to each participant, and the consent form and the individual profile questionnaire were completed before the actual data collection sessions.

In remote data collection sessions, following the completion of the informed consent form and background questionnaire sent via email, an email for online meeting invitation was first sent to the participants. Once they clicked the JOIN icon in the invitation email, they were automatically directed to the online meeting room and connected by audio. With a brief introduction to the study and familiarization on how to perform the translation task, participants then were granted with remote control of the researcher's computer, which had Translog and Camtasia already installed.

### ***3.3.2.2 Performing translation task***

Participants were given access to or remote control of a laptop with Translog 2006/Translog-II and Camtasia Studio 2012 installed. They had a wireless network connection and access to two online dictionaries: *Youdao* and *iCIBA of PowerWord*. The participants were reminded beforehand that they were allowed to use any online resources, the provided online dictionaries, or their preferred online tools. The only restriction was on the use of paper dictionaries since it was impossible to track what they looked up with the instruments applied in

this study only. While they were performing the translation task, in order to reduce the intervention, the researcher tried to stay out of sight when it was face-to-face, or stay off when it was conducted online. Although candidates sitting for the admission translation exam of STIBC 2011 were given two hours to translate the 300-word ST, participants in the present study were given one hour to perform the translation task because all participants finished the same translation task within one hour in the Phase One study.

### ***3.3.2.3 Reflecting on the translation process***

Once the translation task was completed, the key-logging file was saved with Translog User and the video file with Camtasia. Participants were also reminded to submit any notes they had jotted down to the researcher face to face or by email in the remote cases. The reflection process, including the digital recording, started immediately upon completion of the translation task. Participants' typing processes were replayed in real time mode, and they would be accelerated by the researcher when there were not many movements or paused for participants' reflection. Participants were informed beforehand that they could reflect either in Chinese or English, whichever they felt comfortable and confident with. Only participant PT1 reflected in English, and all the other 19 participants reflected mainly in Chinese. During the reflection, when participants skipped too much without reflecting or stopped reflecting, participants were prompted with questions raised in Chinese including "how did you think about the translation task/your performance/your translation?", "what were you thinking right now?", "why did you go back to this word?", "why did you choose this word?", and so on. While they were reflecting, the video replay was paused to allow them enough time to elaborate on their translation processes. The reflections were recorded by Camtasia and a digital voice recorder as a backup.

### **3.4 Data Analysis**

#### **3.4.1 Data preparation and transcription**

To protect the anonymity of participants, a code name was assigned to each of them for data analysis, results reporting, and discussion. The eight student translators in Group One were renamed as NT1-NT8, the seven associate translators in Group Two as PaT1-PaT7, and the five certified translators in Group Three as PT1-PT5.

For each participant, there were three types of data: the key-logging file generated from Translog User for TT typing, the video data of screen movements from Camtasia 2012, and the audio data from the post-task reflection. In total, there were 20 files for each type and 60 files for all 20 participants. First, the 20 audio clips were fully transcribed for data coding. Second, the researcher watched all the video files and noted down the observable strategy use, revealing, for example, what online tools participants used, how often, what they searched online, and what changes they made to the temporary translation product. Third, the key-logging files were converted into Excel files, and pause frequencies, pause durations, time allocations, and percentages of time allocation were calculated. Most researchers (e.g., Alves & Vale, 2009) in TS agreed that very short pauses would “lead to the identification of automatic processes, corrections of typos or other instances of on-line text production in which no conscious problem-solving and/or decision-making takes place” (p. 255). Since researchers in translation process studies tend to agree on a mean pause length of five or six seconds (Alves, 2003; Hansen, 2002; PACTE, 2005), the present study only calculated pauses that were longer than five seconds. The reported strategy use from the audio clips, that is, participants’ reflection data, together with the observed data from the video clips and key-logging files, provided a relatively comprehensive perspective of participants’ strategic behaviour in the translation processes.

### 3.4.2 Data coding

Based on the coding scheme developed in Phase One, by adapting both PACTE's TCM and the LAM and synthesizing them with individual translation strategies, such as omitting, rewriting, and so forth (cf. Baker, 1992; Chesterman, 1997; Lörscher, 1996; Newmark, 1988), a new coding scheme was developed (see Appendix 5 for the coding scheme). During the process of data coding, when a new strategy was reported or observed, it was defined and integrated into the coding scheme.

In regards to the comparison between the old coding scheme developed in the Phase One study and the updated new coding scheme for the present study, altogether there were 59 modifications made to the previous coding scheme including deleting (3), renaming (21), adding (24), separating (10), and combining (1). The modification of "deleting" means that an individual strategy originally listed in the old coding scheme was no longer listed in the new coding scheme. For example, after further discussions with my supervisor, the former individual strategy of *understanding of translation* was not treated as a strategy any more. Therefore, it was not included in the new coding scheme. The modification of "renaming" is to rename the former individual strategy with either an expanded or a narrowed definition. The former strategy of *attending to dialects*, for instance, was renamed as *attending to linguistic variations* with a broader coverage in definition. "Adding" is purely adding a newly reported or observed strategy into the existing coding scheme. "Separating" is to split the one original individual strategy into two or more strategies. The most common modification of this type is to split the original strategy into various linguistic levels, such as *identifying translation problems* into *identifying translation problems* at macro-, textual-, and lexical-levels. The last modification of "combining" is to combine the original two or more strategies into one. This only happened once

when the original *comparing strategies* and *evaluating strategies* were combined as *evaluating strategies*. In addition, some individual strategies were moved to reflect their specific strategic category within the TCM and the LAM.

In the first round of coding, the transcription of each participant's reflection including those of the five associate translators in Phase One was examined, each screen movement revealed from the video was coded, and each pause shown in the key-logging data was noted and counted for frequency and duration. For the second round of coding, data of three randomly selected participants out of each group, which was 9 in total or 45% of the participants, was re-coded.

### **3.4.3 Intra-coder and inter-rater reliability**

For the main study, both the intra-coder and inter-rater reliability were measured. For the intra-coder reliability, the calculation was manually conducted by calculating the number of agreements divided by the total number of coding decisions (Swain et al., 2009). In the second round of coding, the total strategies reported and observed for the 9 selected participants were 1,381, and 1,285 were coded the same as in the first round, resulting in a high intra-coder agreement percentage of 93.05%. For the 9 selected participants, strategies coded in the second round were used for data analysis since the researcher was more experienced with the coding scheme by then.

During the second round of coding, there were three types of disagreement: addition of newly identified strategies, change of coded strategies, and deletion of identified strategies, as illustrated in the following examples.

1. Addition of newly identified strategies: in the second round of coding, extra strategies, which were not coded the first time, were added.

Excerpt 1: “你读了一个原文，你不管原文在说的是什么，你想的是图像的话，结

果你就发现你的翻译过程，实际上是用图像在 translate，对吧？”

(PaT1)

[Translation: “While reading an ST, no matter what it is about, if you are thinking in images, you may find out that you are translating with images, right?”]

In the first round of coding, only one strategy was identified from the above reflection, *being aware of the translation process*, which was defined in the coding scheme (see Appendix 5) as knowing what is going on in the translation process. In the second round of coding, the strategy *using mechanical means* (i.e., short forms, lists, images, and notes) was identified as an additional strategy since the participant revealed that he not only was aware of the translation process, but he also used images to transfer the information of the ST to the TT.

2. Change of coded strategies: in the second round of coding, a previously coded strategy was re-coded as a different strategy.

Excerpt 2: “我会把其中的一些词先翻出来放在那里，然后光看着这些词，然后考

虑怎么把它组织起来，成一个通顺的意思。” (PT3)

[Translation: “I would first translate just some of the words, and then only focus on these words to see how I can organize them into a sentence that makes sense.”]

One of the initially coded strategies for this excerpt was *planning process* (defined as making a plan for the steps in the translation process); however, upon re-examination, it was not about

planning the translation process, but more about deconstructing the process of formulating sentences. Therefore, it was re-coded in the second round as *reformulating sentences*, together with the strategy of *translating key words* coded initially.

3. Deletion of identified strategies: a previously coded strategy was deleted.

Excerpt 3: “我们倒也做过类似的文学翻译，但是没有这个四字成语那么多，而且

这个中文就稍微有点儿晦涩。” (NT7)

[Translation: “We have done similar literal translation, but none of them has so many four-character set phrases as this one does. Besides, the Chinese of this text is rather obscure.”]

Previously, two strategies were coded, *evaluating ST-textual* and *evaluating task*. In the second round of coding, the strategy *evaluating task* (i.e., “evaluating the difficulty level of the translation task”) was deleted since the participant’s reflection only revealed that she was evaluating the phrases and readability of the ST, which were both at the textual-level.

To determine whether the translation performance was correlated with participants’ reported and observed strategy use, the TTs produced by the 20 participants were graded by two raters. They were both professors teaching translation at the School of Translation Studies at a university in China. For grading, the raters were provided with the ST, the reference translation, which was done by a renowned translator (see Appendix 6), a detailed scoring rubric and scoring sheet (see Appendix 7), and participants’ TTs, which had been numbered anonymously.

The grading followed the five-point scale scoring rubric proposed by Angellelli (2009), which covers five subcomponents, with five points assigned for each category: ST meaning, style and cohesion, situational appropriateness, grammar and mechanics, and translation skills.

The total score for five categories is 25 points. Both raters provided no comments but only overall scores for each of the five categories and highlighted the translation errors in participants' TTs.

For the inter-rater reliability, since the inter-rater reliability assessment derived from the ratings of all 20 participants was low ( $r_s = .450, p = .047$ ), though there was a positive and statistically significant correlation between the two raters' scores, a decision was made to calculate the correlation between the two raters' scores for the top three and the bottom three performers using Spearman's *rho* test. The Spearman's *rho* test showed that there was a positive and statistically significant correlation between the two raters' scores ( $r_s = .928, p = .008$ ). Therefore, the inter-rater reliability is deemed acceptable as it can clearly segment the highest performance scores from the lowest performance scores.

#### **3.4.4 Regrouping of participants**

For participants' translation performance, the average of the two raters' scores was taken as the final score for each participant. While taking the individual average as the participants' final performance scores, it could be concluded from Table 2 that NT5, NT6, and NT8 from the novice translator group, PaT1 and PaT3 from the paraprofessional translator group outperformed PT1 from the professional group. Besides, PaT7 had the same score with PT1. In particular, participant NT6 and NT5 whose scores ranked first and second in the NT group had the same scores as PT4 and PT5, that is, 19.25 and 18.50 points, which were within the upper percentile range (75%). The group averages, however, were within the expectation in the sense that professional translators performed the highest quality translation (3.61 points higher than the PaT group average), followed by the paraprofessional translators (0.63 points higher than the NT

group average), and lastly the novice translators (PT:  $M = 19.40$ ,  $SD = 2.1$ ; PaT:  $M = 15.79$ ,  $SD = 1.4$ ; NT:  $M = 15.16$ ,  $SD = 3.1$ ).

Table 2

*Averages and Percentiles of Participants' Performance Scores*

Participants Group	Code	Average		Percentile
		Individual	Group	
NT Group	NT1	15.25	15.16	40.0%
	NT2	11.00		2.5%
	NT3	12.25		7.5%
	NT4	14.25		22.5%
	NT5	18.50		75.0%
	NT6	19.25		85.0%
	NT7	12.75		12.5%
	NT8	18.00		67.5%
PaT Group	PaT1	17.75	15.79	62.5%
	PaT2	14.75		30.0%
	PaT3	17.25		57.5%
	PaT4	15.25		40.0%
	PaT5	14.75		30.0%
	PaT6	14.00		17.5%
	PaT7	16.75		50.0%
PT Group	PT1	16.75	19.40	50.0%
	PT2	20.00		92.5%
	PT3	22.50		97.5%
	PT4	19.25		85.0%
	PT5	18.50		75.0%

*Note.*  $N = 20$ . NT Group = Novice Translator Group; PaT = Paraprofessional Translator Group; PT Group = Professional Translator Group.

To find out the relationship between translation performance and strategy use, 11 participants were regrouped into the high performance group (PT1, PT2, PT3, PT4, PT5, PaT1, PaT3, PaT7, NT5, NT6, and NT8) and the remaining 9 participants were grouped together as the low performance group (NT1, NT2, NT3, NT4, NT7, PaT2, PaT4, PaT5, and PaT6). The cut-off percentile was 50% for both PT1 and PaT7 since they were only 7.5% lower than the adjacent higher percentile 57.5% for PaT3, but 10% higher than the adjacent lower percentile 40% for both PaT4 and NT1. Furthermore, score-wise, the scores of PT1 and PaT7 (that is, 16.75) were

only .5 points lower than the adjacent higher score 17.25 for PaT3, but 1.5 points higher than the adjacent lower score 15.25 for both PaT4 and NT1. With consideration of the range differences in both percentiles and scores, PT1 and PaT7 were grouped into the high performance group.

### **3.4.5 Statistical analysis**

For statistical analysis, both Microsoft Office Excel 2007 and IBM SPSS Version 23 were used. Before conducting any statistical analysis, a Shapiro-Wilk test was performed to explore the normality of data distribution. The null hypothesis of the Shapiro-Wilk test is that the data are normally distributed. When the  $p$ -value is less than .05, the null hypothesis is rejected (i.e., the data are not normally distributed); when the  $p$ -value is greater than .05, the null hypothesis is retained, and thus the data are normally distributed.

When the data distribution was normal ( $p > .05$ ), for the original three groups, a one-way ANOVA test was performed; for the two newly divided groups, a  $t$ -test was performed to determine whether the difference among or between groups was statistically significant. When the data distribution was non-normal ( $p < .05$ ), a Kruskal-Wallis test was conducted for the three groups analysis and a two-sample Kolmogorov-Smirnov test was performed for the two groups analysis.

For the convenience of reporting results in the next chapters, the following table presents the Shapiro-Wilk test results for major data sets (Table 3), including strategy use frequency, pause frequency, pause duration, and time allocation at the three phases in translation, namely, the orientation, drafting, and revising phases, following Jakobsen's (2002) work.

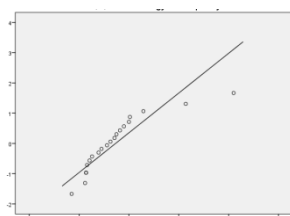
Table 3

*Normality Test Results for Strategy-use Frequency and Pause*

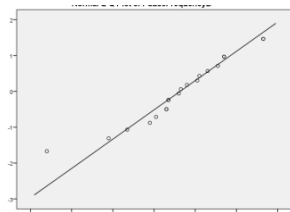
Variables		Shapiro-Wilk test		
		Statistic	<i>df</i>	<i>Sig.</i>
Strategy Use Frequency		.815	20	.001**
Pause Frequency	Drafting	.951	20	.385
	Revising	.806	20	.001**
	Total	.975	20	.849
Pause Duration	Drafting	.970	20	.747
	Revising	.752	20	.000**
	Total	.950	20	.364
Time Allocation	Orientation	.748	20	.000**
	Drafting	.957	20	.478
	Revising	.662	20	.000**
	Total	.931	20	.158

*Note.*  $N = 20$ . \*\* Correlation is significant at  $p < .01$ .

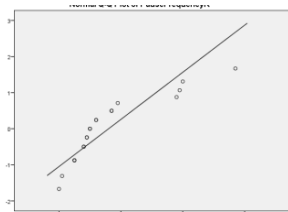
Table 3 shows that the data were not normally distributed, at a significant level of  $p < .01$ , for the overall strategy-use frequency, pause frequency for the revising phrase, pause duration for the revising phrase, time allocation for the orientation and revising phrases. To better visualize the normality test results, Q-Q plots are provided in Figure 7. Q-Q plots can show whether a set of data comes from a normally distributed population depending on whether the points fall approximately along the 45-degree reference line.



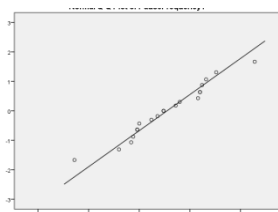
a.



b.



c.



d.

- a. Strategy use frequency
- b. Pause frequency in the drafting phase
- c. Pause frequency in the revising phase
- d. Pause frequency in total
- e. Pause duration in the drafting phase
- f. Pause duration in the revising phase
- g. Pause duration in total
- h. Time for the orientation phase
- i. Time for the drafting phase
- j. Time for the revising phase
- k. Time in total

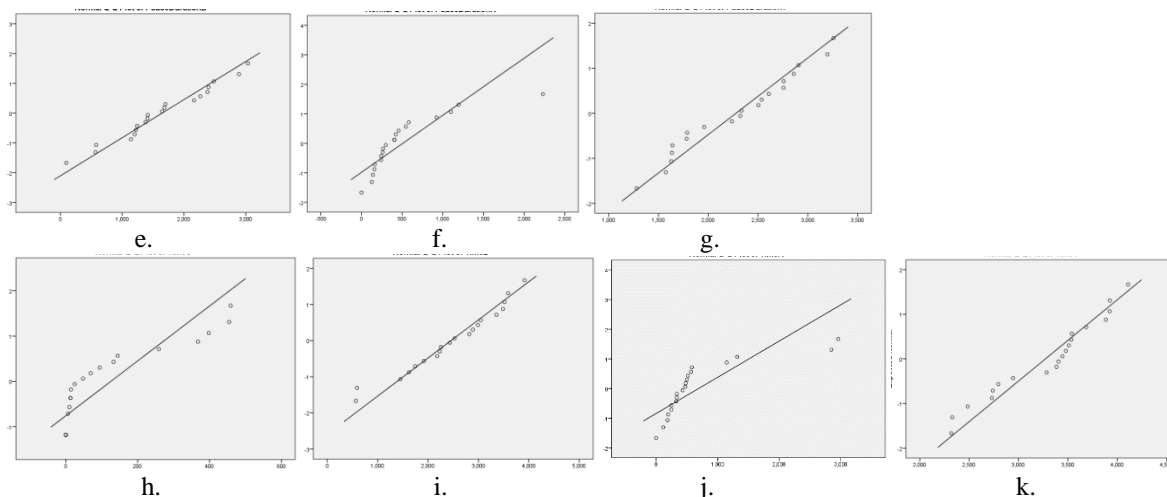


Figure 7. Q-Q plots for normality tests in Table 3.

To examine the reported and observed strategy use of the original three groups of translators with different professional designations in terms of Question 1, both the TCM and LAM were followed and descriptive statistics for strategy-use frequencies were provided. In addition, the correlation coefficients among strategy categories were calculated.

Question 2 examined whether there was any difference in the strategy use among the three groups and between the two new groups. The strategy frequencies, averages, and percentages for each group and each strategy category were calculated by using Microsoft Office Excel 2007. Also, the top-five individual strategies for each group and the top-three individual strategies for each category were identified.

To address Question 3, Spearman correlation coefficient (Spearman's *rho* test) was used to examine the correlation between the two variables: each participant's translation strategy use frequency (the dependent variable) and his/her performance score (the independent variable). Then, the correlation was conducted to examine the relationship between the six strategy categories by using the TCM (hereafter referred to as "TCM strategy categories") and performance scores, and between the six strategy categories by using the LAM (hereafter referred to as "LAM strategy categories") and performance scores.

To address Question 4 the relevant data regarding pauses were analyzed. Microsoft Office Excel 2007 was used to calculate pause frequency, pause duration, time allocation, and time percentages out of the total time spent for the entire translation task. Finally, IBM SPSS Version 23 was used to calculate the correlation coefficients between translators' performance scores and pause frequencies, pause durations, time allocations, time percentages for different phases (i.e., orientation, drafting, and revising phases).

## CHAPTER FOUR - RESEARCH QUESTIONS 1-3: RESULTS OF ANALYSIS USING THE TRANSLATION COMPETENCE MODEL AND DISCUSSION

This chapter first presents the results of the main study by applying the TCM to address research questions 1, 2, and 3 about strategy use and translation performance of translators with different professional designations. It then reports the results for the newly regrouped LP and HP groups, explains unexpected translation performance, and addresses research questions 1, 2, and 3 for the two groups of different performance levels. The final section sums up the major results about TCM strategy categories and individual strategies.

### 4.1 Research Question 1

*What is the reported and observed strategy use for novice, paraprofessional, and professional translators?*

Based on the TCM as described in Section 2.4.1, translation strategies can be grouped into six categories. The reported and observed strategy use by the 20 participants showed that, within the six strategy categories, there were 97 individual strategies: *macro* (14), *professional* (9), *bilingual* (58: *discoursal* [11]; *textual* [24]; *lexical-grammatical* [23]), *extralinguistic* (5), *instrumental* (4), and *psycho-physiological* strategies (7). In this study, the total frequency of strategies employed by 20 participants was 3,464. Table 4 shows the frequencies and percentages of the 97 individual strategies used by all participants.

Table 4

*Frequencies and Percentages of TCM Individual Strategy Use*

<b>Individual strategy</b>	<b>Total</b>	<b>M</b>	<b>Range</b>	<b>SD</b>	<b>% to category total</b>	<b>% to total frequencies</b>
<b>Bilingual Strategies</b>	<b>2529</b>	<b>161.8</b>	<b>788</b>	<b>169.6</b>	<b>100%</b>	<b>73.01%</b>
Compromising-lexical	9	0.5	4	1.0	0.36%	0.26%
Compromising-textual	11	0.6	2	0.8	0.43%	0.32%
Adding	103	5.2	14	3.8	4.07%	2.97%
Amplifying	30	1.5	5	1.5	1.19%	0.87%
Analyzing the choice	91	4.6	16	5.1	3.60%	2.63%
Associating to linguistic knowledge	35	1.8	5	1.7	1.38%	1.01%
Attending to sentence/phrase structure	40	2.0	6	1.6	1.58%	1.15%
Attending to sentence/phrase type	5	0.3	2	0.6	0.20%	0.14%
Attending to the title	5	0.3	1	0.4	0.20%	0.14%
Attending to TL features	27	1.4	6	1.8	1.07%	0.78%
Avoiding repetition	17	0.9	3	0.9	0.67%	0.49%
Being concise	26	1.3	7	1.9	1.03%	0.75%
Attending to cohesion and coherence	38	1.9	6	1.7	1.50%	1.10%
Coining an expression	4	0.2	1	0.4	0.16%	0.12%
Attending to collocation	15	0.8	4	1.1	0.59%	0.43%
Deleting	46	2.3	6	1.9	1.82%	1.33%
Transforming direct/indirect speech	2	0.1	1	0.3	0.08%	0.06%
Evaluating choices	262	13.1	28	8.4	10.36%	7.56%
Evaluating performance-lexical	9	0.5	2	0.6	0.36%	0.26%
Evaluating performance-textual	11	0.6	4	1.2	0.43%	0.32%
Evaluating product-lexical	90	4.5	14	4.5	3.56%	2.60%
Evaluating product-textual	77	3.9	22	5.2	3.04%	2.22%
Evaluating ST-lexical	13	0.7	3	1.0	0.51%	0.38%
Evaluating ST-textual	34	1.7	5	1.3	1.34%	0.98%
Evaluating TU-lexical	16	0.8	3	1.0	0.63%	0.46%
Evaluating TU-textual	31	1.6	7	1.8	1.23%	0.89%
Formulating sentences	1	0.2	1	0.2	0.04%	0.03%
Generating linguistic choices	14	0.7	2	0.7	0.55%	0.40%
Attending to genre consistency	15	0.8	11	2.4	0.59%	0.43%
Identifying translation errors-lexical	77	3.9	9	3.2	3.04%	2.22%
Identifying translation errors-textual	70	3.5	9	2.4	2.77%	2.02%
Identifying logical relations in ST	35	1.8	4	1.4	1.38%	1.01%
Identifying translation problems-lexical	162	8.1	13	3.6	6.41%	4.68%
Identifying translation problems-textual	58	2.9	8	2.0	2.29%	1.67%
Identifying rhetorical device in ST	12	0.6	2	0.7	0.47%	0.35%
Identifying text type	6	0.3	2	0.6	0.24%	0.17%
Interpreting ST-lexical	118	5.9	15	3.6	4.67%	3.41%
Interpreting ST-textual	71	3.6	9	2.5	2.81%	2.05%
Attending to language differences	38	1.9	10	2.6	1.50%	1.10%
Attending to lexical consistency	10	0.5	2	0.6	0.40%	0.29%
Attending to linguistic variations	3	0.2	2	0.5	0.12%	0.09%
Capturing the main idea	3	0.2	2	0.5	0.12%	0.09%
Maintaining logical relations in TT	9	0.5	1	0.5	0.36%	0.26%
Maintain rhetorical device in TT	6	0.3	2	0.6	0.24%	0.17%

<b>Individual strategy</b>	<b>Total</b>	<b>M</b>	<b>Range</b>	<b>SD</b>	<b>% to category total</b>	<b>% to total frequencies</b>
Attending to mechanics	201	10.1	24	6.4	7.95%	5.80%
Attending to positive/negative connotation	4	0.2	2	0.5	0.16%	0.12%
Reformulating ST in TL	2	0.1	1	0.3	0.08%	0.06%
Attending to register	23	1.2	6	1.6	0.91%	0.66%
Restructuring	205	10.3	28	7.2	8.11%	5.92%
Simplifying	21	1.1	5	1.4	0.83%	0.61%
Compromising-stylistic	2	0.1	1	0.3	0.08%	0.06%
Substituting	164	8.2	25	7.1	6.48%	4.73%
Attending to tone	12	0.6	3	1.0	0.47%	0.35%
Transforming sentences/phrases	79	4.0	8	2.2	3.12%	2.28%
Translating key words	1	0.1	1	0.2	0.04%	0.03%
Transforming word category	23	1.2	3	1.0	0.91%	0.66%
Adjusting word order	25	1.3	4	1.0	0.99%	0.72%
<b>Extralinguistic Strategies</b>	<b>54</b>	<b>2.7</b>	<b>7</b>	<b>2.2</b>	<b>100%</b>	<b>1.56%</b>
Activating background knowledge	24	1.2	5	1.3	44.44%	0.69%
Activating bicultural knowledge	2	0.1	1	0.3	3.70%	0.06%
Activating domain knowledge	10	0.5	4	1.0	18.52%	0.29%
Linking to personal experience	12	0.6	3	0.9	22.22%	0.35%
Activating general world knowledge	6	0.3	2	0.7	11.11%	0.17%
<b>Instrumental Strategies</b>	<b>432</b>	<b>21.6</b>	<b>71</b>	<b>18.1</b>	<b>100%</b>	<b>12.47%</b>
Checking online	365	18.3	65	17.2	84.49%	10.54%
Evaluating tools	12	0.6	2	0.8	2.78%	0.35%
Using mechanical means	19	1.0	3	1.3	4.40%	0.55%
Applying searching skill	36	1.8	6	1.8	8.33%	1.04%
<b>Macro Strategies</b>	<b>196</b>	<b>9.8</b>	<b>25</b>	<b>6.2</b>	<b>100%</b>	<b>5.66%</b>
Adapting different perspectives	1	0.1	1	0.2	0.51%	0.03%
Being aware of translation process	54	2.7	11	2.8	27.55%	1.56%
Distancing oneself	2	0.1	1	0.3	1.02%	0.06%
Eliciting strategies	1	0.1	1	0.2	0.51%	0.03%
Evaluating performance-macro	16	0.8	3	1.0	8.16%	0.46%
Evaluating strategies	26	1.3	4	1.2	13.27%	0.75%
Evaluating task	46	2.3	4	1.3	23.47%	1.33%
Anticipating future usage	5	0.3	4	0.9	2.55%	0.14%
Identifying translation problems-macro	3	0.2	1	0.4	1.53%	0.09%
Compromising-macro	2	0.1	1	0.3	1.02%	0.06%
Planning process	27	1.4	7	1.6	13.78%	0.78%
Postponing translation problem	5	0.3	3	0.8	2.55%	0.14%
Reading through	1	0.1	1	0.2	0.51%	0.03%
Rewriting	7	0.4	4	0.9	3.57%	0.20%
<b>Psycho-physiological Strategies</b>	<b>93</b>	<b>4.7</b>	<b>18</b>	<b>5.5</b>	<b>100%</b>	<b>2.68%</b>
Showing motivation/attitude	17	0.9	6	1.5	18.28%	0.49%
Showing confidence	6	0.3	3	0.8	6.45%	0.17%
Monitoring affects	1	0.1	1	0.2	1.08%	0.03%
Evaluating one's ability	45	2.3	13	3.2	48.39%	1.30%
Showing perseverance	13	0.7	5	1.3	13.98%	0.38%
Relying on personal preference	10	0.5	7	1.6	10.75%	0.29%
Showing satisfaction	1	0.1	1	0.2	1.08%	0.03%

Individual strategy	Total	M	Range	SD	% to category total	% to total frequencies
<b>Professional Strategies</b>	<b>160</b>	<b>8</b>	<b>21</b>	<b>6.5</b>	<b>100%</b>	<b>4.62%</b>
Attending to message transfer	32	1.6	8	2.5	20.00%	0.92%
Linking to others' performance	19	1.0	6	1.7	11.88%	0.55%
Aiming at formal equivalence	8	0.4	2	0.7	5.00%	0.23%
Attending to information completeness	12	0.6	4	1.0	7.50%	0.35%
Aiming at optimal equivalence	9	0.5	5	1.1	5.63%	0.26%
Attending to translation principles	23	1.2	10	2.5	14.38%	0.66%
Attending to receivers	26	1.3	11	2.6	16.25%	0.75%
Being aware of strategy applied	29	1.5	5	1.5	18.13%	0.84%
Using back translation	2	0.1	1	0.3	1.25%	0.06%

*Note.*  $N = 20$ . Among the 97 individual strategies, 98.97% were reported in participants' reflections; 14.43% could also be observed from video files; 12.37% could also be observed from key-logging data.

As Table 4 shows, among the six TCM strategy categories, the *bilingual* category represents the most of all the strategies used (73.01%), followed by the *instrumental* category (12.47%), and then the *macro* category (5.66%). The top individual strategies for each category were: *evaluating choices* (bilingual; 10.36%), *activating background knowledge* (extralinguistic; 44.44%), *checking online* (instrumental; 84.49%), *being aware of translation process* (macro; 27.55%), *evaluating one's ability* (psycho-physiological; 48.39%), and *attending to message transfer* (professional; 20.00%). Overall, the top-10 individual strategies reported and observed were: *checking online* (10.5%), *evaluating choices* (7.6%), *restructuring* (5.9%), *attending to mechanics* (5.8%), *substituting* (4.7%), *identifying translation problem-lexical* (4.7%), *interpreting ST-lexical* (3.4%), *adding* (3.0%), *analyzing the choice* (2.6%), and *evaluating product-lexical* (2.6%). All the top-10 strategies belong to the category of *bilingual* strategies except for *checking online* (instrumental).

To further understand translators' strategy use and the relationships among TCM strategy categories, Spearman's *rho* was conducted to calculate their correlation coefficients (see Table 5).

Table 5

*Correlation Coefficients among TCM Strategy Categories*

Categories	BLS	ELS	IS	MS	PPS	PS
BLS	1					
ELS	.329	1				
IS	-.169	-.220	1			
MS	.376	.060	-.048	1		
PPS	<b>.448*</b>	<b>.467*</b>	-.173	.321	1	
PS	<b>.836**</b>	<b>.504*</b>	-.162	.157	<b>.703**</b>	1

*Note.* Spearman's  $\rho$  test.  $N = 20$ . BLS = Bilingual Strategies; ELS = Extralinguistic Strategies; IS = Instrumental Strategies; MS = Macro Strategies; PPS = Psycho-physiological Strategies; PS = Professional Strategies. \*\* Correlation is significant at  $p < .01$ ; \* Correlation is significant at  $p < .05$ .

Interestingly, all strategy categories correlated positively with each other except with the category of *instrumental* strategies, since it correlated negatively with all the other five TCM strategy categories. The five significant positive correlations suggest that translators who applied more *professional* and *psycho-physiological* strategies tended to apply more *bilingual* and *extralinguistic* strategies. Furthermore, the more use of *professional* strategies was related to increased use of *psycho-physiological* strategies. Though the five negative correlation coefficients were not statistically significant, they suggested that translators who applied more *instrumental* strategies tended to apply fewer strategies in all of the other TCM strategy categories.

## 4.2 Research Question 2

*Is there any difference in the strategy use among translators with different professional designations?*

### 4.2.1 Overall strategy use vis-à-vis groups

Descriptive statistics were calculated to gain an overall understanding of the strategy use of the NT, PaT, and PT groups (see Table 6). The strategy-use frequencies included both participants' reported strategy use from their post-task reflections, and the observed strategy use from video clips and key-logging files.

Table 6

*Descriptive Statistics for Overall Strategy-use Frequencies by the NT, PaT, and PT Groups*

	<i>n</i>	Min	Max	Range	<i>M</i>	<i>SD</i>	Sum
NT Group	8	85	156	71	121.1	20.8	969
PaT Group	7	114	410	296	198.4	97.3	1389
PT Group	5	171	314	143	221.2	56.0	1106

*Note.* *N* = 20. NT Group = Novice Translator Group; PaT Group = Paraprofessional Translator Group; PT Group = Professional Translator Group.

For the non-normally distributed strategy-use frequencies among the three groups, a Kruskal-Wallis test was performed and the results showed that there was a significant difference in strategy-use frequencies among the three groups ( $\chi^2(2) = 11.491, p = .003$ ), with a mean rank frequency of 5.31 for the NT group, 12.36 for the PaT group, and 16.20 for the PT group. Table 6 shows that the mean strategy frequency for the PT group was higher than the PaT group and much higher than the NT group (PT:  $M = 221.2, SD = 56.0$ ; PaT:  $M = 198.4, SD = 97.3$ ; NT:  $M = 121.1, SD = 20.8$ ). The much greater *SD* (97.3) and largest range (296) of the PaT group indicated more variation in strategy use among the seven paraprofessional translators, compared to novice and professional translators.

Overall, the three groups of different professional designations showed different varieties of strategies used. Based on the reported and observed strategy use, the NT group used 71 types of individual strategies including two unique individual strategies employed only by the NT group. The unique strategies included one bilingual strategy, *transforming direct/indirect speech* and one professional strategy, *using back translation*. The PaT group used 88 types of individual strategies with four unique individual strategies; the PaT group's unique strategies included four macro strategies: *eliciting strategies*, *anticipating future usage*, *identifying translation problem-macro*, and *compromising-macro*. The PT group used 86 types of individual strategies with six unique strategies. The unique strategies included two macro strategies: *adapting different*

*perspectives* and *reading through*; two psycho-physiological strategies: *monitoring affects* and *showing satisfaction*; and two bilingual strategies: *translating key words* and *formulating sentences*.

Table 7 shows the overall strategy use of the six TCM strategy categories for the three groups of different professional designations.

Table 7

*Frequencies, Averages, and Percentages of TCM Strategy Category Use for the NT, PaT, and PT Groups*

		MS	PS	BLS			ELS	IS	PPS	Sum
				Discoursal	Textual	Lexical				
NT Group	Frequency	44	29	37	265	397	18	168	11	969
	Average			4.6	33.1	49.6				
		5.5	3.6	87.4			2.3	21	1.4	121.1
	% to Sum			3.8	<b>27.3</b>	41.0				
		4.5	3.0	72.1			<b>1.9</b>	<b>17.3</b>	1.1	100
PaT Group	Frequency	97	63	57	334	592	19	180	47	1389
	Average			8.1	47.7	84.6				
		<b>13.9</b>	9	140.4			1.4	<b>25.7</b>	6.7	198.4
	% to Sum			4.1	24.0	42.6				
		<b>7.0</b>	4.5	70.8			1.5	13.0	<b>3.4</b>	100
PT Group	Frequency	55	68	58	259	530	17	84	35	1106
	Average			<b>11.6</b>	<b>51.8</b>	<b>106</b>				
		11	<b>13.6</b>	<b>169.4</b>			<b>3.4</b>	16.8	<b>7</b>	<b>221.2</b>
	% to Sum			<b>5.2</b>	23.4	<b>48.0</b>				
		5.0	<b>6.1</b>	<b>76.6</b>			1.5	7.6	3.2	100

*Note.* Percentages may not sum to 100% because of rounding off. NT Group = Novice Translator Group; PaT Group = Paraprofessional Group; PT Group = Professional Group. MS = Macro Strategies; PS = Professional Strategies; BLS = Bilingual Strategies; ELS = Extralinguistic Strategies; IS = Instrumental Strategies; PPS = Psycho-physiological Strategies.

Table 7 indicates that, overall, as highlighted in bold and double underlines, compared to the other two groups, the PT group showed higher averages of strategy-use frequencies in *professional*, *bilingual* (also in the three bilingual subcategories), *extralinguistic*, and *psycho-physiological* strategies, as well as in total strategies applied. In contrast, the PaT group was

higher in *macro* and *instrumental* strategies than the NT and PT groups. By percentage, as highlighted in bold, the PT group was higher in the use of *professional* and *bilingual* strategies, and the PaT group was higher in *macro* and *psycho-physiological* strategies, while the NT group was higher in *extralinguistic* and *instrumental* strategies. A Kruskal-Wallis test revealed a significant difference among the three groups in strategy-use frequencies for the categories of BLS ( $\chi^2(2) = 10.111, p = .006$ ), MS ( $\chi^2(2) = 8.583, p = .014$ ), PPS ( $\chi^2(2) = 6.931, p = .031$ ), and PS ( $\chi^2(2) = 7.118, p = .028$ ), but not for the categories of ELS ( $\chi^2(2) = 1.295, p = .523$ ) and IS ( $\chi^2(2) = 1.968, p = .374$ ).

For the three groups, among all the strategy categories reported and observed, the largest was the category of *bilingual* strategies (BLS: NT = 72.1%, PaT = 70.8%, PT = 76.6%). The category of *extralinguistic* strategies was the least employed category for both the PaT group (1.5%) and PT group (1.5%), which might be the result of the choice of the ST since it is an excerpt paragraph from a prose work demanding little extralinguistic knowledge for interpretation and translation. For the NT group, the least applied was the category of *psycho-physiological* strategies, which ranked higher and showed higher percentages in both the PaT and PT groups (PPS: NT = 1.1%, PaT = 3.4%, PT = 3.2%).

For the NT group, the second largest was *instrumental* strategies (17.3%), followed by *macro* strategies (4.5%), *professional* strategies (3.0%), and *extralinguistic* strategies (1.9%). For the PaT group, the category of *instrumental* strategies (13.0%) also ranked second, and then *macro* strategies (7.0%), followed by *professional* strategies (4.5%) and *psycho-physiological* strategies (3.4%). For the PT group, the second largest category of strategies was also the category of *instrumental* strategies (7.6%), followed by *professional* strategies (6.1%), *macro* strategies (5.0%), and *psycho-physiological* strategies (3.2%). Although the category of

*instrumental* strategies ranked second in all three groups, its percentage was much higher in both the NT and PaT groups than in the PT group (NT = 17.3%, PaT = 13.0%, PT = 7.6%). The category rankings for the three groups are as follows, BLS >> IS >> MS > PS > ELS > PPS for the NT group, BLS >> IS >> MS > PS > PPS > ELS for the PaT group, and BLS >> IS > PS > MS > PPS > ELS for the PT group.

#### **4.2.2 Strategy use vis-à-vis category**

This section reports and discusses the strategy use results for the three groups of different professional designations by TCM strategy category based on their percentage differences among groups and the presence of any notable findings.

##### **4.2.2.1 Bilingual strategies**

As Neubert (2000) pointed out, although translation is much more than a study of languages, competence in the two languages involved is the “sine qua non (requirement)” (p. 7) of translation, that is, linguistic competence of the languages concerned is the crucial component of translation competence. This may explain why the category of *bilingual* strategies had the greatest number of individual strategies among the six TCM strategy categories and was the most frequently employed strategy category for the three translator groups.

Göpferich’s (2009) communicative competence, as one of the three decisive components of translation competence, corresponds to PACTE’s bilingual subcompetence and comprises lexical, grammatical, and pragmatic knowledge in both the SL and TL. Since bilingual competence is dominant in the translation process, bilingual strategies may be applied more often than other strategies to activate relevant bilingual competence. Unavoidably, the competence in activating and applying bilingual knowledge is essential to overall translation competence, and the prerequisite for translator training as translation is the transfer of messages from an SL into a

TL. Therefore, courses in translation are not offered to English majors in China until their last two academic years when they are linguistically ready, and the teaching of translation was restricted to higher level language learners or translation professional training in the UK (Munday, 2008/2016). Few would argue that competence in the SL and TL is fundamental and indispensable to overall translation competence, so there is the popular misconception that bilinguals are natural translators because they have acquired competence in both languages (e.g., Harris, 1977). However, many later studies (e.g., Krings, 1986; Lörcher, 1991) have shown that “bilingual competence, while a necessary condition, is not in itself sufficient to guarantee translation competence” (Presas, 2000, p. 19).

The differences pertaining to the *bilingual* category among the three groups were as follows:

First, as mentioned above, the *bilingual* category percentage in the PT group was the highest, followed by the NT group and the PaT group. Second, for the subcategories within the category of *bilingual* strategies, overall, professional translators tended to apply more *bilingual* strategies at discoursal-, textual-, and lexical-levels than paraprofessional translators, and even much more than novice translators. By percentage, the PT group’s usage was higher at both the discoursal-level (PT = 5.2%, PaT = 4.1%, NT = 3.8%) and lexical-level (PT = 48.0%, PaT = 42.6%, NT = 41.0%), while the NT group was higher at the textual-level (NT = 27.3%, PaT = 24.0%, PT = 23.4%). These data indicated that professional translators tended to tackle translation problems from an overall discoursal perspective and with their attention directed to the nuances of lexical terms, while novice translators focused more on the textual-level but less from a macro perspective or on the subtleties.

#### 4.2.2.2 Instrumental strategies

Another result was that both the PaT and PT groups demonstrated much lower percentages compared to the NT group in the category of *instrumental* strategies. The NT group was the highest, followed by the PaT group, and lastly the PT group (NT = 17.3%, PaT = 13.0%, PT = 7.6%), with a difference of around 10% between the NT and PT groups. The most frequently reported and observed individual *instrumental* strategy was *checking online* for all three groups. Furthermore, all three groups employed the *instrumental* strategy of *using mechanical means*, such as short forms, listing, grouping, images, and adding notes. For example, in Figure 8, participant NT5 sketched out the structure of a ST sentence using conjunctions, arrows, and key words in the SL. It is a strategy used to help her to grasp the framework of the sentence being translated and better interpret the source sentence, as she reported.

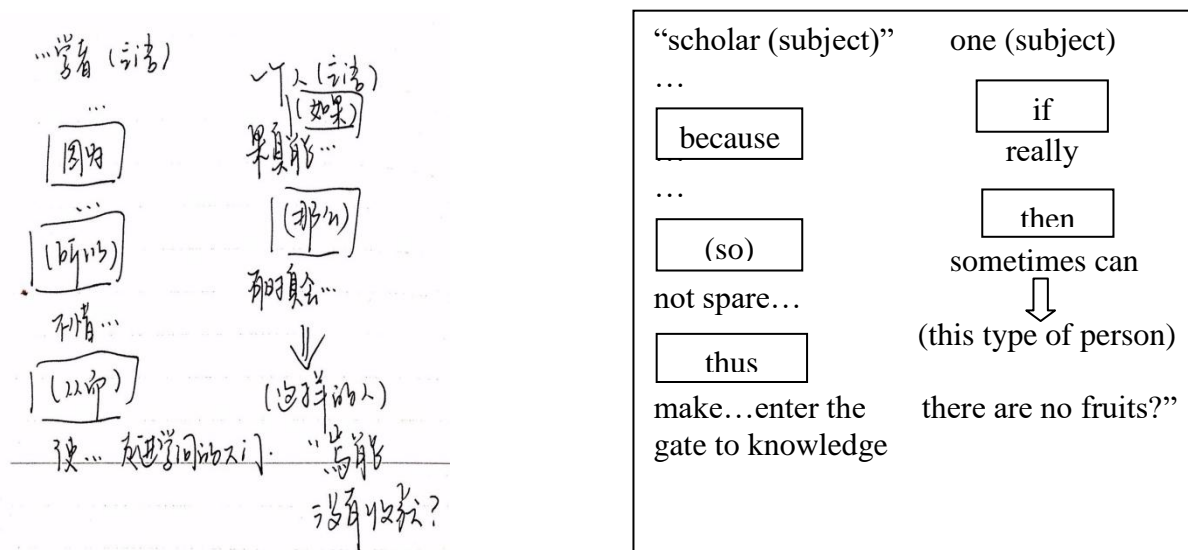


Figure 8. NT5's notes and their translation.

Participant PaT2 used the mechanical means of listing to take down all the possible choices such as “pleasure” and “fun” for “兴趣 *interest*” in one column and “erudition” and “knowledge” for

“学问 *learning*” in another column. As she reported in her reflection, listing was a way to remind her later of those words that suddenly appeared in her mind.

#### 4.2.2.3 Professional strategies

The third important finding was that the category of *professional* strategies demonstrated higher percentages in both the PT and PaT groups than in the NT group (PT = 6.1%, PaT = 4.5%, NT = 3.0%). The average frequency of *professional* strategies in the PT group (13.6) was also the highest compared to 9 in the PaT group and 3.6 in the NT group, with a difference of 10 between the PT and NT groups.

It is understandable that the PaT and PT groups demonstrated higher percentages in *professional* strategies since 9 participants out of 12 of paraprofessional and professional translators had received formal training in translation or interpretation, according to their profile questionnaires. As defined in the coding scheme, *professional* strategies are activation and application of declarative knowledge specific to translators about theories and principles of translation as a profession, which are the same as the translation knowledge subcompetence within the TCM (Albir, 2007). Such declarative knowledge is an essential component of translator training, and as Gile (2009) recommended, the theoretical aspect of translation is usually the first to be addressed in translator training programmes. It is not surprising, therefore, that having received translation training, both paraprofessional and professional translators in the present study showed higher percentages in the use of *professional* strategies, such as *being aware of strategies applied*, *attending to message transfer*, and *attending to receivers*. For example,

Excerpt 4: “有点儿意译，因为什么‘走进学问的大门’，我就没翻出来。” (PaT2)

[Translation: “This is more of free translation because I didn’t translate the whatever ‘走进学问的大门 *enter the gate to knowledge*’.”]

PaT2 was aware of the strategy she had applied (i.e., free translation) for the translation of the Chinese verb phrase that can be literally translated as “enter the gate to knowledge.” It is common in Chinese to refer to the world of knowledge rhetorically as “a palace” and the process of learning the ABCs as “enter the gate.” In order to convey the message in a way closer to the TL receivers, PaT2 avoided word-for-word translation but abandoned some lexical terms and translated the phrase as “to enjoy the learning.” As she explained, she chose the gerund form of the verb “learn” to represent the process of “entering the gate” in the ST.

*Attending to message transfer*, which is paying attention to the transfer of messages in translation, can be illustrated in the following excerpt.

Excerpt 5: “我就跳过很多 details，没有一个一个字的去，就拿到意思吧。” (PT2)

[Translation: “I skipped many details and didn’t (translate) word by word but just grasped its message.”]

PT2 was explaining that she avoided translating verbatim but to grasp the message of the ST for transfer.

*Attending to receivers* is paying attention to readers of the TT as exemplified in Excerpt 6.

Excerpt 6: “因为有的时候你翻译过，不一定客户会喜欢嘛，有时候他们自己有一套翻

译方法了，看过之后他们就说，‘为什么翻成这样？’” (PT2)

[Translation: “Sometimes, your clients may not like your translation because they

have their preferred ways for translation. They may say, ‘why did you translate it like that?’ after reading your translation.”]

PT2 was justifying why he made certain changes in his translation, because in his daily translation practice, he was used to translating to meet the needs of his clients, namely, to attend to receivers of the translation.

#### **4.2.2.4 *Psycho-physiological strategies***

In terms of *psycho-physiological* strategies, both the PaT and PT groups once again showed higher percentages than the NT group did (PaT = 3.4%, PT = 3.2%, NT = 1.1%). In addition, compared to the PaT and NT groups, the PT group had the highest average frequency in *psycho-physiological* strategy use (PT = 7, PaT = 6.7, NT = 1.4).

*Psycho-physiological* strategies are employed to activate translators’ attitudinal aspects concerning motivation, perseverance, confidence, preference, or the self-awareness of their capacity. The results from the present study showed that, on average, both paraprofessional and professional translators employed more *psycho-physiological* strategies during the translation process to activate their affect, especially the attitudinal aspects of their emotions. For example, the most frequently applied individual strategies in the *psycho-physiological* category were *evaluating one’s ability*, *showing attitude/motivation*, and *showing perseverance*. The PT group employed all seven individual *psycho-physiological* strategies, and the PaT employed five of them except *monitoring affects* and *showing satisfaction*, but the NT group only employed one *psycho-physiological* strategy, *evaluating one’s ability*. More specifically, both paraprofessional and professional translators often showed a positive attitude towards translation or in performing the translation task, as exemplified by Excerpt 7:

Excerpt 7: “你要做工作（做翻译）的话，你永远也没有止境，就是你永远想做得更

好。” (PaT1)

[Translation: “It is never ending when you are doing translation, since you always want to do it better.”]

Participant PaT1 showed his strong motivation for and enthusiastic attitude toward pursuing better translation. Most paraprofessional and professional translators expressed in their reflections in one way or another that translation was a never-ending process to them and that they would continuously make revisions if there were no time limitation for the translation task.

Furthermore, PaT3 from the paraprofessional group showed her confidence in performing the translation task several times:

Excerpt 8: “这句话我觉得并不难、 、 、 、 、 就这么简单， 其实。” (PaT3)

[Translation: “I do not think this sentence is difficult (to translate) . . . actually, it’s as simple as that.”]

In addition to the above strategies used, another noticeable difference was that both paraprofessional and professional translators seemed to be more aware of their translation habits and their own capacity in translation, whether they were good or poor at a certain field.

Excerpt 9: “对， 个零”， a zero? 因为咱们有 second language， 对， 所以就是说、 、 、

因为我说，“有个零”， 有点儿， 有点儿， 你知道吧？ 毕竟咱们还是

second language.” (PaT1)

[Translation: “Yap, ‘个零’, a zero? Because we are second language speakers, it’s . . . if I say “there is a zero,” it sounds a little bit . . . you know, after all, we

are second-language speakers.]

In the above excerpt, PaT1 showed an awareness of his insufficient capacity as an English-as-an-additional-language speaker. Similarly, PaT3 also reported six times that she was aware of her own translation habits as illustrated in the excerpt below.

Excerpt 10: “我翻译的习惯是，第一遍先全写出来，第二遍我再用字典把每个字再查一遍，它会给你更好的说法...第一遍我不查。” (PaT3)

[Translation: “While translating, I usually write it all out first, and then check every word in the dictionary, which may provide better choices of expression. . . . I don’t check any word the first time.”]

The performance of the same participant (i.e., PaT3 in 2013 and PT5 in 2016; see footnote 1 in Chapter 3 for further information) was very different from other participants. She produced both her first TTs in less than ten minutes. In the revising phase, she rewrote almost every sentence she had produced in the first versions. To be terminologically more specific, revision, called “checking” by Robert (2008), is undertaken “on completion of the initial translation . . . checking that the meaning has been conveyed, that there are no omissions or errors and that the defined service specifications have been met” (p. 5). In the end, her final TTs were not revised versions with minor corrections of her first versions, but were completely different.

Overall, paraprofessional and professional translators demonstrated more positive affect in the process of translating. They seemed to be more aware of their translation capacity, more confident, and more motivated, while novice translators did not report that they had activated much affect to assist their translation but only evaluated their ability.

### 4.2.3 Top individual strategies vis-à-vis groups

As for the ranking of the most frequently used individual strategies by using the TCM (hereafter referred to as “TCM individual strategies”), Table 8 illustrates the top-five individual strategies for the NT, PaT, and PT groups together with their percentages in relation to the related category totals and of the group totals.

Table 8

#### *Top-five TCM Individual Strategies for the NT, PaT, and PT Groups*

Group	Top-5 TCM Strategies	% in relation to Category Total	% in relation to Group Total
NT Group	IS: checking online	88.1%	15.3%
	BLS: identifying translation problems-lexical	10.7%	7.7%
	BLS: attending to mechanics	8.0%	5.8%
	BLS: evaluating choices	6.7%	4.9%
	BLS: restructuring	6.4%	4.6%
PaT Group	IS: checking online	84.4%	10.9%
	BLS: evaluating choices	10.9%	7.7%
	BLS: attending to mechanics	9.8%	6.9%
	BLS: restructuring	7.9%	5.6%
	BLS: substituting	7.6%	5.4%
PT Group	BLS: evaluating choices	12.8%	9.8%
	BLS: restructuring	9.7%	7.4%
	IS: checking online	77.4%	5.9%
	BLS: substituting	7.6%	5.8%
	BLS: attending to mechanics	5.8%	4.4%

*Note.* TCM = Translation Competence Model. NT Group = Novice Translator Group; PaT Group = Paraprofessional Group; PT Group = Professional Translator Group. IS = Instrumental Strategies; BLS = Bilingual Strategies.

Table 8 shows that the three professional groups applied the same top-5 TCM strategies, except that *substituting* was used by both the PaT and PT groups instead of *identifying translation problems-lexical* by the NT group. The top individual TCM strategy for both the NT and PaT groups was *checking online*, an *instrumental* strategy, which ranked third in the PT group (NT = 15.3%, PaT = 10.9%, PT = 5.9%). However, the top individual TCM strategy for the PT group was *evaluating choices*, a *bilingual* strategy, which ranked second for the PaT group but fourth for the NT group (PT = 9.8%, PaT = 7.7%, NT = 4.9%). Furthermore, both

*bilingual* strategies, *restructuring*, and *substituting*, ranked higher in the PaT and PT groups than in the NT group, and with higher percentages of the group total as well for the PT group. Lastly, the *bilingual* strategy, *attending to mechanics*, ranked fifth in the PT group, but third in both the NT and PaT groups (NT = 5.8%, PaT = 6.9%, PT = 4.4%).

Table 9 presents the top-three individual strategies in each TCM strategy category for the NT, PaT, and PT groups, and their percentages of the group totals.

Table 9

*Top-three Individual Strategies within Each TCM Strategy Category for the NT, PaT, and PT Groups*

	NT Group	PaT Group	PT Group
MS	evaluating task (1.7%) evaluating strategies (0.9%) being aware of translation process (0.9%)	being aware of translation process (2.1%) evaluating task (1.4%) evaluating strategies (0.8%)	being aware of translation process (1.4%) planning process (1.1%) evaluating task (1.0%)
PS	attending to information completeness (0.7%) attending to message transfer (0.6%) attending to receivers (0.5%)	being aware of strategies applied (1.2%) attending to message transfer (1.0%) attending to receivers (0.6%)	attending to translation principles (1.6%) linking (1.2%) attending to receivers (1.2%)
BLS	identifying translation problems-lexical (7.7%) attending to mechanics (5.8%) evaluating choices (4.9%)	evaluating choices (7.7%) attending to mechanics (6.9%) restructuring (5.6%)	evaluating choices (9.8%) restructuring (7.4%) substituting (5.8%)
ELS	<b>activating background knowledge (1.0%)</b> linking to personal experience (0.6%) activating domain knowledge (0.2%)	<b>activating background knowledge (0.4%)</b> linking to personal experience (0.4%) activating domain knowledge (0.4%)	<b>activating background knowledge (0.8%)</b> activating general world knowledge (0.3%) activating domain knowledge (0.3%)
IS	<b>checking online (15.3%)</b> applying searching skills (1.2%) evaluating tools (0.5%)	<b>checking online (10.9%)</b> applying searching skills (1.2%) using mechanical means (0.6%)	<b>checking online (5.9%)</b> using mechanical means (0.7%) applying searching skills (0.6%)

	NT Group	PaT Group	PT Group
PPS	<b>evaluating one's ability</b> (1.1%)	<b>evaluating one's ability</b> (1.4%)	<b>evaluating one's ability</b> (1.3%)
	N/A	showing motivation/attitude (1.0%)	showing personal preference (0.7%)
	N/A	showing perseverance (0.6%)	showing perseverance (0.5%)

*Note.* “%” refers to percentage in relation to the group total. NT Group = Novice Translator Group; PaT Group = Paraprofessional Group; PT Group = Professional Group. MS = Macro Strategies; PS = Professional Strategies; BLS = Bilingual Strategies; ELS = Extralinguistic Strategies; IS = Instrumental Strategies; PPS = Psycho-physiological Strategies.

All three groups showed the same top individual *psycho-physiological*, *instrumental*, and *extralinguistic* strategies, which were *evaluating one's ability*, *checking online*, and *activating background knowledge*, respectively. Excerpt 9 illustrates the strategy of *evaluating one's ability*. Excerpt 11 illustrates the strategy of *activating background knowledge*.

Excerpt 11: “其实很多英文语言比如说圣经来的，圣经里面有 into the gate of happiness,

这个是圣经里面常常用的。” (PT2)

[Translation: “Actually, many expressions in English such as those from the Bible....In the Bible, there is the expression ‘into the gate of happiness,’ which is frequently used.”]

While translating the Chinese phrase “走进学问的大门 *enter the gate to knowledge*,” participant PT2, who held a PhD degree in religious studies and had an instructor position in theology at a Canadian university, activated his background knowledge about the Chinese phrase and the relevant usage in the Bible. In the end, he came up with his final version “enter into the gate of knowledge.”

The top individual *macro* strategy was *evaluating task* for the NT group, and *being aware of translation process* for both the PaT and PT groups. Novice translators reported more negative

evaluation of the translation task than paraprofessional and professional translators did. For example,

Excerpt 12: “我觉得有点难，因为这个是偏文学性的翻译。文学性的能把那个味道翻译出来，我觉得有点困难。” ( NT7 )

[Translation: “I think it is rather difficult since it’s more like a literary translation. I feel it’s quite challenging to translate its literary taste.”]

Participant NT7 categorized the translation task as a literary translation and deemed it as a challenging one, especially in conveying its literary sense. Paraprofessional and professional translators tended to be more aware of the translation process.

Excerpt 13: “你直接读的是中文，实际上脑袋已经开始想英文了、、、、、、有的人在用图像在想。你读了一个原文，你不管原文在说的是什么，你想的是图像的话，结果你就发现你的翻译过程，实际上是用图像在 translate。” (PaT1)

[Translation: “While you are reading the Chinese, actually you are thinking in English already...Some people think with images. You read an ST, and no matter what it is about, if you are thinking in images, you may find out that you are translating with images.” ]

The above excerpt shows that participant PaT1 was aware of his translation process of using the mechanical means of image to convey the message in the ST.

The top *professional* strategy was *attending to information completeness* for the NT group, *being aware of strategies applied* for the PaT group, and *attending to translation principles* for the PT group.

Excerpt 14: “但是我个人觉得这个不太好，就是还没有把那种感觉表达出来。” (NT4)

[Translation: “But personally I don’t think it’s good, since it hasn’t conveyed that kind of sense yet.”]

To participant NT4, “that kind of sense” is part of the message contained in the ST. Therefore, she evaluated the lexical term she provided and believed that it failed to convey “that kind of sense.” Therefore, the information in the ST was not fully conveyed yet.

Excerpt 15: “本意是想直译的，为了赶时间用了个意译的方法。” (PaT6)

[Translation: “Originally I was planning to translate it word-for-word. However, being pressed for time, I turned to free translation.”]

Participant PaT6 was aware of the strategies he was about to apply and what he actually applied.

Excerpt 16: “You have to be, first you have to be accurate, and at the same time, you have to sound like English not Chinese. So there is a compromise.” (PT1)

Participant PT1 was paying attention to the basic translation principles about how to balance between accuracy and idiomaticity.

The top *bilingual* strategy for the NT group was *identifying translation problems-lexical*, but it was *evaluating choices* for both the PaT and PT groups. Novice translators seemed to identify more translation problems at the lexical-level, as illustrated in Excerpt 17.

Excerpt 17: “我可能在想‘外在动机’是指什么，但是我还是不太明白它到底想说什

么，所以我就直接从字典里找了个词来解释。” (NT2)

[Translation: “I might be thinking what ‘外在动机 *ulterior motive*’ means but I still couldn’t figure out what it tended to mean. Therefore, I just picked up one

word from the dictionary to explain it.]

Participant NT2 identified a translation problem presented by the noun phrase “外在动机 *ulterior motive*,” to be specific, a problem in interpreting that phrase. She found her solution to this problem by checking in the dictionary.

Both paraprofessional and professional translators evaluated linguistic choices more often than novice translators did.

Excerpt 18: “R：是什么原因，把这个 knowledge 也改了。

PaT2：因为 fun 是一个动态的，要用 learning 做一个动态的，knowledge 是一个静态的词。” (PaT2)

[Translation: “R: Why did you change the word ‘knowledge’?”

PaT2: Because ‘fun’ is dynamic, I needed to pick up the dynamic word ‘learning.’ ‘Knowledge’ is a static word.”]

PaT2 evaluated the two possible choices “knowledge” and “learning” by their dynamic/static feature before switching them to match with the word “fun,” which she believed to contain a dynamic sense. Other than the dynamic/static feature, participants also frequently considered gradability and denotational/connotational meaning to evaluate linguistic choices.

### **4.3 Research Question 3**

#### ***What is the correlation between translators’ strategy use and translation performance?***

##### **4.3.1 Correlational results**

In order to calculate the correlation between participants’ strategy use and translation performance measured by Angellelli’s (2009) scoring rubric, the correlation between strategy-

use frequencies and performance scores was calculated by conducting Spearman's *rho* test (Table 10). As shown in Table 10, overall, there was no statistically significant correlation between strategy-use frequencies and translation performance scores. This result suggests that the high frequency of reported and observed strategy use does not necessarily yield better quality in translation performance, and vice versa.

Table 10

*Correlations between Strategy-use Frequencies and Performance Scores (Overall and by Professional Designations)*

			Overall Strategy-use Frequencies
Performance Scores	Overall	Correlation Coefficient	.370
		<i>Sig. (2-tailed)</i>	.109
	NT Group ( <i>n</i> = 8)	Correlation Coefficient	-.143
		<i>Sig. (2-tailed)</i>	.736
	PaT Group ( <i>n</i> = 7)	Correlation Coefficient	.162
		<i>Sig. (2-tailed)</i>	.728
	PT Group ( <i>n</i> = 5)	Correlation Coefficient	-.300
		<i>Sig. (2-tailed)</i>	.624

*Note.* Spearman's *rho* test. *N* = 20. NT Group = Novice Translator Group; PaT = Paraprofessional Translator Group; PT Group = Professional Translator Group.

Second, the correlations between TCM strategy category-use frequencies and performance scores were calculated and reported (see Table 11).

Table 11

*Correlations between TCM Strategy Category-use Frequencies and Performance Scores  
(Overall and by Professional Designations)*

			BLS	ELS	IS	MS	PPS	PS
Performance Scores	Overall	Correlation Coefficient	.386	.107	-.260	.229	<b>.449*</b>	.274
		<i>Sig.</i> (2-tailed)	.093	.651	.269	.333	<b>.047</b>	.242
	NT Group ( <i>n</i> = 8)	Correlation Coefficient	-.048	-.157	-.524	-.096	.581	.084
		<i>Sig.</i> (2-tailed)	.910	.711	.183	.820	.131	.844
	PaT Group ( <i>n</i> = 7)	Correlation Coefficient	.360	.055	.288	.193	.183	.324
		<i>Sig.</i> (2-tailed)	.427	.907	.531	.679	.694	.478
PT Group ( <i>n</i> = 5)	Correlation Coefficient	-.564	-.462	.300	.700	-.100	-.300	
	<i>Sig.</i> (2-tailed)	.322	.434	.624	.188	.873	.624	

*Note.* Spearman's *rho* test. *N* = 20. NT Group = Novice Translator Group; PaT = Paraprofessional Translator Group; PT Group = Professional Translator Group. BLS = Bilingual strategies; ELS = Extralinguistic strategies; IS = Instrumental strategies; MS = Macro strategies; PPS = Psycho-physiological strategies; PS = Professional strategies. \* Correlation is significant at  $p < .05$ .

Of all of the six TCM strategy categories, only the category of *psycho-physiological* strategies positively correlated with performance scores at a significant level ( $r_s = .449, p = .047$ ).

This implies that translators who achieved higher scores tended to employ more *psycho-physiological* strategies. The negative correlation coefficient between the use of *instrumental* strategies and performance scores suggests that the more *instrumental* strategies translators tended to use, the lower performance scores they might achieve. By groups, four TCM strategy categories out of six (*bilingual, extralinguistic, instrumental, and macro* categories for the NT group; *bilingual, extralinguistic, psycho-physiological, and professional* categories for the PT group) negatively correlated with performance scores, though not at a significant level. For the PaT group, all six TCM strategy categories positively correlated with performance scores.

For the three subcategories within *bilingual* strategies, overall, there was no statistically significant correlation between performance scores and the frequencies of *bilingual* strategy use

at *discoursal-level* ( $r_s = .146, p = .540$ ), *textual-level* ( $r_s = .359, p = .120$ ), or *lexical-level* ( $r_s = .355, p = .125$ ).

#### 4.3.2 Positive correlations

Before discussing the positive correlations, attention should be given to the finding that, overall, there was no significant correlation between strategy-use frequencies and translation performance scores. This is consistent with the findings about language learners' strategy use and language production or language test scores (e.g., Huang, 2010, 2013; Swain et al., 2009). Swain et al. (2009) claimed that though some individual strategies correlated with language performance, few statistically significant correlations were found between overall strategy-use frequencies and language performance. "Strategy use correlated with improved performance...[but] there is no definite relationship between strategy use and language performance" (Huang, 2012, p. 2).

Although the overall strategy-use frequencies did not significantly correlate with translators' performance scores, five of the TCM strategy categories (i.e., BLS, ELS, MS, PPS, and PS) were positively associated with performance scores. This finding is consistent with the claim in studies of LLS that there are positive associations between the proficiency level and the use of certain types of language use strategies, such as metacognitive, cognitive, compensation, and social-affective strategies (e.g., Nakatani, 2006; Oxford & Ehrman, 1995).

Overall, the category of *psycho-physiological* strategies was the only category that positively correlated with performance scores at a statistically significant level. *Psycho-physiological* strategies relate to activating cognitive aspects such as memory and attention, and attitudinal aspects concerning motivation, perseverance, confidence, and preference (Albir, 2007). Translation involves decision-making processes, and decision-making in turn is "directed

by affect rather than rationality” (Tirkkonen-Condit & Laukkanen, 1996, p. 45). Affect hence has attracted particular attention in translation research. Empirical studies on translation processes have shown that “the right affective frame of mind goes together with creativity and success in translation” (p. 45).

Among the few existing studies on translators’ affective factors in the translation process (e.g., Bernardini, 2001; Jääskeläinen, 1999; Koskinen, 2015; Laukkanen, 1996; Tirkkonen-Condit & Laukkanen, 1996), there is an agreement that affective factors such as confidence, involvement, and relaxation are positively correlated with translation performance (Bernardini, 2001). This supports the significantly positive correlation between the category of *psycho-physiological* strategies and translators’ performance scores discovered in this study. An experiment conducted by Laukkanen (1996) showed that translators produced better translation in routine tasks than in non-routine ones because of the presence of positive affective factors, such as “involvement with the translation task, a relaxed atmosphere, and self-confidence” in the routine tasks (Bernardini, 2001, p. 250). This also supports the significant positive correlation between the frequencies of *psycho-physiological* strategy use and performance scores. Furthermore, experienced translators are more conscious of their motivations in translation and the rationale of their performance. The importance of affect in translation was also stressed by Koskinen’s (2015) study, which focused on the intercultural communication feature of translation and the strong emotional element involved in translation. She claimed that translation was “fundamentally, affective work that requires intercultural sensitivity, reflexiveness and empathy” (p. 180) and argued that even though the transfer of meaning could be automated in machine translation, as affective work, translation would remain human translators’ task.

The percentage of an individual *psycho-physiological* strategy, *evaluating one's ability*, to the group total was higher in the PaT and PT groups than in the NT group (PaT = 1.4%, PT = 1.3%, NT = 1.1%). Even though the percentage differences are not large, there was an interesting point pertaining to this individual strategy. The tendencies revealed from the percentages for the different professional groups in the present study are similar to the four stages of the intercultural communication competence acquisition process proposed by Howell (1982): unconscious incompetence, conscious incompetence, conscious competence, and unconscious competence. From a professional perspective, it is expected that both the PaT and PT groups showed a higher percentage in the use of *evaluating one's ability* since both the paraprofessional and professional translators had received different degrees of professional training in translation. Because of the training in translation, professional translators might be more consciously aware of what they were competent to do and paraprofessional translators might be more consciously aware of what they were incompetent to do. Novice translators, on the contrary, were unconscious of their incompetence in translation. Presumably, expert translators who represent the highest performance level in the translation profession are unconscious of their competence.

#### **4.3.3 Negative correlations**

Overall, the category-use frequencies of *instrumental* strategies negatively correlated with performance scores. As defined in the main study, *instrumental* strategies activate the knowledge related to using documentary sources and information and communication technology applied in translation. This finding suggests that translators with low performance scores relied more on other resources, such as online dictionaries or websites (i.e., object-regulated; Wertsch, 1980), and translators with high performance scores solved translation problems more independently (i.e., self-regulated; Wertsch, 1980). This is in line with findings in

SLA that language learners progress from an object-regulated stage to other-regulated stage, and then to a self-regulated stage (e.g., Schinke-Llano, 1993; Wretch, 1980). More often, object-regulated language learners resort to tools or resources and are easily distracted by the environment; other-regulated language learners turn to others, such as teachers and more skilled peers; self-regulated language learners rely on themselves and are responsible for a learning task. The more proficient language learners are, the more self-regulated they tend to be in language learning and language use.

With respect to the negative correlations by category found for both the NT group (BLS, ELS, IS, and MS) and the PT group (BLS, ELS, PPS, and PS), they may be due to the differences in the automaticity level of participants from various professional designations. Automaticity, which results from experience and proficiency in a task, refers to the absence of attentional control in the execution of a cognitive activity (Bernardini, 2001; Segalowitz & Hulstijn, 2005). As Bernardini (2001) pointed out, the primary hypothesis about automaticity in translation is that professionals' performance is more automatic than that of non-professionals and this has been supported by the finding that professionals verbalize less than non-professionals in TAP. Jääskeläinen and Tirkkonen-Condit's (1991) study showed that professional translators, in routine translation tasks, do verbalize less than non-professional translators do. This is also supported by Jääskeläinen's (1999) finding that semi-professionals (which represent a professional level between professionals and non-professionals, similar to the paraprofessional level in the present study) show more extensive processing than both professionals and non-professionals. This may be because, compared to non-professionals, semi-professionals are aware of problems encountered in translation, but they have not automatized the necessary strategies for solving translation problems as professionals have (Bernardini,

2001). This is in line with the findings of the present study in which the negative correlations were found between TCM strategy category-use frequencies and performance scores for both the NT and PT groups, but positive correlations were found for the PaT group. The NT groups as non-professionals in Bernardini's (2001) study were not aware of the necessary strategies required for problem-solving. In addition, for the reported use of strategies, they might have used them inappropriately. Translators of the PT group, as the professionals, had reached certain automaticity and were unaware of strategies that they might have already applied to solve the problems encountered. Therefore, the NT and PT groups showed negative correlations between strategy-use frequencies and performance scores for different reasons. That is, novice translators were unaware of the availability of possible strategies for use while professional translators were unaware of strategies they had subconsciously applied. However, translators of the PaT group were aware of problems and strategies but lacked automaticity in applying the strategies. Thus, overall or by category, positive correlations were found between strategy-use frequencies and performance scores for the PaT group. These assumptions may only catch a fraction of the overall picture of translators' strategy use. For a more comprehensive understanding of this issue, a larger sample size is needed for future studies.

#### **4.4 Results for the LP and HP Groups**

Based on the participants' performance scores, participants were regrouped into the low performance and high performance groups as described in Chapter 3. The above reported correlations between participants' strategy-use frequencies and performance scores show that translators' performance scores do not match their professional designations, and therefore the regrouping of participants is necessary. Before addressing research questions 1, 2, and 3 for the LP and HP groups, the following section reports and discusses the unexpected performance of

participants NT5, NT6, and NT8 from the novice group and participants PT1, PT4, and PT5 from the professional group.

#### **4.4.1 Unexpected translation performance**

In the main study, it was expected that certified translators from the professional group would perform better than associate translators from the paraprofessional group, and much better than student translators from the novice group. However, as reported in the previous chapter (see Table 2, p. 67), NT6, who had the same score as PT4 (19.25), scored the highest in the novice translator group and outperformed PT1 and PT5 in the professional group whose scores were 16.75 and 18.5 points, respectively. In addition, NT5 scored 18.5 as PT5 did. NT8, who scored 18 points, outperformed PT1. PaT1 and PaT3 from the paraprofessional group, whose scores were 17.75 and 17.25, both outperformed PT1; and PaT7 from the paraprofessional group had the same score as PT1. It is not uncommon for some professional translators to fail to produce better performance. For example, both Gerloff (1988) and Jääskeläinen (1999) reported the same unexpected occurrences when novice translators or bilinguals performed better than professional translators did. In her study on professionalism and expertise in translation, Jääskeläinen (2010) noted that “all experts are professionals, [but] not all professionals are experts” (p. 214). She provided possible explanations for this seemingly unexpected finding of professionals’ low quality production. For example, the translation task might not be in the professional translator’s domain of expertise, or the categories for participants not clearly defined.

##### ***4.4.1.1 Novice translators’ unexpected performance***

The reflections of NT5, NT6, and NT8 in the novice translator group revealed no notable reasons for their performance as they all focused on reflecting on the translation task as such but not on their personal backgrounds or capability in translation. The only possible clue was that

participants NT5, NT6, and NT8 all evaluated the translation task as having the same level of difficulty as their daily assignments at the School of Translation Studies. For example,

Excerpt 19: “也不是很难，因为之前老师让我们翻的时候都会有特别难的。” (NT8)

[Translation: “It’s not that difficult because our instructor has offered us some particularly difficult ones to translate.”]

However, the other five student translators graded the translation task as more challenging than their daily translation assignments. For example,

Excerpt 20: “我觉得有点难，因为这个是偏文学性的翻译。文学性的能把那个味道翻译出来，我觉得有点困难。” (NT7)

[Translation: “I feel it is slightly difficult because this is more of a literary translation. I feel it’s pretty challenging to translate the literary ‘flavor’ out.”]

After the re-examination of the profile questionnaires of NT5, NT6, and NT8, some information may account for their high quality translation. First, novice translators’ average score for the subject of English language in the 2014 National College Entrance Examination was 134.4 out of 150. For NT5, NT6, and NT8, their scores for this subject were 143, 139, and 125, with an average of 135.7, which was slightly higher than the group average. Furthermore, NT5 was the only one from the NT group who had taken the standard language proficiency test *TOEFL* iBT, and she scored 91.

Second, concerning their answers to the profile question about translation experience, the three participants all reported some relevant experiences, but the other five novice translators mentioned no translation experience. For example, NT6 mentioned that she had been an intern with *Global Times*, a Chinese daily newspaper, focusing on international issues, and had

translated many reports in the columns of fashion and entertainment. She estimated that she had translated 45 reports from English to Chinese, and the total word counts had amounted to 20,000 words. NT5 also mentioned that she had been translating western essays, poems, and news reports. However, her amount of translation was around 5,000 words in English-Chinese and Chinese-English translations. Participant NT8 reported translating a few pieces of English news into Chinese with a lower word count of 1,500 words.

#### *4.4.1.2 Professional translators' unexpected performance*

For the three certified translators from the PT group, their unsatisfactory performance may be explained by the following two factors.

First, PT1 and PT4 were both certified translators and certified court interpreters by passing the CTTIC. Though PT5 was not accredited by CTTIC as a court interpreter, she had completed a one-year certificate program in court interpreting at Vancouver Community College. In addition, the courses she had taken include sections on Canadian Law, legal terminology, court procedures, consecutive interpreting, simultaneous interpreting, and interpreter ethics. Furthermore, the Ministry of the Attorney General of British Columbia accepts graduates of the Vancouver Community College court-interpreting program as “accredited” professional interpreters for the BC court services. The three certified translators all have extensive experiences and active engagement in interpreting. PT1 mentioned that his daily translation business mainly focused on legal translation and court interpreting; PT4 shared his experiences about court interpreting in his reflection; and PT5 reported that her annual interpretation amount as 1,000 hours/year.

Second, while answering the question about their translation specialty, they all mentioned their strength in legal translation/interpretation. As a result, their unexpected performance might

partially result from the *routineness* problem, which is “where the professional has applied a routine approach (learned in a particular domain) to a non-routine task” (Jääskeläinen, 2010, p. 219). The routines they had followed in court interpreting did not transfer readily to literary translation or general text type translation.

PT4 mentioned his routine as a court interpreter in his reflection as shown in Excerpt 21.

Excerpt 21: “做法庭的东西，不能有半点 literal 的东西，完全是 verbatim，所以我经常

翻的时候，有的时候有一些人会说文学的东西，文学的味道很浓，就太精确了，精确到又不像...你把它太具体了，它反而不美了。留下一些空间和想象的余地。” (PT4)

[Translation: “For court related stuff, the translation should be completely verbatim and allows the least literary interpretation. Very often in my (translation/interpretation), some people sometimes say something literary with strong literary flair. If you translate it verbatim, it will be too precise and too tangible that its beauty is gone. There should be some space for imagination.”]

As the excerpt shows, PT4 might have applied his routine approach to the translation task, which was outside his specialized domain, that is, the court interpreting setting.

More importantly, compared to translation, some features of interpretation impose constraints on interpreting quality. An important one is balancing attention to the perception and the production since “too much concentration on listening and understanding may produce a defect in the output, too great an attention paid to the output may induce the loss of text portions” (Riccardi, 2002, p. 88). As a result of the working habit, in the interpreting context, interpreters

may sacrifice language structures but to convey the message. Therefore, one can postulate that participant PT1, PT4, and PT5's experience in consecutive/simultaneous interpretation might have played a role in the quality of their translation performance.

Apart from the evidence gleaned from participants' background information and post-task reflections, other reasons for the unexpected performance of the six participants may be rater-related. Since the two raters were both from the same institution, they might hold similar judgement over the translation performances of the participants. In addition, the scoring rubric proposed by Angellelli (2009) may not be quantifiable enough for raters to follow, and hence too much subjective judgment was involved.

The following section reports and discusses the strategy use of the LP and HP groups by addressing research questions 2 and 3.

#### **4.4.2 TCM strategy use for the LP and HP groups**

##### ***4.4.2.1 Overall strategy use vis-à-vis groups***

Table 12 presents the mean strategy-use frequency of the high performance group, which was 53.1 higher than that of the low performance group (HP = 197.1, LP = 144). At the same time, the *SD* (HP = 92.5, LP = 36.3) and range (HP = 296, LP = 115) were much greater in the high performance group than in the low performance group. For the strategy-use frequencies for the LP and HP groups, a two-sample Kolmogorov-Smirnov test results suggest that there was no significant difference in strategy-use frequencies between the LP and HP groups ( $p = .364$ ). However, there was significant difference in strategy-use frequencies among the NT, PaT, and PT groups as reported in Section 4.2.1.

Table 12

*Descriptive Statistics for Strategy-use Frequencies by the LP and HP Groups*

	<i>n</i>	Min	Max	Range	<i>M</i>	<i>SD</i>	Sum
LP Group	9	85	200	115	144	36.3	1296
HP Group	11	114	410	296	197.1	92.5	2168

*Note.* *N* = 20. LP Group = Low Performance Group; HP Group = High Performance Group.

As for strategies used in the main study, the LP and HP groups employed all six TCM strategy categories. Overall, the HP group used 95 individual strategies with 14 unique strategies. These included five macro strategies: *adapting different perspectives*, *eliciting strategies*, *reading through*, *rewriting*, and *postponing translation problem*; six bilingual strategies: *formulating sentences*, *translating key words*, *evaluating performance-textual*, *capturing the main idea*, *reformulating ST in the TL*, and *stylistic compromising*; and three psychophysiological strategies: *monitoring affects*, *showing confidence*, and *showing satisfaction*. The LP group applied 83 individual strategies with two unique strategies, which included one bilingual strategy, *transforming direct/indirect speech*, and one macro strategy, *anticipating future usage*.

The results regarding overall strategy-use frequencies and the variety of strategies used (reported in Section 4.2.1 and this section) show that the PT group had a significantly higher average than the PaT group and the NT group; the HP group showed a higher (though not a significantly higher) average than the LP group. For the variety of strategies used, both the PaT and PT group employed more individual strategies than the NT group, and of these more were unique. Similarly, the HP group used more individual strategies than the LP group, and of these more were unique. The results suggested that translators with higher professional designations or higher performance level tended to use translation strategies more often and seemed to have a larger repertoire of strategies for use. The findings about strategy-use frequency and proficiency

level, and the variety of strategies and translation performance are in line with those reported in language learners' strategy use studies (Anderson, 2011; Cohen, 2014; Huang, 2013; Oxford & Burry-Stock, 1995; Swain et al., 2009).

Although the findings in this study support the claim that proficient translators (and L2 learners) have a wider repertoire of strategies, strategies are not inherently good or bad, nor does increased strategy use equate to better translation performance. Sometimes, proficient and less proficient translators (and L2 learners) may use the same strategies, but what matters most is how they execute and orchestrate the strategies (Anderson, 2011). The present study revealed that less proficient translators tended to use the same translation strategies repeatedly, which is also in line with findings in L2 learners' strategy use studies as well (e.g., Anderson, 2011; Huang, 2013). One of the possible reasons for translators with higher professional designations or higher performance level demonstrating a greater variety and number of strategies may be that they were more aware of their translation process.

Table 13 presents the strategy use of the LP and HP groups by frequency, average, and percentage. Before reporting further statistical analysis, a two-sample Kolmogorov–Smirnov test was conducted and the test results are as follows: BLS ( $K-S Z = 1.011, p = .258$ ), ELS ( $K-S Z = .584, p = .884$ ), IS ( $K-S Z = .719, p = .679$ ), MS ( $K-S Z = .607, p = .855$ ), PPS ( $K-S Z = .674, p = .754$ ), PS ( $K-S Z = .966, p = .308$ ). Overall, there was no significant difference between the two groups in the use frequencies of any TCM strategy category.

Table 13

*Frequencies, Averages, and Percentages of TCM Strategy Category Use for the LP and HP**Groups*

		MS	PS	BLS			ELS	IS	PPS	Sum
				Discoursal	Textual	Lexical				
LP Group	Frequency	74	48	49	319	575	23	177	31	1296
	Average			5.4	35.4	63.9				
		8.2	5.3	104.8			2.6	19.7	3.4	144
	% to Sum			3.8	24.6	<b>44.3</b>				
		<b>5.7</b>	3.7	72.8			<b>1.8</b>	<b>13.7</b>	2.4	100
HP Group	Frequency	122	112	103	539	944	31	255	62	2168
	Average			<u>9.4</u>	<u>49</u>	<u>85.8</u>				
		<u>11.1</u>	<u>10.2</u>	<u>144.2</u>			<u>2.8</u>	<u>23.2</u>	<u>5.6</u>	197.1
	% to Sum			<b>4.8</b>	<b>24.9</b>	43.5				
		5.6	<b>5.2</b>	<b>73.2</b>			1.4	11.8	<b>2.9</b>	100

*Note.* Percentages may not sum to 100% because of rounding off. LP Group = Low Performance Group; HP Group = High Performance Group. MS = Macro Strategies; PS = Professional Strategies; BLS = Bilingual Strategies; ELS = Extralinguistic Strategies; IS = Instrumental Strategies; PPS = Psycho-physiological Strategies.

As highlighted in bold and double underlines in Table 13, the HP group showed higher averages in all six categories and the three subcategories under *bilingual* strategies than the LP group did. However, by percentage, as highlighted in bold, the HP group showed higher percentages of usage in *professional* strategies (HP = 5.2%, LP = 3.7%), *discoursal-level* (HP = 4.8%, LP = 3.8%) and *textual-level* (HP = 24.9%, LP = 24.6%) *bilingual* strategies, and *psycho-physiological* strategies (HP = 2.9%, LP = 2.4%). On the contrary, the LP group showed higher percentages of usage in *macro* strategies (LP = 5.7%, HP = 5.6%), *lexical-level bilingual* strategies (LP = 44.3 %, HP = 43.5%), *extralinguistic* strategies (LP = 1.8%, HP = 1.4%), and *instrumental* strategies (LP = 13.7%, HP = 11.8%). By category ranking, the results showed no difference in the LP and HP groups (i.e., BLS > IS > MS > PS > PPS > ELS), with the category of *bilingual* strategies being the highest (LP = 72.8%, HP = 73.2%) and the category of *extralinguistic* strategies being the lowest.

#### 4.4.2.2 Top individual strategies vis-à-vis groups

The following table shows the top-five TCM individual strategies for both the LP and HP groups.

Table 14

##### *Top-five TCM Individual Strategies for the LP and HP Groups*

Group	Top-5 TCM Strategies	% in relation to Category Total	% in relation to Group Total
LP Group	<b>IS: checking online</b>	83.1%	11.3%
	BLS: attending to mechanics	8.9%	6.5%
	BLS: evaluating choices	8.8%	6.4%
	BLS: identifying translation problems-lexical	8.8%	6.4%
	BLS: restructuring	7.4%	5.4%
HP Group	<b>IS: checking online</b>	85.5%	10.1%
	BLS: evaluating choices	11.3%	8.3%
	BLS: restructuring	8.5%	6.2%
	BLS: substituting	7.4%	5.4%
	BLS: attending to mechanics	7.4%	5.4%

*Note.* TCM = Translation Competence Model. LP Group = Low Performance Group; HP Group = High Performance Group. IS = Instrumental Strategies; BLS = Bilingual Strategies.

The top individual TCM strategy for both the LP and HP groups was *checking online*, an *instrumental* strategy, as shown in Table 14. Its percentage of the group total was higher in the LP group than in the HP group (LP = 11.3 %, HP = 10.1%). Another noticeable point is that the *bilingual* strategy, *attending to mechanics*, ranked second in the LP group but fifth in the HP group (LP = 6.5%, HP = 5.4%). There was large percentage difference for the *bilingual* strategy, *evaluating choices*, which ranked second in the HP group but third in the LP group (HP = 8.3%, LP = 6.4%).

Table 15 summarizes the results for the top-three individual strategies in each TCM strategy category for the LP and HP groups, and their percentages of the group totals. Both the LP and HP group showed the same top individual strategy for the categories of *psychophysiological*, *instrumental*, and *extralinguistic* strategies.

Table 15

*Top-three Individual Strategies within Each TCM Strategy Category for the LP and HP Groups*

	LP Group	HP Group
MS	evaluating task (1.9%) being aware of translation process (1.2%) evaluating strategies (0.8%)	being aware of translation process (1.8%) evaluating task (1.0%) planning process (1.0%)
PS	being aware of strategies applied (1.0%) attending to receivers (0.6%) attending to information completeness (0.5%)	attending to message transfer (1.3%) attending to translation principles (0.8%) attending to receivers (0.8%)
BLS	attending to mechanics (6.5%) identifying translation problem-lexical (6.4%) evaluating choices (6.4%)	evaluating choices (8.3%) restructuring (6.2%) substituting (5.4%)
ELS	<b>activating background knowledge (0.8%)</b> activating domain knowledge (0.5%) linking to personal experience (0.4%)	<b>activating background knowledge (0.7%)</b> linking to personal experience (0.3%) activating general world knowledge (0.2%)
IS	<b>checking online (11.3%)</b> applying searching skills (1.5%) evaluating tools (0.5%)	<b>checking online (10.1%)</b> applying searching skills (0.7%) using mechanical means (0.7%)
PPS	<b>evaluating one's ability (1.7%)</b> showing motivation/attitude (0.4%) showing perseverance (0.2%)	<b>evaluating one's ability (1.1%)</b> showing motivation/attitude (0.6%) showing perseverance (0.5%)

*Note.* The percentage is in relation to the group total. LP Group = Low Performance Group; HP Group = High Performance Group. MS = Macro Strategies; PS = Professional Strategies; BLS = Bilingual Strategies; ELS = Extralinguistic Strategies; IS = Instrumental Strategies; PPS = Psycho-physiological Strategies.

#### ***4.4.2.3 Correlations by performance levels***

##### *4.4.2.3.1 Correlational results*

This section presents the correlations between strategy-use frequencies and translation performance scores by performance levels and by TCM strategy categories in Tables 16 and 17, respectively.

Table 16

*Correlations between Strategy-use Frequencies and Performance Scores by Performance Levels*

		Strategy-use Frequencies	
Performance	LP Group	Correlation Coefficient	.244
	( <i>n</i> = 9)	<i>Sig.</i> (2-tailed)	.527
Scores	HP Group	Correlation Coefficient	.087
	( <i>n</i> = 11)	<i>Sig.</i> (2-tailed)	.799

*Note.* Spearman's *rho* test. *N* = 20. LP Group = Low Performance Group; HP Group = High Performance Group.

As shown in Table 16, the correlations between strategy-use frequencies and performance scores for both the LP and HP groups are positive though not significant.

Table 17

*Correlations between TCM Strategy Category-use Frequencies and Performance Scores by Performance Levels*

		BLS	ELS	IS	MS	PPS	PS	
Performance	LP Group	Correlation Coefficient	.253	.064	<b>-.722*</b>	.403	<b>.753*</b>	.191
	( <i>n</i> = 9)	<i>Sig.</i> (2-tailed)	.511	.870	.028	.283	.019	.623
Scores	HP Group	Correlation Coefficient	.030	-.219	-.138	.025	.136	.094
	( <i>n</i> = 11)	<i>Sig.</i> (2-tailed)	.931	.518	.686	.941	.690	.783

*Note.* Spearman's *rho* test. *N* = 20. LP Group = Low Performance Group; HP Group = High Performance Group. BLS = Bilingual strategies; ELS = Extralinguistic strategies; IS = Instrumental strategies; MS = Macro strategies; PPS = Psycho-physiological strategies; PS = Professional strategies. \* Correlation is significant at  $p < .05$ .

For the LP group, at a statistically significant level, performance scores correlated negatively with strategy-use frequencies of the *instrumental* category but positively with the *psycho-physiological* category. *Bilingual*, *extralinguistic*, *macro*, and *professional* categories positively correlated with performance scores though not at a significant level. For the HP group, performance scores were non-significantly negatively correlated with both *extralinguistic* and *instrumental* categories but positively correlated with *bilingual*, *macro*, *psycho-physiological*, and *professional* categories.

#### 4.4.2.3.2 Significant correlations

For both the LP and HP groups, performance scores' negative correlation with the category of *instrumental* strategies and positive correlation with *psycho-physiological* strategies are consistent with the overall correlation reported in Table 11. The only difference is that the correlations with the *instrumental* and *psycho-physiological* categories were both at a significant level for the LP group. The negative correlation between the category of *instrumental* strategies and performance scores is supported by the discussion in Section 4.3.3. However, the significant positive correlation between performance scores and the category of *psycho-physiological* strategies shown in the LP group may be due to the higher percentage of the individual strategy, *evaluating one's ability* (LP = 1.7%, HP = 1.1%). Though the percentage difference is not large, a further examination of their reflections showed that the LP group reported more of their incompetence in translation. For example,

Excerpt 22: “ ( 对这种偏文学的翻译 ) 就不知道如何把握 , 比如说用词啊 , 什么的。 ”

(NT2)

[Translation: “(This type of literary-like translation) I'm not so sure about its diction and the like.”]

Participant NT2 reported that she was not confident about literary translation, especially about choosing the right word. She evaluated her own ability and revealed her inadequate capability in literary translation. Being aware of their perceived incompetence and lack of confidence, translators of a lower performance level might be more active in managing their negative affect. Thus, indirectly, the awareness of their incompetence might positively affect their translation performance.

### 4.4.3 Strategy use vis-à-vis individual strategy

Major findings related to TCM strategy categories for the LP and HP groups showed a similar pattern as they did for the NT, PaT, and PT groups. The only difference was in the use of *bilingual* subcategories. For the NT, PaT, and PT groups, the PT group showed higher percentages at both the discorsal- and lexical-levels while the NT group was higher at the textual-level. However, for the LP and HP groups, the HP group showed a higher percentage at both the discorsal- and textual-levels while the LP group was higher at the lexical-level. The finding indicates that translators of higher performance level tended to concentrate on larger units to process in translation. This is in line with studies about the different segmentations of translation unit (TU) between professional and novice translators (e.g., Gerloff, 1988; Göpferich & Jääskeläinen, 2009; Jääskeläinen, 1999).

Based on the ranking and differences in percentage of the group total, the following section reports the results and provides discussion on findings by individual strategies, such as *attending to mechanics*, *checking online*, *evaluating choices*, and *identifying translation problems-lexical*.

#### 4.4.3.1 Attending to mechanics

The strategy of *attending to mechanics* is paying attention to minor grammar mistakes, usage and mechanics, such as singular/plural form, tense, subject-verb agreement, pronouns, punctuation, and articles. For example,

Excerpt 23: “一开始用的是单数 interest，把它改成复数了，觉得趣味是各种各样的。”

(NT7)

[Translation: “At first, I used the singular form ‘interest’ but changed it into its plural form since I thought that there were interests of all kinds.”]

Participant NT7 first evaluated her lexical choice, namely, “interest,” and identified a lexical error in her translation, the use of singular “interest,” instead of its plural form. She then further interpreted the lexical term “趣味 *interest*” in the ST and believed that there were interests of all kinds. Therefore, she changed the singular “interest” into its plural form “interests.” The difference between “interest” and “interests” is a morphemic feature. In this simple reflection segment, participant NT7 applied four different individual strategies: *evaluating product-lexical*, *identifying translation error-lexical*, *interpreting ST-lexical*, and *attending to mechanics*.

For the lexical-level bilingual strategy, *attending to mechanics*, its percentages were higher in the PaT and NT groups than in the PT group (PaT = 6.9%, NT = 5.8%, PT = 4.4%) and higher in the LP group than in the HP group (LP = 6.5%, HP = 5.4%). It also ranked higher in the NT and PaT groups than in the PT group and higher in the LP group than in the HP group.

This can be explained by the differences in TU among translators of different proficiency levels. For the purposes of this study, “translation unit” refers to the chunk of information (both actual text segment and abstract message connoted) in the ST being interpreted and transferred at a given moment. Its size and scope can range from morpheme to sentence level, from paragraph to the whole ST. As Göpferich and Jääskeläinen (2009) pointed out, experienced translators tended to focus on larger TUs and tackled more complex textual problems rather than simple equivalence problems, as previously also reported by Gerloff (1988) and Jääskeläinen (1999). The frequently reported and observed use of *attending to mechanics* from translators of lower professional designations or the low performance level is in line with the finding that inexperienced translators tend to focus on shorter TUs. It also suggests that they tended to employ more local strategies to target specific terms, such as lexical ones, rather than global

strategies, which consider the whole translation task, such as readership and style (Jääskeläinen, 1993).

#### 4.4.3.2 *Checking online*

With the help of observable data, it was evident that novice translators or low performance translators, when confronted with translation problems, resorted to online resources more often than paraprofessional and professional translators or high performance translators did. This suggests that translators of higher professional designations or the high performance level performed translation tasks with internalized knowledge and higher automaticity. They were therefore more self-regulated than novice translators or low performance translators who were more object-regulated (e.g., Schinke-Llano, 1993; Wretch, 1980).

Overall, for the percentage of *checking online* in relation to the group total, the NT group was higher than the PaT and PT groups (NT = 15.3%, PaT = 10.9%, PT = 5.9%), and the LP group was higher than the HP group (LP = 11.3%, HP = 10.1%). The smaller percentage difference between the LP and HP group may be because the high performance translators PaT3 and PT5 (the same participant), who had a translation habit of checking every word both in the SL and the TL to ensure that she had found the satisfying equivalents, demonstrated comparatively higher frequencies of *checking online* (PaT3: 65, PT5: 50). The average strategy-use frequency of *checking online* for the HP group was 19.8. On the contrary, NT5 and PT1 in the LP group did not check online even once but relied completely on their own knowledge.

In regards to what they checked online, both the PT and the HP groups showed higher percentages of words, phrases, or terms being checked in English, the TL (PT = 32.3%, NT = 16.9%, PaT = 13.2%; HP = 18.3%, LP = 17.7%). The video data showed that most of the terms checked in English were alternative equivalents for terms in Chinese ST, although the larger

percentage of the online checking was in Chinese. This may indicate that the major challenges in the translation task in terms of online checking was finding the relevant equivalents in the TL and differentiating the nuances between the potential choices. This finding suggests that for translators of higher professional designations or the high performance level, they tended to have more competing choices and focus more on the analysis of those choices. On the contrary, translators of lower professional designations or the low performance level tended to resort to the first choice that occurred to them, without further examination or comparison of the subtlety. The tools used by all participants for online checking include *Youdao*, *The Free Dictionary*, *iCIBA*, *Google*, *Baidu*, *Baidu Translate*, and *CNKI Translate*. The NT group turned to more online dictionaries or tools than the PaT and PT groups (NT = 5, PaT = 4, PT = 3), and the LP group applied more tools than the HP group did (LP = 7, HP = 4). Translators of lower professional designations or the low performance level seemed to apply a larger variety of online translation tools or resources and tended to be more object-regulated. Further examination of participants' background information showed that the average age of the NT group was much younger than both the PaT and PT groups (NT:  $M = 19.5$ ,  $SD = 1.1$ ; PaT:  $M = 41.0$ ,  $SD = 8.8$ ; PT:  $M = 48.0$ ,  $SD = 11.6$ ), and the average age of the LP group was younger than the HP group (LP:  $M = 30.8$ ,  $SD = 13.9$ ; HP:  $M = 36.9$ ,  $SD = 15.1$ ). Age might be another factor of the higher frequencies of *checking online* for translators of lower professional designations or the low performance level than for those of higher professional designations or performance level.

#### ***4.4.3.3 Evaluating choices***

The lexical strategy of *evaluating choices* is making a comparison of all the possible choices from various perspectives. Its percentage was higher in the PT group than in the NT and PaT groups (PT = 9.8%, PaT = 7.7%, NT = 4.9%), and higher in the HP group than in the LP

group (HP = 8.3%, LP = 6.4%). The finding that translators of higher professional designations or the high performance level showed a higher percentage of using *evaluating choices* may indicate that they might have more alternative choices available for comparison and evaluation, and which in turn implies that they may have larger vocabulary size. Studies on vocabulary acquisition in language learning and testing have proved that more proficient language learners have larger vocabulary size. As Meara (1996) reported, “all other things being equal, learners with bigger vocabularies are more proficient in a wide range of language skills than learners with smaller vocabularies” (p. 37). The claim about vocabulary size supports the assumption that translators that are more proficient may have larger vocabularies.

While evaluating linguistic choices, translators compare the choices from every possible perspective and different linguistic levels, including discursual, textual, and lexical. Relevant strategies are activated as well, such as *attending to positive/negative connotation of words*, *attending to tone*, and *attending to register*. In the main study, the individual strategy, *evaluating choices*, which is comparing the competing choices, is different from another lexical strategy *analyzing the choice*, which involves considering the word choice and justifying what has been chosen.

#### ***4.4.3.4 Identifying translation problems-lexical***

The lexical-level *bilingual* strategy, *identifying translation problems-lexical*, refers to identifying problems confronted in translation at the lexical-level. It ranked within the top-five individual strategies for both the NT and LP groups but not for the PaT and PT groups or the HP group. Its percentage of usage was higher in the NT group than in the PaT and PT groups (NT = 7.7%, PaT = 3.3%, PT = 3.6%), and higher in the LP group than in the HP group (LP = 6.4%, HP = 3.6%). This finding indicates that translators of lower professional designations or the low

performance level tended to identify translation problems at the lexical-level more often than translators of higher professional designations or the high performance level. Possibly, translators of lower professional designations or the low performance level were hindered more by lexical problems, lower level bilingual translation problems, and hence they would tackle smaller TU in the translation process. By further comparison, the individual strategy *identifying translation problems-textual* showed the same pattern. These findings show that, overall, the NT or LP groups were confronted with translation problems more often and more at the lexical-level than the PaT and PT groups, or the HP group.

#### ***4.4.3.5 Substituting and restructuring***

For the *bilingual* strategies, *substituting* (PT = 5.8%, PaT = 5.4%, NT = 2.6%; HP = 5.4%, LP = 3.5%) and *restructuring* (PT = 7.4%, PaT = 5.6%, NT = 4.6%; HP = 6.2%, LP = 5.4%), both showed higher percentages of usage for the PT group or the HP group than for the PaT and NT groups, or the LP group.

The finding for *substituting* indicates that translators of higher professional designations or the high performance level tended to have more potential choices to replace the previously chosen terms. Before substituting, there may be a process of applying the strategy of *evaluating choices* to compare the multiple options and make a decision. This is consistent with the finding and previous discussion about translators of higher professional designations or the high performance level showing a higher percentage of using *evaluating choices*. It is also in line with the previous finding that both the PT group and the HP group showed higher percentages of checking words, phrases, or terms in English.

“Restructuring” is to structure an already translated sentence/phrase in another way. For example,

Excerpt 24: “The passage of time...” → “how time passes quickly...” (PT1)

Participant PT1 first started the sentence with the noun phrase “the passage of time”, but he then used the verb form of “passage” and restructured the sentence into a question.

The result regarding the textual-level *bilingual* strategy, *restructuring*, reveals that translators of higher professional designations or the high performance level tended to restructure the phrases or sentences they had produced in the TT more often. This is another sign to show that their attention dwelled on larger TU and they tended to reorganize their textual segments rather than replace a lexical term or fix the mechanics.

#### **4.5 Summary**

In this chapter, the first three research questions regarding strategy use and translation performance were addressed by applying the TCM to the NT, PaT, and PT groups of different professional designations, and then for the LP and HP groups of different performance levels. Overall, both translators of a higher professional designation or performance level employed a greater variety of individual strategies, and they were more concerned about evaluating the alternative options in hand. However, translators of a lower professional designation or performance level resorted to translation tools and resources more often, and attended more to smaller TUs. Even though there was no significant correlation between translators’ translation strategy use and their translation performance, *psycho-physiological* strategies positively correlated with translation performance at a significant level.

## CHAPTER FIVE - RESEARCH QUESTIONS 1-3: RESULTS OF ANALYSIS USING THE LANGUAGE ABILITY MODEL AND DISCUSSION

In this chapter, the LAM is applied to address research questions 1, 2, and 3 first for the NT, PaT, and PT groups. Second, this chapter reports and discusses the strategy use and translation performance of the LP and HP groups. Following the summary of the findings, the final section provides a comparison of the results for the different groups within the TCM and the LAM.

### 5.1 Research Question 1

*What is the reported and observed strategy use for novice, paraprofessional, and professional translators?*

By applying the LAM, the same 97 individual strategies can be grouped into six categories. The number of individual strategies used within each category was as follows: *approach* (6), *metacognitive* (21), *cognitive* (36), *communication* (24), *compromising* (4), and *affective* (6). The category of *cognitive* strategies had the most individual strategies and the category of *compromising* strategies had the least individual strategies. Since the LAM shares the same individual strategies with the TCM, the descriptive statistics for the strategy frequencies by groups of different professional designations or performance levels are the same (see Tables 6 and 12).

As for the frequencies and percentages of the 97 individual LAM strategies used by all participants, they are the same as illustrated in Table 4 except that they have different percentages of the LAM strategy category total. Table 18 presents the frequencies and percentages of the LAM strategy category in relation to the total strategy-use frequencies.

Table 18

*Frequencies and Percentages of LAM Strategy Use*

LAM strategy category	Total	<i>M</i>	Range	<i>SD</i>	% in relation to total frequencies
<b>Com</b>	1212	60.1	121	30.5	34.99%
<b>Met</b>	1068	54.3	90	22.8	31.35%
<b>Cog</b>	1033	51.7	89	22.4	29.82%
<b>App</b>	61	3.1	11	2.8	1.76%
<b>Aff</b>	48	2.4	15	3.8	1.39%
<b>Cop</b>	24	1.2	4	1.4	0.69%

Note.  $N = 20$ . Percentages may not sum to 100% because of rounding off. LAM = Language Ability Model. Com = Communication Strategies; Met = Metacognitive Strategies; Cog = Cognitive Strategies; App = Approach Strategies; Aff = Affective Strategies; Cop = Compromising Strategies.

Overall, the *communication* category is the top category, representing 34.99% of all individual strategies used, followed by the *metacognitive* (31.35%) and *cognitive* (29.82%) categories. The remaining three categories altogether, namely, *compromising*, *approach*, and *affective*, represent less than 4% of all individual strategies used.

Table 19 shows the correlation coefficients among the six LAM strategy categories. The correlation coefficients showed that all the LAM strategy categories correlated positively with each other. Seven of the correlations were significant at  $p < .01$  and five of them were significant at  $p < .05$ . The positive correlations indicated that if translators applied more individual strategies in one LAM strategy category, they also tended to apply more in another LAM strategy category.

Table 19

*Correlation Coefficients among LAM Strategy Categories*

Categories	Met	Cog	Com	Cop	App	Aff
Met	1					
Cog	<b>.841**</b>	1				
Com	<b>.481*</b>	.414	1			
Cop	<b>.773**</b>	<b>.753**</b>	.441	1		
App	<b>.478*</b>	<b>.460*</b>	.123	<b>.455*</b>	1	
Aff	<b>.908**</b>	<b>.801**</b>	<b>.566**</b>	<b>.877**</b>	<b>.478*</b>	1

Note. Spearman's  $\rho$  test,  $N = 20$ . Met = Metacognitive Strategies; Cog = Cognitive Strategies; Com = Communication Strategies; Cop = Compromising Strategies; App = Approach Strategies; Aff = Affective Strategies. \*\* Correlation is significant at  $p < .01$ ; \* Correlation is significant at  $p < .05$ .

## 5.2 Research Question 2

*Is there any difference in the strategy use among translators with different professional designations?*

### 5.2.1 Overall strategy use vis-à-vis groups

Table 20 presents the results of LAM strategy category use for the NT, PaT, and PT groups.

Table 20

*Frequencies, Averages, and Percentages of LAM Strategy Category Use for the NT, PaT, and PT Groups*

		Met	Cog	Com	Cop	App	Aff	Sum
NT Group	Frequency	302	286	363	0	18	0	969
	Average	37.8	35.8	45.4	0	2.3	0	121.1
	% to Sum	31.2	29.5	<b>37.5</b>	0	1.9	0	100
PaT Group	Frequency	436	408	473	15	30	27	1389
	Average	62.3	58.3	67.6	<u>2.1</u>	<u>4.3</u>	3.9	198.4
	% to Sum	31.4	29.4	34.1	<b>1.1</b>	<b>2.2</b>	1.9	100
PT Group	Frequency	348	339	376	9	13	21	1106
	Average	<u>69.6</u>	<u>67.8</u>	<u>75.2</u>	1.8	2.6	<u>4.2</u>	<u>221.2</u>
	% to Sum	<b>31.5</b>	<b>30.7</b>	34.0	0.8	1.2	<b>1.9</b>	100

Note.  $N = 20$ . NT Group = Novice Translator Group; PaT = Paraprofessional Translator Group; PT = Professional Translator Group. Met = Metacognitive Strategies; Cog = Cognitive Strategies; Com = Communication Strategies; Cop = Compromising Strategies; App = Approach Strategies; Aff = Affective Strategies.

A Kruskal-Wallis test was conducted and the results are as follows: Aff ( $\chi^2(2) = 11.669$ ,  $p = .003$ ), App ( $\chi^2(2) = 1.076$ ,  $p = .584$ ), Cog ( $\chi^2(2) = 8.794$ ,  $p = .012$ ), Com ( $\chi^2(2) = 6.560$ ,  $p = .038$ ), Cop ( $\chi^2(2) = 11.147$ ,  $p = .004$ ), Met ( $\chi^2(2) = 10.539$ ,  $p = .005$ ). Except for the category of *approach* strategies, a significant difference was found among the NT, PaT, and PT groups across all the other five LAM strategy categories.

Table 20 shows that, as highlighted in bold and double underlines, the PT group had higher averages of usage in the categories of *metacognitive*, *cognitive*, *communication*, and *affective* strategies, and also in the group total, while the PaT group had higher averages of usage in both *compromising* and *approach* strategies. By percentage, as highlighted in bold, the PT group demonstrated higher percentages in *metacognitive*, *cognitive*, and *affective* strategies, the PaT showed higher percentages in both *compromising* and *approach* strategies, while the NT group had a higher percentage in the category of *communication* strategies.

For all three groups, the category of *communication* strategies was the largest (NT = 37.5%, PaT = 34.1%, PT = 34.0%). The second and third largest categories were *metacognitive* and *cognitive* strategies, respectively, for all three groups. Interestingly, the PT group had the highest percentages in both categories. The major difference among the categories was that the NT group applied no *affective* or *compromising* strategies. For the PaT and PT groups, they differed from each other mainly in the ranking of *affective* and *approach* strategies. The category of *affective* strategies ranked higher than the category of *approach* strategies for the PT group, and it was vice versa in the PaT group. However, the percentages for *affective* strategies in relation to the group total were the same (1.9%) for both groups.

The results from the percentages of LAM strategy use suggest that, compared to other groups, professional translators tended to employ more *metacognitive*, *cognitive*, and *affective* strategies, paraprofessional tended to apply more *compromising* and *approach* strategies, and novice translators tended to employ *communication* strategies more frequently. In addition, novice translators did not report any usage of *compromising* or *affective* strategies in the translation task.

### 5.2.2 Top individual strategies vis-à-vis groups

Tables 21 and 22 illustrate the ranking of the most frequently used individual strategies by using the LAM (hereafter referred to as “LAM individual strategies”) within group and within LAM strategy category. Since both the TCM and LAM share the same individual strategies, the top-five LAM individual strategies, their rankings, and their percentages in relation to the group total were the same but they varied only in their category subordination and their percentages in relation to the corresponding category totals.

Table 21

#### *Top-five LAM Individual Strategies for the NT, PaT, and PT Groups*

Group	Top-5 LAM Strategies	% in relation to Category Total	% in relation to Group Total
NT Group	Com: checking online	40.8%	15.3%
	Met: identifying translation problems-lexical	24.8%	7.7%
	Cog: attending to mechanics	19.6%	5.8%
	Met: evaluating choices	15.6%	4.9%
	Com: restructuring	12.4%	4.6%
PaT Group	Com: checking online	32.1%	10.9%
	Met: evaluating choices	24.5%	7.7%
	Cog: attending to mechanics	23.5%	6.9%
	Com: restructuring	16.5%	5.6%
PT Group	Com: substituting	15.9%	5.4%
	Met: evaluating choices	31.0%	9.8%
	Com: restructuring	21.8%	7.4%
	Com: checking online	17.3%	5.9%
	Com: substituting	17.0%	5.8%
	Cog: attending to mechanics	14.5%	4.4%

*Note.* LAM = Language Ability Model. NT Group = Novice Translator Group; PaT Group = Paraprofessional Group; PT Group = Professional Translator Group. Com = Communication Strategies; Met = Metacognitive Strategies; Cog = Cognitive Strategies.

The top-three individual strategies for each LAM strategy category for the original three groups are presented in Table 22.

Table 22

*Top-three Individual Strategies within Each LAM Strategy Category for the NT, PaT, and PT**Groups*

	NT Group	PaT Group	PT Group
App	<b>applying searching skills (1.2%)</b> Generating linguistic choices (0.5%) rewriting (0.1%)	<b>applying searching skills (1.2%)</b> generating linguistic choices (0.5%) rewriting (0.3%)	<b>applying searching skills (0.6%)</b> generating linguistic choices (0.2%) rewriting (0.2%)
Cog	<b>attending to mechanics (5.8%)</b> interpreting ST-lexical (4.3%) interpreting ST-textual (2.8%)	<b>attending to mechanics (6.9%)</b> interpreting ST-lexical (2.5%) analyzing the choice (2.5)	<b>attending to mechanics (4.4%)</b> analyzing the choice (4.1%) interpreting ST-lexical (3.7%)
Met	identifying translation problems-lexical (7.7%) evaluating choices (4.9%)  identifying translation error-lexical (2.3%)	evaluating choices (7.7%)  identifying translation problems-lexical (3.4%) identifying translation error-lexical (2.8%)	evaluating choices (9.8%)  identifying translation problems-lexical (3.6%) evaluating product-lexical (3.4%)
Cop	N/A	compromising-textual (0.7%) compromising-lexical (0.2%) macro compromising (0.1%)	compromising-lexical (0.5%) compromising-textual (0.2%) Stylistic compromising (0.1%)
Com	checking online (15.3%) restructuring (4.6%) transforming sentences/phrases (3.0%)	checking online (10.9%) restructuring (5.6%) Substituting (5.4%)	restructuring (7.4%) checking online (5.9%) Substituting (5.8%)
Aff	N/A	showing motivation/attitude (1.0%) showing perseverance (0.6%) showing confidence (0.2%)	showing personal preference (0.7%) showing perseverance (0.5%) showing motivation/attitude (0.3%)

*Note.* “%” refers to percentage in relation to the group total. NT Group = Novice Translator Group; PaT Group = Paraprofessional Translator Group; PT Group = Professional Translator Group. App = Approach Strategies; Cog = Cognitive Strategies; Met = Metacognitive Strategies; Cop = Compromising Strategies; Com = Communication Strategies; Aff = Affective Strategies.

Table 22 shows that the top *approach* strategy for the NT, PaT, and PT groups was *applying searching skills*. The strategy of *applying searching skills* relates to applying different methods, such as using synonyms, antonyms, or other relevant expressions for online searching. For example:

Excerpt 25: “因为我要去查‘趣味’这个词的准确，我当时想到 fun，所以我想‘趣味索然’有没有，就反过来可以看到一些更多的词汇嘛，通过反义词、同义词、反义词。” (PaT2)

[Translation: “Because I needed to check whether the word for ‘趣味 *interest*’ is accurate, I thought of ‘fun’, and then ‘趣味索然 *dry as dust*’. [If you take it] the other way round, you can find more choices of words. It can be searched by antonyms and synonyms.”]

Participant PaT2 was searching for the English equivalent for the Chinese word “趣味 *interest*,” instead of checking it directly, she checked its extended relevant expression “趣味索然 *dry as dust*,” since it contains the targeted word “趣味 *interest*.”

*Generating linguistic choices*, the second most frequently used *approach* strategy, is an individual strategy that reveals the process of how a choice comes into being. For example,

Excerpt 26: “‘得力于’那个词，我当时有想‘due to’什么什么，那只是因为，没有得力的意思所以我想到了 leverage，leverage 这个词，可能我以前看那些 business 方面的文章翻译的时候，看的比较多的就是 leverage，我想借助于，得力于杠杆作用，对吧？” (PaT4)

[Translation: “As to the phrase ‘得力于 *owe something to*,” I did think of ‘due to’

something, which only means ‘because of’ but not ‘benefit from.’ So I thought of ‘leverage,’ which I might have seen very often when I read the translation of business documents before. I thought it was about benefiting from the effect of leverage, right?”]

In the above excerpt, participant PaT4 revealed his thinking process of how he came up with the word “leverage” and chose it over other possible alternatives.

The top *compromising* strategy for the PaT group was *compromising-textual* and for the PT group, it was *compromising-lexical*. *Compromising-lexical* or *-textual* is to abandon information at the lexical-level or phrase/sentence level to compromise and cope with something seemingly untranslatable in the ST.

Excerpt 27: “我就觉得‘不知老之将至’，我就只好放弃了。这个本身很难，然后再加上

那个，对于建立这个 idea 没有任何太大的帮助。” (PaT1)

[Translation: “I felt that ‘不知老之将至 *forget the approaching old age*’ ..., I had to give it up. It’s hard to translate; besides, it contributes nothing to the construction of the idea.”]

Participant PaT1 applied the textual-level *compromising* strategy to cope with the seemingly untranslatable Chinese phrase/sentence structure of “不知老之将至 *forget the approaching old age*,” since he believed that it was challenging to reproduce it in the TT and did not benefit the construction of the idea. Therefore, he abandoned it completely to compromise.

The top *affective* strategy for the PaT group was *showing motivation/attitude*, which has been exemplified in Excerpt 7, but for the PT group, it was *showing personal preference*, which

relates to showing one's personal preference in choosing one out of a few alternatives. For example,

Excerpt 28: “我挑了一个词，因为这个词（enlighten），我喜欢这个词。” (PaT3)

[Translation: “I chose the word ‘enlighten’, because I like this one.”]

Participant PaT3 selected the word “enlighten” out of other possible alternatives mainly because of her personal preference as she reported in her reflection.

### 5.3 Research Question 3

#### *What is the correlation between translators' strategy use and translation performance?*

##### 5.3.1 Correlational results

This section reports the correlations between LAM strategy use and translation performance for translators of different professional designations (Table 23).

Table 23

*Correlations between LAM Strategy Category-use Frequencies and Performance Scores  
(Overall and by Professional Designations)*

			Met	Cog	Com	Cop	App	Aff
Performance Scores	Overall	Correlation Coefficient	.420	.277	.274	.197	-.186	.191
		<i>Sig. (2-tailed)</i>	.065	.237	.242	.404	.433	.419
	NT Group ( <i>n</i> = 8)	Correlation Coefficient	.156	-.143	-.190	<i>N/A</i>	-.626	<i>N/A</i>
		<i>Sig. (2-tailed)</i>	.713	.736	.651	<i>N/A</i>	.097	<i>N/A</i>
	PaT Group ( <i>n</i> = 7)	Correlation Coefficient	.109	.487	-.090	.550	.108	.442
		<i>Sig. (2-tailed)</i>	.816	.268	.848	.200	.818	.320
PT Group ( <i>n</i> = 5)	Correlation Coefficient	-.100	-.600	.100	-.359	.100	.103	
	<i>Sig. (2-tailed)</i>	.873	.285	.873	.553	.873	.870	

*Note.* Spearman's *rho* test. *N* = 20. NT Group = Novice Translator Group; PaT Group = Paraprofessional Translator Group; PT Group = Professional Translator Group. Met = Metacognitive Strategies; Cog = Cognitive Strategies; Com = Communication Strategies; Cop = Compromising Strategies; App = Approach Strategies; Aff = Affective Strategies.

Table 23 shows that although not at a significant level, overall, all LAM strategy categories correlated positively with translators' performance scores, except for the category of

*approach* strategies. This finding suggests that translators who applied more *metacognitive*, *cognitive*, *communication*, *compromising*, and *affective* strategies or fewer *approach* strategies tended to yield better translation performance. By comparison, both the NT and PT groups showed more negative correlations than the PaT group did (see Section 4.3.3 for further discussion). The results showed that for both the NT and PaT groups, translators' performance scores positively correlated with the strategy-use frequencies of *metacognitive* strategies and negatively correlated with *communication* strategies. The results showed the opposite for the PT group in these two categories. In addition, for the PaT and PT groups, translators' performance scores positively correlated with the strategy-use frequencies of both *approach* and *affective* strategies, while translators' performance scores were negatively associated with the strategy-use frequencies of *approach* strategies for the NT group.

### 5.3.2 Correlational patterns

The possible reason for the overall negative correlation found between the strategy-use frequencies of *approach* strategies and translators' performance scores may be the use of the top individual *approach* strategy (i.e., *applying searching skills*). The application of *applying searching skills* may break down the translation process and undermine translators' performance since it indicates the lack of knowledge for use and it is time-consuming to apply certain skills to search online to solve translation problems. Therefore, the frequent use of *applying searching skills* may negatively affect translation performance.

For *metacognitive* strategies, with a further examination of the individual strategies used, the largest percentage difference among the NT, PaT, and PT groups was in the use of the individual strategy, *evaluating choices* (PT = 9.8%, PaT = 7.7%, NT = 4.9%). However, the difference does not explain why the use frequencies of *metacognitive* strategies correlated

positively with translators' performance scores for the NT and PaT groups but negatively for the PT group. What is more, the three groups showed no significant difference in the way they employed *evaluating choices*.

For *communication* strategies, both the NT and PaT groups showed higher percentages in the use of the individual strategy, *checking online*, while the PT group showed a higher percentage in the use of *restructuring*. While checking online, translators suspend the typing of the TT and search for solutions to the translation problems encountered. The more often translators pause for checking, the more breakdowns they may have in their translation processes (see Chapter 7 for further discussion on pauses). Therefore, the use of *checking online* may have negative effects on translators' performance. However, for the PT group, translators' attention is still focused on the production of the TT while *restructuring*. Thus the frequent use of *restructuring* in the PT group may contribute to the positive correlation between professional translators' performance and their use frequencies of *communication* strategies. For *approach* strategies, further examination of the top individual *approach* strategy, *applying searching skills* revealed no evidence for the opposite correlations among the NT, PaT, and PT groups.

Since all the correlations in Table 23 are not significant, all the above-discussed patterns need to be justified by future research with bigger sample sizes.

## 5.4 Results for the LP and HP Groups

### 5.4.1 Overall strategy use vis-à-vis groups

Next, details about LAM strategy use by the LP and HP groups are presented in Table 24. First, a two-sample Kolmogorov–Smirnov test was conducted and the results showed no significant differences: Aff ( $K-S Z = .809, p = .530$ ), App ( $K-S Z = .607, p = .855$ ), Cog ( $K-S Z =$

.966,  $p = .308$ ), Com ( $K-S Z = .764$ ,  $p = .604$ ), Cop ( $K-S Z = .405$ ,  $p = .997$ ), Met ( $K-S Z = .876$ ,  $p = .426$ ).

Table 24

*Frequencies, Averages, and Percentages of LAM Strategy Category Use for the LP and HP*

*Groups*

		Met	Cog	Com	Cop	App	Aff	Sum
LP	Frequency	415	387	445	8	32	9	1296
Group	Average	46.1	43.0	49.4	0.9	<u>3.6</u>	1.0	144.0
	% to Sum	<b>32.0</b>	<b>29.9</b>	34.3	0.6	<b>2.5</b>	0.7	100
HP	Frequency	671	646	767	16	29	39	2168
Group	Average	<u>61.0</u>	<u>58.7</u>	<u>69.7</u>	<u>1.5</u>	2.6	<u>3.5</u>	<u>197.1</u>
	% to Sum	31.0	29.8	<b>35.4</b>	<b>0.7</b>	1.3	<b>1.8</b>	100

*Note.*  $N = 20$ . LP Group = Low Performance Group; HP Group = High Performance Group. Met = Metacognitive Strategies; Cog = Cognitive Strategies; Com = Communication Strategies; Cop = Compromising Strategies; App = Approach Strategies; Aff = Affective Strategies.

The HP group showed higher averages of usage in *metacognitive*, *cognitive*, *communication*, *compromising*, and *affective* strategies, and overall. In addition, the differences in averages were quite large in some categories, with a difference of more than 15 counts in *metacognitive*, *cognitive*, and *communication* strategies, and a difference of more than 50 counts in the sum. The LP group had a higher average of usage in only one category, *approach* strategies.

By percentage, the LP group was higher in categories of *metacognitive*, *cognitive*, and *approach* strategies, while the HP group was higher in the other three LAM strategy categories, namely, *communication*, *compromising*, and *affective* strategies. By the ranking of LAM categories, the two groups differed in the rankings of *affective* and *approach* strategies; that is, the category of *affective* strategies ranked higher than the category of *approach* strategies for the HP group while it was the other way around for the LP group.

### 5.4.2 Top individual strategies vis-à-vis groups

The following table reports the top-five individual LAM strategies for both the LP and HP groups.

Table 25

#### *Top-five LAM Individual Strategies for the LP and HP Groups*

Group	Top-5 LAM Strategies	% in relation to Category Total	% in relation to Group Total
LP Group	Com: checking online	33.0%	11.3%
	Cog: attending to mechanics	21.7%	6.5%
	Met: evaluating choices	20.0%	6.4%
	Met: identifying translation problems-lexical	20.0%	6.4%
	Com: restructuring	15.7%	5.4%
HP Group	Com: checking online	28.4%	10.1%
	Met: evaluating choices	26.7%	8.3%
	Com: restructuring	17.6%	6.2%
	Com: substituting	15.4%	5.4%
	Cog: attending to mechanics	18.1%	5.4%

*Note.* LAM = Language Ability Model. LP Group = Low Performance Group; HP Group = High Performance Group. Com = Communication Strategies; Cog = Cognitive Strategies; Met = Metacognitive Strategies.

Although the individual communication strategy, *checking online*, ranked first for both the LP and HP groups, its percentage in relation to the group total was higher for the LP group than for the HP group (LP = 11.3%, HP = 10.1%). In addition, its percentage in proportion to the category total of communication strategies was also higher in the LP group than in the HP group (LP = 33.0%, HP = 28.4%). For the individual cognitive strategy, *attending to mechanics*, its percentage in relation to the category total was also higher in the LP group than in the HP group (LP = 21.7%, HP = 18.1%). For the LP group, both individual strategies, *identifying translation problems-lexical* and *evaluating choices* (metacognitive), ranked the same with percentages of 20.0% in relation to the category totals and 6.4% to the group totals.

Table 26 presents the top-three individual strategies within each LAM strategy category by performance levels.

Table 26

*Top-three Individual Strategies within Each LAM Strategy Category for the LP and HP Groups*

	LP Group	HP Group
App	<b>applying searching skills (1.5%)</b> generating linguistic choices (0.9%) distancing oneself (0.1%)	<b>applying searching skills (0.7%)</b> rewriting (0.3%) generating linguistic choices (0.1%)
Cog	<b>attending to mechanics (6.5%)</b> interpreting ST-lexical (3.1%) analyzing the choice (2.2%)	<b>attending to mechanics (5.4%)</b> interpreting ST-lexical (3.6%) analyzing the choice (2.9%)
Met	<b>evaluating choices (6.4%)</b> identifying translation problems-lexical (6.4%) identifying translation error-lexical (3.1%)	<b>evaluating choices (8.3%)</b> identifying translation problem-lexical (3.6%) evaluating product-lexical (2.9%)
Cop	compromising-textual (0.4%) compromising-lexical (0.2%) macro compromising (0.1%)	compromising-lexical (0.3%) compromising-textual (0.3%) stylistic compromising (0.1%)
Com	<b>checking online (11.3%)</b> restructuring (5.4%) substituting (3.6%)	<b>checking online (10.1%)</b> restructuring (6.2%) substituting (5.4%)
Aff	<b>showing motivation/attitude (0.4%)</b> showing perseverance (0.2%) showing personal preference (0.1%)	<b>showing motivation/attitude (0.6%)</b> showing perseverance (0.5%) linking to personal experience (0.4%)

*Note.* “%” refers to the percentage in relation to the group total. LP Group = Low Performance Group; HP Group = High Performance Group. App = Approach Strategies; Cog = Cognitive Strategies; Met = Metacognitive Strategies; Cop = Compromising Strategies; Com = Communication Strategies; Aff = Affective Strategies.

Both the LP and HP groups shared the same top individual strategy in *approach*, *cognitive*, *metacognitive*, *communication*, and *affective* strategy categories but with different percentages in relation to their group totals. For the LP group, both *identifying translation problems-lexical* and *evaluating choices* ranked first within the category of *metacognitive* strategies. The top *compromising* strategy was *compromising-textual* for the LP group but *compromising-lexical* for the HP group.

### 5.4.3 Correlations by performance levels

#### 5.4.3.1 Correlational results

This section reports the correlations between participants' LAM strategy category-use frequencies and performance scores by performance levels (Table 27). The correlations between overall strategy-use frequencies and performance scores by performance levels, as shown in Table 16, were positive for both the LP and HP groups, though they were not significant.

Table 27

*Correlations between LAM Strategy Category-use Frequencies and Performance Scores by Performance Levels*

			Met	Cog	Com	Cop	App	Aff
Performance Scores	LP Group ( <i>n</i> = 9)	Correlation Coefficient	.245	.160	-.294	.583	.068	.598
		Sig. (2-tailed)	.526	.682	.442	.100	.862	.089
	HP Group ( <i>n</i> = 11)	Correlation Coefficient	.183	-.146	.138	-.145	.216	.131
		Sig. (2-tailed)	.590	.667	.686	.671	.524	.700

*Note.* Spearman's *rho* test, *N* = 20. LP Group = Low Performance Translators; HP Group = High Performance Translators. Met = Metacognitive Strategies; Cog = Cognitive Strategies; Com = Communication Strategies; Cop = Compromising Strategies; App = Approach Strategies; Aff = Affective Strategies.

As shown in Table 27, there were no significant correlations. For the LP group, all LAM strategy categories positively correlated with performance scores except for the *communication* category. For the HP group, performance scores positively correlated with the categories of *metacognitive*, *communication*, *approach*, and *affective* strategies but negatively correlated with *cognitive* and *compromising* categories. The correlation results for the LP and HP groups were opposite in the categories of *cognitive*, *communication*, and *compromising* strategies.

#### 5.4.3.2 Negative correlations

For *cognitive* strategies, a possible reason for the negative correlation shown in the HP group but positive correlation in the LP group is the use of the top individual strategy, *attending*

*to mechanics*. As discussed in Section 4.4.3.1, the LP showed higher percentage in the use of *attending to mechanics*. Translators of the lower performance level were more often troubled by mechanical problems as revealed by LP group's higher percentage in the strategy use of *identifying translation problems-lexical*. Therefore, the more often they attended to mechanics, the more they may have been able to solve the translation problems and hence display better translation performance. For translators of the higher performance level, their knowledge about mechanics is supposed to be internalized and should be automatically activated and applied in the translation process. Thus, for high performers, the frequent conscious use of *attending to mechanics* may not promote but undermine their performance.

For *communication* strategies, the correlation between the strategy use frequency of the *communication* category and performance scores was positive overall, but it was negative for the LP group. The negative correlations may be caused by the high percentage of the individual *communication* strategy, *checking online*. *Checking online* was the top *approach* strategy for the LP and HP groups; its percentage of usage was higher for the LP group than for the HP groups (LP = 11.3%, HP = 10.1%). Presumably, when translators of lower performance level tended to check online more often, their translation processes were broken down more often and hence their performance would be more often undermined.

For *compromising* strategies, the top individual strategy was *compromising-textual* for the LP group but *compromising-lexical* for the HP group, though there were small percentage differences. In terms of translation process management, particularly time management, translators of lower performance scores abandoned what they were unable to translate, and this may save time to concentrate on what they were more competent to deal with. Therefore, the use of *compromising* strategies did positively affect their translation performance. To translators of a

higher performance level, they are supposed to be capable of producing fully functional drafts. Any compromise, even a compromise at the lexical-level, would impair the quality of their performance. This may be the reason for the negative correlation between strategy-use frequencies of compromising strategies and performance scores for the HP group.

## **5.5 Strategy Use vis-à-vis Category**

Based on the ranking of the LAM strategy categories and the differences in percentage in relation to the group total, the following section presents results and discussions about some LAM strategy categories. For example, it discusses the top three LAM strategy categories for all participant groups, namely, *communication*, *metacognitive*, and *cognitive* strategies.

### **5.5.1 Communication and metacognitive strategies**

Although the category of *cognitive* strategies had the greatest variety in individual strategies, in actual application, the category of *communication* (roughly 35% for each professional group or group of different performance level) represented the highest category percentage in relation to all individual strategies used. This is similar to findings in LLS research (e.g., Huang, 2013; Swain et al., 2009), which suggest that *metacognitive* and *communication* strategies are the top-two strategy categories. As for the definitions of *metacognitive* and *communication* strategies in the present study and LLS studies (e.g., Huang, 2010, 2013; Swain et al., 2009), *metacognitive* strategies are used for planning, monitoring, identifying, and evaluating the learning or translation process. *Communication* strategies are used for solving a linguistic or translation problem to reach a communicative goal. It is reasonable that language learners may be more aware of organizing and planning efficient ways of learning and using the TL than translators, but for translators they would be more involved in confronting and solving

translation problems in the translation process than language learners. Therefore, translators tended to apply *communication* strategies more often than *metacognitive* strategies.

As for the percentages of *metacognitive* strategy use in relation to the group total, there was little difference either between the LP and HP groups (LP = 32.0%, HP = 31.0%) or among the NT, PaT, and PT groups (NT = 31.2%, PaT = 31.4%, PT = 31.5%).

### 5.5.2 Cognitive strategies

Within the LAM, the category of *cognitive* strategies had the greatest variety (36 individual strategies). As Oxford (1990, 2011) pointed out, for language learners, typically *cognitive* strategies are the most frequently employed strategies. Oxford and Burry-Stock (1995) explained that according to research on LLS, *cognitive* strategies demonstrated the greatest variety. *Cognitive* strategies require learners to analyze, synthesize, and transform information for deep processing (Oxford & Burry-Stock, 1995). These features of *cognitive* strategies are transferrable to translation strategies since, as previously mentioned, translation is a higher level of language use, and translation strategies naturally share some commonalities with LLS. In the present study, *cognitive* strategies were used to manipulate both the SL and TL for understanding an ST, transferring messages in an ST, and reproducing the message in a TT. Typical *cognitive* processes in translating include anticipating, attending, activating, and analyzing.

The results showed that there was a positive correlation between the strategy-use frequencies of *cognitive* strategies and translators' performance scores. This is consistent with the findings in studies of LLS that there are positive associations between the proficiency level and the use of certain types of language use strategies, such as *metacognitive*, *compensation*, *social-affective*, and as well as *cognitive* strategies (e.g., Nakatani, 2006; Oxford & Ehrman, 1995).

### 5.5.3 Affective and compromising strategies

As reported, the percentage of *affective* strategy use was higher in the HP group than the LP group, and higher in both the PaT and PT groups, but not in the NT group. As for the absence of *compromising* and *affective* categories for the NT group, it may be because novice translators were not even aware of any compromise they had made or any affect involved in the translation process. The category of *affective* strategies positively correlated with performance scores overall, by professional designations, and by performance levels. This is in line with findings regarding the *social-affective* strategy in LLS studies (Nakatani, 2006). Although overall the *compromising* category positively correlated with performance scores, by group, it negatively correlated with performance scores for the PT and HP groups. This may be because compromising as a way of giving up is more destructive to the translation performance for translators of higher professional designations or the high performance level.

## 5.6 Strategy Use vis-à-vis Individual Strategy

This section reports and discusses results regarding some individual strategies, based on the ranking and the differences in percentage in relation to the group total and the presence of any notable findings.

### 5.6.1 Applying searching skills

The strategy of *applying searching skills* relates to applying different methods for searching, as exemplified in Excerpt 25 for an illustration of this strategy use.

Excerpt 25: “因为我要去查‘趣味’这个词的准确，我当时想到 fun，所以我想‘趣味索然’有没有，就反过来可以看到一些更多的词汇嘛，通过反义词、同义词、反义词。” (PaT2)

[Translation: “Because I needed to check whether the word for ‘趣味 *interest*’ is accurate, I thought of ‘fun’, and then ‘趣味索然 *dry as dust*’. [If you take it] the other way round, you can find more choices of words. It can be done by antonyms, and synonyms.”]

Participant PaT2 reported how she had searched for the English equivalent of “趣味 *interest*”, instead of checking it directly. Rather, she associated it with to her linguistic knowledge about its synonyms and antonyms and then checked them using online dictionaries.

The percentage of usage of *applying searching skills* in relation to the category total shows a similar pattern to the category percentage; that is, it was higher for the LP than for the HP (LP = 62.50%, HP = 55.17%), and higher for the NT and PaT groups than for the PT group (NT = 56.67%, PaT = 66.67%, PT = 53.85%). This suggests that translators of lower professional designations or the low performance level tended to apply searching tools and check online more often. They also tended to apply searching skills more frequently. The strategy of *applying searching skills* is an approach to solve translation problems by turning to online dictionaries or resources. Like the strategy of *checking online*, it is also a strategy for an object-regulated translation style.

### 5.6.2 Interpreting ST-lexical

The *cognitive* strategy, *interpreting ST-lexical*, is to figure out the message of the ST at the lexical-level. For example,

Excerpt 29: “但那个‘后生’呢、 、 、 、 、 、 So, it may not be ‘younger students’, it could

be just older than the teacher himself and may not be the next generation either.”

(PT1)

[Translation: “As to the word ‘后生 *young people*’...So, it may not be ‘younger Students,’ it could be just older than the teacher himself and may not be the next generation either.”]

Participant PT1 was trying to understand the Chinese lexical term “后生 *young people*” and exclude other possible misunderstandings of its meaning.

The percentage of usage of *interpreting ST-lexical* in relation to the group total was higher for the NT group than for the PaT and PT groups (NT = 4.3%, PaT = 2.5%, PT = 3.7%), and higher for the HP group than for the LP group (HP = 3.6%; LP = 3.1%). It showed no clear tendency among the groups of different professional designations, but for groups of different performance levels, the HP group showed a higher percentage than the LP group did. This may be because translators of the higher performance level were more concerned about grasping the subtleties of the lexical terms in the ST. Translators of the lower performance level, on the contrary, were not motivated to dig deeper into challenging terms. Another reason is that the ST itself contains some quite challenging lexical terms for interpretation. Some frequently reported challenging terms include: “后生 *young people*,” “废寝忘食 *forgetting sleep and meals*,” and “涉笔成趣 *artistic appeal reached by a touch of pen*.” This was revealed by the observation that the NT group had checked more words or expressions in Chinese (i.e., the SL). For translators from the high performance group, their higher percentage of using *interpreting ST-lexical* was more related to grasping the subtleties of the lexical terms.

### 5.6.3 Evaluating product-lexical

The *metacognitive* strategy, *evaluating product-lexical*, relates to evaluating translation product at the lexical-level. For example,

Excerpt 30: “我后面把 no credit , 因为我注意到‘一大部分’ , 我又改了 , 改成 less。所以

no credit 就全否定了 , 这是说‘一大部分’。” (PaT2)

[Translation: “Later on, I changed ‘no credit’ as well because I noticed ‘一大部分 *a great part of*’ (in the ST). I changed ‘no credit’ into ‘less.’ ‘No credit’ is complete negation while the ST is ‘一大部分 *a great part of*.’”]

Participant PaT2 first identified a lexical error in her translation, and then evaluated and explained why her first choice was not equivalent.

The percentage of usage of *evaluating product-lexical* in relation to the group total was higher for the PT group than for the PaT and NT groups (PT = 3.4%, PaT = 2.6%, NT = 1.8%), and higher for the HP group than for the LP group (HP = 2.9%, LP = 2.1%). A further examination of the usage percentage of *evaluating product-textual* showed the same pattern for groups of different performance levels. These findings indicate that translators of higher professional designations or the high performance level evaluated their translation product more often, especially their translation product at the lexical-level. This finding is consistent with findings in TS that the self-monitoring skill is very strong among expert translators (Jääskeläinen, 2010). Usually, an evaluative comment is a reflection of a translator’s self-monitoring skills. Translators of higher professional designations or the high performance level were more concerned about the nuances of the lexical terms of their translation products. This

also supports the finding about the overall higher usage percentage of lexical-level *bilingual* strategies for translators of higher professional designations, as discussed in Section 4.2.2.1.

#### **5.6.4 Identifying translation errors-lexical**

The *metacognitive* strategy, *identifying translation errors-lexical*, is identifying errors made in translation at the lexical-level, as illustrated in Excerpt 31.

Excerpt 31: “He could effortless evoke artistic appeal.” → “He could effortlessly evoke artistic appeal.” (PT4)

As this excerpt from the observed data shows, Participant PT4 spotted an error in his translation at the lexical-level, that is, the adjective “effortless,” and changed it into its adverb form, “effortlessly.” This is a typical usage of the strategy *identifying translation errors-lexical* for participants.

The percentage of usage of *identifying translation errors-lexical* in relation to the group total was higher for both the PaT and NT groups than for the PT group (PaT = 2.8%, NT = 2.3%, PT = 1.5%), and higher for the LP group than for the HP group (LP = 3.1%, HP = 1.7%). A further examination of the percentage of *identifying translation errors-textual* showed the same pattern. The percentage differences indicate that translators of lower professional designations or the low performance level tended to identify lexical/textual translation errors more often. This is possibly because translators of higher professional designations or the high performance level yielded fewer errors in their drafts, and hence they did not identify translation errors as often as translators of lower professional designations or the low performance level did.

#### **5.6.5 Compromising-lexical**

The usage percentage of *compromising-lexical* in relation to the category total was higher for the PT group than for the PaT group (PT = 66.67%, PaT = 20.00%). The NT group did not

use the *compromising-lexical* strategy. The percentage was higher for the HP group than for the LP group (HP = 43.75%, LP = 25.00%). However, opposite to the usage percentage of *compromising-lexical*, the usage percentage of *compromising-textual* in relation to the category total was higher for the PaT group than the PT group (PaT = 60.00%, PT = 22.22%), and higher for the LP group than for the HP group (LP = 62.50%, HP = 37.50%). These findings suggest that translators of higher professional designations or the high performance level tended to compromise more at the lexical-level rather than the textual-level. As defined for the present study, *compromising* strategies are applied to solve seemingly untranslatable problems by compromising to achieve a less equivalent translation. Naturally, using a less desirable choice can undermine the quality of the translation, and compromising a bigger textual unit can exert a deeper impact on translation than compromising a smaller lexical unit.

### 5.6.6 Generating linguistic choices

An interesting point is that the *approach* strategy, *generating linguistic choices*, reveals the process of how a choice comes into being, as illustrated in Excerpt 32:

Excerpt 32: “因为这个原文，学问要收获，收获是 reap fruits，right? So, the same, reap

fruits, results, 成果。” (PT1)

[Translation: “Because in the ST, ‘学问要收获 *knowledge achieve results*,’

‘收获 *reap*’ is to reap fruits, right? So, the same, reap fruits, results, ‘成果’.”]

Participant PT1 explained how he came up with the phrase “achieve results” because he believed that “收获 *reap*” was to reap fruits and then “results” was as a figurative meaning of “fruits.”

Therefore, he chose the collocation of “achieve results.”

The percentage of usage of *generating linguistic choices* in relation to the group total was higher for both the NT and PaT groups than for the PT group (NT = 0.5%, PaT = 0.5%, PT = 0.2%), and higher for the LP group than for the HP group (LP = 0.9%, HP = 0.1%). The finding that translators of higher professional designations or the high performance level did not reveal the process of generating linguistic choices in their reflections very often may be because this process has been highly automatic for them. Automaticity, as a character of proficiency (Segalowitz & Hulstijn, 2005), should be higher among the PT and HP groups, since they are of higher proficiency levels based on their performance.

### **5.7 Summary**

In this chapter, by applying the LAM, results related to the first three research questions were reported first for the NT, PaT, and PT groups, and then for the LP and HP groups. The category of *cognitive* strategies showed the greatest variety of individual strategies, but the category of *communication* strategies was the top LAM strategy category being used by all participants. There was no significant correlation between LAM strategy category-use and translation performance, but all LAM strategy categories were positively associated with each other.

### **5.8 Comparison of Results from the TCM and LAM**

The final section provides a comparison of the findings for translators of different professional designations and performance levels analyzed using the TCM and LAM. Table 28 summarizes the comparison of the results by category.

Table 28

*Comparison between TCM and LAM Strategy Categories*

TCM	LAM
MS (14)	Met (5), Cog (2), Com (2), App (4), Cop (1)
PS (9)	Cog (7), Com (2)
BLS (58)	Cog (22), Cop (3), Com (18), Met (14), App (1)
ELS (5)	Cog (4), Com (1)
IS (4)	Com (1), App (1), Met (1), Cog (1)
PPS (7)	Met (1), Aff (6)

*Note.* Numbers in brackets show the number of individual strategies for the corresponding categories. TCM = Translation Competence Model; LAM = Language Ability Model. MS = Macro Strategies; PS = Professional Strategies; BLS = Bilingual Strategies; ELS = Extralinguistic Strategies; IS = Instrumental Strategies; PPS = Psycho-physiological Strategies. Met = Metacognitive Strategies; Cog = Cognitive Strategies; Com = Communication Strategies; Cop = Compromising Strategies; App = Approach Strategies; Aff = Affective Strategies.

As Table 28 shows, most *psycho-physiological* strategies in the TCM were identified as *affective* strategies in the LAM, most *extralinguistic* strategies were *cognitive*, most *bilingual* strategies were *cognitive*, *communication*, or *metacognitive* strategies, most *professional* strategies were *cognitive* ones, and most *macro* strategies were either *metacognitive* or *approach* strategies.

Briefly, in Chapters 4 and 5, results were reported by the TCM or LAM first, and then, within each model, the results were presented by groups. To further compare the results, this section synthesizes and compares the results first by groups, and then by models (see Figures 9, 10, 11, and 12 for side-by-side comparisons).

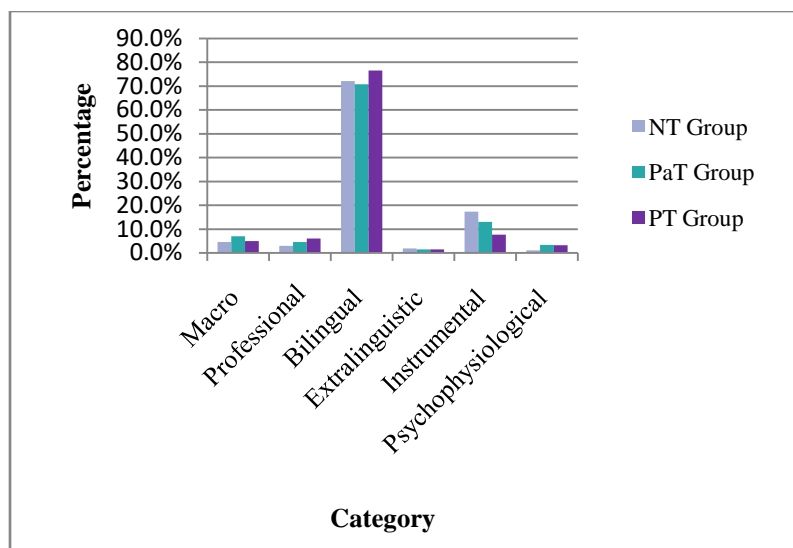


Figure 9. TCM strategy categories for the NT, PaT, and PT groups.

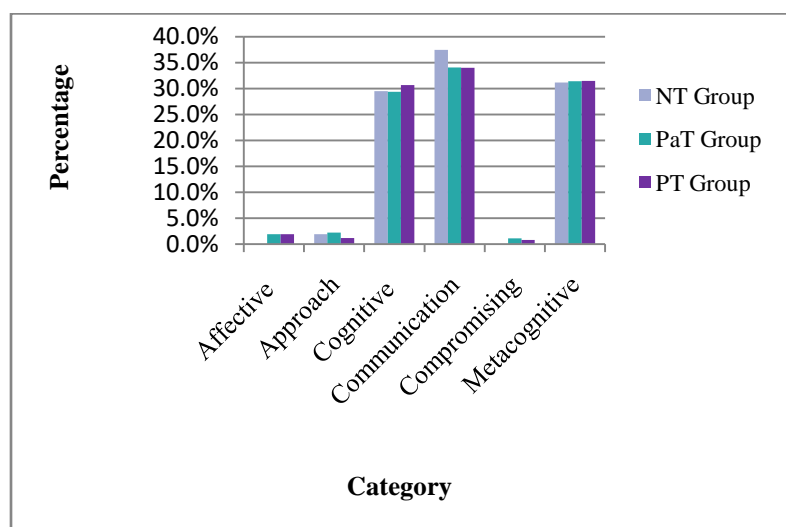


Figure 10. LAM strategy categories for the NT, PaT, and PT groups.

The most noticeable point revealed in Figures 9 and 10 was that, within the TCM, the percentage difference was rather large between *bilingual* strategies and the other five categories; within the LAM, the largest three categories were *cognitive*, *communication*, and *metacognitive* strategies. The NT group showed higher percentages of usage in *instrumental* and *extralinguistic* (TCM) strategies, and *communication* (LAM) strategies. Moreover, no application of *affective* and *compromising* (LAM) strategies by the NT group was indicated. Both the PaT and PT

groups had higher percentages of usage in *professional* and *psycho-physiological* (TCM) strategies, and *affective* and *compromising* (LAM) strategies.

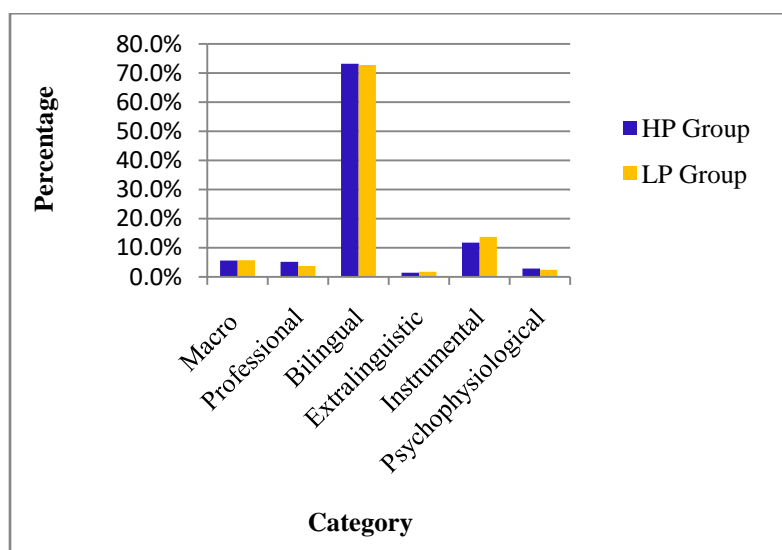


Figure 11. TCM strategy categories for the LP and HP groups.

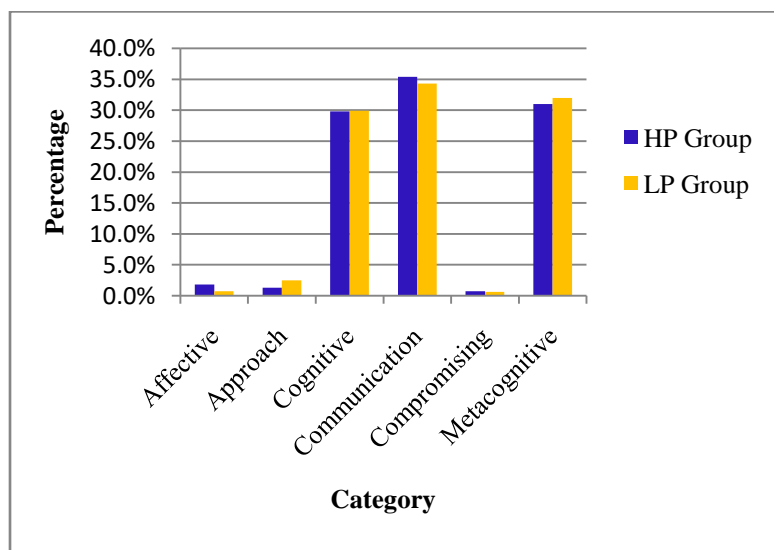


Figure 12. LAM strategy categories for the LP and HP groups.

By performance levels, like the NT, PaT, and PT groups, for both the LP and HP groups, the category of *bilingual* strategies represented the highest percentage within the TCM. The three categories of *cognitive*, *communication*, and *metacognitive* were the dominant strategy categories within the LAM. The HP group showed higher percentages mainly in *professional* and *psycho-*

*physiological* (TCM) strategies, and *affective* and *communication* (LAM) strategies, while the LP group was higher mainly in the *instrumental* (TCM) and *approach* (LAM) strategies.

By applying the two models from both the fields of TS and studies of LLS, the strategy use data elicited in this study were triangulated and cross-checked. Furthermore, the application of the LAM enabled the detection of the negative correlation between translators' performance scores and the use of *approach* strategies. It also revealed the noteworthy use of *communication*, *metacognitive*, and *cognitive* strategies in the translation process. In addition, the comparison highlighted the use of some individual strategies among groups. For example, translators of higher professional designations or at a higher performance level compromised and evaluated their translation products more often at the lexical-level; whereas, translators of lower professional designations or at a lower performance level tended to identify translation errors more often.

Similarly, the application of the TCM made it possible to identify *bilingual* strategies as the largest and the most frequently used category. Although it has been taken for granted that bilingual competence is the major component of the overall translation competence, the present study provided further evidence of translators' strategy use in the bilingual strategy domain. Furthermore, the negative correlation between performance scores and the use of *instrumental* strategies were identified when data were analyzed using the TCM. The study also identified the use of the *psycho-physiological* individual strategy, *evaluating one's ability*, and its consistency in usage across the three professional groups in relation to Howell's (1980) four stages of competence acquisition.

## CHAPTER SIX - RESEARCH QUESTION 4 AND DISCUSSION

This chapter addresses research question 4 by reporting the results regarding participants' pauses during the translation process and discussing the major features of pause by professional designations and performance levels, with the purpose of revealing any existing relationship between pauses and translation performance.

### **Research Question 4**

*Do translators of different professional designations pause differently during translation processes? Is there any relationship between pauses and translation performance?*

#### **6.1 Major Pause Features**

For the assessment of translators' performances, fluency in text production needs to be considered. Writers' pausing (Miller, 2000) and the length of produced texts between pauses (Latif, 2009) have been taken as writing fluency measures. In TS, pause, which has been taken as a marker for the beginning and end of a TU by Alves and Vale (2011), may be "for planning, searching for a translation alternative, an assessment of the previous production or the beginning of a new reading phase" (p. 107). As reviewed in Chapter 2, scholars such as Krings (1986) and Dragsted (2012) claimed that longer pauses indicated the presence of translation problems, which in turn signalled the activation and use of translation strategies. Therefore, the analysis of pauses in the translation process provides another perspective of translators' strategy use.

Translation, as a specific type of writing, shows divergent process from monolingual writing. That is, smaller syntactic units require more cognitive processing than larger ones. That is because translators do not need to create the structure or content of the text but need to keep the idea from the ST and express it in the TT (Dragsted, 2012; Immonen & Mäkisalo, 2010).

For the present study, only the major pause features are examined instead of the overall fluency of participants' translation performance since the aim of traditional pause analysis is to find out the "cognitive rhythm" or any systematic relationship between pause location, pause frequency, and pause duration (Schilperoord, 1996, 2002). Due to space and time limitations, the present study mainly analyzed the relationship between pause frequency, pause duration, time allocation, and percentage of time allocation vis-à-vis translators' performance, first for the NT, PaT, and PT groups, then for the LP and HP groups.

As mentioned in Chapter 3, the present analysis followed Jakobsen's (2002) three-phase division to zoom in on the translation process and offer more detailed analysis. The three phases are orientation, drafting, and revising. Orientation starts from the moment when the translator sees the ST displayed in the Translog window for the first time to first keystroke for the TT production. In the orientation phase, mostly, there is only one longer pause because translators are mainly engaged in the comprehension of the ST and some cognitive preparation for the incoming TT production (Jakobsen, 2002). Drafting begins with the first keystroke to the typing of the last punctuation mark in the first TT version. Revising starts immediately after the drafting phase and ends when the translator considers his/her translation to be complete and ready for his/her client. The four pause features, namely, pause frequency, pause duration, time allocation, and percentages of time allocation, are reported and discussed overall and at the three phases.

The revising phase in the present study is about self-revision, which is "a detailed comparative examination of the translated [text] with the respective [ST] in order to verify that the [sense] is the same in both texts and to improve the quality of the [TT]" (Delisle, Lee-Jahnke, & Cormier, 1999, p. 175). In *Translation Services: Service Requirements* issued by *European Committee for Standardization* (2006), the process of revising in translation was called

“checking,” which is what translators conduct right after their completion of the initial translation to check for omissions, errors, and whether the intended meaning has been conveyed, to ensure the specific requirements have been met, and to then make necessary amendments.

In addition, as summarized by Shih (2006), revision does not necessarily occur only in a separate phase, since translators may go back to the previously translated text at any time during the translation process, and try to revise it. This type of revision at the drafting phase was referred to as online revision by scholars such as Jakobsen (2002, 2005). In addition, revision should be seen as “an on-going process of assessing the text-produced-so-far” (Shih, 2006, p. 309). Though confusion still exists in the concept of “revision” in TS, the revising phase in the present study refers to the revising process that follows the completion of the first TT version.

## 6.2 Pauses for the NT, PaT, and PT Groups

### 6.2.1 Pause frequencies

Table 29 presents the descriptive statistics of pause frequencies for the three groups in the drafting phase, revising phase, and for the entire translation task. As explained above, since there is only one longer pause in the orientation phase, the provision of descriptive statistics for the pause frequency in this phase is not necessary.

Table 29

*Descriptive Statistics for Pause Frequencies by the NT, PaT, and PT Groups*

Participants	<i>n</i>	Pause Frequency	Min	Max	Range	<i>M</i>	<i>SD</i>	Sum
NT Group	8	Drafting	61	86	25	<b>73</b>	8.4	583
		Revising	1	10	9	<b>7</b>	3.0	55
		Total	71	95	24	<b>80</b>	8.5	638
PaT Group	7	Drafting	38	113	75	<b>82</b>	27.3	572
		Revising	0	39	39	<b>18</b>	15.5	123
		Total	43	132	89	<b>99</b>	27.6	695
PT Group	5	Drafting	8	94	86	<b>60</b>	35.3	298
		Revising	12	57	45	<b>29</b>	19.2	143
		Total	65	108	43	<b>88</b>	18.9	441

*Note.*  $N = 20$ . NT Group = Novice Translator Group; PaT Group = Paraprofessional Translator Group; PT Group = Professional Translator Group.

Based on the normality test results provided in Chapter 3, a one-way ANOVA test was performed for the normally distributed pause frequencies in the drafting phase and the entire translation task. The results showed that there was no significant difference either in the drafting phase ( $F(2, 17) = 1.217, p = .321$ ), or in the entire translation task ( $F(2,17) = 1.870, p = .184$ ). For the non-normally distributed pause frequencies in the revising phase, a Kruskal-Wallis test revealed a significant difference among the three groups in pause frequencies in the revising phase ( $\chi^2(2) = 8.670, p = .013$ ).

Regarding the mean pause frequency, the PaT group had the largest pause frequency in total, followed by the PT group, and then the NT group (PaT:  $M = 99, SD = 27.6$ ; PT:  $M = 88, SD = 18.9$ ; NT:  $M = 80, SD = 8.5$ ). The PaT group also had the largest mean pause frequency in the “Drafting” phase, followed by the NT group and the PT group (PaT:  $M = 82, SD = 27.3$ ; NT:  $M = 73, SD = 8.4$ ; PT:  $M = 60, SD = 35.3$ ). In the “Revising” phase, the PT group paused the most frequently, followed by the PaT group and then the NT group (PT:  $M = 29, SD = 19.2$ ; PaT:  $M = 18, SD = 15.5$ ; NT:  $M = 7, SD = 3.0$ ). Table 29 shows a clear tendency that the more professional translators paused more often for revising drafts, and the difference among the three professional groups was significant. Furthermore, professional translators paused least in the drafting phase; novice translator paused least in total, and paraprofessional translators paused the most overall.

Thus far, in the area of writing research, Poll, Ljung, Odelius, and Sörqvist’s study (2014) revealed a negative correlation between pause frequency and monolingual writing fluency at a statistically significant level. Based on the significant difference in pause frequency in the revising phase among the three professional groups, one possible assumption about pause

frequency is that pause frequency in the revising phase is correlated with professional level and maybe with performance level as well.

### 6.2.2 Pause durations

In this section, the duration of pause in seconds overall for the translation task and at the translation process's three phases are reported and discussed.

Table 30

#### *Descriptive Statistics for Pause Durations by the NT, PaT, and PT Groups*

Participants	<i>n</i>	Pause Duration	Min	Max	Range	<i>M</i>	<i>SD</i>	Sum
NT Group	8	Orientation	≤5	69	69	<b>21</b>	25.4	170
		Drafting	1241	3034	1793	<b>2094</b>	610.9	16754
		Revising	127	545	418	<b>265</b>	156.5	2116
		Total	1573	3198	1625	<b>2380</b>	573.1	19039
PaT Group	7	Orientation	≤5	459	459	<b>296</b>	174.6	2072
		Drafting	579	2890	2311	<b>1527</b>	709.7	10691
		Revising	≤5	1194	1194	<b>404</b>	449.1	3660
		Total	1279	3238	1979	<b>2346</b>	653.5	16422
PT Group	5	Orientation	6	144	138	<b>54</b>	62.7	268
		Drafting	94	2265	2171	<b>1089</b>	826.4	5446
		Revising	242	2230	1988	<b>876</b>	798.0	4379
		Total	1627	2859	1231	<b>2019</b>	559.1	10093

*Note.* *N* = 20. NT Group = Novice Translator Group; PaT Group = Paraprofessional Translator Group; PT Group = Professional Translator Group. ≤ 5 means the pause duration is shorter than or equal to 5 seconds.

A one-way ANOVA test was calculated for the normally distributed pause durations in the drafting phase and for the entire translation task. The results indicated that there was no significant difference for pause durations either in the drafting phase ( $F(2, 17) = 3.308, p = .061$ ), or for the entire translation task ( $F(2, 17) = .629, p = .545$ ). For the non-normally distributed pause duration in the orientation and revising phases, a non-parametric Kruskal-Wallis test was conducted and the test results showed that there was a significant difference in the orientation phase ( $\chi^2(2) = 7.315, p = .026$ ), with a mean rank pause duration of 7.13 seconds for the NT group, 15.21 seconds for the PaT group, and 9.30 seconds for the PT group. The PaT group

tended to pause longer in the orientation phase than the other two groups did. However, there was no significant difference in pause durations in the revising phase ( $\chi^2(2) = 4.225, p = .121$ ), with a mean rank pause duration of 7.50 seconds for the NT group, 11.21 seconds for the PaT group, and 14.30 seconds for the PT group.

As for the mean pause duration, for both the “Drafting” (NT:  $M = 2,094, SD = 610.9$ ; PaT:  $M = 1,527, SD = 709.7$ ; PT:  $M = 1,089, SD = 826.4$ ) and “Total” (NT:  $M = 2,380, SD = 573.1$ ; PaT:  $M = 2,346, SD = 653.5$ ; PT:  $M = 2,019, SD = 559.1$ ), the NT group had the longest, followed by the PaT group, and then the PT group. A very intriguing finding was that, in the “Revising” phase, the PT group not only had the longest pause duration, but it was more than three times that of the pause duration for the NT group, the shortest among the three participant groups, and more than twice of that for the PaT group (PT:  $M = 876, SD = 156.5$ ; PaT:  $M = 404, SD = 449.1$ ; NT:  $M = 265, SD = 798.0$ ). The results for pause duration showed that novice translators paused the longest but professional translators paused the shortest in the “Drafting” phase and for the entire translation task, while professional translators paused the longest, but novice translators paused the shortest in the “Revising” phase. The duration of pauses revealed valuable information about the cognitive processes of a translator (Schilperoord, 1996). To date, studies on pause duration focused more on the relationship between pause duration and pause location (e.g., Immonen, 2006; Immonen & Mäkisalo, 2010; Schilperoord, 1996). This study shows the relationship between pause duration and pause frequencies in different phases and translators’ performance scores.

### **6.2.3 Time allocations**

Time spent for the entire translation task was allocated in three phases: “Orientation,” which is for reading the ST and getting ready for typing the first TT, “Drafting,” which is

producing the first draft, and “Revising,” which is revising the first and following drafts. “Total” in Table 31 refers to the sum of time allocation to “Orientation,” “Drafting,” and “Revising,” namely, the total time spent for completing the entire translation task.

Table 31

*Descriptive Statistics for Time Allocations by the NT, PaT, and PT Groups*

Participants	<i>n</i>	Time Allocation	Min	Max	Range	<i>M</i>	<i>SD</i>	Sum
NT Group	8	Orientation	≤5	69	69	<b>21</b>	23.7	191
		Drafting	2180	3913	1733	<b>3029</b>	668.0	24232
		Revising	115	565	450	<b>309</b>	157.0	2473
		Total	2320	4109	1789	<b>3359</b>	665.5	26874
PaT Group	7	Orientation	≤5	459	459	<b>296</b>	174.6	2072
		Drafting	568	3517	2949	<b>2150</b>	949.8	15051
		Revising	≤5	2958	2958	<b>824</b>	1026.0	5767
		Total	2329	3885	1556	<b>3275</b>	505.1	22924
PT Group	5	Orientation	6	144	138	<b>54</b>	62.7	268
		Drafting	590	2989	2399	<b>1967</b>	1007.0	9833
		Revising	474	2845	2371	<b>1112</b>	1006.0	5559
		Total	2485	3510	1025	<b>3132</b>	483.3	15660

*Note.* *N* = 20. The time unit is second. NT Group = Novice Translator Group; PaT Group = Paraprofessional Translator Group; PT Group = Professional Translator Group. ≤ 5 means the pause duration is shorter than or equal to 5 seconds.

A non-parametric Kruskal-Wallis test was performed for the non-normally distributed time for the orientation and revising phases. The results showed that there was a significant difference in time allocated to orientation ( $\chi^2(2) = 7.315, p = .026$ ), but not for revising ( $\chi^2(2) = 5.663, p = .059$ ). For the normally distributed time in the drafting phase and for the entire translation task, a one-way ANOVA test showed that there was no significant difference in time allocated to drafting ( $F(2, 17) = 3.023, p = .075$ ), nor to the entire translation task ( $F(2, 17) = .243, p = .787$ ).

For the average time allocated to “Orientation,” the PaT group showed the longest, compared to the shortest for the NT group and the second longest for the PT group (PaT: *M* = 296, *SD* = 174.6; PT: *M* = 54, *SD* = 62.7; NT: *M* = 21, *SD* = 23.7). Except for PaT3 who spent

almost no time (less than 5 seconds) before typing her translation, the average time spent by the other six paraprofessional translators was 345 seconds before typing their TTs. Based on the post-task reflections, five out of the above seven paraprofessional translators reported they scanned the ST before they actually started translating. Participants NT4, NT5, and NT7 spent less than 5 seconds before typing as well. Even though the ST was a short paragraph (326 Chinese characters), an average of 21 seconds for the NT group would not be enough to read through the whole ST. This shows that student translators might not follow translation teachers' instruction that it would be better to read through the entire ST and have an overall understanding of it before initiating the translation of the ST. The same phenomenon was reported by Jakobsen (2002). Another large difference is that paraprofessional translators spent more than five times more of time than professional translators in the orientation phase. A good assumption is that the ST presented more difficulties to paraprofessional translators than to professional translators, and thus the former might be floundered in thoughts and hesitated to embark on the translation. After a closer examination of the orientation time for each professional translator, it was noticed that three of them spent less than 21 seconds, the average for the NT group. Therefore, like novice translators, professional translators did not seem to have read through the entire ST either.

The NT group showed the longest time allocated to the entire translation task (NT:  $M = 3,359$ ,  $SD = 665.5$ ; PaT:  $M = 3,275$ ,  $SD = 5.5.1$ ; PT:  $M = 3,132$ ,  $SD = 483.3$ ) and to the drafting phase (NT:  $M = 3,029$ ,  $SD = 668.0$ ; PaT:  $M = 2,150$ ,  $SD = 949.8$ ; PT:  $M = 1,967$ ,  $SD = 1007.0$ ), followed by the PaT group and the PT group. A further calculation showed that the NT group spent 54% more time than the PT group in the drafting phase, and this difference is even higher than the 35% difference reported by Jakobsen (2002). At the end of the drafting phase, the first-

drafted TT is produced and it is “an accurate guide to ST content or a reminder of the mental structure created during the process of comprehending the ST” (Shih, 2006, p. 309). This may be because of the “mental structure” or “mental abstract” (Shih, 2006), the structured comprehension of the ST retained in a translator’s mind, that PaT3/PT5 (the same participant) was able to put aside the ST and just grasp the content of her first TTs and produce dissimilar final TTs.

In terms of the time allocated to “Revising”, however, the PT group was the longest (PT:  $M = 1,112$ ,  $SD = 1,006.0$ ; PaT:  $M = 824$ ,  $SD = 1,026.0$ ; NT:  $M = 309$ ,  $SD = 157.0$ ). The results suggested that professional translators tended to spend more time on revising but less time on drafting and completing the entire translation task; however, novice translators tended to spend more time on drafting and the entire translation task but less time on revising. The finding that professional translators spent more time on revising and less time on drafting compared to novice translators is consistent with findings reported in Jakobsen’s (2002) study on translation drafting by professional and student translators. As explained by Jakobsen (2002), even though professional translators had produced better drafts at the end of the drafting phase, they nevertheless spent more time than student translators on checking and revising the drafts. Jakobsen speculated that:

What expert translators do in the end revision phase is to monitor text that is already fully functional... student translators also monitor their TT during end revision, but in this phase they are frequently still struggling with unsolved or only partially solved problems.  
(p. 194)

Künzli (2009) reported that while revising draft translations, trainee translators’ (similar to the student translators in the present study) revising was characterized by “a relatively high

proportion of under-revisions (failure to correct errors in the draft translation), hyper-revisions (unnecessary changes), and over-revisions (the introduction of errors into translation)” (p. 118).

#### 6.2.4 Percentages of time allocations

Table 32 shows the group average percentage of time spent on Orientation, Drafting, Revising, and Pausing in relation to the total time on the translation task.

Table 32

##### *Average Percentages of Time Allocations for the NT, PaT, and PT Groups*

Participants	Orientation	Drafting	Revising	Pausing
Overall	4.1%	74.9%	21.0%	68.9%
NT Group	0.7%	89.9%	9.4%	70.5%
PaT Group	9.5%	66.0%	24.3%	70.4%
PT Group	2.0%	63.1%	35.0%	64.4%

*Note.* Percentages for Orientation, Drafting, and Revising may not sum to 100% because of rounding off. NT Group = Novice Translator Group; PaT Group = Paraprofessional Translator Group; PT Group = Professional Translator Group.

Percentage wise, all three groups had the same pattern in time allocation (i.e., drafting > revising > orientation). Among groups, the PaT group showed the highest percentage for the orientation phase, followed by the PT group and then the NT group (PaT = 9.5%, PT = 2.0%, NT = 0.7%). For the drafting phase, the NT group had the highest percentage, then the PaT group, and lastly the PT group (NT = 89.9%, PaT = 66.0%, PT = 63.1%). For the revising phase, the PT group showed the highest percentage, followed by the PaT group and the NT group (PT = 35.0%, PaT = 24.3%, NT = 9.4%). As for the average percentage for pause duration out of the total translation time, the NT group ranked slightly higher than the PaT group, then the PT group (NT = 70.5%, PaT = 70.4%, PT = 64.4%). The percentage of pause duration out of the total translation time is consistent with the findings in monolingual production research. Flower and Hayes (1981) reported that in the writing process, sometimes 70% of the composing time was

allocated to pause time. In TS, it is also agreed that pause takes a larger proportion of the total translation time (Green, Heer, & Manning, 2013). To sum up, for the orientation phase, the percentage of time was higher for the PaT group; for the drafting phase, it was higher for the NT group; and for the revising phase, it was higher for the PT group; for pausing, it was higher for the NT group.

The findings regarding the patterns in time allocation found in the present study are the same as the one in Jakobsen's (2002) study. That is, the largest average percentage was for drafting, the second largest for revising, and the least for orientation. In other words, consistent with Jakobsen (2002), this main study also comes to the conclusion that overall participants spent most of their time drafting their translation. Also as Jakobsen (2002) reported, professional translators spent higher percentage out of their total production time in the orientation and revising phases while student translators spent more time in the drafting phase. The group differences in time allocation percentages in this main study are consistent with Jakobsen (2002) as well.

### **6.3 Pauses for the LP and HP Groups**

The next four tables present results for pause frequency, pause duration, time allocation, and average percentages of time allocation for the LP and HP groups.

### 6.3.1 Pause frequencies

Table 33

*Descriptive Statistics for Pause Frequencies by the LP and HP Groups*

Participants	<i>n</i>	Pause Frequency	Min	Max	Range	<i>M</i>	<i>SD</i>	Sum
LP Group	9	Drafting	38	113	75	<b>78</b>	20.8	700
		Revising	0	12	12	<b>6</b>	4.0	55
		Total	43	113	70	<b>84</b>	20.9	755
HP Group	11	Drafting	8	113	105	<b>69</b>	27.4	753
		Revising	8	57	49	<b>24</b>	16.5	266
		Total	65	132	67	<b>93</b>	20.1	1019

*Note.* *N* = 20. LP Group = Low Performance Group; HP Group = High Performance Group.

The pause frequency patterns in the drafting and revising phases and for the entire translation task for translators of different performance levels are the same as those found for translators of different professional designations. A *t*-test revealed no significant differences either in the drafting phase ( $t(18) = -.841, p = .412$ ), or for the total pause frequencies ( $t(18) = .951, p = .354$ ). However, a two-sample Kolmogorov-Smirnov showed a significant difference between the LP and HP groups in pause frequencies in the revising phase ( $K-S Z = 1.416, p = .036$ ).

Table 33 shows that the HP group paused more often in the revising phase (HP:  $M = 24, SD = 16.5$ ; LP:  $M = 6, SD = 4.0$ ) and in the entire translation task (HP:  $M = 93, SD = 20.1$ ; LP:  $M = 84, SD = 20.9$ ) than the LP group did. The LP group, however, paused more often in the drafting phase than the HP group did (LP:  $M = 78, SD = 20.8$ ; HP:  $M = 69, SD = 27.4$ ).

### 6.3.2 Pause durations

Table 34 presents the descriptive statistics of pause durations for the LP and HP groups in the orientation, drafting, and revising phases, and for the entire translation task.

Table 34

*Descriptive Statistics for Pause Durations by the LP and HP Groups*

Participants	<i>n</i>	Pause Duration	Min	Max	Range	<i>M</i>	<i>SD</i>	Sum
LP Group	9	Orientation	≤5	459	459	<b>147</b>	173.6	1326
		Drafting	579	3034	2455	<b>1975</b>	810.1	17776
		Revising	≤5	457	457	<b>221</b>	144.4	1990
		Total	1279	3258	1979	<b>2344</b>	705	21092
HP Group	11	Orientation	≤5	455	455	<b>108</b>	164.5	1183
		Drafting	94	2483	2389	<b>1374</b>	677.2	15115
		Revising	242	2230	1988	<b>742</b>	597.4	8165
		Total	1627	2859	1231	<b>2224</b>	501.7	24463

*Note.*  $N = 20$ . LP Group = Low Performance Group; HP Group = High Performance Group.  $\leq 5$  means the pause duration is shorter than or equal to 5 seconds.

The patterns of pause durations for translators of different performance levels in the drafting and revising phases, and for the entire translation task are consistent with those found for translators of different professional designations. The only difference is in the orientation phase, that is, the LP group showed longer pause durations than the HP group did (LP:  $M = 147$ ,  $SD = 173.6$ ; HP:  $M = 108$ ,  $SD = 164.5$ ). A  $t$ -test showed no significant difference between the two groups either in the drafting phase ( $t(18) = -1.809$ ,  $p = .087$ ), or for the total pause durations ( $t(18) = -.443$ ,  $p = .663$ ). A two-sample Kolmogorov-Smirnov test detected a statistically significant difference between the LP and HP groups for the pause duration in the revising phase ( $K-S Z = 1.483$ ,  $p = .025$ ).

The pause durations showed a similar pattern as pause frequency for the LP and HP groups in that the HP group paused longer in the revising phase (HP:  $M = 742$ ,  $SD = 597.4$ ; LP:  $M = 221$ ,  $SD = 144.4$ ) but the LP group paused longer in the drafting phase (LP:  $M = 1,975$ ,  $SD = 810.1$ ; HP:  $M = 1,374$ ,  $SD = 677.2$ ). Unlike the pause frequency, the LP group also paused longer for the entire translation task (LP:  $M = 2,344$ ,  $SD = 705.0$ ; HP:  $M = 2,224$ ,  $SD = 501.7$ ). The unique case was that PaT4 was the only one out of the total 20 participants who did not have a

separate revising phase. Based on the observable data from his video file and key-logging file, he finished his translation at the moment when he typed the final stop in his first TT. The fact is that he mainly conducted online revision to check and revise his ongoing production, but he did not spend time on end revising.

### 6.3.3 Time allocations

Table 35 presents descriptive statistics for time allocated to the orientation, drafting, and revising phases, and for the entire translation task for the LP and HP groups.

Table 35

#### *Descriptive Statistics for Time Allocations by the LP and HP Groups*

Participants	<i>n</i>	Time Allocation	Min	Max	Range	<i>M</i>	<i>SD</i>	Sum
LP Group	9	Orientation	≤5	459	459	<b>147</b>	173.6	1326
		Drafting	1621	3913	2292	<b>2921</b>	764.8	26292
		Revising	≤5	500	500	<b>276</b>	155.2	2488
		Total	2320	4109	1789	<b>3345</b>	688.6	30106
HP Group	11	Orientation	≤5	455	455	<b>108</b>	164.5	1183
		Drafting	568	3491	2923	<b>2083</b>	939.9	22912
		Revising	184	2958	2774	<b>1028</b>	986.2	11311
		Total	2485	3686	1201	<b>3214</b>	429.6	35352

*Note.* *N* = 20. LP Group = Low Performance Group; HP Group = High Performance Group. ≤ 5 means the pause duration is shorter than or equal to 5 seconds.

A *t*-test was performed and a significant difference was found in the drafting phase ( $t(18) = -2.153, p = .045$ ), but not for the total time allocated to the translation task ( $t(18) = -.522, p = .608$ ). A two-sample Kolmogorov-Smirnov test revealed a statistically significant difference in the revising phase ( $K-S Z = 1.573, p = .014$ ), but not in the orientation phase ( $K-S Z = -.472, p = .979$ ).

As mentioned above, NT4 and NT7 from the LP group, and PaT3 and NT5 from the HP group did not pause longer than five seconds in the orientation phase. For time allocation, compared to the HP group, the LP group spent more time in the orientation phase (LP:  $M = 147$ ,

$SD = 173.6$ ; HP:  $M = 108$ ,  $SD = 164.5$ ), the drafting phase (LP:  $M = 2,921$ ,  $SD = 764.8$ ; HP:  $M = 2,083$ ,  $SD = 939.9$ ), and for the entire translation task (LP:  $M = 3,345$ ,  $SD = 688.6$ ; HP:  $M = 3,214$ ,  $SD = 429.6$ ). On the contrary, the time the HP group spent on revising was almost four times of that for the LP group (HP:  $M = 1,028$ ,  $SD = 986.2$ ; LP:  $M = 276$ ,  $SD = 155.2$ ). The time allocation patterns for the drafting and revising phases, and for the entire translation task are similar to those found for the different professional designations.

### 6.3.4 Percentages of time allocations

Table 36 reports the average percentages of time spent on the orientation, drafting, and revising phases, and the total pause durations in relation to the time for the translation task in total by the LP and HP groups.

Table 36

#### *Average Percentages of Time Allocations for the LP and HP Groups*

Participants	Orientation	Drafting	Revising	Pausing
LP Group	5.0%	86.5%	8.5%	69.0%
HP Group	3.3%	65.6%	31.3%	68.9%

*Note.*  $N = 20$ . LP Group = Low Performance Group; HP Group = High Performance Group.

As shown in Table 36, the HP group showed a higher percentage of time allocation in the revising phase (HP = 31.3%, LP = 8.5%). The LP group, however, had higher percentages in the orientation phase (LP = 5.0%, HP = 3.3%), drafting phase (LP = 86.5%, HP = 65.6%), and for pausing (LP = 69.0%, HP = 68.9%).

The findings regarding time allocation percentages for the LP and HP groups in the drafting and revising phases and for the entire translation task are also consistent with those found for the NT, PaT, and PT groups.

## 6.4 Correlation between Pause and Translation Performance

In this section, the relationship between pause and translation performance is further examined by calculating the correlation coefficients in different phases (i.e., “Orientation,” “Drafting,” “Revising”), “Pausing,” and “Total” by different professional groups and performance levels. The correlation results are reported between pause frequencies and pause duration vis-à-vis performance scores (Table 37) and between time allocation and time percentages vis-à-vis performance scores (Table 38).

Table 37

*Correlations between Pause Frequencies and Pause Durations vis-à-vis Performance Scores*

		Pause Frequencies			Pause Duration				
		Drafting	Revising	Total	Orie.	Drafting	Revising	Total	
Performance Scores	Overall	$r_s$	-.105	<b>.503*</b>	.129	-.118	-.349	.427	-.163
		$p$	.659	<b>.024</b>	.587	.619	.132	.060	.491
	NT Group	$r_s$	-.286	.445	-.216	.049	-.452	.524	-.476
		$p$	.493	.265	.608	.909	.260	.183	.232
	PaT Group	$r_s$	.145	.613	<b>.763*</b>	.072	.036	.559	.523
		$p$	.756	.144	<b>.046</b>	.878	.934	.192	.229
	PT Group	$r_s$	.600	-.564	.500	-.200	.800	-.500	.500
		$p$	.285	.322	.391	.747	.104	.391	.391
	LP Group	$r_s$	.160	-.462	.173	.506	-.286	-.294	-.244
		$p$	.681	.211	.656	.164	.456	.442	.527
	HP Group	$r_s$	.134	-.454	-.167	-.328	.211	-.449	-.096
		$p$	.687	.161	.623	.325	.534	.166	.779

*Note.*  $N = 20$ . Orie. = Orientation. NT Group = Novice Translator Group; PaT Group = Paraprofessional Translator Group; PT Group = Professional Translator Group. LP Group = Low Performance Group; HP Group = High Performance Group. *Sig.* (2-tailed). \* Correlation is significant at  $p < .05$ .

Overall, the results showed that pause frequency in the revising phase in particular was positively correlated with performance scores at a significant level ( $r_s = .503$ ,  $p < .024$ ). This significant positive correlation suggests that the more often translators paused in the revising phase, the better performance they seemed to achieve. Pause frequency and pause duration in the drafting phase were negatively correlated with translation performance scores though not at a

significant level. These correlations suggest that the more often or the longer translators paused in the drafting phase, the lower performance scores they tended to achieve. Another significant positive correlation was found for the PaT group between performance scores and pause frequency for the entire translation task.

Table 38

*Correlations between Time Allocations and Percentages vis-à-vis Performance Scores*

		Time Allocation			Time Percentage				
		Drafting	Revising	Total	Orie.	Drafting	Revising	Pausing	
Performance Scores	Overall	$r_s$	-.347	.364	-.255	-.133	-.311	<b>.446*</b>	-.063
		$p$	.134	.115	.279	.577	.182	<b>.049</b>	.791
	NT	$r_s$	-.381	-.190	-.524	.049	-.095	-.048	-.310
	Group	$p$	.352	.651	.183	.909	.823	.911	.456
	PaT	$r_s$	.252	.612	.559	.072	-.505	.505	.523
	Group	$p$	.585	.144	.193	.878	.248	.248	.229
	PT	$r_s$	.600	-.600	.200	-.200	.600	-.600	.500
	Group	$p$	.285	.285	.747	.747	.285	.285	.391
	LP	$r_s$	-.345	-.647	-.504	.506	.109	-.336	-.059
	Group	$p$	.364	.060	.166	.164	.780	.376	.881
	HP	$r_s$	.458	-.421	-.330	-.328	.586	-.403	-.078
	Group	$p$	.157	.197	.322	.325	.058	.219	.820

*Note.*  $N = 20$ . Orie. = Orientation. LP Group = Low Performance Group; HP Group = High Performance Group. NT Group = Novice Translator Group; PaT Group = Paraprofessional Translator Group; PT Group = Professional Translator Group. *Sig.* (2-tailed). \* Correlation is significant at  $p < .05$ .

Table 38 shows that, overall, there was one significantly positive correlation between performance scores and the percentage of time allocated to the revising phase, and one positive association between performance scores and the time allocation for the revising phase. The positive associations suggest that the more time spent on revising, the higher performance scores translators tended to achieve. Table 38 also shows that, overall, non-significant negative associations were found in the orientation and drafting phases. These negative associations suggest that the more time translators spent in the orientation and drafting phases, the lower performance scores they tended to achieve.

In summary, significant positive correlations were found in the revising phase, first between pause frequency and performance scores, then between time allocation percentages and performance scores. The positive correlations indicate that translators who paused more frequently in the revising phase or showed a higher percentage of time allocated for the revising phase tended to achieve higher performance scores.

The correlations between pause and translation performance reported in the present study are contradictory to findings in the relevant field, even though few studies have been conducted in this regards. As Hansen (2006) pointed out in her 2002 study, there was no correlation between the occurrence of pauses and the quality of the translation product. This may be a result of methodological flaws since she only investigated the translation processes of six participants of which two were bilinguals with very different backgrounds. O'Brient (2006) also mentioned that there was a general agreement that pause frequency and duration is subject to individual differences. However, she called for more studies on how useful pause analysis was for TS, and the relationship between pause behaviour and translation or post-editing in machine translation (O'Brient, 2006). Alves and Vale (2009) pointed out that pauses (especially longer pauses) in translation indicate intense monitoring of the translation process and problem-solving and decision-making processes. Therefore, by calculating and analyzing the statistical results regarding pauses and observing translators' pause behaviour, more of the intangible mental process of translation can be exposed. The findings here suggest that the drafting phase is tenser and more cognitively demanding to translators of lower professional designations or the low performance level, while translators of higher professional designations or the high performance level devote more effort to revising their drafts. As previously mentioned, by the end of the drafting phase, professional translators' have produced fully functional drafts while novice

translators are still struggling with their unsolved translation problems even in the revising phase (Jakobsen, 2002; Künzli, 2009). This may be why translators of lower professional designations or the low performance level devoted more time, cognition, and energy to the drafting phase. For translators of higher professional designations or the high performance level, the challenges might be mainly from the revising phase for achieving optimal equivalence rather than simply transferring the ST to the TT.

### **6.5 Summary**

Overall, it can be summed up that translators of higher professional designations or the high performance level tended to pause more often and longer, and spent more time specifically in the revising phase. Furthermore, they tended to pause less often and shorter in the drafting phase. However, translators of a lower designation or performance level allocated more time and showed longer pauses and higher pause frequencies in the drafting phase. Pause analysis in the translation process is an exciting new area for future research to further examine the relationship between pause (pause frequency, length, and location) and translators' performance.

## CHAPTER SEVEN - IMPLICATIONS AND CONCLUSION

Chapter 7 first summarizes and synthesizes the major findings of the present study. The second section identifies the theoretical, methodological, and pedagogical implications of the findings. Limitations of the present study and directions for future research are presented next. The final section concludes the present study.

### 7.1 Summary and Synthesis of Results

This section summarizes findings of the previous three chapters, namely, results by applying the TCM and the LAM, and results regarding pauses in the translation process. Then, a synthesis of the major results is provided.

#### 7.1.1 Summary of results

Overall, the 20 participants used 97 individual strategies as reported and observed in this study and the total strategy-use count was 3,464. Furthermore, translators of higher professional designations or the high performance level showed greater number and variety in individual strategies than translators of lower professional designations or the low performance level.

##### 7.1.1.1 TCM analysis results

By applying the TCM, results regarding strategy use for groups of different professional designations or performance levels are as follows:

- 1) Among the six TCM strategy categories, the category of *bilingual* strategies had the most individual strategies;
- 2) In terms of category ranking, for all groups, the top two categories were *bilingual* and *instrumental* strategies, the next two categories were *macro* and *professional* strategies, and the last two categories were *psycho-physiological* and *extralinguistic* strategies;

- 3) Overall, translators of higher professional designations or the high performance level applied more strategies; they showed higher average frequencies in *professional*, *bilingual*, *extralinguistic*, and *psycho-physiological* strategies;
- 4) By percentage, compared to other categories of strategies, translators of higher professional designations or the high performance level had higher percentages in *professional*, *psycho-physiological*, and *bilingual* strategies, while translators of lower professional designations or the low performance level showed higher percentages in *instrumental* and *extralinguistic* strategies;
- 5) By subcategory under the category of *bilingual* strategies, translators of higher professional designations or the high performance level showed higher percentages at the discoursal-level; however, the NT group showed a higher percentage at the textual-level and the LP group at the lexical-level;
- 6) For individual strategy ranking, the strategy of *evaluating choices* showed higher percentages and ranking in the groups of higher professional designations or the high performance level; while both *checking online* and *attending to mechanics* ranked higher and showed higher percentages in the groups of lower professional designations or the low performance level;
- 7) Most TCM strategy categories positively correlated with each other except with the category of *instrumental* strategies; both *psycho-physiological* and *professional* strategies significantly correlated with *bilingual* and *extralinguistic* strategies, and *psycho-physiological* and *professional* strategies significantly correlated with each other as well;

- 8) Overall, there was no significant correlation between strategy-use frequencies and performance scores. By category, participants' performance scores only positively correlated at a significant level with the category of *psycho-physiological* strategies.

#### **7.1.1.2 LAM analysis results**

By applying the LAM, findings for participants of different professional designations or performance levels are as follows:

- 1) Among the six LAM strategy categories, the *cognitive* category had the most individual strategies.
- 2) As for the ranking of strategy use by category, for all groups, the top three were *communication*, *metacognitive*, and *cognitive* strategies, and the lower three were *approach*, *affective*, and *compromising* strategies for all the other groups except the NT group;
- 3) Translators of higher professional designations or the high performance level showed higher average strategy use of *metacognitive*, *cognitive*, *communication*, and *affective* strategies than other categories of strategies;
- 4) Translators of higher professional designations or the high performance level had higher percentages of strategy use in *affective* strategies than other categories of strategies;
- 5) The NT group applied none of *compromising* or *affective* strategies;
- 6) All strategy categories positively correlated with each other and 12 out of 15 correlations were at a significant level;
- 7) With the exception of the *approach* category, all LAM strategy categories positively correlated with performance scores, though none reached significance.

### **7.1.1.3. Pause analysis results**

Based on the analysis of pause frequency, pause duration, time allocation, and percentages of time allocation, findings regarding translators' pause and performance can be summed up as follows:

- 1) Translators of higher professional designations or the high performance level tended to pause more often, show longer pause duration, have longer time allocation and higher percentage for time allocation for the revising phase than translators of lower professional designations or the low performance level;
- 2) Compared to translators of higher professional designations or the high performance level, translators of lower professional designations or the low performance level tended to show longer pause duration and have longer time allocation for the drafting phase; they tended to have higher percentage of time allocation for the drafting phase and pausing;
- 3) The correlation tests showed that for the revising phase, both pause frequency and percentage of time allocation positively correlated with performance scores at a significant level, and both pause duration and time allocation positively correlated with performance scores though not significantly; for the drafting phase, translation performance scores negatively correlated with pause frequency, pause duration, time allocation, and percentage of time allocation; for the orientation phase, both pause duration and percentage of time allocation negatively correlated with performance scores.

### **7.1.2 Synthesis of results**

Overall, within the TCM, the *bilingual* strategy category represents the most of all the individual strategies used, while within the LAM, it is the *communication* strategy category. The findings about the most frequently used category within the TCM and the LAM confirm previous

results regarding bilingual competence in TS (e.g., Göpferich, 2009; Krings, 1986; Lörcher, 1991; Neubert, 2000), and the *communication* strategy category in language learners' strategy use (e.g., Huang, 2013; Swain et al., 2009).

Translators of different professional designations or performance levels showed similar patterns in strategy use. Compared to translators of lower professional designations or the low performance level, translators of higher professional designations or the high performance level demonstrated greater variety of individual strategies, and higher reported and observed strategy-use frequencies. By category, translators of higher professional designations or the high performance level tended to use higher percentages of *professional*, *psycho-physiological*, and *bilingual* TCM strategy categories, and higher percentages of the *affective* LAM strategy category as well than translators of lower professional designations or the low performance level. The higher percentages in both *psycho-physiological* and *affective* strategy categories may inform future studies on affective issues in translation from a psychological and pedagogical point of view. However, translators of lower professional designations or the low performance level tended to apply higher percentages of the *instrumental* TCM strategy category than translators of higher professional designations or the high performance level. Findings about *psycho-physiological*, *affective*, and *bilingual* categories are in line with relevant studies on PPS and Aff, which show that affective factors are positively associated with translation performance (e.g., Bernardini, 2001; Jääskeläinen, 1999; Koskinen, 2015; Laukkanen, 1996; Nakatani, 2006; Tirkkonen-Condit & Laukkanen, 1996) and on BLS, which show that bilingual strategies are most frequently applied in the translation process (e.g., Göpferich, 2009; Neubert, 2000).

By individual strategy, translators of lower professional designations or the low performance level seemed to apply higher percentages of individual strategies that are object-

regulated in nature, such as *checking online* and *applying searching skills*. They tended to tackle smaller TUs since they showed higher use percentage of *attending to mechanics* and *identifying translation problems-lexical*. Furthermore, they tended to apply fewer strategies to activate positive affect but used higher percentages of *evaluating one's ability* with respect to their inadequate capability in translation. In contrast, translators of higher professional designations or the high performance level demonstrated more self-monitoring and more attention to linguistic subtleties by applying higher use percentages of *evaluating product-lexical*, *evaluating choice*, and *substituting*. Findings about individual strategies in relation to TUs and object/self-regulated tendency are also supported by related studies (e.g., Gerloff, 1988; Göpferich & Jääskeläinen, 2009; Jääskeläinen, 1999, 2010; Meara, 1996; Schinke-Llano, 1993; Wretch, 1980).

Even though the correlation results showed that, overall, there was no significant relationship between strategy use and translation performance, by category, the *psychophysiological* TCM strategy category positively correlated with performance scores at a significant level. In addition, both the *instrumental* TCM strategy category and the *approach* LAM strategy category, which include more object-regulated individual strategies, negatively correlated with performance scores, though not significantly. Among the six TCM categories, five of them had positive associations with each other but the *instrumental* category had a negative association with other TCM strategy categories. Among the LAM, all six categories were positively associated with each other. Findings regarding correlations between strategy use and performance scores are supported by the positive associations found in language learners' strategy use (e.g., Nakatani, 2006; Oxford & Ehrman, 1995).

For the differences in pause, translators of higher professional designations or the high performance level showed higher pause frequencies and averages of time allocation, and longer

pause durations and time allocation in the revising phase. Translators of lower professional designations or the low performance level showed the same pattern in the drafting phase. Translators of lower professional designations or the low performance level also showed longer total pause duration and total time allocation. As for percentages of time allocation, overall, translators spent 60-70% of their total time on pausing. Most of the time was spent for drafting, followed by revising and orientation. The major results regarding pause features in the translation process are consistent with studies regarding pause in language learning and use, and further substantiate findings about pause in TS (e.g., Flower & Hayes, 1981; Green, Heer, & Manning, 2013; Jakobsen, 2002). The main correlational results were that, overall, pause frequencies and percentages of time allocation in the revising phase positively correlated with performance scores at a significant level. The four pause features in both the drafting and orientation phases all negatively correlated with performance scores, though not significantly. However, the correlational results between pause and translation performance, especially those significant ones, are not in agreement with the findings about pause in TS to date. Previous literature shows that either there is no relationship between pause and performance or that pause features are caused by individual differences (e.g., Hansen, 2002; O'Brient, 2006).

## **7.2 Implications**

The following section discusses the implications of the present study from the perspectives of theory, methodology, and pedagogy.

### **7.2.1 Theoretical implications**

The present study contributes to the theoretical and systematic analysis of translation strategy and its classification. Translation strategy was redefined in the present study as a process during which the declarative and procedural knowledge relevant to the translation task is

activated and applied through various means. The definition of translation strategy in this study has expanded its traditional and original coverage from a linguistic, cultural, or equivalence-oriented technique or method to the process of activating and integrating the relevant knowledge. In other words, translation competence is what a translator possesses for doing translation while translation strategy is how a translator manoeuvres and exerts her/his competence in actual translation practice.

For the categorization of translation strategies, this study has made the first attempt to apply both the TCM and LAM to the analysis and interpretation of data about participants' strategy employment. The six categories within the TCM and the other six categories within the LAM overlap to some extent, but the cross-over classification can validate findings within each model and cover the translation strategies to a greater extent. This is a completely new way to categorize translation strategies that focuses on strategy functions and translation competence, and is divergent from those classifying by text types or problem types in the field of TS.

Indeed, there are no relevant previous studies attempting to create a coding scheme or inventory for the strategies applied by translators. Therefore, the coding scheme developed in this study can serve as a basis for the establishment of a translation strategy inventory, which may be a useful reference for future observational studies to qualitatively and quantitatively analyze the data in translation process research. The development of a more comprehensive coding scheme is a never-ending process as new strategies may emerge when different text types are tackled and hence new translation problems may arise.

The introduction of LLS into the examination of translation strategies has yielded important findings in this study, which in turn shed light on the field of language learning and use strategies. As Cook (2007) proposed, translation should be added to the four basic language

skills (i.e., listening, speaking, reading, and writing). Since Cook's work, other scholars in language teaching (e.g., Cook, 2010; Laviosa, 2014; Liao, 2006; Pym & Malmkjær, 2013) have strongly supported the use of translation in the language learning classroom. To illustrate how translation can facilitate language learning, some findings in this study can be examples. Most of the *bilingual* lexical-level strategies, such as *evaluating choices*, *evaluating product-lexical*, and *attending to positive/negative connotation or words*, can help language learners better differentiate synonyms, grasp the nuances of word differences, and use them more appropriately. Most of the *bilingual* discoursal- and textual-level strategies, such as *attending to tone*, *attending to register*, *attending to cohesion and coherence*, and *attending to collocation* can help language learners build up their language abilities in constructing cohesive and coherent, well-structured, and appropriately chosen phrases, sentences, and discourse in general. The positive correlation between *psycho-physiological* strategies and performance scores, similar to the findings regarding the positive association between affective strategies and language performance (Huang, 2012), can encourage both language learners and language instructors to foster positive affect in the language-learning and language-teaching process. A more confident, motivated, and perseverant learner may achieve better language learning results.

More generally, the relationship between translation strategies and translation competence proposed in the present study, which regards the employment of translation strategies as the activation of corresponding translation competences, has provided a new perspective to approach translation competence. This study also shows a new direction for translation strategy research by applying multiple process-oriented research methods. Building on Bachman and Palmer's (1996) LAM, the present study's findings may also contribute to the

development of a communicative translation ability model by integrating translation competence and strategic competence.

### **7.2.2 Methodological implications**

Methodologically, to avoid the drawbacks of the concurrent research method, such as TAP, as reviewed previously (e.g. Jakobsen, 2003; Krings, 2001; Künzli, 2009; Li, 2004; Shreve & Angelone, 2010), this study integrated the keystroke-recording software Translog and the screen-capturing software Camtasia with retrospective reflection to examine the translation process of novice, paraprofessional, and professional translators. The keystroke-logging tool recorded translators' every keystroke by the preset time unit. The linear representation of all the keystrokes and statistical information projects a detailed and thorough view of the translation processes. The rich data in the key-logging files reveal more than pause frequencies, pause durations, and time allocations, which were addressed in the present study. It is also another data source to double-check the strategy use elicited in participants' reflections and observed from the video data. The screen-capturing software product visually documented translation processes, especially online searching and online usage of resources, and supplemented what was recorded by Translog. The instrumental strategy, *checking online*, could only be observed from the video files. Both tools worked behind the scenes without even being noticed by translators but kept track of translators' translation processes.

Without the interruption of TAP but with access to online resources, participants were able to translate in a near real-life situation except that there was no access to paper dictionaries and they were aware of their translation processes being recorded. In addition, the reported strategy use, together with the observed strategy use, elicited from both video and key-logging data, provided a more complete picture about participants' strategy than using any single source

of data. The retrospective reflection session in this study was a stimulated recall session to elicit translation strategies immediately upon the completion of the translation task. Furthermore, with the replay of the translation processes and prompting questions from the researcher, the reflection was concurrent as well. As pointed out by Huang (2013), it is generally agreed that a participant's verbalization can help researchers obtain a better understanding of their thought processes than solely relying on researchers' observation.

Another methodological implication is from the regrouping of participants in the present study. As most process-oriented translation studies (e.g., Gerloff, 1988; Jääskeläinen & Tirkkonen-Condit, 1991; Jääskeläinen, 1999, 2010; Jakobsen, 2002) examine the performance of participants by their professional designations, their results may potentially be misleading based on the unexpected performance of either professional or student translators in the present study and other relevant studies (e.g., Gerloff, 1988; Jääskeläinen, 1999, 2010). Therefore, it is equally important to consider grouping participants by their performance level.

### **7.2.3 Pedagogical implications**

The findings in the present study may raise the awareness of translation strategy use for researchers, translators, and translator trainers, and help them better understand translation competence and translation strategies.

First, as Lörcher (1996) pointed out, process-oriented research in translation has been purely descriptive about how participants translate. As a result, whether the use of certain translation strategies is successful or not for solving a translation problem is only subjectively judged by translators themselves. A situation can then arise in which the deployment of a translation strategy may not be an appropriate solution to the translation problem the participant encounters. Therefore, it is necessary for translation instructors to remind student translators to

be aware of the appropriate use of translation strategies with the consideration of the translation task at hand and guide them to critically evaluate and assess the use of translation strategies. The findings of this study have shown what strategies the translators of higher professional designations or the high performance level used and how those strategies were employed. The appropriateness or inappropriateness of strategy use is decided by many factors, such as the text type of the translation task, translators' proficiency level, and translators' personal preferences.

Second, based on the higher percentage and frequency of using *affective* strategies, and the positive correlation between the use of *affective* strategies and translation performance by translators of higher professional designations or the high performance level, it is worth raising translators' and translator trainers' awareness of *affective* strategies in translation practice and training. Furthermore, the greater variety of strategies reported and observed for the professional translators and high performance translators suggests that it may improve translation performance if the translator has an inventory of many translation strategies at his/her disposal. Translation strategy, the external manifestation of translation competence as proposed by the present study, can be combined with designed translation tasks, which elicit the deployment of certain strategies, to develop translators' relevant translation competence.

A strategy-based translation instruction inspired by translation strategy studies like the present one would include the modeling and identifying of strategies with the help of instructors. Chamot (2005) suggested that since proficiency level and "the learners' goals, the context of the learning situation, and the cultural values of the learners' society will also influence choice and acceptability of language learning strategies" (p. 124), it would be beneficial for translation instructors to first discuss with students to find out what strategies they use and why they use certain strategies for different tasks, and then identify the mismatch and motivate students to

experiment with new translation strategies. Chamot (2005) also stressed that students' metacognitive ability, which is about planning for learning, monitoring, selecting problem-solving strategies, and evaluating learning, should be enhanced since it can help students to understand and regulate the thinking and learning processes. Strategy-based instruction also includes providing multiple opportunities for learners to practice and evaluate strategies, and to acquire the competence of appropriate strategy application.

The significant findings about pause found in the three phases of translation process in the present study suggest that a better understanding of pause features and time allocations for the phases in the translation process may benefit translation researchers, translator trainers, and translators in general. The findings also suggest a developmental trajectory of less time for the drafting phase and more time allocated for the revising phase as translators' proficiency increases. Pedagogically, translation instructors or translator trainers can remind student translators of and explain the importance of allocating more time on the revising phase.

### **7.3 Limitations**

Although the study attempted to consider all possible methodological issues related to examining translators' strategy use, it still had several limitations. First, participants were not trained for verbal reflection before the reflection session, so their differing verbal reporting abilities may possibly play a role in their reflection (Huang, 2014). Their reflection may not have completely or accurately revealed their thinking processes because their verbalizing ability may have varied. In addition, their personality and attitude towards the translation experiment might have affected their reflection. For example, the talkativeness of PaT3 might have contributed to her relatively high reported use of translation strategies. In addition, some participants seemed impatient while performing the translation task and inactive in the reflection session. As it is

generally agreed that translators' idiosyncratic rhythm may affect their performance, other external conditions, such as time limitation and the familiarity with the computer for use, may also have affected their strategy use (Alves & Vale, 2009).

Second, the validity of this study's findings might be enhanced if member checking was conducted (Creswell, 2014). This does not mean only checking the accuracy of the transcription with participants but verifying ambiguous parts in the reflection, since individual participants' intention for using certain strategies may affect coding; data coding was used in this study to analyse the qualitative data from transcriptions to identify what type of translation strategy a participant had employed in his/her translation.

Third, the five-point scoring rubric used in this study (Angellelli, 2009) and the absence of training for raters prior to the grading of the translation performance may have led to a low inter-rater reliability. A more fine-tuned and detailed assessment rubric needs a larger score range and more specifications than the five points. Furthermore, it may need more refined subcategories within each category and well-defined error types for raters to deduct points. In addition, it was not possible for the two raters to discuss scoring in order to reach agreement over any differences. The above mentioned factors all might have negatively affected the inter-rater reliability.

Lastly, due to the shortage of and challenging access to associate and certified Chinese-English translators in Canada, the sample size of the current study is small. A larger sample size would strengthen the statistical power and the generalizability of the study's results.

#### **7.4 Future Research Directions**

The findings reported in the present study point to several future research directions. First, other rich and complex information captured by the logging data deserves further

investigation. The timing between the pauses evident in the linear representation of the typing process provides an index to investigate how translators of different proficiency levels segment TUs, either as words, phrases, sentences, or even paragraphs. Also, it may capture different indicators of difficulty in translation, such as gaze duration, number of fixations, pauses, and so on (Dragsted, 2012). With the help of eye-tracking equipment, future research can conduct more comprehensive pause analysis by covering the aspects of pause location, pause length, and pause types in relation to syntactic units (words, phrases, clauses, and sentences) to further investigate how translation strategy use is correlated with pauses in the translation process. This may lead to integrated product- and process-oriented research, a more comprehensive investigation of pauses because of the use of a multi-method approach that triangulates these sources of data (i.e., keystroke recording, screen-capturing, eye-tracking, and retrospective reflection).

Second, future research can involve translators of more proficiency levels, such as expert translators and language learners, to reveal the development of translators' translation competence. It would be valuable to observe translators as they move from nontranslator trainees (language learners), to novice translators (translation students), to paraprofessional translators (associate members of STIBC), to professional translators (certified members of CTTIC), and to expert translators (highly experienced translators in Chinese-English translation field).

Third, to present a continuous developmental trajectory of strategy use, it would be beneficial to conduct longitudinal studies on the development of translation competence and translation strategy use. A longitudinal study of translation competence development involves the analysis of both translation product and translation process of the same participants, at regular intervals, and over a long period of time (Göpferich & Jääskeläinen, 2009). A longitudinal case study can be conducted on one participant's translation performance at a

regular interval and over a long period of time. To generalize findings of this type of case study and further understand the acquisition of translation strategy competence, longitudinal studies of translators of different professional designations or performance levels will be a promising direction for future research.

The communicative translation ability model inspired by the present study may direct translation researchers to the path of achieving an integral and comprehensive translation ability model, which awaits validation in future research. Translation ability, similar to language ability, involves translation competence and strategic competence to perform a translation task. Only when translation strategies act upon translation competence can a translator's overall ability be exerted to perform the given translation task. The to-be-validated communicative translation ability model may guide further investigation of strategic competence and overall translation competence, which mirror language competence and strategic competence to language ability.

Furthermore, to avoid certain limitations of this study, a brief training on verbal reflection is recommended before data collection, and member checking should be included in future replications. In addition, the individual participant variables (i.e., age and gender), which may play a role in participants' use of translation strategies, should be controlled or factored into the design of future studies.

## **7.5 Conclusion**

Based on the relevant literature in translation strategy and process-oriented translation research, this paper redefined translation strategy from a dynamic perspective and categorized translation strategy by emphasizing translation competence acquisition and the communicative purpose of translation. The findings of this study suggest that it is essential for translation

competence development to raise translation researchers', translator trainers', and translation practitioners' awareness of translation strategy use.

The statistical analysis of the reported and observed strategy use elicited through multiple methods (i.e., retrospective reflection, concurrent screen-capturing, and key-stroke logging) in this study suggests that, in the translation process, overall, translators resorted to *bilingual* and *communication* strategies most often. This is because translation is a communicative message transfer process involving the bilingual knowledge of the SL and TL (e.g., Göpferich, 2009; Krings, 1986; Lörcher, 1991; Neubert, 2000).

Translators of a higher designation or performance level demonstrated a larger repertoire of individual strategies and used strategies more often to solve the translation problems. To facilitate their translation processes, they activated different types of positive affect, such as an active motivation to achieve better translation versions, positive attitude to translation, and strong personal preference for certain choices. They focused on larger TUs and, at the same time, paid attention to the subtleties of potential choices. Translators of a lower designation or performance level tended to use more object-regulated strategies in nature because they were not competent enough to be self-regulated without turning to tools and resources. In addition, they tackled smaller TUs but failed to notice the subtle differences of alternative options.

The correlational results regarding strategy use indicate that the *psycho-physiological* strategies positively correlated with translators' performance scores at a significant level. This positive correlation suggests that the activation of memory-, attention-, and attitude-related positive affect may improve translators' performance. Furthermore, an overall negative association between *instrumental* strategies and translation performance suggests that the more often translators turn to online dictionaries, google search, or other resources, the more often

their performance would be interrupted and hence the poorer their translation performance would be.

The pause analysis in this study suggests that, overall, translators show the same pattern in percentages of time allocation for the three phases in the translation process: drafting > revising > orientation. Furthermore, the developmental trajectory is more time in the revising phase but less time in the drafting phase as translators' competence increases. For translators of a higher designation or performance level, they paused longer and more often, and spent more time in the revising phase. However, translators of a lower designation or performance level showed those features in the drafting phase instead.

The integration of LLS in this study adds a new perspective to the investigation of translators' strategy use and translation processes. As the first attempt informed by both the TCM and the LAM to examine translators' strategy use and pause behaviour in the Chinese-English translation process, this study opens another window to explore translators' translation processes, with a focus on their mental processes and strategic behaviour and also on the relationship between pause and translation strategy use. The findings of this study can move the field of translation strategies research forward and benefit researchers, trainers, and trainees in the professions of both translation and additional-language teaching.

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**APPENDIX 1: INDIVIDUAL PROFILE QUESTIONNAIRES****Individual Profile Questionnaire (P)**

Your name, e-mail address and personal information will be kept confidential. Thank you very much for your contribution. I really appreciate your time and efforts.

---

Name: \_\_\_\_\_ Age: \_\_\_\_\_  
Gender:     Male         Female        Email: \_\_\_\_\_

---

1. What is your first language?
2. At what age, did you have your first contact with English?
3. How long have you been learning English?
4. How long have you been in Canada (or an English speaking country)?
5. Other than English, do you know other foreign languages?
6. What is the highest level of education you have completed? Which field is your degree in?
7. Have you received any formal translation training? If yes, please specify.
8. How long have you been doing translation?
9. What is your annual translation experience in words?
10. What is your average translation speed (word/hour)?
11. What is your specialized area of translation (*e.g. literature, law, technology*)

12. Are you a full-time translator or a part-time/freelance translator?

13. When did you join STIBC as an associate member? Were you accredited by passing the admission exam or by the “on dossier” process? Or

When did you join STIBC/AITO as a certified member? Were you accredited by passing the admission exam or by the “on dossier” process?

14. Have you taken any of the following proficiency tests? If not, please mark “N/A,” and, if yes, please provide the score(s) and the year you took the test.

Test	Score	Year
TEM-8 (Test for English Majors-8) 英语专业八级考试		
TOEFL (Test of English as a Foreign Language) 托福		
IELTS (International English Language Testing System) 雅思		
CTTIC (Canadian Translators, Terminologist and Interpreters Council)		
CATTI (China Aptitude Test for Translators and Interpreters) 人事部全国翻译专业资格考试		
NAETI (National Accreditation Examinations for Translators and Interpreters) 教育部全国外语翻译证书考试		
SIA (Shanghai Interpretation Accreditation) 上海外语口译证书考试		
Other		

15. If you have other translation experience, please specify.

**Individual Profile Questionnaire (N)**

Your name, e-mail address and personal information will be kept confidential. Thank you very much for your contribution. I really appreciate your time and efforts.

-----  
Name: \_\_\_\_\_ Age: \_\_\_\_\_  
Gender:  Male  Female Email: \_\_\_\_\_  
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1. Which province are you from?
  
  
  
  
  
  
  
  
  
  
2. At what age, did you have your first contact with English?
  
  
  
  
  
  
  
  
  
  
3. How long have you been learning English?
  
  
  
  
  
  
  
  
  
  
4. Have you ever been to an English-speaking country? If yes, please specify.
  
  
  
  
  
  
  
  
  
  
5. What was the score of the subject of Foreign Language (English or Japanese or other foreign languages, please specify) in your Higher Education Entrance Examination (*gaokao*)?
  
  
  
  
  
  
  
  
  
  
6. Other than English, do you know other foreign languages? If yes, what is your proficiency level?
  
  
  
  
  
  
  
  
  
  
7. What translation courses or courses related to translation have you taken at STS?
  
  
  
  
  
  
  
  
  
  
8. Do you have any translation experience? If yes, please specify (word count, text type).

9. Have you taken any of the following proficiency tests? If no, please mark “N/A,” and, if yes, please provide the score(s) and the year you took the test.

Test	Score	Year
<b>TEM-4</b> (Test for English Majors-4) 英语专业四级考试		
<b>TEM-8</b> (Test for English Majors-8) 英语专业八级考试		
<b>TOEFL</b> (Test of English as a Foreign Language) 托福		
<b>IELTS</b> (International English Language Testing System) 雅思		
<b>CATTI</b> (China Aptitude Test for Translators and Interpreters) 人事部全国翻译专业资格考试		
<b>NAETI</b> (National Accreditation Examinations for Translators and Interpreters) 教育部全国外语翻译证书考试		
<b>SIA</b> (Shanghai Interpretation Accreditation) 上海外语口译证书考试		
Other		

## APPENDIX 2: SOURCE TEXT

## 学问与趣味

前辈的学者常以学问的趣味启迪后生，因为他们实在是得到了学问的趣味，不惜现身说法，诱导后学，使他们也在愉快的心情下走进了学问的大门。例如，梁任公先生就说过：“我是个主张趣味主义的人，倘若用化学化分‘梁启超’这件东西，把里头所含的一种原素名叫“趣味”的抽出来，只怕所剩下的仅有个零了。”任公先生注重趣味，学问甚是渊博，而并不存在有任何外在的动机，只是“无所为而为”，故能有他那样的成就。一个人在学问上果能感觉到趣味，有时真会像是着了魔一般，真能废寝忘食，真能不知老之将至，苦苦钻研，锲而不舍，在学问上焉能不有收获？但学问没有根底，趣味也很难滋生。任公先生的学问之所以那样博大精深，涉笔成趣，左右逢源，不能不说的一大部分得力于他学问根底之打得坚固。

(Word count: 326)

**APPENDIX 3: CONSENT FORM**

**Department of Linguistics  
University of Victoria**

*Participant Consent Form*

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**Novice, Paraprofessional, and Professional Translators' Strategy Use  
in Chinese-English Translation Processes:  
Retrospective Reflections, Concurrent Screen-capturing, and Key-stroke Logging**

You are invited to participate in a study entitled **Novice, Paraprofessional, and Professional Translators' Strategy Use in Chinese-English Translation Processes: Retrospective Reflections, Concurrent Screen-capturing, and Key-stroke Logging** that is being conducted by XIAOJUAN QIAN.

XIAOJUAN QIAN is a PhD student in the department of Linguistics at the University of Victoria and you may contact her at [abagil@hotmail.com](mailto:abagil@hotmail.com) or XXX-XXX-XXXX if you have further questions.

*[FOR STUDENTS, INCLUDE THE FOLLOWING:]*

As a graduate student, I am required to conduct research as part of the requirements for a degree in Applied Linguistics. It is being conducted under the supervision of Dr. LI-SHIH HUANG. You may contact my supervisor at: [lshuang@uvic.ca](mailto:lshuang@uvic.ca) or 250-472-4665.

**Purpose and Objectives**

The purpose of this research project is to investigate the translation processes and strategic behaviours of Chinese to English novice, paraprofessional and professional translators to answer the following questions: Is there any significant difference in the strategy application between translators of different professional designations? What is the correlation between translators' strategy application and translation performance, positive or negative? Rather than from a linguistic perspective, how can translation strategies be categorized for the purpose of communication or translation competence acquisition?

**Participants Selection**

You are being asked to participate in this study because you have a high language proficiency in both English and Chinese; and you are either novice, paraprofessional, or professional Chinese-English translators.

**What is involved**

If you agree to voluntarily participate in this research, your participation will include:  
Using a computer with special software or remotely to do C-E Translation: 1 hour; Post-task Reflection: 30 minutes; Background questionnaire: 10 minutes  
(Total: approximately 1.5 hours)

**Inconvenience & Risks**

Participation in this study may cause some inconvenience to you, including time devoted to the research and possible fatigue you may experience during the data collection process. There are no known or anticipated risks to you by participating in this research.

**Benefits**

The potential benefits of your participation in this research:  
will help us better understand the translation processes and contribute to the field of Translation Studies. On your side, it can help you realize your deficiency in translation and improve your translation skills. Positively, the research findings will also benefit the translation market which is a lubricant to the modern globalized society.

**Compensation**

As a way to compensate you for any inconvenience related to your participation, you will receive 20 dollar cash. If you agree to participate in this study, this form of compensation to you must not be coercive. It is unethical to provide undue compensation or inducements to research participants. If you would not participate if the compensation was not offered, then you should decline.

**Voluntary Participation**

Your participation in this research must be completely voluntary. If you do decide to participate, you may withdraw at any time without any consequences or any explanation. If you do withdraw from the study, the compensation will not be provided. Please note that if you withdraw after you submit the survey online, it's logistically impossible to remove the data.

**Anonymity**

In terms of protecting your anonymity, a coding name will be used instead of your real name in data analysis and dissemination of the data results.

**Confidentiality**

Your confidentiality and the confidentiality of the data will be protected by using a password protected personal computer and personal filing cabinet.

**Dissemination of Results**

It is anticipated that the results of this study will be shared with others in the following ways: Thesis/Dissertation/Class presentation; presentations at scholarly meetings; published articles, chapter or book, directly to participants.

A summary of the research results will also be sent to interested participants by email.

**Disposal of Data**

Data from this study will be disposed of by erasing the electronic data five years later from the time it is collected.

**Contacts**

Individuals that may be contacted regarding this study by the principal investigator: XIAOJUAN QIAN.

In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

By signing this form, your free and informed consent is implied and it indicates that you understand the above conditions of participation in this study.

I understand the above conditions of participation in this study and hereby give my free and informed consent.

Print Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

*A copy of this consent will be left with you, and a copy will be taken by the researcher.*

**APPENDIX 4: INVITATION EMAILS**

Dear STIBC/ATIO members,

My name is Xiaojuan Qian, a PhD candidate in Applied Linguistics at the University of Victoria. I'm wondering whether you can help me with my research in Translation Studies by translating a short passage from Chinese into English. After the translation, I will guide you to verbally reflect on your translation process. The translation will take 45 -60 minutes, and the reflection will be about 30 minutes.

To thank you for your time and effort, I will provide a 20 dollar check as compensation.

If you are interested in participating and you didn't take the STIBC exam in the year of 2011, please contact me at [abagil@hotmail.com](mailto:abagil@hotmail.com) or XXX-XXX-XXXX. Looking forward to your reply!

All the best,

Xiaojuan Qian

PhD Candidate

Department of Linguistics

University of Victoria

Victoria, BC, Canada

Dear instructors,

My name is Xiaojuan Qian, a PhD candidate in Applied Linguistics at the University of Victoria. I'm wondering whether you can pass on a message to your grade-two students that I'm in search of participants to join my research in Translation Studies by translating a short passage from Chinese into English. After the translation, I will guide them to verbally reflect on their translation processes. The translation will take 45-60 minutes, and the reflection will be about 30 minutes. To thank them for the time and effort, I will e-transfer 100 RMB to each participant as compensation.

If any of your grade two students is interested in participating, please remind them to contact me directly at [abagil@hotmail.com](mailto:abagil@hotmail.com) or XXX-XXX-XXXX. My gratitude and looking forward to hearing from your students!

Best Regards,

Xiaojuan Qian

PhD Candidate

Department of Linguistics

University of Victoria

Victoria, BC, Canada

## APPENDIX 5: CODING SCHEME

Category	Individual Strategy	Example
Macro Strategies	<b>planning process: (Metacognitive)</b> making a plan for the steps in translation process	“( 这些暂时搁置没有处理, 然后进入到下一步 ) 因为下面稍微好些, 因为哪有时间这样考虑, 总要, 光集中在这个地方, 时间到了, 我做不了下面的了。” (PT3) “(I left those unsolved and moved on to the next step) because the following part was easier to translate. I didn't have time to think it over. If I just focus on this part, I can't translate the rest part when the time is up.”
	<b>being aware of translation process: (Cognitive)</b> knowing what is going on in the translation process	“第一遍先全写出来, 第二遍我再用字典把每个字再查一遍, 它会给你更好的说法。、、、第一遍我不查。” ( PaT3 ) “First, I wrote everything out and then I looked up every word in the dictionary since there will be better options ...but I didn't' check up anything the first time.” (PaT3)
	<b>evaluating task: (Metacognitive)</b> evaluating the difficulty level of the translation task	“[整个时间] 稍微有点紧,我觉得一个半小时 [就差不多了]” (PaT4) “[I felt that time wise] it's a little bit tight, it would be good if it were set for one and a half hours.”
	<b>postponing translation problems: (Communication)</b> putting translation problems aside and come back to work on them again later	“这个我花了比较多的时间, 甚至于我先停下来先去做后面的了, 然后我又回过头来再看看它这个。”(PT3) “It took me quite long. I even stopped working on it and began to translate the following part. Later on, I came back to work on it again.”
	<b>evaluating strategies: (Metacognitive)</b> evaluating strategies applied in the translation	“就是那个‘走进学问的大门’因为‘大门’什么的, 直接翻, 就感觉怪怪的。”(NT1) “For the phrase ‘走进学问的大门 (enter the gate to knowledge)’, it will be awkward if I translate ‘gate’ word by word.”
	<b>adapting different perspectives: (Approach)</b> adapting different perspective to read the target text	“尽量尝试不同的眼光,再去查一遍。”(PT3) “[I would] try to take a different perspective to read the translation again.”
	<b>reading through: (Communication)</b> reading through the target text	“你有的时候做的这个地方做不下去了, 怎么样连下去呢? 与其说绞尽脑汁卡在这里, 你还不如从头至尾的读一遍” ( PT3 ) “When you encounter a problem and you can't get over it, how to proceed? It would be better to read through (the target text) than be stuck there.”
	<b>distancing oneself: (Approach)</b> distancing oneself from the translation task	“因为那会儿你会, 翻完了, 松一口气, 离远一点儿距离再看一下, 是不是 make sense, 或者只是 garbage。”(PaT4) “By that time, I was done with the translation. I would release my breath and distance myself from the translation. And then I would judge whether it makes sense or it is just garbage.”
	<b>evaluating performance-macro: (Metacognitive)</b> evaluating the overall translation process	“( R : 所以你的时间基本上用于第一遍, 边翻边改了, 是吧? ) 对, 我翻的比较慢。”(NT8) “(R: You spent most of your time in the first time, revising as you were translating, right?) Yes, my translation was very slow.”

	<b>eliciting strategies: (Approach)</b> activating possible strategies from the existing strategy repertoire	“对，对，如果有现成的，英文的，就是不同语种的，人家常用的，你干脆有可能换过来。”(PaT1) “Yeah, if there is a frequently used equivalent metaphor in English, or other languages, it’s very possible that you just use it.”
	<b>anticipating future usage: (Cognitive)</b> anticipating the usage of an expression in the future	“这一组是 interest, 这一组是 erudition/learning, 我就比较, 因为后面还要反复的用这些词。” (PaT2) “This group is for words like ‘interest’, and this is for ‘erudition/learning’. I just compared them since they would be repeatedly used in the following part.”
	<b>identifying translation problem-macro: (Metacognitive)</b> identifying problems confronted in translation at macro level	“你又想忠实于原文，又想地道，又想准确，有时候就很难拿捏。”(PaT4) “If you want to be faithful to the source text, and at the same time be idiomatic and accurate, it will be very hard to balance.”
	<b>rewriting<sup>4</sup>: (Approach)</b> Rewriting the translated text in a different way	“因为我觉得你最好的翻译不是直译，是重新再写一遍，回头再、、但，意思不能变。这些意思我先写出来” ( PaT3 ) “Personally, I believe the best way of translating is not to translate literally but to rewrite and [revise] later on... However, the meaning should not be changed. I first jotted down the meaning of it.”
	<b>Compromising-macro: (Compromising)</b> giving up something or compromising from an overall perspective	“在时间紧迫的情况下，没有太多奢求，来去咬文嚼字。” ( PaT4 ) “While you are under time pressure, it’s not possible to be rigorous and picky on wording.”
Professional Strategies	<b>attending to message transfer: (Cognitive)</b> paying attention to the transfer of message in translation	“我每次都确认下，因为我觉得意思对就行，意思对我就不再改了。” ( PaT3 ) “I confirm it every time. As long as I feel that the message is the same, I will stop revising.”
	<b>aiming at formal equivalence: (Cognitive)</b> trying to preserve the original grammatical structure in the target text	“当时我没在想别的，主要是把这个 sentence structure 和那个原句，尽量的接近，对吧？” ( PaT1 ) “I thought of nothing at that moment, but mainly about keeping the sentence structure as close as possible to the source sentence, right?”
	<b>aiming at optimal equivalence: (Cognitive)</b> aiming to achieve the most appropriate and the most natural equivalent in the target text	“中文里这个‘前辈’实在是英文里很难找到一个 100% 对称的 equivalent” ( PT4 ) “It’s really hard to find a 100% equivalent of the Chinese word ‘前辈 (predecessor)’ in English.”
	<b>being aware of strategies applied: (Cognitive)</b> attending to strategies applied in the translation	“有点儿意译，因为什么‘走进学问的大门’，我就没翻出来。” ( PaT2 ) “This is more of free translation because I didn’t translate the whatever ‘走进学问的大门 (enter the gate to knowledge)’.”
	<b>attending to information completeness: (Cognitive)</b> paying attention to the completeness of	“怎么要把这个 metaphor 保留下来，又要把这个意思整个的，完全的解释出来，是吧？” ( P1 ) “How to keep this metaphor and explain this message

<sup>4</sup> “Rewriting” is usually taken as a communication strategy in language use strategy studies. For the present study, however, “rewriting” was reported by participants more in a sense as an approach strategy, based on the contexts.

		the information in the translation process	completely and thoroughly, right?"
		<b>attending to receivers: (Cognitive)</b> paying attention to readers of the target text	“让人家读的时候，一下就懂了、、、” ( PaT1 ) “The readers can get it easily when they read it.”
		<b>attending to translation principles: (Cognitive)</b> paying attention to the basic translation principles such as faithfulness, expressiveness and elegance	“这句话、、、这有点硬邦邦的，冷冰冰的，就为了能够忠实原文。” ( P4 ) “This sentence... it’s a little bit rigid and colorless, but is only faithful to the source sentence.”
		<b>Linking to others’ performance: (Communication)</b> linking to other possible interpretation of the source text, strategies and performance for the translation	“有的译者呢,有可能他用 Rengong, 然后他弄一个 star, 然后在下边注脚上说, 那种。” (PaT1) “Some translators may use ‘Rengong’, and then they use a star to explain in the footnotes.”
		<b>using back translation: (Communication)</b> using the strategy of translating back into the source language	“但是，我自己觉得，翻得不是太好。因为如果回译回去的话，就完全不一样了。”(NT6) “However, I don’t think I did a good translation because if I translate it back into Chinese, it will be totally different.”
<b>Bilingual Strategies</b>	<b>Discoursal</b>	<b>attending to register: (Cognitive)</b> paying attention to the register of the source or target text	“Especially, when you talk about academia, this would be an appropriate word. It’s also the register, we call that register, and it’s the level of language.” (PT1)
		<b>attending to tone: (Cognitive)</b> paying attention to the tone, manner or way of wording	“我翻不到那样的口气嘛，我就干脆用肯定句算了。”(PaT2) “I couldn’t reproduce the tone in my translation, so I just used an affirmative sentence.”
		<b>attending to linguistic variations: (Cognitive)</b> paying attention to the regional, social or age dialects	“因为他们那个时候的古汉语过渡到现代汉语，很多地方，断句各个方面比较乱。”(PT4) “Because in his [the author] time, it’s the transitional period from ancient Chinese into modern Chinese, in many aspects such as punctuation, there were no standard rules yet.”
		<b>Compromising-stylistic: (Compromising)</b> giving up something stylistic to make a compromise in translation	“对，这些文采的东西，可以放弃一些。” ( PaT1 ) “It is for sure that some of the literary grace can be given up.”
		<b>attending to language differences: (Cognitive)</b> paying attention to the structural difference between the source and target languages	“这个，我主要是注意不能搞成排比，像我们中文一样的搞排比。因为我们中文都是四字排比的么，英文不能做排比用。” ( PaT2 ) “Over here, I was mainly thinking of avoiding the parallel structure as it is in Chinese. It is normal in Chinese to parallel all the four-character phrases together, but it’s not accepted in English.”
		<b>ID rhetorical device in ST: (Cognitive)</b> identifying the rhetorical devices in the source text	“因为主要是，怎么把这个‘走进学问的大门’，对吧？它是一个 metaphor 啦！” ( PaT1 ) “It’s mainly about [how to translate] ‘走进学问的大门’ (enter the gate to knowledge), right? It’s a metaphor!”
		<b>maintaining rhetorical device in TT: (Communication)</b> maintaining the rhetorical devices in the target text	“它又有一个 metaphor 了、、、它这么个 metaphor，我还是继续决定用它的 metaphor。” ( PaT1 ) “Here is another metaphor...I would continue to keep this metaphor.”

Textual	<p><b>attending to TL features: (Cognitive)</b> paying attention to the features of the target language</p>	<p>“不然这句话翻译成英文之后是不通的, 英文不能这么说话, 这要是 run-on sentence.” (PT5) “Otherwise, it would be an ungrammatical sentence if I translated it into English. It doesn't make sense in English since it's a run-on sentence.”</p>
	<p><b>attending to genre consistency: (Cognitive)</b> paying attention to and trying to preserve the genre of the source text</p>	<p>“后来我把 student 改成 pupil, 因为 pupil 比较符合这个古文的意思, 我为什么要用 lad, scholar, 还有后来的 erudite, 都是因为古文的感觉, 这一段有点儿像古文。” (PaT3) “Later on, I changed 'student' into 'pupil' because 'pupil' fits better for the old Chinese style. That's why I picked up 'lad, scholar' and 'erudite'. They all have the sense of classical Chinese. This paragraph is kind of ancient Chinese.”</p>
	<p><b>capturing the main idea: (Cognitive)</b> capturing the main idea of the source text</p>	<p>“多看一遍, 其实知道它讲什么。” (PT2) “Actually, I read it one more time and came to know what it was about.”</p>
	<p><b>identifying text type: (Cognitive)</b> identifying the text type of the source text</p>	<p>“对, 对, 没错, 这个就算 literal 了。” (PT4) “Yeah, that's right. This is the type of literal [translation].”</p>
	<p><b>attending to the title: (Cognitive)</b> Paying attention to the title in translation</p>	<p>“恩, 就琢磨标题, 标题是最重要的嘛。” (PaT2) “Well, I was thinking over the title. Title matters the most.”</p>
	<p><b>restructuring: (Communication)</b> structuring an already translated sentence/phrase in another way</p>	<p>“The passage of time...” → “how time passes quickly...” (PT1)</p>
	<p><b>interpreting ST-textual: (Cognitive)</b> figuring out the message conveyed in the source text at the sentence/phrase level</p>	<p>“它那个的意思就是说, 梁启超他所有的研究都充满了乐趣, 他没有痛苦。” (PaT5) “It actually means that Qichao Liang tastes nothing but fun in all his research work.”</p>
	<p><b>attending to cohesion and coherence: (Cognitive)</b> paying attention to the cohesion and coherence of text</p>	<p>“( R: 我看你对这个连接词, 关注的比较多一点? ) 对, 因为包括我平时看报纸杂志的时候, 我也经常关注。” (PaT4) “(R: I noticed that you paid more attention to the conjunctions, right?) Yes, usually when I read newspapers or magazine, I pay special attention to them too.”</p>
	<p><b>Compromising-textual: (Compromising)</b> abandoning information at the sentence/phrase level to compromise</p>	<p>“我就觉得‘不知老之将至’, 我就只好放弃了。这个本身很难, 然后再加上那个, 对于建立这个 idea 没有任何太大的帮助。” (PaT1) “I felt '不知老之将至 (forget the approaching old age)' ..., I had to give it up. It's hard to translate; besides it contributes nothing to the idea.”</p>
	<p><b>attending to collocation: (Cognitive)</b> paying attention to the collocation</p>	<p>“我就觉得 taste the interest 不好, 到后面你就看到了, 所以就把 interest 全部换成了 fun、 、 因为觉得 taste 在 collocation 的时候, 发现不好。” (PaT2) “I didn't think 'taste the interest' was good... You will see that I replaced all 'interest' with 'fun' later... because I thought that 'taste' was not in good collocation with [the word 'interest'].”</p>
<p><b>attending to sentence/phrase type: (Cognitive)</b> paying attention to different sentence types in the source text to achieve</p>	<p>“我觉得这个, 我当时应该也想过用反问句来说, 但后来我觉得它反问不也是强调么, 所以就用肯定的说法。” (PaT5) “As to this one, I thought about translating it into a tag question</p>	

	language effect...	first, but later on I realized that tag question is a way to emphasize. Therefore, I translated it into an affirmative sentence.”
	<b>transforming sentences/ phrases: (Communication)</b> combining, separating or changing the original sentences/phrases in the target text	“这也是为什么我第一句翻了三个英文短句。如果我是用一个英文长句翻译的话，我觉得太长了。组织也能组织，但我觉得读起来特别累。” ( PaT5 ) “That’s why I translated the first sentence into three short ones in English. I thought it would be too long if I just made it into one long English sentence. It’s possible to structure that one sentence, but I feel it’s too tiring to read.”
	<b>being concise: (Communication)</b> being concise	“后来我改了，[the gate of knowledge]直接改成了 learning gate，更精简了，太长了，实在是太啰嗦了。” ( PaT2 ) “Later on, I changed [the gate of knowledge] into ‘learning gate’ to make it more concise. It originally was too long and lengthy.”
	<b>reformulating ST in TL: (Cognitive)</b> imagining the message conveyed in the ST was originally expressed in the TL	“我就这么想，如果这句话，当时梁启超是用英文说的，他应该会用我翻译的这种方法说。”(PT5) “I just thought that Qichao Liang would use my translation if he was originally speaking in English at that time.”
	<b>referring to ST: (Communication)</b> making reference to the context	“因为我翻这个 elder 的时候，我看到后面叫他‘任公’，所以就没有用 Mr。” ( PaT2 ) “While I translated it as ‘elder’, I noticed that he was addressed as ‘Rengong’ later in the paragraph. Therefore, I gave up ‘Mr.’.”
	<b>formulating sentences: (Metacognitive)</b> deconstructing the process of formulating sentences	“我会把其中的一些词先翻出来放在那里，然后光看着这些词，然后考虑怎么把它组织起来，成一个通顺的意思。” (PT3) “I would first translate just some of the words, and then only focus on these words to see how I can organize them into a sentence which makes sense.”
	<b>identifying logical relations in ST: (Cognitive)</b> identifying the logical relation among or between sentences in the source text	“对，因为我觉得‘而并不存在有’，这是一个转折的，好像是。” ( PaT4 ) “Yes, I thought there might be a kind of shift in ‘而并不存在有 (without any...)’.”
	<b>maintaining logical relations in TT: (Communication)</b> maintaining the original logical relations of the source text in the target text	“就是说逻辑关系，主要是说不要破坏它原句的逻辑关系。” ( PaT1 ) “It is about the logical relations. I primarily aimed at not destroying its original logical relations.”
	<b>adjusting word order: (Communication)</b> adjusting the word order in the target text	“这又是一句废话，后来全得改，而且可能要把顺序调一下。” ( PaT3 ) “This is nonsense again. It must be revised later and the word order may need to be adjusted.”
	<b>translating key words: (Communication)</b> translating the key words first to proceed with the translation	“我会把其中的一些词先翻出来放在那里，然后光看着这些词，然后考虑怎么把它组织起来，成一个通顺的意思。” (PT3) “I would first translate just some of the words, and then only focus on these words to see how I can organize them into a sentence which makes sense.”

	<p><b>identifying translation problems-textual: (Metacognitive)</b> identifying problems confronted in translation at the sentence/phrase level</p>	<p>“这个中文上来看的话, 其实老实话, 我也不清楚。” (PT3) “[As to this sentence], to be frank, I didn't understand its meaning in Chinese.”</p>
	<p><b>identifying translation errors-textual: (Metacognitive)</b> identifying errors made in translation at the sentence/phrase level</p>	<p>“The younger scholars would be able to happily enter the gate of learning.” → “The younger scholars are also able to happily enter the gate of learning.” (PT5)</p>
	<p><b>attending to sentence/phrase structure: (Cognitive)</b> directing attention to sentence/phrase structure in the source or target text</p>	<p>“还有后面我把那个‘废寝忘食’、‘不知老之将至’, 作为一个修饰成分, 来修饰‘苦苦钻研’。” (NT2) “And for the following ‘废寝忘食 (the neglect of meals and sleep)’, ‘不知老之将至 (forget the approaching old age)’, I used them as modifiers to modify ‘苦苦钻研 (work hard)’.”</p>
	<p><b>evaluating ST-textual: (Metacognitive)</b> evaluating source text at sentence/phrase level</p>	<p>“我们倒也做过类似的文学翻译, 但是没有这个四字成语那么多, 而且这个中文就稍微有点儿晦涩。” (NT7) “We have done similar literal translation, but none of them has so many four-character set phrases as this one does. Besides, the Chinese of this text is rather incomprehensible.”</p>
	<p><b>transforming direct/indirect speech: (Communication)</b> transforming direct speech into indirect speech or vice versa</p>	<p>“我把它那个直接引语换成了间接引语, 就是这个‘梁任公就说过我是一个、 、 、’, 我就换成了‘他说他怎么样怎么样’。” (NT2) “I changed the direct speech into indirect speech. Originally, it is ‘梁任公就说过我是一个 (Rengong Liang said, I am a...)’ and I transformed it into ‘he said he was ...blar, blar”</p>
	<p><b>evaluating TU-textual: (Metacognitive)</b> evaluating the unit of translation at sentence/phrase level</p>	<p>“这句话倒没有特别难, 但是要翻成这种感觉挺难的, 这句话我觉得并不难。” (PT5) “This sentence is not difficult, but it's quite challenging to translate its feel. I don't think this sentence is very difficult to translate.”</p>
	<p><b>evaluating product-textual: (Metacognitive)</b> evaluating the translation at sentence/phrase level</p>	<p>“我一开始就是‘it's difficult...’, 我就觉得这个太简单了, 太口语化了。” (NT5) “At the beginning, I translated as ‘it's difficult to...’, but I thought it was too simple and colloquial”.</p>
	<p><b>evaluating performance-textual: (Metacognitive)</b> evaluating performance at sentence/phrase level</p>	<p>“(R: 这是你第一句的处理?) 对, 翻得很快, 我基本上都不怎么想的” (PaT3) “(R: This is how you dealt with the first sentence?) Yes, I translated very fast without any thinking.”</p>
Lexical-grammatical	<p><b>transforming word category: (Communication)</b> changing the word category in the source text or in the translation process</p>	<p>He only achieves... → His achievements... (PaT6)</p>
	<p><b>identifying translation problems-lexical: (Metacognitive)</b> identifying problems confronted in translation at lexical level</p>	<p>“这里主要说, 我主要是看到他的名字。因为梁任公一个, 梁启超, 怎么处理。” (PaT2) “Over here, I mainly focused on his name. Because one is ‘Rengong Liang’ and another one is ‘Qichao Liang’, how should I deal with these?”</p>
	<p><b>Compromising-lexical: (Compromising)</b> abandoning lexical or phrasal terms to compromise.</p>	<p>“因为什么‘走进学问的大门’, 我就没翻译出来。” (PaT2) “Because I did not translate the so-called ‘走进学问的大门 (enter the gate to knowledge)’.”</p>

	<b>identifying translation errors-lexical: (Metacognitive)</b> identifying errors made in translation at lexical level	“He could effortlessly evoke artistic appeal.” → “He could effortlessly evoke artistic appeal.” (PT4)
	<b>generating linguistic choices: (Approach)</b> revealing the process of how a choice comes into being	“因为这个原文，学问要收获，收获是 reap fruits, right? So, the same, reap fruits, results, 成果。”(PT1) “Because in the source text, ‘学问要收获 (knowledge to be reaped)’; ‘收获 (reap)’ is to reap fruits, right? So, the same, reap fruits, results, ‘成果’.”
	<b>evaluating product-lexical (Metacognitive)</b> evaluating translation at lexical level	“我后面把 no credit, 因为我注意到‘一大部分’, 我又改了, 改成 less。所以 no credit 就全否定了, 这是说‘一大部分’。” ( PaT2 ) “Later on, I changed ‘no credit’ as well because I noticed ‘一大部分 (a great part of)’. I changed ‘no credit’ into ‘less’. ‘No credit’ is complete negation while it is ‘a great part of’.”
	<b>evaluating performance-lexical: (Metacognitive)</b> evaluating performance at lexical level	“比较仓促，没有做很好的选词。”(PaT6) “It was a very hasty translation and I didn’t do a good job in word choice.”
	<b>evaluating TU-lexical: (Metacognitive)</b> evaluating the unit of translation at lexical level	“还有就是，觉得那个‘涉笔成趣、左右逢源’啊，这些四字成语就挺难翻的。”(NT4) “And then, the four-character set phrases like ‘涉笔成趣, 左右逢源 (unusual literary talent)’ were quite hard to translate.”
	<b>interpreting ST-lexical: (Cognitive)</b> figuring out the message of the source text at the lexical level	“但那个‘后生’呢、、、、、、 So, it may not be ‘younger students’, it could be just older than the teacher himself and may not be the next generation either.” (PT1) “As to the word ‘后生 (young people)’...So, it may not be ‘younger students’, it could be just older than the teacher himself and may not be the next generation either.”
	<b>associating to linguistic knowledge: (Communication)</b> thinking of other expressions through associating with synonyms, antonyms or relevant expressions	“R: erudition, 你怎么想到的? PaT2: 你是说想到 erudition, ( 是通过‘学问’ ) 对, 就是 scholar, scholarship 么。” ( PaT2 ) “R: ‘erudition’, how did you come up with it? PaT2: You mean how I came up with the word ‘erudition’? (R: Is it triggered by ‘学问 (knowledge)’ ) yeah, by scholar, scholarship.”
	<b>evaluating choices: (Metacognitive)</b> making a comparison of all the possible choices from various perspectives	“R: 是什么原因, 把这个 knowledge 也改了。 PaT2: 因为 fun 是一个动态的, 要用 learning 做一个动态的, knowledge 是一个静态的词。” ( PaT2 ) “R: Why did you change the word ‘knowledge’? PaT2: Because ‘fun’ is dynamic, I needed to pick up the dynamic word ‘learning’. ‘Knowledge’ is a static word.”
	<b>evaluating ST-lexical: (Metacognitive)</b> Evaluating the source text at lexical level	“因为‘前辈’, 算是比较常见的用词啦。”(PaT5) “Because the word ‘前辈 (predecessor)’ is a rather common word.”
	<b>coining an expression: (Communication)</b> creating a non-existing new expression in the target language	“那样的话, 在 interest 后面加一个 ism, interestism 没有这个词, 表示把它看成了一个很重要的事情。” (PT3) “In that case, I could add the suffix ‘ism’ to the word ‘interest’ to get “interestism” which is not an existing word in English. It means taking interest as something very important.”

	<p><b>attending to mechanics: (Cognitive)</b> paying attention to the minor grammar such as tense, pronoun, article, plural/singular, punctuation</p>	<p>“一开始用的是单数 interest，把它改成复数了，觉得趣味是各种各样的。”(NT7) “At first, I used the singular form ‘interest’ but changed it into its plural form since I thought that there were interests of all kinds.”</p>
	<p><b>adding: (Communication)</b> adding words or phrases to the already typed product.</p>	<p>“When conducting academic research”→“When studying and conducting academic research” (PaT5)</p>
	<p><b>substituting: (Communication)</b> Substituting the previously word choice with its synonym</p>	<p>This is observed and calculated from video clips</p>
	<p><b>deleting: (Communication)</b> deleting unnecessary words or phrases in the target text</p>	<p>“What would be left would probably be a zero”→“What would be left would probably be zero” (PaT1)</p>
	<p><b>simplifying: (Communication)</b> leaving out components which are in the source text but considered unnecessary in the target language structure</p>	<p>“我就是觉得什么‘苦苦钻研、锲而不舍’啊，我就想着直接翻成就是‘全神贯注’的在 concentrate on，就没有把那个成语单独列出来。”(NT5) “I just thought that I should translate ‘苦苦钻研、锲而不舍 (work hard)’ and the alike all into ‘concentrate on’, so I didn’t translate them one by one.”</p>
	<p><b>amplifying: (Communication)</b> adding words for the sake of a more smooth and natural target language structure</p>	<p>“就是收获成果，那个 fruits 是我自己加的，但是‘收获’，后面应该有个东西吧、、、好像有点儿自己往里面加东西了，就有点风险了。”( PaT4 ) “This is about ‘achieve great academic success’. I added ‘fruits’ here because there should be something after the word ‘收获 (achieve)’... It is a little bit risky since I added something here.”</p>
	<p><b>attending to positive/negative connotation of words: (Cognitive)</b> paying attention to the negative/positive connotation of words</p>	<p>“还有就是‘着魔’第一反应就是 be crazy，然后我觉得这个在中文里面不是那个贬义的，最后就用了那个词 possessed。”(NT6) “Another one is ‘着魔 (possessed)’. The first translation I thought of was ‘be crazy’; however I felt the Chinese word does not contain any negative connotation, and in the end I chose ‘possessed’.”</p>
	<p><b>attending to lexical consistency: (Cognitive)</b> paying attention to the consistency of words chosen</p>	<p>“学问没有根底”，那个学问是用 knowledge 还是 scholarship，我想前面用 scholarship，就 consistent 一点、、、”( PaT4 ) “‘学问没有根底 (no foundation for knowledge)’, [I was thinking of] which word to pick up for ‘学问(knowledge)’, ‘knowledge’ or ‘scholarship’? Since I used ‘scholarship’ at the beginning, I would be consistent.”</p>
	<p><b>analysing the choice: (Cognitive)</b> making an analysis of the word chosen</p>	<p>“practically，我们中文一般会说‘着实’，就好像是，就实实在在的，就是这样。”( PaT2 ) “The equivalent of ‘practically’ in Chinese usually is ‘着实 (really)’. It’s like ‘really’.”</p>
	<p><b>avoiding repetition: (Communication)</b> avoiding repetitive use of the same expressions, avoiding lengthy expressions</p>	<p>“我另外一个地方想用 foundation，所以我前面就用了 root，就把它改了，改成 root。”(PaT2) “Because I wanted to use the word ‘foundation’ for elsewhere, I used ‘root’ first instead and changed it into ‘root’.”</p>

<b>Extralinguistic Strategies</b>	<b>activating background knowledge: (Cognitive)</b> activating the background knowledge	“其实很多英文语言比如说圣经来的，圣经里面有 into the gate of happiness，这个是圣经里面常常用的。”(PT2) “Actually, many expressions in English are from Bible. In Bible, there is the expression ‘into the gate of happiness’ which is frequently used.”
	<b>activating domain-specific knowledge: (Cognitive)</b> activating the knowledge about the domain or theme of the source text	“Because you are talking about chemistry...I know chemistry is about elements. So I said ‘you take out one of its elements’.” (PT1)
	<b>activating bicultural knowledge: (Cognitive)</b> activating the knowledge about the source culture and target cultures	“中国人的这个‘废寝忘食’是跟中国古代的儒家教育和古代的书生这种科举制度。这个东西，老外他们，西方人学习也是很勤奋，但从来没有人讲，我‘废寝忘食’I work so hard, I didn’t even bother eating and sleeping, right?”(PT4) “The Chinese phrase of ‘废寝忘食 (neglect meals and sleep)’ is related to the Confucian education and the scholars of ancient China’s imperial examination system. As to this, foreigners, the westerners also work hard, but nobody has ever said ‘I work so hard, I didn’t even bother eating and sleeping’, right?”
	<b>linking to personal experience: (Communication)</b> linking to the previous personal experience	“我当时的理解是，老年要来了么，想到比如初中学的说春天要来了，the approaching of spring。”(NT8) “My understanding was, the old age is approaching, I thought of what I learned in high school, ‘the approaching of spring’.”
	<b>activating general world knowledge : (Cognitive)</b> activating knowledge about the world	“因为它从科学上讲不对，你化学这个东西吧，比如这个桌子吧，碳抽了，还有氢，还有很多各种、、。”( PaT5 ) “That is not scientifically right. As to chemistry, take this table as an example, there should be hydrogen and many other elements if the element of carbon is taken away.”
<b>Instrumental Strategies</b>	<b>checking online (Communication):</b> using online dictionaries or websites to check uncertain expressions	This is observed and calculated from video clips.
	<b>applying searching skills: (Approach)</b> applying different methods for searching	“因为我要去查‘趣味’这个词的准确，我当时想到 fun，所以我想‘趣味索然’有没有，就反过来可以看到一些更多的词汇嘛，通过反义词、同义词、反义词。”(PaT2) “Because I needed to check whether the word for ‘趣味 (interest)’ is accurate, I thought of ‘fun’, and then ‘趣味索然 (dry as dust)’. [If you take it] the other way round, you can find more choices of words. It can be done by antonyms, synonyms, antonyms.”
	<b>evaluating Tools: (Metacognitive)</b> evaluating the tools for finishing the translation task	“因为金山词霸，它经常在不停的更新么。我觉得现在最新这版，词汇量还是很大的。”(PaT4) “iCIBA updates itself very often. I think the newest version has a pretty large vocabulary.”
	<b>using mechanical means: (Cognitive)</b> using mechanical means such as short forms, jotting down, images, adding notes	“你直接读的是中文，实际上脑袋已经开始想英文了、、、、有的人在用图像在想。你读了一个原文，你不管原文在说的是什么，你想的是图像的话，结果你就发现你的翻译过程，实际上是用图像在 translate。”( PaT1 ) “While you are reading the Chinese, actually you are thinking in English already...Some people think with images. You read a source text, and no matter what it is about, if you are thinking in images, you may find out that you are translating with

		images.”
<b>Psycho-physiological Strategies</b>	<b>evaluating one’s ability: (Metacognitive)</b> evaluating one’s own ability in translation	“这个翻译，我就很难一字一句，我希望把它一字一句翻下来，但后来太困难。” ( PaT5 ) “For this translation task, it’s hard for me to translate word-by-word. I wish I could translate that way, but it’s too difficult in the end.”
	<b>monitoring affects: (Affective)</b> monitoring one’s affects during the translation process	“我是比较 comfortable，我通常不会改，而且自己会告诉自己不要改，所以我 comfortable 很多时候会跳过。”(PT2) “If I’m feeling comfortable (about my translation), I will make no change and I keep reminding me not to change. Therefore, when I’m feeling comfortable, I will skip it.”
	<b>showing confidence: (Affective)</b> showing confidence in conducting the translation task	“没错没错，我觉得这是一个最好的翻译。” (PT4) “Yeah, that’s right. I think this is the best translation.”
	<b>showing motivation/attitude: (Affective)</b> showing one’s motivation or attitude in translation	“其实我很喜欢翻译，我很享受翻译。” ( PaT2 ) “In fact, I love to translate and I really enjoy it.”
	<b>showing perseverance: (Affective)</b> showing one’s perseverance in refining the product	“现在就在读了，几乎每遍读都能改点东西，永远在改。” (PT5) “I’m reading it now. There is always something to be changed, almost every time I read it. I’m revising it all the time.”
	<b>relying on personal preference: (Affective)</b> showing one’s personal preference in choosing among many choices	“我挑了一个词，因为这个词 ( enlighten )，我喜欢这个词。” ( PaT3 ) “I picked up this word ‘enlighten’, because I like this one.”
	<b>showing satisfaction: (Affective)</b> Showing satisfaction with the translation	“整个这个翻译当中，其实我最满意的是这句话‘have a manner of fun’这句话是我最满意的。还有 break me down.”(PT5) “As to the translation in general, I’m most satisfied with this sentence ‘have a manner of fun’ which is the most satisfying one. And ‘break me down’ as well.”

**APPENDIX 6: REFERENCE TRANSLATION****Learning and Personal Inclination**

translated by Zhang Peiji

Scholars of the older generation often urge young people to develop interest in learning because they themselves have been enjoying the real pleasure of academic studies. And they are ever ready to cite their own example by way of advice, in hopes of enabling young people to gain access to scholarship in an enjoyable way. For example, the distinguished scholar Liang Qichao once said wittily, “I always stand for interest-ism. If you broke down Liang Qichao’s stuff into its component parts, there would be nothing left except an element named ‘interest’.” Mr. Liang was a man of profound learning who attached much importance to interest. He attained great academic success because he pursued scholarly study solely for its own sake, without any ulterior motive. A man who is really interested in learning sometimes does act like one possessed. He forgets his approaching old age and works hard even to the neglect of his meals and sleep. Isn’t it but natural for a man of such devotion to have great scholarly achievements? Interest will never develop where no solid foundation has been laid for learning. There is no denying the fact that Mr. Liang owed his wide erudition and unusual literary talent, for the most part, to his good grasp of foundation knowledge.

## APPENDIX 7: SCORING RUBRIC AND SHEET

### Translation Assessment Rubric

T=Translation; TL=target language; ST=source text

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#### I. Source Text Meaning

- 5 Translation contains elements that reflect a detailed and nuance understanding of the major and minor themes of the ST and the manner in which they are presented in the ST. the meaning of the ST is masterfully communicated in the T.
  - 4 T contains elements that reflect a complete understanding of the major and minor themes of the ST and the manner in which they are presented in the ST. The meaning of the ST is proficiently communicated in the T.
  - 3 T contains elements that reflect a general understanding of the major and most minor themes of the ST and the manner in which they presented in the ST. There may be evidence of occasional errors in interpretation but the overall meaning of the ST appropriately communicated in the T.
  - 2 T contains elements that reflect a flawed understanding of major and/or several minor themes of the ST and/or the manner in which they are presented in the ST. There is evidence of errors in interpretation that lead to the meaning of the ST not being fully communicated in the T.
  - 1 T shows consistent and major misunderstanding of the ST meaning.
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#### II. Style and Cohesion (addresses textual sub-component)

- 5 T is very well organized into sections and/or paragraphs in a manner consistent with similar TL texts. The T has a masterful style. It flows together flawlessly and forms a natural whole.
- 4 T is well organized into sections and/or paragraphs in a manner consistent with similar TL texts. The T has style. It flows together well and forms a coherent whole.
- 3 T is organized into sections and/or paragraphs in a manner generally consistent with similar TL texts. The T style may be inconsistent. There are occasional awkward or oddly placed elements.

- 2 T is somewhat awkwardly organized in terms of sections and/or paragraphs or organized in a manner inconsistent with similar TL texts. The T style is clumsy. It does not flow and has frequent awkward or oddly placed elements.
  - 1 T is disorganized and lacks divisions into coherent sections and/or paragraphs in a manner consistent with similar TL texts. T lacks style. T does not flow together. It is awkward. Sentences and ideas seem unrelated.
- 

### **III. Situational Appropriateness (addresses pragmatic sub-component)**

- 5 T shows a masterful ability to address the intended TL audience and achieve the translation's intended purpose in the TL. Word choice is skillful and apt. Cultural references, discourse and register are completely appropriate for the TL domain, text-type, and readership.
  - 4 T shows a proficient ability in addressing the intended TL audience and achieving the translation's intended purpose in the TL. Word choice is consistently good. Cultural references, discourse and register are consistently appropriate for the TL domain, text-type, and readership.
  - 3 T shows a good ability to address the intended TL audience and achieve the translation's intended purpose in the TL. Cultural references, discourse and register are mostly appropriate for the TL domain but some phrasing or word choices are either too formal or too colloquial for the TL domain, text-type, and readership.
  - 2 T shows a weak ability to address the intended TL audience and achieve the translation's intended purpose in the TL. Cultural references, discourse and register are at times inappropriate for the TL domain. Numerous phrasing and/or word choices are either too formal or too colloquial for the TL domain, text-type, and readership.
  - 1 T shows an inability to appropriately address the intended TL audience and achieve the translation's intended purpose in the TL. Cultural references, discourse and register are consistently inappropriate for the TL domain. Most phrasing or word choices are either too formal or too colloquial for the TL domain, text-type, and readership.
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### **IV. Grammar and Mechanics (addresses micro-linguistic sub-competent)**

- 5 T shows a masterful control of TL grammar, spelling and punctuation. Very few or no errors.

- 4 T shows a proficient control of TL grammar, spelling and punctuation. Occasional minor errors.
  - 3 T shows a weak control of TL grammar, spelling and punctuation. T has frequent minor errors.
  - 2 T shows some lack of control of TL grammar, spelling and punctuation. T is compromised by numerous errors.
  - 1 T shows lack of control of TL grammar, spelling and punctuation. Serious and frequent errors exist.
- 

#### **V. Translation Skill (addresses strategic sub-component)**

- 5 T demonstrates able and creative solutions to translation problems. Skillful use of resource materials is evident.
  - 4 T demonstrates consistent ability in identifying and overcoming translation problems. No major errors and very few minor errors are evident. No obvious errors in the use of resource materials are evident.
  - 3 T demonstrates a general ability to identify and overcome translation problems. However, a major translation error and/or a large number of minor errors are evident and compromise the overall quality of the translation. Improper or flawed use of reference materials is reflected in the TT.
  - 2 T demonstrates some trouble in identifying and/or overcoming translation problems. Several major translation errors and/or a large number of minor errors are evident and compromise the overall quality of the translation. Improper or flawed use of reference materials is reflected in the TT.
  - 1 T reflects an inability to identify and overcome translation problems. Numerous major translation errors and/or minor translation errors lead to a seriously flawed translation. Reference materials and resources are consistently used improperly.
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## Scoring Sheet [Total Score: 25]

<b>Rubric Categories</b>	<b>Category Score</b>	<b>Comments and Notes</b>
<b>Source Text Meaning</b> [5, 4, 3, 2, 1]		
<b>Style and Cohesion</b> [5, 4, 3, 2, 1]		
<b>Situational Appropriateness</b> [5, 4, 3, 2, 1]		
<b>Grammar and Mechanics</b> [5, 4, 3, 2, 1]		
<b>Translation Skill</b> [5, 4, 3, 2, 1]		