The Development of Expertise in Interpreting through Self-Regulated Learning for Trainee Interpreters

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Abstract

The purpose of this study is to investigate the role of self-regulated learning in the development of expertise in conference interpreting for trainee interpreters. It aims to identify and quantify the learner factors affecting the development of expertise in interpreting and their interrelationships, chart their changes over time, and specify their relationship to interpreting performance.

Participants were thirty Stage-1 students and eleven Stage-2 direct-entry students admitted into the MA in Translating and Interpreting Programme (Chinese strand) at Newcastle University in September 2009. Quantitative data were collected at three time points over the course of the academic year with the aid of a self-designed questionnaire.

Trainee interpreters' motivational beliefs and metacognitive knowledge of strategies were found to be major influences on their use of self-regulated learning strategies. Motivational beliefs and strategy use predicted interpreting performances. In turn, interpreting performances were found to influence subsequent motivational beliefs, metacognitive knowledge and strategy use. Student entry characteristics such as level of language on entry and age played a moderating role in the relations between the cognitive and motivational factors and the development of self-regulation, as well as in the relations between self-regulated learning and the development of expertise in interpreting. These findings can be seen in the context of a model of expertise development in interpreting.

The findings highlight the role of modifiable learner factors in interpreter training theories, as well as the role of unmodifiable learner factors in deliberate-practice or self-regulated learning approaches to the learning of interpreting. The key implication of the study for interpreter training practice is that teaching and learning need to focus more on the adaptive use of self-regulated learning strategies, rather than solely emphasizing time spent practising. At the same time, strategy use needs to be taught as part of a framework of motivational and cognitive factors, rather than in isolation.

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List of Abbreviations

AIIC	Association internationale des interprètes de conférence (The International Association of Conference Interpreters)
CA	Continuous Assessment
CI	Consecutive Interpreting
IELTS	International English Language Testing System
ILFQ	Interpreting Learner Factors Questionnaire
MSLQ	Motivated Strategies for Learning Questionnaire
SI	Simultaneous Interpreting
SRL	Self-Regulated Learning

Chapter 1

Introduction

In this chapter I introduce the background to the research, the main research problem, and the research questions. I provide a justification for the research, and a brief description of the methodology. In conclusion, I present an outline of the thesis.

1.1 Background to the Research

Interpreting has been characterized by Pöchhacker as 'an immediate form of translational activity, performed for the benefit of people who want to engage in communication across barriers of language and culture' (2004: 25). As a result of the boom in international meetings, and with the impact of globalization, there has been a growing need for professional interpreters whose role is to act as a cross-cultural link and facilitate multilingual communication (AIIC Training Committee, 2006). Conference interpreters are made, not born (Herbert, 1978; Mackintosh, 1999; Kalina, 2000). This highlights the importance of training, particularly formal/institutional training, for conference interpreters (Gile, 2009: 1; Kelly & Martin, 2009: 294). According to Gile (2009: 7), formal training can help individuals who wish to become professional interpreters enhance their performance to the full extent of their potential as well as helping them develop their interpreting skills more rapidly than they could through field experience and self-instruction. The growing need for professional interpreters has led to a sharp increase in interpreter training programmes in many parts of the world (Gile, 2009: 1; Kelly & Martin, 2009: 294).

Training is probably the most frequently discussed issue in interpreting studies (Gile, 2000, 2009; Pöchhacker, 2004; Sawyer, 2004). Indeed, the vast majority of research on interpreting has been carried out in the context of interpreter training by academics who are involved in interpreter training, and a considerable amount of research uses the training environment for reflection, observation and experimenting (Pöchhacker, 2004: 177; Gile, 2009: 7). According to Gile (2009: xiv), 'training-centred and training-related publications have come out in large numbers and are still being produced at a high rate, dozens or more each year, including research papers, theses, dissertations, monographs

and collective volumes'. However, the bulk of the literature seems to cover only one aspect of interpreter training, namely pedagogy (Pöchhacker, 2004; Sawyer, 2004; Gile, 2009). As a result, the literature on interpreter training tends to show a teacher's perspective, focusing on themes that are usually under the teacher's control, such as basic curricular issues, student selection and performance assessment, as well as teaching methods aimed at developing the skills that make up the interpreter's core competence (Pöchhacker, 2004: 177). Far less common in the available literature, however, are inquiries centring on the trainee or learner, who is by far the single most important element in any training process (Kelly, 2005: 43). Still less common are studies on the modifiable learner factors.

It is only recently that we have begun to see a few studies which look at the learning aspect of interpreter training. For example, Ficchi (1999) suggested an autonomous approach to consecutive interpretation learning. Horváth (2007) explored whether training at an interpreter training centre developed students' capacity to carry out autonomous learning. Shaw and her colleagues investigated student perspectives about factors affecting achievement (Shaw, Grbic & Franklin, 2004; Shaw & Hughes, 2006). More recently, Moser-Mercer (2008) examined learners' or novices' skill acquisition in interpreting from a human performance perspective, calling for the development of effective learning environments that promote self-regulation. However, her study did not involve empirical investigations into students' learning processes. Rosiers, Eyckman and Bauwens (2011) investigated individual difference variables in the context of interpreting; however, their chosen focus was on such variables as students' self-perceived communication competence, self-perception of language skills, anxiety levels and integrative motivation. In their study, students' profiles of these variables were related to sight translation performances rather than to consecutive or simultaneous interpreting performances.

In sum, no study to date has made a systematic attempt to examine empirically the multiple factors that influence the acquisition of expertise in interpreting for trainee interpreters. No research has systematically examined how modifiable learner factors, including motivational dimensions as well as cognitive dimensions, develop over time and how these factors relate to their consecutive or simultaneous interpreting performances. Most of what we know about the ways in which trainee interpreters go about their learning remains anecdotal. Questions are still unanswered about what

factors affect trainee interpreters' learning of conference interpreting. It is high time that we began to address, in a systematic way, the learning aspect of interpreter training.

Inspired by Moser-Mercer's call for the promotion of metacognitive skills and self-regulation in the learning of interpreting (2008), this research is designed to fill the gap in the literature on interpreter training. Taking a learner's perspective, this study attempts to investigate how trainee interpreters go about their learning of conference interpreting, and to ascertain the role of self-regulated learning in trainee interpreters' journey towards expertise in interpreting. To explore this complex issue, I will identify and quantify the dominant modifiable learner factors that contribute to the development of interpreting expertise, chart their development over time, and unravel their interrelationships as well as their relationship to interpreting performance. This will enable me to build a robust model for the acquisition of interpreting expertise, which provides a framework for understanding how trainee interpreters go about their learning of interpreting and thus can inform our interpreter training pedagogy. It is hoped not only that the interpreter trainer can benefit from the findings of this study, but also that the trainee/learner will find the results of this study useful, which may help them become more conscious of what they are doing as trainee interpreters.

1.2 Research Problem and Research Questions

The problem addressed in this research is: w*hat is the role of self-regulated learning in the journey of trainee interpreters towards expertise in conference interpreting?* In order to solve the research problem, I first turned to the literature of expertise studies, in a search for factors affecting the acquisition/development of expertise, especially those factors that are under the control of the learner. A review of major models pointed to three modifiable learner factors affecting the acquisition/development of expertise: motivation, knowledge base, and deliberate practice. Then, within the framework of social cognitive models of self-regulated learning, these three factors were further operationalized as four modifiable learner factors: motivational types/beliefs, metacognitive knowledge of strategies, effort, and use of self-regulated learning strategies. Accordingly, a general model of self-regulated conference interpreting learning was proposed where performance in interpreting was jointly determined by modifiable personal factors (e.g. motivation and knowledge), behavioural factors (e.g.

strategy use and effort), unmodifiable personal factors (i.e. student entry characteristics such as knowledge of B-language prior to the start of the course and age), as well as environmental factors. Thus, in order to satisfactorily solve the research problem, this study attempts to answer the following specific questions (see 5.2):

1) How do trainee interpreters' modifiable personal factors (i.e. motivation, knowledge) and behavioural factors (i.e. strategy use, effort) change over time?

2) How do the relations between modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e. strategy use, effort) change over time?

3) How do modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e. strategy use, effort) correlate with/predict interpreting performances?

1.3 Justification for the Research

It has been common practice in the research on interpreting expertise to compare expert and novice performance (see Chapter 2 for a review). The primary goal was to determine the characteristics, behaviours and abilities of experts so that these features could be trained in non-experts (Alexander, 2003). An expert is generally considered to be someone who has attained a high level of performance in a given domain as a result of years of experience. A novice is usually defined as someone who has little or no experience in a particular domain. Without question, the interpreting studies community has garnered much from past decades of expert–novice research. The sharp distinctions arising between novices and experts have helped to establish the reasons for superior task performance. This approach has also pointed to the abilities or features that novices must eventually acquire if they are to operate as experts. Indeed, as Liu (2008: 160) puts it, knowing how expert interpreters perform their craft differently from novices and how expertise progresses along a developmental course is crucial to the success and efficiency of interpretation training.

Despite the significant contributions of expert–novice research, it has been difficult to translate the findings of expert–novice research into the practice of interpreter training any further for the following reasons. Firstly, our review in Chapter 2 has revealed that research on expertise in interpreting has consisted mainly of studies in contrasts, with a

focus on extremes. Characterizations of expertise were based on sharp contrasts between experts and novices. This approach casts a dichotomous veil over expertise—one is a novice *or* an expert (Alexander, 2003). This orientation fails to illuminate the process by which one progresses from being a true novice to a higher level of expertise in interpreting. Although sharp contrasts between experts and novices are useful starting points, it is the journey from novice to expert that is central to interpreter training. The contrastive study of expert and novice performance could not explain what specifically would be required to set novices on the right course towards expertise in interpreting. Secondly, past research on expertise in interpreting has concentrated on the cognitive dimensions of performance (see review in Chapter 2), while overlooking powerful social or motivational factors. Yet, individuals' motivations are significant contributors to the development of expertise (e.g. Ericsson et al., 1993; Charness, Krampe & Mayr, 1996). Without understanding those motivational dimensions, interpreter trainers cannot explain why some individuals devote the time and energy needed to acquire/develop expertise in interpreting while others do not, or why some individuals persevere in their journey towards expertise while others do not (Alexander, 2003). Moser-Mercer (2008) pointed out that past research on the cognitive dimensions of interpreting has led to a modelling of the interpreting process of the hypothetical expert interpreter with solid professional experience. However, skill acquisition in interpreting, and the various stages learners pass through towards more expert performance, cannot readily be explained with the models developed for expert interpreters (Moser-Mercer, 2008). Given these limitations of the expert–novice research, it seems worthwhile to search for alternative conceptions of the development of expertise in interpreting.

In recent years, there has been an increasing amount of literature on the acquisition and development of expertise in different domains. The key concept in current approaches to explaining expertise is the notion of deliberate practice (Ercisson, Krampe & Tesch-Römer, 1993). Expert performance is explained in terms of acquired characteristics resulting from extended deliberate practice. Individuals are thought to acquire new knowledge, strategies, and skills which allow them to restructure their current performance. This is not done as an automatic response to experience in the field, but rather as a consequence of structured learning and effortful adaptation. Performance is improved when individuals participate in domain-specific activities that provide optimal opportunities for learning. Ericsson, Krampe and Tesch-Römer (1993)

have described deliberate practice as those activities which are highly relevant to improving performance and require significant personal effort to initiate and maintain. Deliberate practice involves: (a) setting goals involving specific skills; (b) intense involvement in structured training sessions; (c) performing tasks that are not inherently motivating and contain few external rewards; and (d) self-monitoring performance outcomes and receiving feedback about current performance (Ericsson, Krampe & Tesch-Römer, 1993). Although the detailed characteristics of deliberate practice differ as a function of the demands on the expert performance in each domain of expertise, the best individuals have been found to engage in a greater quantity and quality of deliberate practice in a wide range of domains (Ericsson, 2000/01: 214).

The concept of deliberate practice has permeated the literature on expertise during the past two decades. Although the principles of deliberate practice have been established in other domains such as chess, music, medicine and sports, Ericsson (2000/01) suggested that these principles could provide insights into developing expert performance in interpreting. Moser-Mercer (2008) also stressed the importance of deliberate practice for skill acquisition in interpreting. She pointed out that the concept of deliberate practice emphasizes the importance of students monitoring their learning so that they seek feedback and actively evaluate their strategies and current levels of understanding. She also pointed out that deliberate practice in interpreting is very different from simply repeating the same exercise over and over again, or doing 'mileage' in interpreting practice that emphasizes quantity over quality of the learning experience. Therefore, it seems worthwhile to draw upon the principles of deliberate practice to provide insights into our inquiry about how trainee interpreters go about their learning of conference interpreting.

Despite its relevance and its potential implications for studying the acquisition of expertise in interpreting, the deliberate-practice framework alone cannot fully describe the various aspects of trainee interpreters' learning of conference interpreting in an educational setting. The deliberate-practice approach focuses on identifying relations between characteristics and durations of study activities and performance, while the issues of the motivational and habitual factors that lead students to engage in the study activities are not a primary concern. Self-regulated learning models, on the other hand, include self-motivation as well as metacognition and behaviour performance (Pintrich & De Groot, 1990; Zimmerman, 1995), hence they are well-suited for explaining the learning of conference interpreting in an educational setting. Self-regulated learning

models are also distinctive because they seek to understand learning from a student's perspective, especially that of his or her self-image as a learner. These self-beliefs are assumed both to influence students' proactive efforts to self-regulate studying and to be influenced reciprocally by the results of those efforts (Zimmerman, 1989). They not only provide descriptions of 'how' students come to understand and master these tasks through the use of various cognitive resources (e.g. prior knowledge, others such as teachers and peers) and tools (e.g. cognitive and regulatory learning strategies), but also provide insights into questions about the 'whys' of student choice, level of activity and effort, and persistence at classroom academic tasks (Garcia & Pintrich, 1994: 127). In addition, the properties of deliberate practice (e.g. task analysis, goal setting, strategy choice, self-monitoring, self-evaluations, and adaptations) have been studied as key components of self-regulation (Boekaerts, Pintrich & Zeidner, 2000; Schunk & Zimmerman, 1998; Winne, 1997; Zimmerman & Schunk, 2001). Therefore, in order to gain a full and richer understanding of trainee interpreters' learning of conference interpreting, we can incorporate the properties of deliberate practice in a self-regulated learning model, thus considering both the activities that increase the productivity and efficiency of study time (i.e. deliberate practice) and the social, cognitive and motivational factors that lead certain students to engage in these effective study activities. In actual fact, self-regulated learning has been used as a model for understanding student learning or developing instructional interventions to improve learning and performance in diverse disciplines, as well as across a range of academic levels, in prior research (see Chapter 3). As far as we know, it has not been used as a framework for understanding trainee interpreters' development of expertise in conference interpreting in educational settings.

Self-regulation is not a mental ability or an academic performance skill; rather it is the self-directive process by which learners transform their mental abilities into academic skills (Zimmerman, 2002: 65). Learning is viewed as an activity that students do for themselves in a proactive way rather than as a covert event that happens to them in reaction to teaching. Self-regulation is generally defined by Zimmerman as 'self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals' (Zimmerman, 2000: 14). Self-regulated learners are proactive in their efforts to learn because they are aware of their strengths and limitations and because they are guided by personally set goals and task-related strategies. These learners monitor their behaviour in terms of their goals and self-reflect

on their increasing effectiveness. This enhances their self-satisfaction and motivation to continue to improve their methods of learning. Because of their superior motivation and adaptive learning methods, self-regulated students are "not only more likely to succeed academically but to view their futures optimistically" (Zimmerman, 2002: 66).

To date there have been no empirical studies on the development of modifiable learner factors (i.e. self-generated thoughts, feelings and actions, in Zimmerman's words) in trainee interpreters and their interrelationships. Nor have there been empirical studies on the relation between modifiable learner factors and trainee interpreters' attained levels of performance in interpreting. As a result, we know very little about the process by which a trainee interpreter progresses from a true novice to a higher level of expertise. Nor do we know which specific modifiable learner factors would set novices on the right course towards expertise in interpreting, nor how these factors would combine to affect the learning process.

It is therefore of significant importance for us to investigate the role of self-regulated learning in the journey of trainee interpreters towards expertise in conference interpreting. Such a study can help us better understand trainee interpreters' learning processes. It can also present insights in terms of improving the efficiency of conference interpreting learning. Furthermore, to investigate trainee interpreters' learning processes, and particularly to ascertain the differences between relatively successful and unsuccessful learners, will be an initial step in interpreter trainers playing a more effective role. The research will be of interest both to scholars of interpreting studies and to interpreter trainers. At the same time, the study presents a new area of application for the principles of deliberate practice and self-regulated learning theories.

1.4 Methodology

The primary objective of the present study is to explore the potential contributions of the fields of expertise studies and self-regulated learning to understanding the factors affecting conference interpreting learning and to improving interpreter education. The methodology chosen for the purposes of this study is a longitudinal quantitative survey. The main instrument is a self-designed questionnaire – *The Interpreting Learner Factors Questionnaire* (ILFQ). Quantitative data are collected through closed questions. The questionnaire is intended to generate information about the modifiable learner

factors (i.e. learners' motivational beliefs, metacognitive knowledge, effort, and use of self-regulated learning strategies) that are assumed to affect the development of expertise in conference interpreting, as well as demographic information including students' gender, age, IELTS score on admission, etc. To develop the ILFQ, I borrowed conceptual categories and adapted questionnaire items from existing literature and instruments in the areas of language learning and self-regulated learning. A convenience sample from the Postgraduate Programme in Translating and Interpreting (Chinese strand) at Newcastle University was used in this investigation: The Chinese Translating and Interpreting Programme at Newcastle University consists of two stages of study over 24 months: Stage 1 (i.e., Year 1) and Stage 2 (i.e., Year 2). I chose as the basis of my study students who entered the Chinese Translating and Interpreting Postgraduate in September 2009, including all of the students who entered Stage 1 and those students who entered Stage 2 directly because they had met the Stage-2 entry requirements. Over the course of the academic year, participants were asked to complete three surveys, which were administered during the registration week prior to the start of the course (September 2009), at the end of Semester One (January 2010), and at the end of Semester two (May 2010). Data analyses focused on Stage-1 students primarily while using Stage-2 students as a supplement. Statistical analyses such as paired-samples t-tests, repeated measures ANOVAs, Pearson correlation analyses and independent-samples t-test, as well as multiple regression analyses were conducted on the data in order to answer the research questions.

The aim of this study is to quantify the dominant learner factors, their development over time, and their interrelationships, as well as their relationship to interpreting performance. It is hoped that the findings of this longitudinal quantitative survey will form the basis for further research. Qualitative research projects are recommended to follow up on these findings, using such methods as students' learning diaries or interviews.

1.5 Outline of the Thesis

Chapter 1 is an introductory chapter. In this chapter, the background to the study has been described and the research problem and the research questions introduced. To justify the research problem, the importance of the research problem as well as the

general lack of research on trainee interpreters' learning processes in the field of interpreter training has been discussed. Then, an introductory overview of the methodology was given. Finally, an outline of the study is presented.

Chapters 2–4 review a range of literature related to the study. Chapter 2 discusses the current literature available in the field of expertise studies as well as expertise in conference interpreting. Chapter 3 is a detailed review of related research in the field of self-regulated learning, with particular emphasis on the social cognitive perspective of self-regulation. Chapter 4 brings the previous two chapters together and explains how this study developed gradually out of a review of the literature. It discusses the origins of the four modifiable learner factors assumed to affect the acquisition/development of expertise in interpreting. This chapter brings the literature review to a conclusion by proposing the general conceptual framework for this study. Although there is extensive literature on motivation (e.g., Dörnyei, 2001, 2005; Gardner, 1985), strategies (e.g., Macaro, 2001, 2006; Oxford, 1990), and autonomous learning (e.g., Dickinson, 1987, 1995; Little, 1991, 1995) in the field of second language acquisition (SLA) or language teaching methodology, they were deemed to be irrelevant to the present study and, thus, were not included in the review.

Chapter 5 is the Methodology chapter. This chapter sets out the research questions and describes the major methodology used to collect the data which will be used to answer the questions. The methodology used in this study is a longitudinal quantitative survey. A self-designed questionnaire was used to collect data. Chapter 5 describes how the questionnaire was designed and piloted, as well as the participants in the study. Participants were asked to complete three surveys over the course of one academic year. Data analysis procedures are described.

Chapter 6 is the Results chapter. In this chapter, the results of the data analysis are presented. This chapter is divided into three parts according to the three research questions of the study.

Chapter 7 is the Discussion chapter. This chapter discusses the findings of Chapter 6 within the context of self-regulated learning, deliberate practice, interpreter training, and expertise studies in general.

Chapter 8 is the Conclusions and Implications chapter. This chapter summarizes the major findings emerging from this study and discusses the theoretical as well as the

practical implications for interpreter training. It also discusses the limitations of the study, and suggests some topics and methodologies for future research.

Chapter 2

Psychological Perspectives on Expertise in Conference Interpreting

2.1 Introduction

Since the mid-1970s, various research traditions, or paradigms, have emerged in interpreting studies: for example, the initial interpretive theory of translation paradigm (IT paradigm; the bootstrap paradigm) in the 1970s, the cognitive processing paradigm (CP paradigm) in the 1980s, and so on (see Pöchhacker, 2004, for a review of paradigms in interpreting studies). This chapter focuses on an important paradigm that emerged in interpreting studies in the 1990s – the so-called expert–novice paradigm (Moser-Mercer, 1997; Moser-Mercer et al., 2000). In this chapter I review research on expertise in conference interpreting from the perspective of expertise studies.

2.2 The Expert–Novice Paradigm in Interpreting Research

Since interpreting research became established as a field of academic study in its own right in the mid-1970s, the complexity of the subject has led to the application of numerous paradigms from neighbouring disciplines, for example applied linguistics, translation theories, psycholinguistics, pragmatics, semiotics, communication science, cognitive sciences, neurophysiology and neurolinguistics (Riccardi, 2002: 83). One field that opened up to interpreting studies in the 1990s is the framework for expertise research – an area of cognitive psychology which has grown out of work on information processing and artificial intelligence since the 1970s (see Hoffman, 1997). Expertise research is concerned with understanding, in some detail, the knowledge, reasoning, and skills of experts in a variety of domains, with developing methodological tools to elicit such knowledge, and with describing similarities among experts in different domains (Moser-Mercer et al., 2000). An expert is generally considered to be someone who has attained a high level of performance in a given domain as a result of years of experience. A novice is usually defined as someone who has little or no experience in a particular domain. Both categories allow for some degree of variation, and Klein and Hoffman, as cited by Moser-Mercer et al. (2000), have argued for finer distinctions along the continuum from novice to expert. Expertise, then, refers to the characteristics, skills,

and knowledge that distinguish experts from novices and less experienced people (Ericsson, 2006).

The nature of expertise has been studied in two general ways: via the 'absolute approach' and the 'relative approach' (Chi, 2006: 21). The absolute approach studies exceptional experts with the goal of understanding how they perform in their domain of expertise, and how they are distinguished from others in the field. Chi (2006) calls this type of work in psychology the study of exceptional or absolute expertise. The relative approach to expertise studies experts in relation to novices. This approach assumes that expertise is a level of proficiency that novices can achieve. Because of this assumption, the definition of expertise for this contrastive approach can be more relative, in the sense that the more knowledgeable group can be considered the 'experts' and the less knowledgeable group the 'novices' (Chi, 2006: 22). One advantage of the study of relative expertise is that we can be a little less precise about how to define expertise since experts are defined relative to novices on a continuum. In this relative approach, one goal is to understand how we can enable less skilled or experienced persons to become more skilled, since the assumption is that expertise can be attained by a majority of learners or trainees. This goal has the advantage of illuminating our understanding of learning since presumably the more skilled person becomes expert-like from having acquired knowledge about a domain, that is, from learning and studying (Chi & Bassok, 1989) and from deliberate practice (Ericsson, 2006; Ericsson, Krampe & Tesch-Römer, 1993). Thus, the goal of studying relative expertise is not merely to describe and identify the ways in which experts excel. Rather, the goal is to understand how experts became that way so that others can learn to become more skilled and knowledgeable (Chi, 2006).

With the emergence of the cognitive turn in psychology and educational psychology, a new role for expertise studies also emerged. Expert cognition was conceived as the 'goal state' for education, the criterion for what the successful educational process should produce, as well as a measure by which to assess its progress, while novice cognition (as well as that of various levels of intermediates) could serve as 'initial states', as models of the starting place for the educational process (Feltovich, Prietula & Ericsson, 2006: 45). The task of education was to determine the kinds of operations that could transform the initial states into the desired goal state. Meanwhile, Feltovich, Prietula and Ericsson (2006: 46) pointed out that it is untrue that, upon knowing how the expert does something, one might be able to 'teach' this to novices directly. As they

explained, expertise is a long-term developmental process, resulting from rich instrumental experiences in the world and extensive practice, which cannot simply be handed to someone (2006: 46).

According to Ericsson (2000/01: 202–203), the domain of interpreting has many characteristics in common with other domains of professional expertise, such as computer programming, medicine and accounting. Professional interpreters must have considerable experience prior to becoming professionals. They have mastered the source and target languages and are likely to have studied languages and various aspects of translation at university level. Another similarity between expertise in interpreting and expertise in other professional domains is that interpreters are specialists and they are a very small professional elite.

Hoffman (1997) and Moser-Mercer (1997, 2000) were the first to employ methodology drawn explicitly from the cognitive psychology of expertise for the study of interpreting, drawing connections between research on expertise and expertise in interpreting. Their contributions, as Sawyer (2004) put it, have led to initial theory-building based on the results of research in other domains. In his seminal article, Hoffman (1997) surveyed findings from cognitive science research on expertise, with a focus on applications to the domain of simultaneous interpreting, including methods of knowledge elicitation that might be useful in the empirical investigation of proficiency at simultaneous interpreting. Guided by the so-called expert–novice research paradigm, Moser-Mercer and her colleagues (Moser-Mercer et al., 2000; Moser-Mercer, 2000, 1997) carried out a large-scale interdisciplinary research project. Their primary interest was to identify and describe sub-skills or sub-processes of language processing in which professional interpreters may differ from students and to exploit these differences for pedagogical purposes, in particular aptitude testing. Moser-Mercer (2000: 349) cites the ability to concentrate as a key success factor in the early stages of acquiring interpretation skills and abilities. Furthermore, Moser-Mercer et al. (2000: 126–127) found significant differences between experts and novices in the language combination of French (native) and English (acquired) in a reading exercise under delayed auditory feedback conditions, but no significant differences in shadowing or verbal fluency tasks.

In comparison, Liu (2001) finds that expert interpreters working from acquired English into native Chinese perform significantly better than non-experts on domain-related tasks. She cites ability in selective encoding, better monitoring of output, and more

efficient allocation of working memory resources as pertinent areas (2001: 93). She found that experts were more selective in terms of what to interpret and what not to (2001: 90). Positive for training in simultaneous interpreting is her conclusion that expertise may be achieved by acquiring identifiable domain-specific skills rather than relying on general qualities such as a large working memory span (2001: 89). Her results also suggest the importance of real-world experience in attaining expertise (2001: 91).

In her empirical study on the development of expertise in consecutive interpreting, Cai (2001) compared the consecutive interpreting performances of Chinese–French interpreters and students of interpreting, and found that interpreters' language ability was the least important factor among all the variables that could distinguish professional interpreters, trained students and untrained students.

A study by Kurz (2003) investigated what sets novices and experts apart in terms of how they perceive, deal with and are affected by stress. In her pilot study designed to measure stress levels among students and professionals, the pulse rate and skin conductance level (SCL) of two interpreters interpreting at a highly technical and demanding medical conference and three students in an interpreting class were measured. Although the SCL method failed to discriminate between experts and novices, the average pulse rate varied significantly (students 97.6; professionals 74.4), clearly indicating higher stress levels among students. Kurz concludes that conference interpreters have learned to overcome their 'stage fright' with experience and are more stress-resilient than beginners. Student interpreters still grapple with problems of anxiety and stress (Kurz, 2003: 62).

Using the novice–expert paradigm, Liu, Schallert and Carroll (2004) carried out an experiment where professional interpreters' performance in simultaneous interpreting from English into Mandarin was compared to that of two groups of student interpreters, beginners and advanced, with the aim of determining whether performance differences exist in simultaneous interpreting by individuals with similar general cognitive abilities but different skills specific to the task of simultaneous interpreting. The results showed that the professional interpreters, who were not different from students in their general working memory capacity, outperformed student interpreters.

Christoffels, De Groot and Kroll (2006) reported experiments where they compared the performance of trained interpreters to that of bilingual university students and highly

proficient English teachers. The participants were all native speakers of Dutch and relatively proficient in English as a second language, but they differed in their proficiency in English and their professional training in simultaneous interpreting. The researchers examined performance on basic language and working memory tasks that are thought to engage cognitive skills important for simultaneous interpreting. The data of the experiments point to working memory as a critical sub-skill for simultaneous interpreting.

Drawing on the expert–novice paradigm, Köpke and Nespoulous (2006) carried out an in-depth investigation of working memory capacity among 21 professional interpreters (experts), 18 second-year interpreting students (novices) and two control groups (20 multilinguals and 20 students). They found that professional interpreters do not necessarily have a higher working memory capacity than those who have less experience in interpreting (novice interpreters), suggesting that differences in working memory may not be the only determinants of performance or expertise in interpreting.

In a research project designed as an expert–novice comparison, Hild (2007) investigated the characteristics of expert SI performance by contrasting a group of eight professionals (with nine years of experience on average) with a similar-sized group of interpreter trainees, three months into their Master degree in Conference Interpreting Techniques. The results clearly demonstrated a robust superiority for the experts in terms of performance accuracy, allocation of attention, and the ability to store and recall task-related information.

In his review of the contribution the perspective of expertise research can make to interpreting studies, Sawyer concludes that ‘expertise studies provide a theoretical framework to more thoroughly describe processes governing the evolution of interpreting competence’ (2004: 29) and that ‘expertise studies provide a range of quantitative and qualitative methodologies that can inform the process of learning and instruction in interpreter education’ (2004: 31).

Ericsson (2000/01) discussed how the expert-performance perspective can be applied to the study of professional interpreting. He proposed that the expert-performance approach to studying expertise in the domain of interpreting proceeds in three steps. The first step involves capturing the reliably superior performance of expert interpreters over other less skilled individuals, such as bilinguals who have all the necessary knowledge of languages but lack training and experience in simultaneous or consecutive

interpreting. Consequently, the key challenge is to find those representative real-time tasks that capture the essence of interpreting and show a clearly superior performance of the expert interpreters. Then, by having expert interpreters repeatedly perform these types of tasks, experimenters can identify, with experimental and process-tracing techniques, those complex mechanisms that mediate their superior performance, that is, the mediating mechanisms that are responsible for the performance advantage (Ericsson & Simon, 1993; Ericsson & Smith, 1991). The final step then involves explaining the origin of these mechanisms and, if they are acquired, what kinds of practice activities led to their acquisition. Ericsson (2000/01) noted that, as our understanding of the mechanisms mediating expert interpreting improves, and instruments to assess those mechanisms during the training of interpreters are developed, education and training can be made more individualized and effective.

On the other hand, Moser-Mercer (2008) pointed out that skill acquisition in interpreting and the various stages learners pass through towards more expert performance cannot readily be explained with the models developed for expert interpreters. Moser-Mercer (2008) proposed looking at the development of interpreting expertise from a performance psychology perspective. Guided by a human performance perspective, her study has offered a better understanding of the basic psychological skills underlying peak performance, identified the significance of psychological factors promoting improved performance, looked at the effects of situational and personal motivation on performance, illustrated the meta-cognitive skills required for promoting improved performance, and taken a first look at how cognitive ageing affects the development of expertise.

Liu (2008) examined the differences between expert and novice interpreters in their ability to manage their mental resources, particularly in the way attention is managed. She compared skills and sub-skills, analysed the cognitive abilities underlying the act of simultaneous interpreting, and provided evidence and counter-evidence from interpreting studies and cognitive science.

The research on interpreting studies to date has often opted to compare expert and novice performance in order to determine if there are observable differences in behaviours or abilities. Attention has tended to focus on describing underlying differences between the cognitive processes of novices and experts (Sawyer, 2004: 68) and on knowing how expert interpreters perform their craft differently from novices,

rather than on finding out how expertise develops from novice to expert. So far there have been no controlled longitudinal studies to trace the development of expertise in interpreting from one period to another. No research has investigated trainee interpreters' initial development of expertise in interpreting, starting from their introduction to the domain as beginners, when language learners have to make a 'transition' (Shaw, Grbic & Franklin, 2004: 70) from language learning to interpreting learning.

Both common sense and expert knowledge tell us that it is a relatively long intermediate phase on the developmental continuum from being a novice to becoming an expert in a domain. For complex cognitive skills like conference interpreting, this intermediate phase in which students gradually acquire competence can have a very long duration. Consequently, there is a strong need for longitudinal research on the development of expertise in conference interpreting during that long intermediate phase, allowing for the measurement of differences or change in variables (e.g. ability factors, practice behaviours, and attitudinal aspects) from one period to another. Indeed, it can be argued that any claims about 'development' (or learning, progress, improvement, change, gains, and so on) can be interpreted most meaningfully only within a full longitudinal perspective (Ortega & Iberri-Shea, 2005: 26). Empirical longitudinal research will advance the insights of expertise research. Indeed, as Liu (2008: 160) has observed, knowing how expertise progresses along a developmental course is crucial to the success and efficiency of interpreter training.

2.3 Expertise in Interpreting

2.3.1 Defining Expertise in Interpreting

According to AIIC, 'a conference interpreter is a professional language and communication expert who, at multilingual meetings, conveys the meaning of a speaker's message orally and in another language to listeners who would not otherwise understand' (available at: http://www.aiic.net/en/prof/default.htm). There are two major modes of work in conference interpreting: simultaneous interpreting (SI) and consecutive interpreting (CI). In simultaneous interpreting, the interpreter sits in a booth

with a clear view of the meeting room and the speaker, and listens to and simultaneously interprets the speech into a target language (AIIC, available at: http://www.aiic.net/ViewPage.cfm?page_id=1629), usually his or her A (native) language. Here the interpreter listens to the beginning of the speaker's comments then begins interpreting while the speech continues, carrying on throughout the speech, to finish at almost the same time as the original (Jones, 2002: 5). Most Chinese simultaneous interpreters also have to work into a B–language (e.g. English), as only very few non-Chinese interpreters have a Chinese B language. In consecutive interpreting, the interpreter sits at the same table with the delegates or at the speaker's platform and interprets a speech into the target language after the speaker speaks (AIIC, available at: http://www.aiic.net/ViewPage.cfm?page_id=1629). The interpreter listens to a single intervention in its entirety, while taking notes. Then he or she renders the meaning of the message in another language with the help of notes. Note-taking is an essential element of consecutive interpreting, yet it is a singularly individual exercise: every interpreter has his or her own way of taking notes (AIIC, available at: http://www.aiic.net/ViewPage.cfm?page_id=1629). Given that the Chinese writing system is generally ideographic, with its thousands of characters generally representing meanings and not sounds, taking notes in Chinese often involves taking advantage of this ideographic feature of Chinese (Fan, 2010: 271).

The recognition of interpreting as a profession implies that there is a body of specialized knowledge and skills which is shared by its practitioners. This professional expertise needs to be externalized and made explicit, both for (re)presenting the profession to others in society and in support of the training of future practitioners (Pöchhacker, 2004: 32). According to Pöchhacker (2004: 166), competence in interpreting can be defined as the congruence of task demands (performance standards) and qualifications, and an understanding of the latter is crucial to professionalization in general and interpreter training in particular.

There is a growing body of research on the abilities and expertise which make up an interpreter's professional competence, chiefly informed by approaches from psychology (Pöchhacker, 2004: 166). According to Gile's analysis of the components of interpreting expertise, interpreters need to have good passive knowledge of their passive working languages, good command of their active working languages, sufficient knowledge of the themes and subject-matters addressed by the speeches, and good command of the principles and techniques of interpreting (1995: 4–5; 2009: 8–10). Moser-Mercer et al.

(2000) state that developing expertise in interpreting requires the integration of a large number of sub-skills and sub-processes of language processing. Taken together these sub-skills make up a complex cognitive skill, for which not everyone has the requisite aptitude. Liu (2008) defines expertise in interpreting as the result of well-practised strategies in each of the comprehension, translation, and production processes, and the interaction among these processes. Pöchhacker points out that, beyond cognitive processing and task performance as such, expertise in interpreting also includes assignment-related interactional skills and strategies for knowledge acquisition (2004: 168).

2.3.2 Levels of Expertise in Interpreting

Interpreter proficiency levels have been described for use in the language industry around the world. In the UK, CILT, the National Centre for Languages, published the latest edition of *National Occupational Standards in Interpreting* in 2006 (CILT, 2006). The National Occupational Standards in Interpreting set out what individuals need to do, and the knowledge and skills they need, to be competent professional interpreters. The Standards have been designed by and for the interpreting industry, to promote understanding of what constitutes professional and advanced levels of interpreting performance, in a range of contexts.

In the USA, the Government has developed the 'ILR Skill Level Descriptions for Interpretation Performance' (available at: http://www.govtilr.org/skills/interpretation SLDsapproved.htm) under the auspices of the Interagency Language Roundtable (ILR), which all U.S. government agencies adhere to as the standard yardstick of interpreter proficiency. The Skill Level Descriptions are primarily intended to serve as guidelines for use in government settings. The Skill Level Descriptions characterize interpreting performance in three bands: Professional Performance (Levels 3 to 5), Limited Performance (Levels 2 and 2+), and Minimal Performance (Levels 1 and 1+). Only individuals performing at the Professional Performance levels are properly termed 'interpreters'.

In Australia, the National Accreditation Authority for Translators and Interpreters (NAATI) sets national standards in translating and interpreting, and serves as an agency that issues accreditations for practitioners who wish to work in this profession in

Australia. Levels of accreditation in interpreting include ‘Paraprofessional Interpreter’, ‘Professional Interpreter’, ‘Conference Interpreter’, ‘Conference Interpreter (Senior)’ (the highest level) (available at: http://www.naati.com.au/at-accreditation-levels.html).

In China, currently two nationally recognized certification examinations for interpreters, that is, CATTI (China Aptitude Test for Translators and Interpreters) (available at: http://www.catti.cn/) and NAETI (National Accreditation Examinations for Translators and Interpreters) (available at: http://sk.neea.edu.cn/wyfyzs/index.jsp), are setting proficiency levels and issuing accreditations in interpreting. The two examination programmes are both open to the general public without limitations as to applicants’ education, background or experience. CATTI sets four proficiency levels in interpreting: Senior Interpreter, Interpreter Level One, Interpreter Level Two and Interpreter Level Three. NAETI offers three proficiency level exams with Level One as the highest and Level Three the lowest. In both programmes, a Level Two certification is considered essential for a professional interpreter.

The categories described for use in the language industry around the world differ from those defined in Expertise Studies in that they are static; they characterize abilities in working professionals rather than dynamically evolving skills in trainees (Sawyer, 2004: 71). Hoffman (1997: 199) describes the developmental progression of expertise in terms of categories stemming from medieval craft guilds. These levels have been adopted by Moser-Mercer (2000) and Kiraly (2000). The categories include the naïve or naivette, novice, initiate, apprentice, journeyman, expert, and master (see Appendix A for definitions). This developmental progression points in the direction of an operational definition of expertise: the expert is one whose judgments are uncommonly accurate and reliable and whose performance shows consummate skills and economy of effort, and one who can deal effectively with rare or tough cases and has special skills or knowledge derived from extensive experience with sub-domains (Hoffman, 1997: 199–200). In conference interpreting, Moser-Mercer et al. (2000: 108) observes that ‘it is often acknowledged that the student obtaining his final diploma can call himself an expert with some degree of justification, but that years of experience in the field are still required for him to become a full-fledged professional’.

It seems likely that the stages of apprentice, journeyman, and expert, and the associated phenomena or attributes, obtain in the domain of interpreting expertise (Hoffman, 1997: 200). Moser-Mercer (2000: 340) has advocated a stage-by-stage approach to skill

development in interpreting, appropriating the terminology of professional guilds: 'their [the trainee interpreters] goal is to complete the course as journeymen and to venture out into the world of international conferences to become true experts.' Although the time course of this metamorphosis is not specified here, elsewhere Moser-Mercer, as cited by Hoffman (1997), speculates that a period of ten years is necessary to reach the final stage on the journey – that of a master interpreter.

Drawing on Hoffman's (1997: 199) categories and adapting from Klein and Hoffman (1993: 206) and Hoffman et al. (1995: 132), Sawyer (2004: 72) has generated the 'Levels of expertise in interpreter educational programs' (see Appendix B). These levels of expertise in interpreter education assume that expertise is a level of proficiency that novices can achieve. This relative approach to expertise can illuminate our understanding of how experts become the way they are, so that novices can learn to become experts (Chi, 2006). The term 'novice' is used here in a generic sense, in that it refers to a range of non-experts, from naivettes to initiates.

2.3.3 Skill Acquisition in Interpreting

Cognitive psychology offers us rich insights into how people acquire skills. The development of a skill typically comprises three stages: the cognitive stage, the associative stage, and the autonomous stage (Anderson, 2005: 281–282). In the cognitive stage, novices develop a declarative encoding of the skill; that is, they commit to memory a set of facts (see below) that are relevant to the skill. Learners typically rehearse these facts as they first perform the skill. The knowledge acquired in the cognitive stage is inadequate for skilled performance. In the associative stage, novices gradually detect errors in the initial understanding and eliminate them and strengthen the connections among the various elements required for successful performance of a skill. Basically, the outcome of the associative stage is a successful procedure for performing the skill. However, it is not always the case that the procedural representation of the knowledge replaces the declarative. Sometimes, the two forms of knowledge can coexist side by side, as when we speak a foreign language fluently and still remember many rules of grammar. However, it is the procedural, not the declarative, knowledge that governs the skilled performance. In the autonomous stage, the procedure becomes more and more automated and rapid. Once the novice has switched from explicit use of declarative knowledge to direct application of procedural

knowledge, the learning of a skill nears completion. This process is called 'proceduralization' (Anderson, 2005: 289). Anderson (1982) argues that an important step in the development of expertise is the conversion of the novice's declarative knowledge to procedural knowledge via proceduralization.

Drawing on insights from cognitive psychology, Moser-Mercer (1997; Moser-Mercer et al., 2000) has advocated a stage-by-stage approach to skill development in interpreting. According to her (1997; Moser-Mercer et al., 2000), interpreters will first pass through a cognitive stage, during which they learn the relevant facts about interpreting, such as text analysis, multi-tasking, paraphrasing, etc. This stage is followed by an associative stage, during which the novice tries out these skills on various kinds of material, learns from his/her errors, considers alternatives, discusses solutions, strengthens connections between elements, and discovers and experiments with procedures. Eventually, the novice arrives at the autonomous stage, where procedures become more and more automated and rapid and require fewer processing resources. After much practice, skills are no longer conscious, effortful, deliberate and linear, but become automatic and intuitive (Hoffman, 1996). The result is increased speed and accuracy in experts' performances (Moser-Mercer, 1997; Moser-Mercer et al., 2000).

Moser-Mercer has also emphasized the importance of metacognition for skill acquisition in interpreting:

> … novices still need to engage in tactical learning whereby they learn specific rules for solving specific problems, such as how to convert particular syntactic constructions in the incoming message to matching constructions in the outgoing language. This tactical knowledge then becomes increasingly well organized and the novice develops a set of strategies (monitoring strategies, workload management strategies, etc.) designed to optimally solve the problems he encounters. (Moser-Mercer et al., 2000: 110)

Thus, learning to interpret cannot merely be equated to automating the largest possible number of underlying processes (Moser-Mercer et al., 2000).

In sum, as Moser-Mercer (1997) notes, there appear to be several phases a novice must go through on his/her way to becoming an expert, most of which encompass acquiring declarative knowledge and organizing knowledge base, and acquiring strategies such as comprehension strategies, planning strategies, monitoring strategies, and workload

management strategies. It has been claimed in the expertise literature that it takes around 5000 hours to become an expert. Moser-Mercer (1997) argues that if we total the hours a novice interpreter spends in class and in self-guided practice before achieving the level of expertise required to pass final exams, he or she usually comes quite close to this figure. Hoffman, as cited by Moser-Mercer (1997), suggests that time and maturation in themselves do not seem to hold the key to successful expert performance. According to Hoffman (1997), the development of expertise involves progressing from a literal understanding of problems to an articulated, conceptual, and principled understanding. The key is accumulation of skill based on experience and practice.

Chapter 3

The Self-Regulated Learning Perspective in Educational Psychology

3.1 Introduction

This chapter presents a review of the self-regulated learning perspective as addressed in educational psychology. It starts by setting out the social cognitive perspective of self-regulation that guides the present study. This is followed by a description of the key dimensions of self-regulation and the phases of self-regulatory development. The chapter concludes with a review of the common instruments for measuring self-regulated learning as well as of empirical studies investigating self-regulated learning.

3.2 A Social Cognitive Perspective on Self-Regulation

Self-regulated learning, or self-regulation, is neither a mental ability nor an academic performance skill; rather, it refers to the self-directive process by which learners transform their mental abilities into academic skills (Zimmerman, 2002: 65). Under a self-regulated learning perspective, learning is viewed as an activity that students do for themselves in a proactive way rather than as a covert event that happens to them in reaction to teaching. Self-regulated learners are proactive in their efforts to learn because they are aware of their strengths and limitations and because they are guided by personally set goals and task-related strategies. They monitor their behaviour in terms of their goals and self-reflect on their increasing effectiveness. This enhances their self-satisfaction and motivation to continue to improve their methods of learning. Because of their superior motivation and adaptive learning methods, self-regulated students are more likely not only to succeed academically but also to view their futures optimistically (Zimmerman, 2002: 66).

According to Zimmerman (2001, 2002), what characterizes self-regulating students is their active participation in learning from the metacognitive, motivational and behavioural point of view. Characteristics attributed to self-regulating persons coincide

with those attributed to high-performance, high-capacity students, as opposed to those with low performance, who show a deficit in these variables (Zimmerman, 1998b). However, with adequate training in these dimensions, all students can improve their degree of control over learning and performance. In their review of the characteristics of self-regulated learners, Torrano Montalvo and González Torres (2004) stated that self-regulated learners see themselves as agents of their own behaviour; they believe learning is a proactive process; they are self-motivated; and they use strategies that enable them to achieve desired academic results.

The present discussion draws most directly on prominent models of self-regulated learning that arise from a general social cognitive perspective on learning (e.g. Pintrich, 2000, 2004; Zimmerman, 2000). Social-cognitive models share several basic assumptions about the nature of self-regulated learning (Pintrich, 2004). One assumption is that self-regulated learning is dependent on students having a necessary set of skills or abilities as well as adaptive attitudes and beliefs that can be taught and learned by most students. In other words, students need to have both the 'skill' and the 'will' to learn. A second assumption in these models is the importance of setting goals or having performance standards or criteria. That is, students set some type of criterion, standard or goal against which comparisons are made in order to assess whether the learning process is proceeding effectively or if some change is needed. Third, Pintrich noted that most models view learners as active constructive participants in the learning process. In other words, students have the potential to manage their own academic functioning at least some of the time and in some contexts. A fourth general assumption of most models is that self-regulatory activities serve as mediators between personal and contextual characteristics and actual achievement or performance (Pintrich, 2004). Therefore, the importance of individuals' cultural, demographic, or personality characteristics, as well as the contextual characteristics of the classroom environment, can be understood through their impact on students' self-regulation of their cognition, motivation, and behaviour.

In social cognitive theory (Bandura, 1986), self-regulation is viewed as an interaction between personal, behavioural and environmental triadic processes. Within this framework, Pintrich defines self-regulated learning as 'an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behaviour, guided and constrained by their goals and the contextual features in the environment' (2000: 453). Zimmerman defines

self-regulation as 'self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals' (2000: 14). According to Zimmerman (2000), self-regulation is described as cyclical because the feedback from prior performance is used to make adjustments during current efforts. Such adjustments are necessary because personal, behavioural and environmental factors are constantly changing during the course of learning and performance, and must be observed or monitored using three self-oriented feedback loops (see Figure 3.1). The feedback loops involved in monitoring one's internal state, one's behaviours and one's environment constitute what Zimmerman (2000) has described as the triadic forms of self-regulation. Covert self-regulation involves monitoring and adjusting cognitive and affective states. Behavioural self-regulation involves self-observing and strategically adjusting performance processes, such as one's method of learning. Environmental self-regulation refers to observing and adjusting environmental conditions or outcomes. According to Zimmerman (2000), these triadic feedback loops are assumed to be open. Open loop perspectives include proactively increasing performance discrepancies by raising goals and seeking more challenging tasks. Thus, self-regulation involves triadic processes that are proactively as well as reactively adapted for the attainment of personal goals (Zimmerman, 2000: 15).

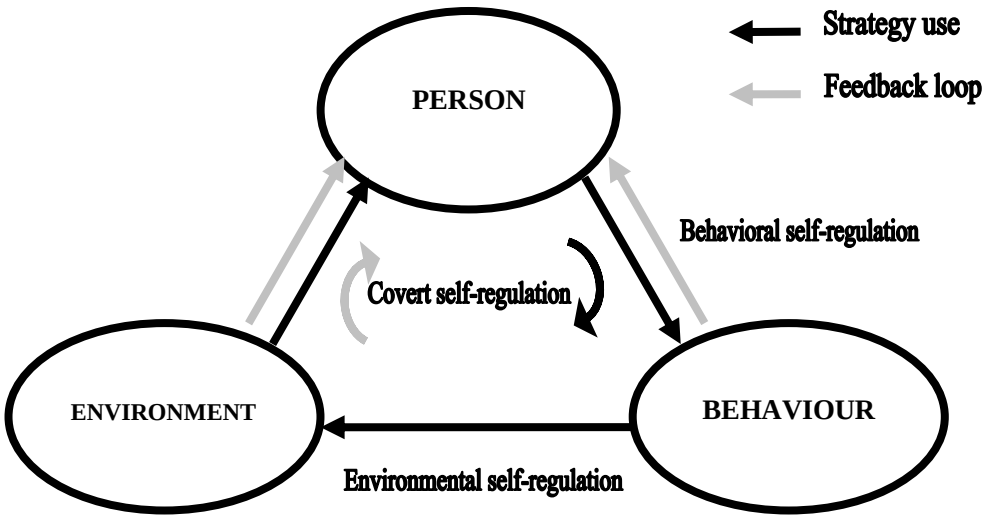


Figure 3.1 Triadic forms of self-regulation (Zimmerman, 2000: 15)

Winne (1997) argued that every person attempts to self-regulate his or her functioning in some way to gain goals in life and that it is inaccurate to speak about un-self-regulated persons or even the absence of self-regulation. From this perspective, what distinguishes effective from ineffective forms of self-regulation is instead the quality and quantity of one's self-regulatory processes. According to Zimmerman (2000), an important issue is to understand how these processes are structurally interrelated and cyclically sustained.

3.3 Dimensions of Self-Regulated Learning

Pintrich (2000, 2004), Pintrich and De Groot (1990), and Pintrich and Zusho (2002) advanced a framework for classifying the different phases and areas for regulation (Table 3.1). According to this framework, self-regulated learning is characterized as involving four inter-dependent phases. These phases are used by students to manage their own academic functioning with regard to four areas.

Phases of SRL. There are four phases in Pintrich's (2004) framework. Phase One, labelled 'forethought' by Pintrich (2004), reflects students' planning, goal setting, and prior knowledge activation and other processes that often occur before task engagement. Phase Two, called 'monitoring' by Pintrich (2004), describes students' efforts to keep track or be aware of their on-going progress and performance at a task or learning activity. Phase Three is labelled 'control' by Pintrich (2004). This process involves students' use of various learning strategies needed to complete academic tasks. It reflects learners' efforts to actively manage, modify or change what they are doing in order to maintain their effectiveness. Finally, Phase Four, termed 'reaction and reflection' by Pintrich (2004), is a phase in which students review and respond to their experiences. One key aspect of this phase is the generation of new meta-level knowledge about the tasks, strategies or self. These new insights might then be stored as metacognitive knowledge that is used when making plans or decisions about how to maximize learning in later situations. According to Pintrich (2004), these four phases do not represent a strict time-ordered sequence, nor are they assumed to be causally connected in a linear fashion. Self-regulated learners engage in these different types of sub-processes in a flexible and adaptive fashion so that they can manage different

aspects of their learning. Hence, the phases simply provide a structure and emphasize that self-regulated learning is dependent on students' active engagement before, during and after the completion of academic work.

Areas of SRL. According to Pintrich (2004), there are four areas of learning that an individual learner can attempt to monitor, control, and regulate. One area, cognition, concerns the various mental processes individuals use to encode, process or learn when engaged in academic tasks. Most typically, these processes have included students' use of cognitive and metacognitive learning strategies. A second dimension of learning that individuals can self-regulate is motivation and affect. In other words, their own level of motivation or motivational processing represents an important target for students who are working to manage their own learning. Prior work has identified many strategies that students use to sustain or improve their own motivation, including self-provided rewards, self-talk about the importance or usefulness of material, and making learning activities into a game so they are more enjoyable (Wolters, 2003a). A third area that students can self-regulate is their behaviour. For instance, the use of time-management strategies to organize and control when to study fits into this area. Finally, the fourth dimension of learning that Pintrich (2004) identified as a potential area for regulation is the context or environment. This area includes facets of the immediate task, classroom or even cultural environment. Students, for instance, might monitor and control the lighting, temperature, and noise in their environment. Also, the use of peer learning strategies to manage one's learning by effectively utilizing peers within the social environment fits into this dimension. According to Pintrich (2004), these four areas overlap and intertwine with one another. Regulating the processing associated with one area (e.g. motivation) may also involve changes in functioning within the others (e.g. cognition, behaviour). Students' overall efforts to plan and control where, when and with whom they study are likely to involve the consideration of all four of these different areas.

Phases and relevant scales	Areas for regulation			
	Cognition	Motivation/Affect	Behaviour	Context
Phase 1 Forethought, planning, and activation	Target goal setting Prior content knowledge activation Metacognitive knowledge activation	Goal orientation adoption Efficacy judgments Perceptions of task difficulty Task value activation Interest activation	Time and effort planning Planning for self-observations of behaviour	Perceptions of task Perceptions of context
Phase 2 Monitoring	Metacognitive awareness and monitoring of cognition	Awareness and monitoring of motivation and affect	Awareness and monitoring of effort, time use, need for help Self-observation of behaviour	Monitoring changing task and context conditions
Phase 3 Control	Selection and adaptation of cognitive strategies for learning, thinking	Selection and adaptation of strategies for managing, motivation, and affect	Increase/decrease effort Persist, give up Help-seeking behaviour	Change or renegotiate task Change or leave context
Phase 4 Reaction and reflection	Cognitive judgments Attributions	Affective reactions Attributions	Choice behaviour	Evaluation of task Evaluation of context

Table 3.1 Phases and areas for self-regulated learning (Pintrich, 2004)

3.4 Phases of Self-Regulatory Development

Social cognitive researchers view self-regulatory competence as involving three elements: self-regulating one's covert personal processes, behavioural performance, and environmental setting (Bandura, 1986). According to Zimmerman, the component skills of self-regulation of learning include: (a) setting specific proximal goals for oneself; (b) adopting powerful strategies for attaining the goals; (c) monitoring one's performance selectively for signs of progress; (d) restructuring one's physical and social context to make it compatible with one's goals; (e) managing one's time use efficiently; (f) self-evaluating one's methods; (g) attributing causation to results; and (h) adapting future methods (2002: 66). Students' levels of learning have been found to vary according to the presence or absence of these key self-regulatory processes (Schunk & Zimmerman, 1998).

According to Zimmerman (2000), self-regulatory processes can be acquired from and are sustained by social sources of influence as well as self-sources. Zimmerman and his colleagues formulated a social cognitive model of the development of self-regulatory competence (Schunk & Zimmerman, 1997; Zimmerman, 2000; Schunk, 2001). As Table 3.2 shows, the model predicts that academic competence develops initially from social sources and subsequently shifts to self-sources in a series of levels. Although there may be some overlap, the first two levels (observational and emulative) rely primarily on social factors, whereas by the second two levels (self-controlled, self-regulated) the source of influence has shifted to the learner.

The first level corresponds to learning by modelling (i.e. vicarious induction of a skill through observation). This observational level would be attained when the learner can deduce the main features of the skill or strategy by observing a model. The emulative level of self-regulation is defined as imitative performance of a modelled skill while receiving social feedback. It is attained when the learner's performance approaches the general form of the model's. The role of social guidance, essential in these first two levels, becomes less evident during the last two. The third step is called the self-controlled level and corresponds to successful application of a demonstrated skill when the model is no longer present, and the fourth and last level, self-regulation, refers to adaptive use of a skill in changing conditions. It is assumed that students who master each level in sequence will have more facility in learning than others. However, possessing the capacities does not automatically mean that they are used; motivational and environmental elements influence the final decision.

Level of Development	*Social Influences*	*Self-Influences*
Observational	Models Verbal Description	
Emulative	Social Guidance Feedback	
Self-Controlled		Internal Standards Self-Reinforcement
Self-Regulated		Self-Regulatory Processes Self-efficacy Beliefs

Table 3.2 Social cognitive model of the development of self-regulatory competence (Schunk, 2001: 135)

Similarly, Glaser (1996) proposed that the major principle or hypothesis underlying the acquisition of competence can be labelled ‘a change in agency’, that is, a change in the agency for learning as expertise develops and performance improves. Initially, learning involves a significant degree of external environmental support, and as competence is attained, there is an increasing amount of internalized self-regulation that controls the learning situation and the fine-honing of performance. The progression can be described in terms of three interactive phases: external support, transition, and self-regulation (Glaser, 1996: 305).

3.5 Investigating Self-Regulated Learning

3.5.1 Instruments That Measure Self-Regulated Learning

The measurement of the different components and processes in self-regulated learning (SRL) is a matter of great importance. In an attempt to clarify and classify methods and instruments used by researchers to measure processes involved in the self-regulation of learning, Winne and Perry (2000) distinguish between instruments that measure SRL as an aptitude, which they defined as a relatively enduring attribute of a person that predicts future behaviour (cognition and motivation), and instruments that measure self-regulated learning as an activity (event), which is defined as a temporal entity with a discernible beginning and an end.

3.5.1.1 Instruments Measuring SRL as an Aptitude

According to Winne and Perry (2000), the most common protocols for measuring SRL as an aptitude include questionnaires and structured interviews.

Self-report questionnaires. Self-report questionnaires are the most frequently used protocol for measuring SRL, perhaps because they are relatively easy to design, administer and score. These measures inherently provide (a) information about learners' memories and interpretations of their actions and (b) their explanations of cognitive and metacognitive processes researchers cannot observe (Turner, 1995). Typically, self-report questionnaires measure SRL as an aptitude because items ask respondents to generalize their actions across situations rather than referencing singular and specific learning events while learners experience them.

According to Winne and Perry (2000) and Zimmerman (2008), two of the most-used self-report questionnaires are the Learning and Strategies Study Inventory (LASSI: Weinstein, Schulte & Palmer, 1987) and the Motivated Strategies for Learning Questionnaire (MSLQ: Pintrich et al., 1991). Dörnyei (2005: 178) points out that the MSLQ is currently the best known instrument in this area in educational psychology.

The Learning and Study Strategies Inventory (LASSI: Weinstein, Schulte & Palmer, 1987) is an 80-item self-report inventory of students' strategies for enhancing their study practices. The LASSI involves 10 scales that assess skill, will and self-regulation strategies—a classification system that corresponds with a metacognitive, motivational and behavioural definition of self-regulation. Scales classified as skill (or metacognition) include Concentration, Selecting Main Ideas, and Information Processing. Scales classified as will (or motivation) include Motivation, Attitude and Anxiety. Scales classified as self-regulation (or behaviour) include Time Management, Study Aids, Self-Testing and Test Strategies. Students respond to items in each sub-scale using 5-point ratings that range from 'not at all typical of me' to 'very much typical of me'.

The Motivated Strategies for Learning Questionnaire (MSLQ: Pintrich et al., 1993) is an 81-item questionnaire made up of two major sections: Learning Strategies and Motivation. The Learning Strategies section is further divided into a Cognitive-Metacognitive section, which includes rehearsal, elaboration, organization, critical thinking, and metacognitive self-regulation, and a Resource Management section, which includes such behaviours as managing time and study environment, effort management, peer learning and help seeking. The Motivation section involves scales that involve valuing, expectancy and affect. The Valuing scales include Intrinsic–Extrinsic Goal Orientation and Task Value. The Expectancy scales include Self-Efficacy and Control of Learning, and the Affect section includes Test Anxiety.

The Motivation section, the Cognitive-Metacognitive section, and the Resource Management Strategy section correspond to the three elements in the definition of SRL: motivation, metacognition and behaviour. Students respond to questions on these scales using 7-point ratings that range from 'not at all true of me' to 'very true of me'.

The MSLQ (Pintrich et al., 1991, 1993) does not represent an instrument designed to assess all components of Pintrich's conceptual model (2000), as the questionnaire was developed about ten years earlier than the model. The MSLQ only measures a small portion of the potential self-regulatory strategies suggested by the model. For example, there are no scales on the current MSLQ that assess any strategies to control motivation or affect, unlike the cognitive scales on the MSLQ that do assess some strategies to regulate cognition. That is, the motivation items only ask students about their motivational beliefs for the course, not any self-regulatory strategies students might use to control their motivation or emotion in the course.

The MSLQ was developed using a social-cognitive view of motivation and self-regulated learning. This battery represents the operationalization of cutting-edge theory in the areas of motivation and self-regulated learning (Dörnyei, 2005: 178). The MSLQ has been used in different languages, in different countries, and on diverse samples and settings to address both theoretical and applied purposes. Either in its entirety or via its sub-scales, the MSLQ has been used extensively for empirical research in the areas of motivation and self-regulated learning across content areas as well as target populations. According to Duncan and McKeachie, the MSLQ has proven to be a reliable and useful tool that can be adapted for a number of different purposes for researchers, instructors, and students (2005: 118).

Structured interviews. Assessing self-regulation through structured interview was pioneered by Zimmerman and Martinez-Pons (1986; 1988). They devised an interview called the Self-Regulated Learning Interview Schedule (SRLIS; Zimmerman & Martinez-Pons, 1986, 1988) to assess SRL as a metacognitive, motivational and behavioural construct. During this structured interview, students are presented with six problem contexts to which they are asked to respond, such as preparing for a test or writing an essay. The answers to these open-ended questions are transcribed and coded into 14 self-regulatory categories that focus on motivation, metacognition or behaviour. Included among the motivation categories are self-evaluation reactions and self-consequences. Included among the metacognitive categories are goal setting and

planning, organizing and transforming, seeking information, and rehearsing and memorizing. Included among the behavioural categories are environmental structuring; keeping records and monitoring; reviewing texts, notes, and tests; and seeking assistance from peers, teachers, and parents. Students' answers to each learning context were recorded for their frequency, and students were also asked to rate their consistency in using a particular strategy using a 4-point scale that ranges from 'seldom' to 'most of the time'. Later studies (e.g. Zimmerman & Martinez-Pons, 1990; Nota, Soresi & Zimmerman, 2004) confirmed the validity of this interview protocol for measuring the use of self-regulation strategies and for distinguishing between high and low performance students according to their use of self-regulation strategies.

Winne and Perry (2000) noted that, when measured as an aptitude, SRL varies within individuals over relatively long time periods, within individuals across different tasks and settings, and across individuals. Zimmerman (2008) stated that initial attempts to measure self-regulated learning using questionnaires and interviews were successful in demonstrating significant predictions of students' academic outcomes.

3.5.1.2 Instruments Measuring SRL as an Event

An alternate approach assesses SRL as an event, which is defined as a temporal entity with a discernible beginning and an end. An event spans time and it is demarcated by a prior event and a subsequent event. An example of an event approach to the assessment is a phase model of SRL, which separates students' efforts to self-regulate into phases, such as before, during, and after attempts to learn (Pintrich, 2000; Zimmerman, 2000). Because event measures can assess sequential dependency of responses, they are well suited for making causal inferences about online changes in self-regulation in real time and authentic contexts.

According to Winne and Perry (2000), instruments which measure self-regulated learning as an event include think-aloud measures, error detection tasks, trace methodologies, and observation of performance. Zimmerman (2008) reviewed recent efforts to assess students' SRL online, such as trace logs of SRL processes in computer-assisted environments (Winne et al., 2006), think-aloud protocol measures of SRL in hypermedia learning environments (which represent an online form of interactive multimedia and usually involve multiple representations, e.g. text, diagrams,

animations) (Azevedo & Cromley, 2004; Azevedo, Cromley & Siebert, 2004; Green & Azevedo, 2007), structured diary measures of SRL (Schmitz & Wiese, 2006; Stoeger & Ziegler, 2007), observation and qualitative measures of SRL (Perry et al., 2002), and microanalytic measures and cyclical analyses of SRL (Cleary & Zimmerman, 2001; Kitsantas & Zimmerman, 2002). In this section, I will not describe all the instruments that to date have been used to measure SRL as an event. Instead, in line with the present study's emphasis on the integration of both motivational and cognitive factors in the investigation of student learning, I will describe in detail a microanalytic methodology developed by Zimmerman and his colleagues, which they have used to investigate students' motivational beliefs and self-regulatory processes in the learning of athletic skills (Cleary & Zimmerman, 2001; Kitsantas & Zimmerman, 2002).

Microanalytic measures and cyclical analyses of SRL. To investigate the role of students' motivational feelings and beliefs in initiating and sustaining changes in their self-regulation of learning and other issues as an event during online efforts to learn, Zimmerman and his colleagues developed a microanalytic methodology for assessing SRL in three sequential phases (Cleary & Zimmerman, 2001; Kitsantas & Zimmerman, 2002).

In this approach, specific questions are used to measure well-established self-regulatory processes and motivational beliefs or feelings at key points before, during and after learning. The learner is asked open- or closed-ended questions that produce both qualitative and quantitative data, respectively. The questions are brief and task-specific in order to minimize disruptions in learning. For example, Kitsantas and Zimmerman (2002) developed a measure of self-efficacy to assess students' confidence about serving into the opponents' court. The measure consisted of two items. The first question was asked before the players began serving, and the second following two consecutive misses. Both items began with the words 'On a scale from 0–100 with 10 being Not Sure, 40 being Somewhat Sure, 70 being Pretty Sure, and 100 being Very Sure, how sure are you that you will make two serves in your opponent's highest designated area (i.e. the two front corner areas)' (Kitsantas & Zimmerman, 2002: 97). It is worth noticing that this self-efficacy measure pertained directly to the next performance event rather than to the player's overall volleyball serving aptitude. According to Zimmerman (2008: 177), a key feature of these measures is that they can be used during repeated efforts to learn, and changes in a learner's self-efficacy over practice efforts can be plotted to show trends. In addition, as Zimmerman (2008: 177)

has suggested, the learner's estimates of self-efficacy can be calibrated against his or her actual performance.

This methodology has been used to study the effects of SRL processes and motivational beliefs as an event within and across the three phases of a cyclical model of SRL (Zimmerman, 2000). In his description of the microanalytic methodology, Zimmerman (2008: 177–178) suggests that to date microanalytic measures have been created to assess all SRL processes and motivational beliefs in the cyclical model except for goal orientation, which focuses on the purposes of achievement tasks rather than on a specific event. Zimmerman also suggests that microanalyses of SRL processes and sources of motivation to date have been used most frequently to investigate learning of athletic skills, such as free-throw shooting, volleyball serving and dart throwing, and these measures of SRL have revealed significant differences between experts, non-experts and novices (Cleary & Zimmerman, 2001; Kitsantas & Zimmerman, 2002). When compared to non-experts and novices, experts made the most extensive use of SRL processes and reported the most positive motivational beliefs and feelings. Zimmerman points out that, although high levels of expertise take years to develop, there is recent evidence (Cleary, Zimmerman & Keating, 2006) that novices who are taught multiphase SRL strategies display significantly greater athletic skill and improved motivational beliefs during relatively brief practice sessions than novices in an untutored control group (Zimmerman, 2008: 179).

3.5.2 Empirical Studies Investigating SRL as an aptitude

Spearheaded by Zimmerman (Zimmerman & Martinez-Pons, 1986) and Pintrich (Pintrich & De Groot, 1990), extensive research has been carried out to investigate self-regulated learning as an aptitude in educational contexts, although it is worth noting that, to date, no empirical research into self-regulated learning has been carried out in the domain of interpreter education. For the sake of clarity, the following review is conducted in accordance with the chronological sequence in which the research reports were published.

Zimmerman and Martinez-Pons (1986) studied 40 10th-grade students who were high achievers and 40 who were low achievers in a high school. Through an interview process using a Self-Regulated Learning Interview Scale (SRLIS), they identified 14

self-regulated learning strategies (e.g. goal setting, keeping records, self-reward) as being used in class, on homework and when studying. The high-achieving 10th-grade students reported significantly greater use of 13 of the self-regulated strategies identified. The low achievers also utilized self-regulated learning strategies, but to a lesser extent.

In a study of 173 seventh-grade students, Pintrich and De Groot (1990) examined relationships between motivational orientation, self-regulated learning, and classroom academic performance. The students responded to a self-report questionnaire (the Motivated Strategies for Learning Questionnaire: MSLQ). Their study found that higher levels of self-regulation were correlated with higher levels of achievement, as measured by student performance on actual classroom tasks and assignments.

In Zimmerman and Martinez-Pons' (1990) study relating grade level, sex and giftedness to self-efficacy and strategy use, 90 students of the 5th, 8th, and 11th grades from a school for the academically gifted and an identical number from regular schools were interviewed, using a Self-Regulated Learning Interview Schedule. The students were also asked to rate their efficacy using 'Student Academic Efficacy Scales'. The study found that gifted students made greater use of certain self-regulated learning strategies than regular students, including organizing, seeking peer assistance, and reviewing notes. A student's giftedness was associated with high levels of academic efficacy. This study concluded that the achievement of the gifted students indicates that a triadic model of self-regulation may have merit for training students to become more effective learners (Zimmerman & Martinez-Pons, 1990).

Zimmerman and Bandura (1994) studied the role of self-regulatory factors on writing attainment in university-level students. The participants were 95 university freshmen students enrolled on a writing course. Self-designed self-efficacy scales were used. Self-regulatory variables were measured at the beginning of a writing course and related to final course grades. It was found that perceptions of self-efficacy for writing influenced both perceived academic self-efficacy and personal standards for the quality of writing considered self-satisfying. Perceived academic self-efficacy influenced writing grade attainments both directly and through its impact on personal goal setting.

Wolters, Yu, and Pintrich (1996) examined the relations between three goal orientations and students' motivational beliefs, self-regulated learning and academic performance. The participants were 434 7th- and 8th-grade students. Questionnaires adapted from the

MSLQ (Pintrich et al., 1991) were administered at two time points, that is, at the beginning and at the end of one school year. The study found that adopting a learning goal orientation and a relative ability goal orientation resulted in a generally positive pattern of motivational beliefs as well as cognition, including higher levels of cognitive strategy use, self-regulation and academic performance. Conversely, adopting an extrinsic goal orientation was found to lead to more maladaptive motivational and cognitive outcomes.

VanderStoep, Pintrich, and Fagerlin (1996) examined how students' knowledge, motivational beliefs and cognitive strategies differ as a function of achievement across three different disciplines of English, psychology and biology. Their sample included 380 undergraduates from three different colleges. Students' course knowledge was assessed with the ordered-tree technique (Naveh-Benjamin et al., 1986), and their motivational beliefs and use of self-regulatory strategies were assessed with the Motivated Strategies for Learning Questionnaire (MSLQ). The ordered-tree exercise and the MSLQ were administered at the beginning and end of the semester. The study found that high-achieving students were more likely to have adaptive motivational beliefs, particularly high efficacy and task value beliefs, as well as to report more use of cognitive and metacognitive strategies. Better levels of domain-specific knowledge were important, but only for students on the social science courses. Adaptive motivational beliefs were found to be predictive of academic performance, but most clearly in natural and social sciences.

Wolters and Pintrich (1998) examined whether students' levels of motivation and self-regulated learning vary, and whether the relations between these motivational and self-regulated learning constructs change, by gender and across the subject areas of mathematics, social studies and English. A questionnaire adapted from the MSLQ (Pintrich et al., 1991) was administered to 545 7th- and 8th-grade students. The study results revealed mean level differences by subject area and gender in the motivation and cognitive strategy use variables, but not in regulatory strategy use or academic performance. In contrast, the results indicated that the relations among these constructs were very similar across the three subject areas examined.

In a study examining the relationship between cognitive and motivational variables and their relationship to mathematics attainment among 94 Hong Kong Year 10 and Year 11 students, Rao, Moely and Sachs (2000) used the Chinese version of the MSLQ (Pintrich

et al., 1991) and a Mathematics Motivation Questionnaire, administered at two time points with a 12-month interval. They found that low achievers perceived academic learning as being less useful over time and reported spending less time studying in Year 10 than in Year 11, but that high and low achievers did not differ in their use of self-regulated learning strategies. Performance on the public examination in mathematics was predicted by prior achievement and Self-Concept of Mathematics Ability.

Zusho, Pintrich and Coppola (2003) investigated the changes in 458 college students' motivation, and cognitive and self-regulatory strategy use, to determine what predicted students' course performance in chemistry. Self-report questionnaires, including the MSLQ, were administered three times over the course of the semester. Results showed that students' motivational levels and use of rehearsal and elaboration strategies decreased, while their use of organizational and self-regulatory strategies increased. These trends, however, were found to vary by students' achievement levels. In terms of the relations of motivation and cognition to achievement, the motivational components of self-efficacy and task value were found to be the best predictors of final course performance even after controlling for prior achievement.

Nota, Soresi and Zimmerman (2004) investigated the relations between the self-regulation strategies used by a group of Italian students during the final years of high school and their subsequent academic achievement and resilience in pursuing higher education. The researchers used the Self-Regulated Learning Interview Schedule (SRLIS: Zimmerman & Martinez-Pons, 1986, 1988, 1990). The study was conducted in two phases: (1) the interview was administered one-off at the beginning of the fifth and last year of high school; (2) high school diploma grades and grade point averages of university exams were collected three years later, when 49 of the original 81 students had studied at university for two academic years. The cognitive self-regulation strategy of organizing and transforming proved to be a significant predictor of the students' course grades in Italian, mathematics and technical subjects in high school, and in their subsequent average course grades and examinations passed at the university. The motivational self-regulation strategy of self-consequences was a significant predictor of the students' high school diploma grades and their intention to continue with their education after high school.

Nielsen (2004) investigated the learning and study strategies of advanced music students and the manner in which their self-efficacy beliefs relate to the strategies they employed. The participants were 130 first-year students at six institutions of higher music education. A questionnaire adapted and translated from the MSLQ (Pintrich et al., 1991) was administered one-off as a group measure to one class at a time. They study found that students in general apply cognitive, metacognitive and resource management strategies during practice. Overall, they used strategies to manage their resources to a lesser extent than other strategies. Music students high in self-efficacy were more likely to be cognitively and metacognitively involved in trying to learn the material than students low in self-efficacy.

Nielsen (2008) investigated the achievement goals of 130 first-year music students from six music academies/conservatoires and the manner in which their strategies and instrumental performance relate to these goals. A questionnaire adapted and translated from the Students' Achievement Goal Orientations Scales (the AGOS) (Midgley et al., 1998) and the MSLQ (Pintrich et al., 1991) was administered one-off as a group measure to one class at a time. Low correlations were found between task goal and learning strategies, and between ability-avoidance goal and learning strategies. Achievement goal orientation variables were not correlated with instrumental achievement. The results implied that advanced students have the potential to improve and regulate their achievement goal orientations during instrumental learning.

Caprara et al. (2008) examined the developmental course of perceived self-efficacy for self-regulated learning from junior high to high school and its contribution to academic achievements and the likelihood of the students remaining in school. A self-developed questionnaire measuring perceived self-efficacy for self-regulated learning was administered to 412 students. This longitudinal project used a staggered, multiple cohort design covering the period 1994–2004. The study included two cohorts assessed at six different time points. Latent growth curve analysis revealed a progressive decline in self-regulatory efficacy from junior to senior high school, with males experiencing the greater reduction. The lower the decline in self-regulatory efficacy, the higher the high school grades and the greater the likelihood of remaining in high school controlling for socioeconomic status.

Artino Jr and Stephens (2009) examined whether there are motivational and self-regulatory differences between undergraduate and graduate students enrolled on

several online courses. A questionnaire adapted from the MSLQ (Pintrich et al., 1993) was administered online one-off during the last three weeks of the semester to 87 undergraduates and 107 graduate students from a public university. The study found that graduate students learning online reported higher levels of critical thinking than undergraduates. Graduate student membership was predicted by higher levels of critical thinking and lower levels of procrastination. On the other hand, undergraduate membership was predicted, somewhat paradoxically, by greater task value beliefs and greater intentions to enrol on future online courses.

Van der Veen and Peetsma (2009) investigated the development in self-regulated learning behaviour of 735 students in the first year of the lowest level of secondary school in the Netherlands. A questionnaire adapted from a number of previously published instruments, including the MSLQ (Pintrich et al., 1993), was administered on four occasions: the first at the start, the second and third in the middle, and the fourth at the end of the school year. The study found that development in self-regulated learning behaviour was best explained by the degree to which students intrinsically valued school work.

The overarching objective of the empirical studies into self-regulated learning as aptitude has been concerned with examining the roles of motivation and self-regulation in student learning and achievement. The studies were conducted across a range of content areas, including undergraduate chemistry (Zusho, Pintrich & Coppola, 2003), undergraduate writing (Zimmerman & Bandura, 1994), undergraduate music (Nielsen, 2004, 2008), undergraduate English, psychology, and biology (VanderStoep, Pintrich & Fagerlin, 1996), high school mathematics (Rao, Moely & Sachs, 2000), and high school mathematics, social studies and English (Wolters & Pintrich, 1998). Various attributes of self-regulated learning were examined in these studies. Some focused on motivational beliefs (e.g. Zimmerman & Bandura, 1994; Caprara et al., 2008), and some on self-regulated learning strategies (e.g. Zimmerman & Martinez-Pons, 1986; Nota, Soresi & Zimmerman, 2004), while many examined both motivational beliefs and use of self-regulated learning strategies (e.g. Pintrich & De Groot, 1990; Zimmerman & Martinez-Pons, 1990; Wolters, Yu & Pintrich, 1996; Wolters & Pintrich, 1998; Rao Moely & Sachs, 2000; Zusho, Pintrich & Coppola, 2003; Nielsen, 2004, 2008; Caprara et al., 2008; Artino Jr. & Stephens, 2009; Van der Veen & Peetsma, 2009). One study (VanderStoep et al., 1996) included an even wider range of personal attributes of a self-regulated learner than other studies, by examining knowledge, motivation and

self-regulatory learning strategies at the same time. Also, a significant number of studies have investigated development or change in students' motivational beliefs and use of self-regulatory strategies over time (e.g. Wolters, Yu & Pintrich, 1996; VanderStoep et al., 1996; Rao Moely & Sachs, 2000; Zusho, Pintrich & Coppola, 2003; Caprara et al., 2008; Van der Veen & Peetsma, 2009).

Empirical studies have been conducted on diverse samples, ranging from high school students to university undergraduate and postgraduate students. In terms of data elicitation methods, empirical research into self-regulated learning as an aptitude can be roughly divided into two major strands. One uses questionnaires, and the other uses structured interviews. The earliest research report accessible so far is Zimmerman and Martinez-Pons (1986), which could be regarded as one that heralded the start of empirical research into self-regulated learning using structured interviews. Another early research report is Pintrich and De Groot (1990), which heralded the start of empirical research into self-regulated learning using questionnaires. In terms of research design, there exist both cross-sectional and longitudinal studies, and both within-cohort and between-cohort research designs.

Most of the studies reported relationships between students' motivational beliefs, self-regulated learning and academic achievement. Findings from the studies have demonstrated that SRL is a significant predictor of students' academic performance and achievement. Most directly, empirical evidence indicates that different indicators of SRL can be used to predict students' teacher-assigned grades. For instance, Pintrich and De Groot (1990) found that motivational, cognitive and metacognitive aspects of SRL predicted students' performance on classroom tasks and assignments in a group of seventh graders. Consistently, Wolters and Pintrich (1998) found that self-regulatory strategies reported by a separate sample of junior high school students could be used to explain their semester grades in mathematics, English and social studies. In a similar vein, studies consistently show that higher-achieving students evidence greater engagement in different aspects of SRL than lower-achieving students (VanderStoep, Pintrich & Fagerlin, 1996; Zimmerman & Martinez-Pons, 1990). There was also evidence that self-regulatory strategies mediated the effects of students' verbal ability measures on their outcomes in writing (Zimmerman & Bandura, 1994). Research also showed that students who scored highly in their overall use of self-regulation strategies sought help more frequently from peers and teachers and learned more than students who did not seek help (Pintrich et al., 1993; Zimmerman & Martinez-Pons, 1986).

Chapter 4

Towards a Model of the Development of Expertise in Conference Interpreting

4.1 Introduction

This chapter will explain how this study developed gradually out of a review of the literature. First, research on factors important to the development of expertise will be reviewed. The focus of the review will be on the factors that can be controlled by the learner. The selection of the focus was made in accordance with my research purpose, that is, studying the effects of modifiable learner variables on the development of expertise in conference interpreting. Next, the modifiable learner factors will be operationalized in the context of interpreter education. Then, the general conceptual framework for the study will be described.

4.2 Research on Factors Affecting the Development of Expertise

This section will first establish categories to classify the factors affecting the development of expertise. Secondly, it will focus on the modifiable learner variables identified by researchers, and the emphasis will be placed on the general empirical findings in relation to these modifiable learner factors since these empirical findings have provided this study with insights into students' development of expertise in conference interpreting.

Bandura postulated that the person, the behaviour, and the environment are all inseparably entwined to create learning in an individual (1986: 18). In the social cognitive view, people are neither driven by inner forces nor automatically shaped and controlled by external stimuli. Rather, human functioning is explained in terms of a model of triadic reciprocal determination in which behaviour, cognitive and other personal factors, and environmental events all operate as interacting determinants of each other (Figure 4.1). For example, how individuals interpret the results of their performance attainments informs and alters their environments and their self-beliefs,

which in turn inform and alter their subsequent performances. This is the foundation of Bandura's (1986) conception of reciprocal determinism, the view that (a) personal factors in the form of cognition, affect, and biological events, (b) behaviour and (c) environmental influences create interactions that result in a triadic reciprocality (Pajares, 1996: 544; Pajares & Usher, 2008: 392). The three interacting factors within Bandura's (1986) model will be used in this study to classify the factors affecting the development of expertise that were proposed in models of expertise development.

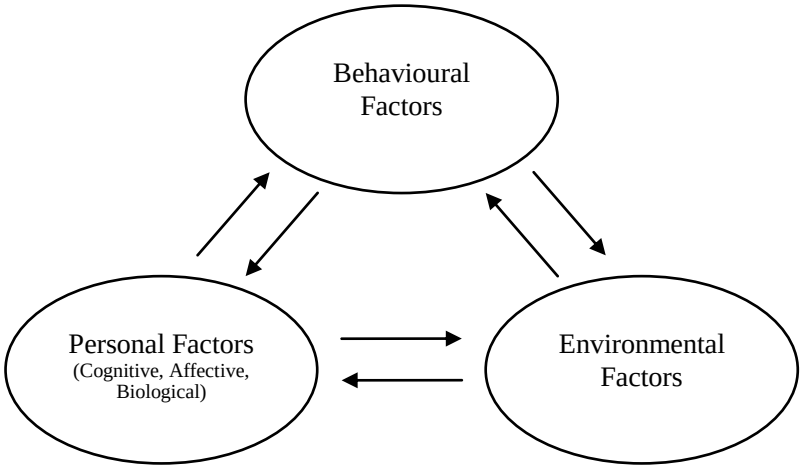


Figure 4.1 Bandura's (1986) Triadic Reciprocal Determination through the Dynamic Interplay of Personal, Behavioural, and Environmental Factors.
From Pajares and Usher (2008: 392)

4.2.1 Factors Affecting the Development of Expertise

Traditionally, individual differences in attained levels of performance have been explained by an account given by Galton (1869/1979). According to this 'common-sense view of professional development' (Ericsson, 2000/01: 190), every healthy person will improve initially through experience, but these improvements are eventually limited by innate factors that cannot be changed through training; hence attainable performance is constrained by one's basic endowments, such as abilities, mental capacities, and innate talents.

During the past few decades, several theoretical developments have questioned the common-sense view of professional development. Researchers have found that highly

motivated individuals can influence their attained level of performance to a much greater degree than traditionally assumed (Ericsson, 2000/01). For example, studies have found a consistent correlation between the level of attained performance and the amount and quality of solitary activities meeting the criteria of deliberate practice in many types of domains (Ericsson, 1996, 2001, 2002). According to Ericsson, 'improvement of performance was uniformly observed when individuals, who were motivated to improve their performance, were given well defined tasks, were provided with feedback, and had ample opportunities for repetition' (2000/01: 195). Several theoretical models have been proposed that explain the development of expertise in terms of acquirable or modifiable factors and that limit the role of innate (inherited) characteristics to general levels of activity and emotionality (e.g. Ericsson, Krampe & Tesch-Römer, 1993).

Among these models, four were selected for review because they have made a major contribution to the development of the conceptual model for this study, namely, Ericsson, Krampe and Tesch-Römer's (1993) 'Theoretical Framework for the Acquisition of Expert Performance', Charness, Krampe & Mayr's (1996) 'Taxonomy of Factors Important to Expertise/Skill Acquisition', Sternberg's (2000) 'Developing Expertise Model', and Alexander's (1997) 'The Model of Domain Learning (MDL)', an alternative perspective on expertise that arose from studies of student learning in academic domains (Alexander, 2003).

Table 4.1 lists the factors that are included in these above-mentioned models for explaining the development of expertise. The factors are classified in terms of personal, behavioural and environmental factors according to Bandura's (1986) Model of Triadic Reciprocal Determination. The personal factors consist of two sub-groups: unmodifiable and modifiable personal factors. All behavioural factors are considered to be modifiable. The unmodifiable personal factors refer to the features that are very difficult, if not impossible, for the learner to make changes to. They include personality, genetic endowments, etc. The modifiable factors refer to those where intervention is possible, including such personal factors as motivation variables, knowledge and beliefs, and all behavioural factors such as use of learning skills and strategies. Learners can modify these variables if they intend to. For example, once the learner has realized that the strategies he or she has used in learning are not effective, he or she may try to change them.

Author(s)	Environmental Factors	Personal Factors		Behavioural Factors
		Unmodifiable	Modifiable	Modifiable
Ericsson, Krampe & Tesch-Römer (1993)	Resources		Motivation	Deliberate practice; Effort
Charness, Krampe & Mayr (1996)	External social factors; External information factors	Internal personality factors	Internal motivation factors; Software of cognitive system: knowledge base (chunk size, retrieval structures); problem solving processes (representation, search mechanisms); Hardware of cognitive system: Working Memory Capacity; Speed of Processing; Learning Rate; Forgetting rate	Practice ● Intensity (deliberate/casual); ● Duration; ● Content;
Sternberg (2000)	Contextual factors	Genetic factors	Motivation (intrinsic/extrinsic); Knowledge (declarative/ procedural)	Metacognitive skills; Learning skills; Thinking skills
Alexander (1997)			Interest (i.e., individual and situational interest); Knowledge (i.e., domain and topic knowledge)	Strategies (i.e., cognitive and metacognitive strategies)

Table 4.1 Factors affecting the development of expertise listed in the representative models of expertise development

4.2.2 Modifiable Learner Factors

The following section will discuss the modifiable personal factors and behavioural factors (see Table 4.2) of learners conceptually and empirically in line with the purpose of this study. These factors have been selected from different models, among which Charness, Krampe and Mayr's (1996) is the major source. The modifiable personal

factors and behavioural factors taken together are called modifiable learner factors in this study.

Modifiable Personal Factors	Behavioural Factors
Motivation; Knowledge base	Deliberate practice (quality; quantity)

Table 4.2 Modifiable learner factors affecting the development of expertise

4.2.2.1 Motivation

Individuals' motivations are significant contributors to the development of expertise (Winne, 1995). Without understanding those motivational dimensions, educators cannot explain why some individuals persist in their journey toward expertise, while others yield to unavoidable pressures (Bereiter & Scardamalia, 1993).

Ericsson, Krampe, and Tesch-Römer (1993) viewed motivation as a prerequisite for sustained engagement in deliberate practice over extended periods of time, a known predictor of expert performance. Sternberg (2000) suggested that motivation is the pivotal and activating component within the interaction of primary contributors to attaining expertise such as meta-cognitive, learning and thinking skills, as well as knowledge, motivation and their contextualization. He suggested that several different kinds of motivation can be distinguished: achievement motivation, competence (self-efficacy) motivation, and motivation to develop one's own intellectual skills. Alexander and her colleagues explored the influence of learner interest on expertise. The Model of Domain Learning (MDL: Alexander, 2003) tracks two forms of interest in expertise development: individual and situational interest.

Charness, Tuffiash and Jastrzembski (2004) reviewed relevant literature on motivation, personality and emotion in the domains of chess and music performance. The literature showed that there are significant bivariate relationships in directions consistent with the view that motivational factors are important determinants of practice. Nonetheless, it is worth noting that such variables typically play weak roles (r values < 0.3, meaning less

than 10% of the variance) in predicting either the extent of practice or its end state: current skill level. Such relations are quite modest compared to those found in Charness, Krampe and Mayr (1996), where 60% of the variance in current level of chess expertise could be accounted for by factors such as cumulative deliberate practice, age (negatively, for older adults), and size of chess library. Charness, Tuffiash and Jastrzembski (2004) stressed the need for further systematic explorations of the relevant variables related to motivation and expert skill acquisition. They recommended longitudinal studies as the best method to trace the development of expertise. They even suggested an example for a longitudinal study of chess skill acquisition. For example, participants could be tested initially to ascertain individual differences in personality and motivation variables and then be reinterviewed and retested over a long interval on the previous variables. They claimed that such a study would significantly advance our understanding of the interrelations between the factors affecting expertise/skill acquisition (see Charness, Krampe & Mayr, 1996), and in particular, changes in the roles of personality and motivation in skill acquisition over extended periods of time.

It can be seen from the above review that motivation is an essential component in all the models of expertise development and plays a crucial role in the acquisition/development of expertise in any domain. Yet, the models reviewed varied in their conceptualization of motivation, thus resulting in a large number of different motivational constructs. Although there are good theoretical reasons for these different conceptualizations, in many cases they can be confusing and less than helpful in investigating how motivational and cognitive factors interact and jointly influence student learning and achievement. Rather than following these conceptualizations of motivation, this study will conceptualize trainee interpreters' motivation for conference interpreting learning in line with social cognitive models of motivation (Schunk, Pintrich & Meece, 2008). Social cognitive models of motivation (Schunk, Pintrich & Meece, 2008) stress the contribution of both motivational and cognitive factors for student academic success. In other words, they recognize that students need both the cognitive skill and the motivational will to be successful in learning. One of the most important assumptions of social cognitive models of motivation (Schunk, Pintrich & Meece, 2008) is that motivation is a dynamic, multifaceted phenomenon. In other words, social cognitive models of motivation stress that students can be motivated in multiple ways and that the important issue is understanding how and why students are motivated for learning rather than labelling students as 'motivated' or 'not motivated' in some global fashion. A

second important assumption of social cognitive models of motivation is that motivation is not a stable trait of an individual, but is more situated, contextual and domain-specific. In other words, student motivation is conceived as being inherently changeable and sensitive to the context. A third assumption concerns the central role of cognition in social cognitive models of motivation. That is, an individual's active regulation of his or her motivation, thinking and behaviour mediates the relationships between the person, the context, and the eventual achievement. In other words, students' own thoughts about their motivation and learning play a key role in mediating their engagement and subsequent achievement.

4.2.2.2 Knowledge Base

In Charness, Krampe and Mayr's (1996) framework of factors supporting expertise/skill acquisition, knowledge base (chunk size, retrieval structures) is an integral part of the software of cognitive system. Similarly, Simon and Chase (1973) proposed that expert performance in 'any skilled task (e.g. football, music)' (1973: 279) was the result of vast amounts of knowledge and pattern-based retrieval acquired over many years of experience in the associated domain. Shreve suggested that knowledge is an 'essential prerequisite to expert skill' (2002: 155). This conception of expertise is consistent with theories of skill acquisition (Anderson, 1983; Fitts & Posner, 1967), based on the assumption that knowledge is first acquired (i.e. declarative knowledge) and then organized into procedures (i.e. procedural knowledge) for responding to encountered situations. For the development of expertise, knowledge must be acquired in such a way that it is highly connected and articulated, so that inference and reasoning are enabled, as is access to procedural actions. The resulting organization of knowledge provides a schema for thinking and cognitive activity.

Knowledge is also one of the three components of Alexander's (2004) Model of Domain Learning. According to Alexander (2003), when learners orient to a complex, unfamiliar domain, they have limited and fragmented knowledge. They lack a cohesive and well-integrated body of domain knowledge. As individuals progress towards expertise, quantitative and qualitative changes occur in their knowledge base. Experts not only demonstrate a foundational body of domain knowledge, but that knowledge is also more cohesive and principled in structure. Similarly, Hoffman has made the observation that 'the development of expertise involves a progression from a superficial

and literal understanding of problems (a qualitative mark of the cognition of novices), to an articulated, conceptual, and principled understanding (a qualitative mark of the cognition of experts)' (1997: 197).

The knowledge base of a person, it is now generally assumed, is made up of different types of knowledge. The best-known examples are declarative and procedural knowledge (e.g. Sternberg, 2000), but more elaborate distinctions exist (e.g. Alexander & Judy, 1988; Alexander, 1997; Garcia & Pintrich, 1994; De Jong & Ferguson-Hessler, 1996). In Anderson et al.'s (2001) revised Taxonomy for Learning, Teaching and Assessing, four distinct types of knowledge are defined according to a taxonomy of learning outcomes: factual, conceptual, procedural and metacognitive. While the first three categories were included in the original Taxonomy by Bloom and his colleagues (1956), the metacognitive knowledge was added to the new Taxonomy. Metacognitive knowledge involves knowledge about cognition in general, as well as awareness of and knowledge about one's own cognition (Anderson et al., 2001: 29; Pintrich, 2002). According to Krathwohl (2002: 214), metacognitive knowledge is of increasing significance as it is important for students to be made aware of their metacognitive activity, and then to use this knowledge to appropriately adapt the ways in which they think and operate.

A review of the literature on interpreting expertise revealed that no prior study has attempted to link metacognitive knowledge to the development of expertise in interpreting for trainee interpreters. Instead, previous studies have generally focused on those types/categories of knowledge that are thought to be immediately related to the execution of interpreting tasks. For instance, Gile (2009: 8–10) argues that interpreters must have (a) good passive knowledge of their passive working languages; (b) good command of their active working languages; (c) sufficient knowledge of the themes and subject-matters addressed by the speeches they interpret; and (d) both declarative and procedural knowledge about interpreting. Gile (2009: 110) further defines the interpreter's knowledge base, which he notes is necessary for both comprehension and reformulation, as comprising knowledge of the source and target languages (linguistic knowledge) and knowledge of the world (extralinguistic knowledge). Hoffman (1997: 201) cites sources as stating that expert interpreters need to possess 'encyclopaedic knowledge', need to continually enrich and expand their 'world knowledge' (Viaggio, 1992a, b), must have a broad general knowledge (AIIC statement), must know both source and target languages and accents thoroughly, must know the source and target

cultures thoroughly, must know the topic being interpreted, must have skills in some sort of short-hand notation, must possess a comprehensive vocabulary, and must have a 'powerful' memory and a comprehensive general knowledge. Moser-Mercer et al. (2000: 108–109) have shown that the differences between expert interpreters and novices in terms of their knowledge base and its organization relate to four categories: factual knowledge, semantic knowledge, schematic knowledge and strategic knowledge. In terms of strategic knowledge, Moser-Mercer et al. suggest that experts tend to proceed from known to unknown information, whereas novice interpreters more often focus on the unknown and then easily get stuck. Experts thus use more global plans, whereas novices tend to use low-level microcontextual plans (2000: 109). Kurz states that professional conference interpreters have, through their training and experience, acquired sufficient expertise (defined by Kurz as 'a combination of knowledge and better strategies'), which is reflected in the ability to process larger segments, and to adopt the right strategy quickly, or even automatically (2003: 60). Kurz observes that experts (professional conference interpreters) and novices (student interpreters) have been found to differ in terms of meaningful patterns of information, organization of knowledge, and context and access to knowledge (2003: 58–59).

It is relatively easy to see why past research has focused on some types/categories of knowledge that are thought to be immediately related to the execution of interpreting tasks, such as general knowledge, cultural knowledge, linguistic knowledge, textual knowledge, transfer knowledge and subject knowledge, while neglecting other significant types of knowledge, such as metacognitive knowledge, which can play an important role in student learning (Pintrich, 2002). This is because they have focused on the nature of expertise in interpreting rather than on the acquisition/development of expertise in interpreting. They have focused on the nature of the knowledge of expert and novice interpreters rather than on the knowledge of trainee interpreters. They have focused on what interpreters know so as to be able to interpret effectively, but not on what trainee interpreters know so as to be able to learn effectively. They have focused on the differences in the nature of the knowledge possessed by expert interpreters (professional conference interpreters) and novice interpreters (student interpreters), but not on the differences between relatively high-achieving and low-achieving trainee interpreters under the category of novice interpreters. We know from past research that the nature of the knowledge of the expert interpreter differs from that of the novice in profound ways. Yet, little is known about how expert learners and novice learners of

conference interpreting differ in their metacognitive knowledge about conference interpreting learning. Thus, an important purpose of this study is to address this gap in the literature.

4.2.2.3 Deliberate Practice

Ideas about how practice and training can explain individual differences in attained level of performance in any domain have a long history. According to Galton's (1869/1979) seminal book on 'hereditary genius', individuals will need training and practice to reach high levels of performance in any domain, but improvements in performance are eventually limited by innate factors that cannot be changed through training; hence attainable performance is constrained by one's basic endowments, such as abilities, mental capacities, and innate talents. Ericsson called this traditional view of skill acquisition and professional development 'the common-sense view of professional development' (2000/01: 190).

Contemporary theories of skill acquisition (Anderson, 1982; Fitts & Posner, 1967) are consistent with Galton's general assumptions about basic unmodifiable capacities and with observations on the general course of professional development. When individuals are first introduced to a skilled activity, their primary goal is to reach a level of proficiency that will allow them to perform these tasks at a functional level. During the first phase of learning and skill acquisition (Fitts & Posner, 1967), beginners try to understand the requirements of the activity and focus on generating actions while avoiding gross mistakes. In the second phase of learning, when people have had more experience, noticeable mistakes become increasingly rare, performance appears smoother, and learners no longer need to focus as intensely on their performance to maintain an acceptable level. After a limited period of training and experience, an acceptable level of performance is typically attained. As individuals adapt to a domain during the third phase of learning, their performance skills become automated, and they are able to execute these skills smoothly and with minimal effort. As a consequence of automatization, performers lose the ability to control the execution of those skills, making intentional modifications and adjustments difficult. In the automated phase of learning, performance reaches a stable plateau, and no further improvements are observed, which is in agreement with Galton's (1869/1979) assumption of a performance limit.

Initially, some researchers (e.g. Simon & Chase, 1973) considered the possibility that expertise was an automatic consequence of lengthy experience, and they considered individuals with over ten years of full-time engagement in a domain to be experts. These researchers typically viewed expertise as an orderly progression from novice to intermediate and to expert, where the primary factors mediating the progression through these stages were instruction, training, and experience. However, more recent reviews (Ericsson, Krampe & Tesch-Römer, 1993; Ericsson & Kintsch, 1995; Ericsson & Smith, 1991) have raised issues about this characterization of expertise. Even when individuals have access to a similar training environment, large individual differences in performance are still often observed. Furthermore, research shows that the amount of experience in a domain is often a weak predictor of performance. Rather than accepting these facts as evidence for innate differences in ability (i.e. talent), Ericsson, Krampe and Tesch-Römer (1993) tried to identify those training activities that would be most closely related to improvements in performance. On the basis of a review of research on skill acquisition, Ericsson, Krampe, and Tesch-Römer (1993) identified a set of conditions where practice had been uniformly associated with improved performance. They found that significant improvements in performance were realized when individuals were (1) given a task with a well-defined goal, (2) motivated to improve, (3) provided with feedback, and (4) provided with ample opportunities for repetition and gradual refinements of their performance. Deliberate efforts to improve one's performance beyond its current level demand full concentration and often require problem-solving and better methods of performing the tasks (Ericsson, Krampe & Tesch-Römer, 1993). When all these elements are present, Ericsson and colleagues used the term 'deliberate practice' to characterize training activities.

Ericsson further explained how expert performers can avoid reaching a performance asymptote within a limited time period, as predicted by contemporary theories of skill acquisition and expertise, and keep improving their performance for years and decades. He proposed that aspiring experts continue to improve their performance as a function of more experience because it is coupled with deliberate practice. According to Ericsson, the key challenge for aspiring expert performers is to avoid the arrested development associated with automaticity. These individuals purposefully counteract tendencies towards automaticity by actively setting new goals and higher performance standards, which require them to increase speed, accuracy, and control over their actions. The

experts deliberately construct and seek out training situations to attain desired goals that exceed their current level of performance.

According to Ericsson, Krampe and Tesch-Römer (1993), the quantity and quality of deliberate practice is related to the attained level of performance. The amount of accumulated practice is predicted to be directly related to current levels of performance. The greatest improvements in performance are likely to be associated with the largest weekly amounts of deliberate practice. Therefore, individuals should attempt to optimize the amount of time they spend on deliberate practice to reach expert performance. Ericsson (2000/01) points out that, although the detailed characteristics of deliberate practice differ as a function of the demands on the expert performance in each domain of expertise, the best individuals have been found to engage in a greater quantity and quality of deliberate practice in a wide range of domains.

In their useful framework for looking at skill acquisition in chess, Charness, Krampe and Mayr (1996) focused on the role of deliberate practice as the primary change mechanism. They hypothesized that the cognitive system changes through practice, and that social, personality, and external factors have their impact through their influence on practising behaviours. Sternberg's (2000, 2001) developing expertise model showed that the novice works towards expertise through deliberate practice, but that this practice requires an interaction of motivation, metacognitive skills, learning skills, thinking skills, and knowledge.

Undoubtedly, interpreting, as a complex or 'high-performance' skill (De Groot, 2000: 53; Sawyer, 2004: 79; Gile, 2005: 127), requires intensive and appropriate practice to achieve expertise. As Moser-Mercer (2003) has observed, trainees often spend hours every day practising, hoping that they will make good progress. They think that the more they practise, the more they will progress. Yet when they keep practising without taking a moment to reflect on their performances, they waste their effort and lose the opportunity to identify space for further improvement. The concept of 'deliberate practice' emphasizes the importance of students monitoring their learning so that they seek feedback and actively evaluate their strategies and current levels of understanding. Such activities are very different from simply repeating the same exercise over and over again, or doing 'mileage' in interpreting practice that emphasizes quantity of the learning experience over quality (Moser-Mercer, 2008).

Aldea (2008) suggests that the distinction between sterile practice and deliberate practice should be made clear to trainees from the very beginning. It is undeniable that interpreting trainees are usually highly motivated and willing to work the extra hours necessary for honing their skills. The danger, according to Ericsson (2000/01), lies in the fact that once a basic level of mastery is achieved, activities become routine and development is completely arrested. Aldea (2008) warns that interpreters may spend not months, but years in the booth and still fail to make any progress, unless they purposefully assess their performance, diagnose problems, and seek remedial actions. According to Ericsson, 'improvement of performance was uniformly observed when individuals who were motivated to improve their performance were given well-defined tasks, were provided with feedback, and had ample opportunities for repetition' (2000/01: 195). Aldea (2008) suggests that in order to ensure that students' self-study sessions are indeed objective-based deliberate practice sessions, and not just some sterile 'let's interpret some speeches' sessions, some steps need to be taken, for example defining short-term objectives, preparing suitable speeches, providing objective-related feedback, and following training stages. If these criteria are met, the efficiency of the training process increases dramatically and practice becomes truly effective. On the other hand, Ericsson suggests that training sessions should be 'limited to around an hour—the time that college students could maintain sufficient concentration to make active efforts to improve' (2000/01: 195).

In sum, researchers of expert performance have found that all experiences are not equally helpful and there are qualitative differences between activities loosely referred to as 'practice' in terms of their ability to improve performance (Plant et al., 2005). The effects of mere experience differ greatly from those of deliberate practice, where individuals concentrate on actively trying to go beyond their current abilities. The study of deliberate practice will enhance our knowledge about how experts optimize the improvements of their performance (and motivation) through the high level of daily practice they can sustain for days, months, and years. The emerging insights should be relevant to any motivated individual aspiring to excel in any challenging domain (Ericsson, 2006).

On the other hand, some researchers (e.g. Sternberg, 1996, 1998) have cautioned that there is a need to counter extreme positions such as the view that deliberate practice is everything, or almost everything. Sternberg (1998) suggested that Ericsson and his colleagues' work in deliberate-practice studies shows a correlation between focused

practice and expertise but it does not show a causal relation. He agreed that it seems unquestionable that deliberate practice plays a role in the development of expertise, but he pointed out that it also seems extremely likely that its role is that of a necessary rather than a sufficient condition. Sternberg (1996, 2001) suggests that very high levels of expertise require native ability, talent and deliberate practice, rather than only deliberate practice. As he put it, 'without the ability, hours of practice can be for minimal or no rewards' (1996: 349). However, Ericsson (2000/01) suggested that Sternberg's view only represented the enduring common-sense view of professional development which is still advocated by the main contemporary theories of human ability (Ericsson, 2000/01: 190). He claimed that the empirical evidence backing the common-sense view of professional development was surprisingly limited and sometimes even inconsistent with the assumptions of this view of expert performance (2000/01: 190).

Furthermore, Shreve (2002) pointed out that conference interpreting is, at least in some aspects, quite unlike a number of cognitive skill domains (e.g. chess) in that it involves human language. The cognitive abilities and structures that underlie human language are of a quite different nature from the skills related to games or other domains. It remains for us, as interpreting researchers, to determine which aspects of interpreting expertise can be improved by deliberate long-term practice and which are dependent on other factors less amenable to improvement because they are dependent on innate or genetically determined human linguistic abilities (Shreve, 2002: 169).

4.3 A Breakdown of the Modifiable Learner Factors in the Context of Interpreter Education

4.3.1 Introduction

The previous section has identified the modifiable learner factors that affect the development of expertise. In this section, one step will be taken further to show how these modifiable learner variables could be eventually measured in the context of interpreter education, drawing upon the theoretical approaches of self-regulated learning.

4.3.2 Motivational Beliefs

Needless to say, trainee interpreters need to be motivated to complete rigorous conference interpreting courses/programmes. Social cognitive models of motivation (Schunk, Pintrich & Meece, 2008) stress that students can be motivated in multiple ways, and the important issue is understanding how and why students are motivated for achievement. Accordingly, in this study, I conceptualize trainee interpreters' motivation in line with a general expectancy-value model of motivation (Pintrich, 1999; Pintrich, 2003; Pintrich & De Groot, 1990). Two motivational components are included: an expectancy component and a value component. The expectancy component involves students' beliefs that they are able to perform the task and that they are responsible for their own performance. It involves students' answers to the question, 'Can I do this task?' The value component of student motivation essentially concerns students' reasons for doing a task: in other words, what students' individual answers are to the question, 'Why am I doing this task?'

4.3.2.1 Value Components

People can be motivated to engage in an activity for different reasons. Deci and Ryan (1985) identified three types of motivation, namely intrinsic motivation, extrinsic motivation and amotivation, to account for the different reasons why individuals engage in activities.

Intrinsic motivation generally refers to motivation to engage in activities for their own sake, namely for the feelings of pleasure, interest, and satisfaction that derive directly from participation (Deci & Ryan, 1985). For instance, an intrinsically motivated student would study Chinese/English interpreting because of the feelings of satisfaction and pleasure that arise directly from the various interpreting activities embraced by the programme curriculum. On the other hand, extrinsic motivation is experienced when someone engages in an activity as a means to an end. For example, many Chinese students may be studying Chinese/English interpreting because they want to be interpreters, a job which is well-paid and glamorous. Three major types of extrinsic motivation have been proposed (Deci & Ryan, 1985, 1991), namely external regulation,

introjected regulation, and identified regulation. Individuals are externally regulated when the source of control is outside the person. For instance, students who study interpreting because their parents force them to do so are externally regulated. With introjected regulation, the individual has only partially internalized previous external pressure or inducement to engage in the activity. For instance, students might say that they study interpreting because their parents or teachers expect them to. When motivated out of identified regulation, the individual performs the behaviour out of choice and values it as being important. In identifying the activity as being important in terms of personal goals, the individual is expressing more choice regarding her/his participation than when introjected and external regulatory styles operate. However, the underlying motive to engage is still instrumental as it is the usefulness of the activity, rather than the activity's inherent interest, that guides participation (Deci & Ryan, 2000). For example, a student who identifies training in Chinese/English conference interpreting as an important qualification for improving their chances of finding a good job and studies for such benefits (e.g. 'I'm studying interpreting because I think it will be useful in getting a good job') would be exhibiting identified regulation. Finally, Deci and Ryan (1985) have suggested that a third motivational concept is necessary to provide a more complete account of human behaviour. This concept, termed 'amotivation', refers to the relative absence of motivation. Individuals who are amotivated engage in the activity without any sense of purpose and do not see any relationship between their actions and the consequences of such behaviour. Amotivation stems from a lack of competence, the belief that an activity is unimportant, and/or when an individual does not perceive contingencies between her/his behaviour and the desired outcome (Ryan & Deci, 2000; Vallerand, 1997). For example, an interpreting student who states, 'I don't know why I study interpreting, and frankly, I don't care' would be considered amotivated.

According to self-determination theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2000, 2002), intrinsic motivation, the various types of extrinsic motivation (namely external regulation, introjected regulation, and identified regulation), and amotivation lie on a continuum of self-determination. Intrinsic motivation is the most self-determined type of motivation. Identified regulation is the most self-determined type of extrinsic motivation. Representing a lack of intention and a relative absence of motivation, amotivation is the least autonomous regulation embraced by self-determination theory (Deci & Ryan, 1985, 1991).

Consistent with Deci and Ryan's theory, studies carried out in the UK (Newstead, Franklyn-Stokes & Armstead, 1996) indicate that students essentially give three kinds of reason for choosing university courses. The most frequent is the extrinsic motivation of improving their standard of living, improving their chance of finding a good job. This is followed by the intrinsic motivation of fulfilling personal potential, improving life skills and gaining control of their own life, gaining knowledge for its own sake or furthering a particular academic interest. The third kind of reason identified is 'amotivation' or lack of motivation: avoiding the world of work, taking 'time-out', having fun and so on.

Types of motivation represent the reasons why people engage in behaviours (Reeve et al., 2008). The reasons/causes underlying behaviour have consequences for the quality and consequences of that behaviour. Self-determination theory differentiates between types of motivation or regulation, such as autonomous versus controlled forms (Deci & Ryan, 1985; Ryan & Deci, 2000). For example, one reason why people engage in behaviours is to actualize their interests and self-endorsed values. The regulation of behaviour when interests and values are the reason for acting is said to be autonomous. From the perspective of self-determination theory (SDT: Deci & Ryan, 1985), this constitutes self-regulation. Other reasons why people engage in behaviours are introjected under interpersonal pressures or directly controlled by forces outside the self. When such forces regulate a person's behaviour, their behaviour is considered controlled rather than autonomous. As such, this does not constitute true self-regulation because the person is regulated by the coercive or seductive forces rather than impelled by self-initiated, volitional or self-endorsed regulation.

Intrinsic motivation and the 'identified regulation' type of extrinsic motivation are two sources of students' autonomous self-regulation (Reeve et al., 2008). The study of identified regulation, an autonomous type of extrinsic motivation, shows that a student's level of this self-determined form of extrinsic motivation for a learning activity forecasts the quality of his or her educational outcomes in much the same way that intrinsic motivation does (Ryan & Deci, 2000). Past research based on the tenets of self-determination theory (Deci & Ryan, 1985, 1991) demonstrated that intrinsic motivation and the 'identified regulation' type of extrinsic motivation are associated with positive outcomes in academic performance.

Intrinsic and extrinsic motivation are sometimes thought of as two ends of a continuum, such that the higher the intrinsic motivation the lower the extrinsic motivation; however, there is no automatic relation between intrinsic motivation and extrinsic motivation (Lepper, Corpus & Iyengar, 2005, cited in Schunk, Pintrich & Meece, 2008: 237). Schunk, Pintrich and Meece (2008) pointed out that, for any given activity, an individual may be high on both, low on both, medium on both, high on one and medium on the other, and so forth. They suggested that it is more accurate to think of intrinsic and extrinsic motivation as separate continuums, each ranging from high to low. In addition, according to them, intrinsic and extrinsic motivations are time- and context-dependent. They characterize people at a given point in time in relation to a particular activity, and they can change over time.

4.3.2.2 Expectancy Components

4.3.2.2.1 Self-Efficacy Beliefs

Given the long preparation period necessary to reach high levels of performance, it is clear that interested individuals need to be motivated for sustained engagement in deliberate practice over extended periods of time. The question of interest then becomes: why are some individuals so strongly driven to excel in a given domain, while others lose interest and fall by the wayside?

Schunk and Zimmerman (1997) argued that specific task competencies are learned and developed in a series of four stages (observation, emulation, self-control and self-regulation). These competencies lay the groundwork for intrinsic motivation to develop and promote a desire to advance to higher levels within a domain. In the earliest stages of skill development, learners rely on advanced students and experts to teach and show them pertinent concepts related to the skill so that they can emulate their mentors' abilities and hone their own through feedback and guidance from those mentors. Learners hear the motivational orientation, self-expressed beliefs, and performance standards of role models and ultimately adopt some or all of them as their own. Research has shown that the higher the perseverance of a model, the higher the

perseverance of the observer; and the greater the observer's perceived similarity to the model, the greater the motivation to continue practice.

Later stages of development shift the locus of learning from social to internal sources (Schunk & Zimmerman, 1997). The competent learner focuses on the process rather than the outcome to master components of the skill, and chooses to deliberately practise in weak (and often unpleasant) areas in order to achieve mastery. The learner possesses the ability to self-direct practice sessions and monitors the distance between the current state and goal without relying on guidance from social support. With increased perception of self-efficacy, the learner has the ability to sustain motivation and adaptively implement skills in dynamic situations.

Bandura (1997) proposed a social cognitive model of motivation focused on the role played by perceptions of efficacy and human agency. Bandura defined self-efficacy as individuals' confidence in their ability to organize and execute a given course of action to solve a problem or accomplish a task. According to Bandura (1997), self-efficacy beliefs are derived from experiences such as verbal persuasion or derision, observing models that succeed or fail, somatic signs of energy or fatigue, and the positive or negative results of personal enactments. Both experimental and correlational research (Bandura, 1997; Linnenbrink & Pintrich, 2003; Pintrich, 2000; Pintrich & De Groot, 1990; Schunk, 1991; Schunk, Pintrich & Meece, 2008) suggests that self-efficacy is positively related to a wide variety of adaptive academic outcomes such as higher levels of effort, increased persistence in difficult tasks, cognitive engagement, and students' use of self-regulatory strategies, as well as higher levels of achievement and learning. Students who have more positive self-efficacy beliefs (i.e. they believe they can do the task) are more likely to work harder, persist, use adaptive and appropriate study skills, and eventually achieve at higher levels. According to Linnenbrink and Pintrich's (2003) general framework, self-efficacy can lead to more engagement and, subsequently, to more learning and better achievement; however, the relations also flow back to self-efficacy over time. Accordingly, the more a student is engaged, and especially the more they learn and the better they perform, the higher their self-efficacy.

4.3.2.2.2 Control Beliefs

Control of learning refers to how much the student expects to be able to control the outcomes of their learning. If outcomes are contingent upon their own behaviour, students will have a high perception of control over learning and should study more effectively. Students with low perceived control over learning believe that they will not have positive outcomes, no matter how much effort they put into learning.

The role of control beliefs was first analysed using a construct called 'locus of control' (Rotter, 1966). Locus of control is a generalized belief about the extent to which behaviours influence outcomes, that is, successes and failures. People with an external locus of control believe that their actions have little impact on outcomes and that there is little they can do to alter them. Those with an internal locus of control believe that outcomes are contingent on their actions and largely under their control.

Locus of control is postulated to affect learning, motivation and behaviour. Students who believe they have control over whether they succeed or fail should be more motivated to engage in academic tasks, expend effort and persist with difficult material than students who believe their actions have little effect on outcomes. In turn, these motivational effects should improve learning. Research supports the hypothesized positive relation between internal locus of control and motivation and achievement in school (Phares, 1976).

However, the general locus-of-control construct is inadequate for providing a fine-grained analysis of the role of control beliefs. For example, Weiner (1986) has shown that locus of control includes two dimensions that need to be separated: internality–externality and controllability–uncontrollability. These two separate dimensions of locus and control can have different influences on motivation and achievement. In this regard, constructs offered by attribution theory seem to represent a more fine-grained analysis of the role of control beliefs. Attribution theory suggests that when failure or success occurs, individuals will analyse the situation to determine the perceived causes for the failure or success (Weiner, 1986). These causes may be environmental factors or personal factors. These perceived causes can be categorized into three causal dimensions: locus of control, stability, and controllability (Eccles & Wigfield, 2002). The locus of control dimension has two poles: internal versus external locus of control. The stability dimension captures whether causes change over time or not. For instance, ability was classified as a stable, internal cause, and effort was

classified as unstable and internal. Controllability contrasts causes one can control, such as skill/efficacy, with causes one cannot control, such as aptitude, mood, others' actions, and luck.

Research on attributions suggests that, for success, it is especially adaptive to attribute the success to unstable but controllable internal factors such as effort, as effort can be modified according to the demands of the situation. In psychology, a behaviour or trait is 'adaptive' when it helps an individual adjust and function well within a changing social environment, and 'maladaptive' when it is counterproductive to the individual (http://psychology.wikia.com/wiki/Adaptive). On the other hand, in the case of failure, attributions to factors that are unstable are more adaptive. For instance, attributing failure to lack of effort (unstable, controllable, internal) not only allows the student to protect his or her self-worth – it also helps them to see a way to avoid failure in the future (by exerting more effort).

Skinner and her colleagues (Skinner 1995; Skinner, Zimmer-Gembeck & Connell, 1998) proposed a more elaborate model of perceived control. They distinguished three types of beliefs that contribute to perceived control: capacity beliefs, strategies beliefs, and control beliefs. These three beliefs can be organized around the relations between an agent, the means or strategies an agent might use, and the ends or goals the agent is trying to attain through the means or strategies (Skinner, 1995, 1996). Capacity beliefs refer to an individual's beliefs about his or her personal capabilities with respect to ability, effort and luck. These beliefs reflect the person's beliefs that he or she has the means to accomplish something, and are similar to self-efficacy judgments (Bandura, 1997) or agency beliefs (Skinner, 1995, 1996). Strategy beliefs are expectations or perceptions about factors that influence success in learning. These beliefs refer to the perception that the means are linked to the ends—that if one uses the strategies, the goal will be attained. They also have been called 'outcome expectations' (Bandura, 1997) and 'means-ends beliefs' (Skinner, 1995, 1996). Control beliefs are expectations about an individual's likelihood of doing well in learning. These beliefs refer to the relation between the agent and the ends or goals and have also been called 'control expectancy beliefs' (Skinner, 1995, 1996). Skinner and her colleagues (Skinner, 1995; Skinner, Wellborn & Connell, 1990) found that perceived control influenced academic performance by promoting or decreasing active engagement in learning.

On the other hand, Bandura (1986) has questioned the value of disembodied perceptions of control that are not tied to personal agency beliefs. People exercise control by using appropriate means. It is difficult to conceive of a person controlling outcomes without their wielding influence through certain means. From a social cognitive perspective, beliefs that actions control outcomes, although important, are insufficient to motivate students to pursue academic activities (Bandura, 1991). If students believe they lack the ability to master academic demands, they will tend to avoid them even though outcomes are academically achievable. For example, students might believe that they can control their learning setting, but feel they lack the capacity or strategy to learn. In line with this view, Smith (1989) reported that perceived efficacy, but not locus of control, predicted improvements in performance and reductions in anxiety in highly self-anxious students who underwent an intensive coping skills training programme.

4.3.3 Metacognitive Knowledge

The term 'metacognition' appears to have emerged from the early work of Flavell who referred to it as knowledge concerning one's own cognitive processes and products or anything related to them (Flavell, 1976; Flavell, Miller & Miller, 1993). Metacognition has been regarded as a key ingredient in the development of expertise (Moser-Mercer, 2008; Sternberg, 1998). According to Flavell (1979), metacognition consists of both metacognitive knowledge and metacognitive experiences of regulation. While self-regulation or self-regulated learning is beginning to be recognized as essential for the acquisition of expertise in interpreting (e.g. Moser-Mercer & Bali, 2007; Moser-Mercer, 2008), the metacognitive knowledge trainee interpreters bring to the task of learning remains unexplored in the interpreting education literature.

Metacognitive knowledge is 'a specialized portion of a learner's acquired knowledge base' (Flavell, 1979, cited in Wenden, 1998: 45). It is that part of long-term memory that contains what learners know about learning. Thus it is a stable body of knowledge though, of course, it may change over time. Metacognitive knowledge refers to acquired knowledge about cognitive processes; knowledge that can then be used to control cognitive processes. Knowledge is considered to be metacognitive (rather than cognitive) if it is actively used in a strategic manner to ensure a goal is met. This knowledge may be acquired unconsciously, the outcome of observation and imitation, or it may also be acquired consciously. Learners remember what their teachers tell them about how to

learn, or they may reflect on their process and make generalizations about it. The research has shown that learners are capable of bringing this knowledge to consciousness and talking about it. It is statable. Moreover, while learners may make some statements about language learning that appear arbitrary, in fact, their acquired knowledge consists of a system of related ideas, some accepted without question and others validated by the learners' experience.

Flavell's (1979) definition of metacognitive knowledge included knowledge of strategy, task, and person variables. He categorized these variables as person, task and strategic knowledge. Person knowledge refers to knowledge about how human beings learn and process information, as well as individual knowledge of one's own learning processes. Task knowledge includes knowledge about the nature of particular tasks or more generalized knowledge about types of task, as well as the processing demands that will be placed upon the individual. Strategic knowledge refers to general knowledge about what strategies are, specific knowledge about when and how to use them, and their effectiveness. It also includes knowledge about how best to approach the learning, that is, general principles about the learning that can guide a learner's choice of strategies.

According to Pintrich (2002: 220), strategic knowledge includes knowledge about both cognitive and metacognitive strategies, as well as conditional (contextual) knowledge about when and where it is appropriate to use such strategies. For example, students can have knowledge of various metacognitive strategies that will be useful to them in planning, monitoring, and regulating their learning and thinking. These strategies include the ways in which individuals plan their cognition (e.g. set sub-goals), monitor their cognition (e.g. ask themselves questions as they perform an interpreting exercise) and regulate their cognition (e.g. re-do an interpreting exercise they don't do well). In addition, students can have knowledge of resource management strategies, including managing their time and study environment, controlling their effort and attention in the face of distractions and uninteresting tasks, and collaborating with peers, as well as seeking help from peers and teachers. Knowledge about different types of strategies that can be used for learning tasks is an important component of Garcia and Pintrich's (1994) model of self-regulated learning.

Pintrich (2002) noted that metacognitive knowledge of strategies is linked to how students will learn and perform. Students who know about different learning strategies are more likely to use them when studying. On the other hand, if students do not know

of a strategy, they will not be able to use it. Pintrich (2002) argued that metacognitive knowledge of strategies enables students to perform better and learn more. In addition, Pintrich (2002) pointed out that metacognitive knowledge of strategies is related to the transfer of learning, that is, the ability to use knowledge gained in one setting or situation in another (Bransford, Brown & Cocking, 1999). Students are often confronted with new tasks that require knowledge and skills they have not yet learned. In this case, they cannot rely solely on their specific prior knowledge or skills to help them on the new task. When experts find themselves in this situation, they are likely to use more general strategies to help them think about or solve the problem. In the same way, students, who by definition lack expertise in many areas, need to know about different general strategies for learning and thinking in order to use these strategies for new or challenging tasks.

Similarly, in interpreter training, Moser-Mercer (2008) suggests that metacognitive skills enable the transfer of expertise to new scenarios and thus are a hallmark of adaptive expertise. According to Moser-Mercer (2008), the concept of adaptive expertise provides an important model for successful learning. Adaptive experts are capable of adjusting more readily to new situations and of improving their performance throughout their life time. In contrast, routine expertise refers to the ability to reliably perform in a large number of routine situations in a specialized domain. Moser-Mercer argues that in interpreter training, we should transcend current pedagogical principles that foster the development of routine expertise to encourage the emergence of adaptive expertise. She cited Bransford, Brown and Cocking (2000) as saying that adaptive expertise is not merely grafted onto routine expertise. In other words, a routine expert cannot evolve into an adaptive expert simply through additional practice. For adaptive experts to evolve they need to be exposed to learning environments that encourage metacognitive learning (Bransford, Brown & Cocking, 2000, cited in Moser-Mercer, 2008). Given the importance of metacognitive skills, metacognitive knowledge has an essential role to play in the development of expertise in interpreting.

Because metacognitive knowledge in general is positively linked to student learning, Pintrich (2002) suggested that it is necessary to explicitly teach metacognitive knowledge in order to facilitate its development. At the same time, Veenman and Elshout (1999) pointed out that metacognitive knowledge does not automatically lead to the appropriate problem solving behaviour. For instance, a student may know that making a summary of a complex text is necessary and yet refrain from performing the

activity for different reasons. The topic may be uninteresting or too difficult, or the student may lack the necessary knowledge and skills for making a summary.

4.3.4 Use of Self-Regulated Learning Strategies

Ericsson, Krampe and Tesch-Römer (1993) proposed that the acquisition of expert performance was primarily the result of the cumulative effect of engagement in deliberate-practice activities where the explicit goal is to improve particular aspects of performance. Deliberate practice is characterized by its conscious deliberate properties – namely, a high level of concentration and the structuring of specific training tasks to facilitate setting appropriate personal goals, monitoring informative feedback, and providing opportunities for repetition and error correction (Ericsson, Krampe & Tesch-Römer, 1993). Deliberate attention (i.e. strategic awareness) is believed to be necessary to overcome prior habits, to self-monitor accurately, and to determine necessary adjustments (Zimmerman, 2006). Ericsson (2003) has discussed a person's attempts to acquire expertise as deliberate problem solving because they involve forming a cognitive representation of the task, choosing appropriate techniques or strategies, and evaluating one's effectiveness.

Cleary and Zimmerman (2001) pointed out that self-regulation is reflected in these features of deliberate practice. Like students who are instructed to practise deliberately, self-regulated learners structure their practice sessions by setting specific goals and self-monitoring (Cleary & Zimmerman, 2001: 187). Similarly, Darabi, Nelson and Seel (2009) argued that the construct of deliberate practice implies a metacognitive process similar to that of self-regulated learning, in which one continually assesses and improves one's own strategy and performance through iterative feedback cycles including goal-setting, performance, self-observation, and self-reflection. Indeed, Zimmerman (2006: 705) observed that these properties of deliberate practice (e.g. task analysis, goal setting, strategy choice, self-monitoring, self-evaluations and adaptations) have been studied as key components of self-regulation (Boekaerts, Pintrich & Zeidner, 2000; Schunk & Zimmerman, 1998; Winne, 1997; Zimmerman & Schunk, 2001).

Self-regulation models have been used to understand the cognitive and motivational issues involved in deliberate practice. For example, Cleary and Zimmerman (2001) used a social cognitive model of self-regulation to study self-regulation differences during

free-throw shooting practice by basketball experts, non-experts and novices. In a study of college women's volleyball practice, Kitsantas and Zimmerman (2002) compared self-regulatory processes among novice, non-expert and expert volleyball players. Zimmerman (2006) examined the role of self-regulatory processes in the development of expertise using a three-phase cyclical social cognitive model of self-regulation. He found that experts from diverse disciplines, such as sport, music and writing, rely on well-known self-regulatory processes to practise and perform. Variants of these self-regulatory processes can also assist aspiring learners to acquire both knowledge and skill more effectively. However, Zimmerman (2006) pointed out that increases in one's use of self-regulatory processes will not immediately produce expert levels of knowledge and skill. Indeed, learners' selection of goals and strategies will depend on their levels of task knowledge and performance skill. According to Zimmerman (2006), expertise involves self-regulating three personal elements: one's covert cognitive and affective processes, behavioural performance, and environmental setting. These triadic elements are self-regulated during three cyclical phases: forethought, performance, and self-reflection. Zimmerman (2006) made it clear that expertise involves more than self-regulatory competence; it also involves greater task knowledge and performance skill.

In her study on skill acquisition in interpreting, Moser-Mercer (2008) identified parallels between self-regulated learning and expertise development. According to Moser-Mercer, when faced with a learning task, self-regulated learners typically begin by analysing the task and interpreting task requirements in terms of their current knowledge and beliefs. She pointed out that this is parallel to the cognitive stage of expertise development identified by Anderson (1995). Self-regulated learners set task-specific goals, which they use as a basis for selecting, adapting, and possibly inventing strategies that will help them accomplish their objectives. Moser-Mercer pointed out that this is the parallel to the associative stage identified by Anderson (1995). After implementing strategies, self-regulated learners monitor their progress towards goals, thereby generating internal feedback about the success of their efforts. They adjust their strategies and efforts on the basis of their perception of ongoing progress. Moser-Mercer pointed out that this is parallel to the beginning of the automated stage of expertise development identified by Anderson (1995).

Furthermore, Moser-Mercer and Bali (2007) argued that self-regulated learning is essential for the acquisition of expertise in interpreting, and that without self-regulated

learning progress will be arrested. Their argument parallels Ericsson's (2000/01: 198) earlier point about deliberate practice. Ericsson proposed that the development of typical, novice performance is prematurely arrested in an effortless automated form; experts, however, engage in an extended, continued refinement of mechanisms that mediate improvements in their performance and therefore remain within the cognitive/associative phases. However, if they at some point in their career give up their commitment to seeking excellence and thus stop engaging in deliberate practice to further improve performance, this will result in premature automation of their performance and arrested performance.

In summary, our review has shown that it is possible to operationalize the 'conscious deliberate properties' (Zimmerman, 2006: 705) of students' practice in terms of their use of self-regulatory strategies. In this study, the conscious deliberate properties of students' practice in interpreting will be operationalized in terms of two general categories of strategies: (1) self-regulatory strategies to control cognition, and (2) resource management strategies (Pintrich, 1999).

4.3.4.1 Self-Regulatory Strategies to Control Cognition

Most models of metacognitive control or self-regulating strategies include three general types of strategies: planning, monitoring, and regulating (see e.g. Zimmerman & Martinez-Pons, 1986, 1988; Pintrich & De Groot, 1990; Pintrich & Garcia, 1991; Pintrich et al., 1993). Previous research has shown that metacognitive strategies for learning are linked to better academic performance (e.g. Pintrich & De Groot, 1990; Zimmerman & Martinez-Pons, 1986, 1988).

Planning activities have been investigated in various studies of students' learning. Planning activities include setting goals for studying, skimming a text before reading, generating questions before reading a text, and doing a task analysis of the problem (Pintrich, 1999: 461). In the case of interpreters, these would be setting specific goals to help focus performance when doing an interpreting exercise, analysing the nature of a new task and using relevant sources of information to prepare, and thinking about what to learn before beginning an interpreting task. These activities seem to help the learner plan their use of cognitive strategies and also seem to activate or prime relevant aspects of prior knowledge, making the implementation of the task much easier. Learners who

report using these types of planning activities seem to perform better on a variety of academic tasks than students who do not use these strategies (Zimmerman, 1989; Hofer, Yu & Pintrich, 1998).

Monitoring one's thinking and academic behaviour is an essential aspect of self-regulated learning. In order for a learner to be self-regulating, there must be some goal or standard or criterion against which comparisons are made in order to guide the monitoring process. Monitoring activities include self-testing through the use of interpreting exercises to check for mastery of skills, and analysing the strengths and weaknesses of one's performance as an interpreter after finishing a task. These various monitoring strategies alert the learner to breakdowns in performance that can then be 'repaired' using regulation strategies. This is important, because if students do not monitor their performance, it is unlikely that they will even see the need for regulating or changing their cognition and behaviour.

Regulation strategies are closely tied to monitoring strategies. As students monitor their learning and performance against some goal or criterion, this monitoring process suggests the need for regulation processes to bring behaviour back in line with the goal or to come closer to the criterion. For example, when students ask themselves if they could have prepared for an interpreting task more effectively after finishing it, this analysis of performance and strategy effectiveness is a regulatory strategy. Another type of self-regulatory strategy for interpreting occurs when a student changes their way of approach when confronted with speeches addressing difficult or less familiar themes and subject-matters. Of course, reviewing or sorting out afterwards any aspect of an interpreting exercise that one does not do that well or is confused about is another strategy that students can use to regulate their behaviour. Regulating strategies are assumed to improve learning by helping students correct their studying behaviour and repair deficits in their performance (Pintrich, 1999: 462).

4.3.4.2 Resource Management Strategies

Resource management concerns strategies that students use to manage and control other resources besides their cognition (Pintrich et al., 1993). These strategies include their managing their time and study environment (e.g. using their time well, having an appropriate place to study) as well as their regulation of their own effort (e.g. persisting

in the face of difficult or boring tasks). Resource management strategies also include peer learning (e.g. using a study group or friends to help learn) and help-seeking (e.g., seeking help from peers or teachers when needed), which focus on the use of others in learning.

Although students' management of their time and the actual place they choose to study are not cognitive or metacognitive strategies that may have a direct influence on eventual learning, Hofer, Yu and Pintrich (1998) pointed out that they are general strategies that can help or hinder students' efforts to complete the academic task. According to Pintrich (2004), students' monitoring of their study environment for distractions and subsequent attempts to control or regulate their study environment to make it more conducive for studying are a means to facilitate learning through self-regulation. In interpreter training, much of the learning and practice takes place outside the classroom, and students have to be able to control and regulate their study environment. Self-regulation also includes the general capability to control one's effort and persistence in the face of difficult or boring tasks. In interpreter training, trainee interpreters will encounter many situations that call for self-regulation of this sort. They must learn to manage their time and effort well in order to be successful. In addition, the ability to work well with peers in study groups or co-operative learning groups is also a very important self-regulatory strategy. As Gile (2005) pointed out, the automation of cognitive skills and stamina build-up in interpreter training require much more practice than can be given in class. Students in interpreter training programmes are required to set up informal groups of two to four or five people and practise on a daily basis (2005: 135). Finally, given the complexity of conference interpreting (De Groot, 2000; Gile, 1997, 2005; Sawyer, 2004), the ability to seek help from peers as well as teachers can be crucial to success in conference interpreting learning. Students who know when, how, and from whom to seek help should be more likely to be successful than those students who do not seek help appropriately. In sum, these resource management strategies are assumed to help students adapt to their environment as well as change the environment to fit their goals and needs (Pintrich, 1999).

4.3.5 Effort

The central claim of Ericsson, Krampe and Tesch-Römer's (1993) theoretical framework for explaining expert performance is that the level of performance an

individual attains is directly related to the amount of deliberate practice. Hence, individuals seeking to maximize their performance within some time period should maximize the amount of deliberate practice they engage in during that period.

It could be said that, despite the differences among the many interpreter training institutions, a common feature of all the courses is their intensive nature. They usually involve a high number of contact hours, complemented by an even higher number of self-study hours during which students are expected to practise. A recent example is the European Masters in Conference Interpreting (EMCI), a postgraduate degree offered by a number of European universities that have agreed on a common curriculum (EMCI, 2010). The latter includes five core components (The Theory of Interpretation, The Practice of Interpretation, Consecutive Interpretation, Simultaneous Interpretation, The EU and International Organizations) and a number of optional courses. The programme will normally offer no fewer than 400 class contact hours, of which a minimum of 75% will be devoted to interpreting practice. In addition, students will be expected to devote time to group practice of simultaneous and consecutive interpreting and other self-directed learning. Class contact hours, group work hours and self-directed study may total no fewer than 1,000.

In other universities outside the EMCI consortium, credits and attendance requirements may vary, but the expectation that trainees will engage in assiduous individual and group practice is always present. For example, in an outline of the two-year interpreting course offered at ESIT in Paris, Seleskovitch and Lederer (1986: 166) specify that for every hour of class attendance, three hours of individual practice are expected if students are to achieve satisfactory results.

So far, no studies have been found to investigate the role of effort in conference interpreting learning. This might be because many people believe that this factor is so self-evident that the findings cannot reveal anything insightful. However, this factor is worth investigating with Chinese students because belief in effort is so widespread that it is necessary to test the assumption that effort alone could result in success, which could lead to the neglect of the role of other modifiable learner variables. Plant et al.'s (2005) study on American college students found that amount of study time was a poor predictor of academic performance. They found that the amount of study only emerged as a significant predictor of academic performance when the quality of study and previously attained performance were taken into consideration. The present study has

intended to measure the effect of effort on conference interpreting learning achievement in a context where the effects of the other modifiable learner factors were also examined. The key issue concerning effort that the present study has aimed to tackle was to determine under what conditions effort could promote learning outcomes and under what conditions it could not.

Table 4.3 presents a summary of the modifiable learner factors affecting the development of expertise in interpreting discussed in Section 4.3.

Modifiable learner factors affecting the development of expertise in interpreting			
Motivational beliefs	Metacognitive knowledge of strategies	Use of self-regulated learning strategies	Effort
Task value (i.e. reasons for engagement) Self-efficacy beliefs Control beliefs for learning	Beliefs about SRL strategies	Metacognitive self-regulation strategies Resource management strategies -Time & Environment; - Effort regulation; - Peer learning; - Help seeking	Study time per day outside of class

Table 4.3 Modifiable learner factors affecting the development of expertise in interpreting

4.4 Conceptual Model of Factors Affecting the Development of Expertise in Interpreting

This section will introduce the conceptual model for this study. The interrelations between the factors in the model will first be specified. Secondly, this section will explain which factors in the conceptual model are the focus of this study and which are not.

4.4.1 Description of the Conceptual Model for This Study

4.4.1.1 The Factors Included in the Conceptual Model

In order to investigate trainee interpreters' development of expertise in conference interpreting, it is helpful to possess a framework for looking at skill acquisition or expertise development. By reviewing various models of factors affecting the development of expertise (Ericsson, Krampe & Tesch-Römer, 1993; Charness, Krampe & Mayr, 1996) and the operationalization of modifiable learner factors within the theoretical framework of self-regulated learning (see 4.3), as well as by drawing upon social cognitive models of factors affecting learning outcomes (Bandura, 1986), I selected the following factors for inclusion in the conceptual model of factors affecting the development of expertise in interpreting (Table 4.4).

Environmental factors	**Personal Factors**		**Behavioural Factors**
	Unmodifiable	**Modifiable**	**Modifiable**
Resources	Age; Language level on entry	Motivation variables; Knowledge base	Use of self-regulated learning strategies; Effort

Table 4.4 The factors included in the conceptual model for this study

4.4.1.2 The Interrelations between Different Sets of Factors

In this model, in accordance with a social cognitive and self-regulated learning perspective, it is assumed that, in the context of interpreter education, learners' development of expertise in interpreting is decided by personal, behavioural and environmental factors (see 4.2). Learners' personal, behavioural and environmental

factors all operate as interacting determinants of each other. Although they all influence the development of expertise in interpreting, only learners' personal and behavioural factors affect it directly. Environmental factors can influence the development of expertise in interpreting only indirectly through the learner factors, that is, personal factors and behavioural factors. In other words, the learner factors serve as mediators through which environmental factors can exert influence on learning outcomes. Learner factors are further divided into two sub-groups: unmodifiable (e.g. age, gender, level of B-language on entry) and modifiable (e.g. motivational beliefs, knowledge, effort, use of self-regulated learning strategies). It is assumed that unmodifiable learner factors can affect the development of expertise in interpreting through modifiable learner variables. Finally, it is also assumed that students' achievement in developing expertise in interpreting can in turn influence modifiable learner factors, including modifiable personal factors and behavioural factors. Figure 4.2 below presents a model of the development of expertise in interpreting, with the solid arrows indicating the interrelations among different sets of factors as well as their relations to the development of expertise in interpreting, and the dotted arrows indicating the relations flowing back to modifiable personal factors and behavioural factors over time from the development of expertise in interpreting.

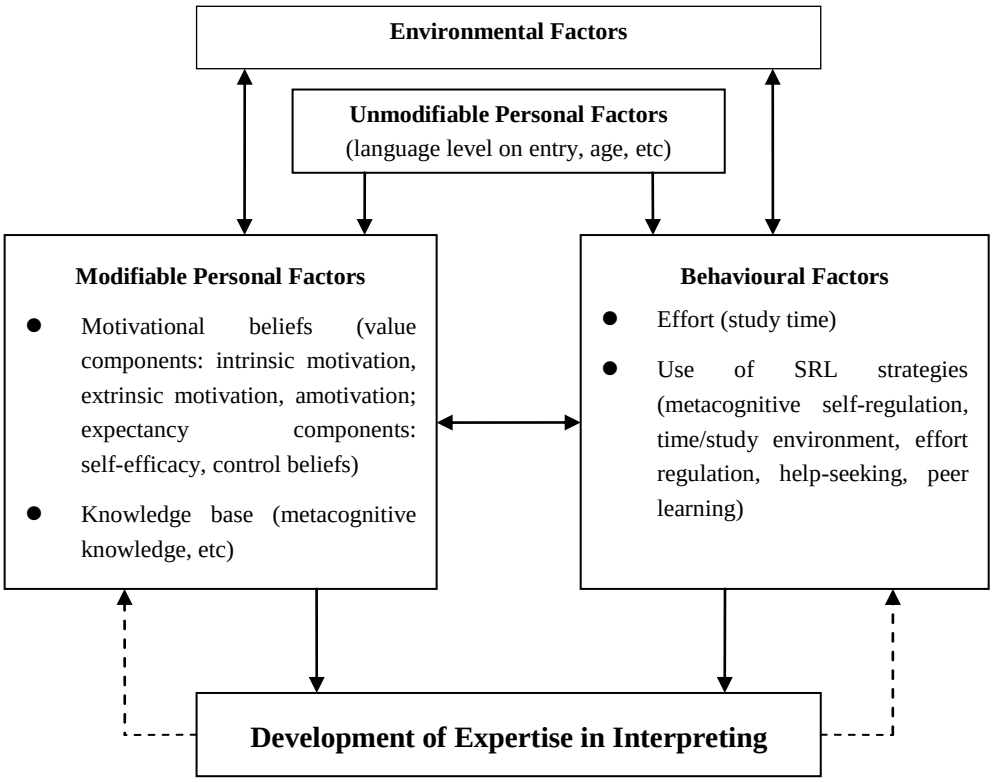


Figure 4.2 A model of the development of expertise in interpreting

4.4.2 Factors Selected from the Model as the Focus of This Study

Thus far, a conceptual model has been proposed as a framework for describing the factors affecting the development of expertise in conference interpreting, and for understanding how trainee interpreters develop their expertise in conference interpreting in educational settings. For the purpose of this study, I will focus on only the modifiable components of the model, that is, learners' motivational beliefs, knowledge base, effort, and use of SRL strategies. Such an intention was prompted by the findings revealed by empirical studies conducted by expertise researchers; namely, learners' development of expertise was to a large extent accounted for by factors under learners' control (see e.g. Ericsson, Krampe & Tesch-Römer, 1993; Charness, Krampe & Mayr, 1996; Sternberg, 2000, 2001). These modifiable learner factors are examined from a self-regulated learning perspective on student learning. The motivational components of self-regulated learning in this study are represented by expectancy components (self-efficacy beliefs, control beliefs) and value components (intrinsic motivation, extrinsic motivation,

amotivation). Self-regulatory strategies to control cognition and resource management strategies represent the strategy-use aspect of self-regulated learning that will be examined in this study. Besides strategy use and motivational beliefs, our model of self-regulated learning also includes the students' knowledge base, represented by students' metacognitive knowledge of strategies.

In addition to examining modifiable learner variables, the present study also surveyed a few unmodifiable learner factors which have been shown to be particularly important in conference interpreting learning, namely language level on entry, and age. Sound language skills are prerequisites for training as an interpreter (AIIC Training Committee, 2006; Gile, 1995). Age has been found to be relevant to the developmental trajectory of academic self-regulation, with older students being more capable of regulating their cognition than younger students (Pintrich & Zusho, 2002). Age has also been linked to interpreters' cognitive processing speed as well as being used as a variable in studies on student interpreters' well-being (Moser-Mercer, 2008). The reason for measuring the effects of unmodifiable learner factors was that once their effects are teased out, we could be in a better position to discuss the effects of modifiable learner factors on the development of expertise in conference interpreting, which is the focus of the current investigation.

Our review of research on interpreting expertise (see Chapter 2) has found that studies in interpreting expertise in the literature have been overwhelmingly 'static' in that nearly all of them are cross-sectional, while no 'dynamic' longitudinal research has investigated trainee interpreters' initial development of expertise in conference interpreting starting from their introduction to the domain as beginners, when they have to make the transition from language learning to interpreting learning. Schunk (2005) notes that research is needed on the development of self-regulatory processes and especially on developmental changes in how the component processes merge to affect self-regulated learning. A longitudinal approach can yield meaningful findings about the components of self-regulated learning, as is attested by an abundance of previous empirical research in the context of education (e.g. Wolters, Yu & Pintrich, 1996; VanderStoep, Pintrich & Fagerlin, 1996; Rao, Moely & Sachs, 2000; Zusho, Pintrich & Coppola, 2003; Caprara et al., 2008; Van der Veen & Peetsma, 2009). Furthermore, previous research has demonstrated that self-regulated learning is a significant predictor of students' academic performance and achievement (see review in Chapter 3). More directly, empirical evidence indicates that different indicators of self-regulated learning

can be used to predict students' teacher-assigned grades (e.g. Pintrich & De Groot, 1990; VanderStoep, Pintrich & Fagerlin, 1996; Wolters & Pintrich, 1998; Zimmerman & Martinez-Pons, 1990).

Therefore, this study intends to investigate how students' self-regulated learning develops over time and what factors, with a focus on modifiable learner variables, influence (i.e. facilitate or constrain) the development during the course of conference interpreting learning. This study also intends to examine how the personal attributes of self-regulated learning predict students' achievement in the learning of interpreting.

In summary, on the basis of the proposed model of factors affecting the development of expertise in interpreting, this study aims to investigate trainee interpreters' development of self-regulation and its influence on their development of expertise in conference interpreting. With a focus on the modifiable components of the model, the study attempted to answer these questions: (1) what changes take place in trainee interpreters' self-regulation during the course of their interpreting learning?; (2) what are the factors that facilitate or constrain the development of self-regulation?; and (3) how does trainee interpreters' self-regulation relate to their interpreting performance/learning outcomes?

4.4.3 Factors in This Conceptual Model That Are Not Included in the Study

As is indicated in Figure 4.2, the learner's personal factors, behaviours, and environment all work together to influence his or her development of expertise in interpreting. The focus of this study is on modifiable learner factors and the environmental factors and unmodifiable personal factors are not included. This narrowing of the focus is not intended to play down the importance of the other factors, but rather to permit a clearer and more detailed examination of the modifiable learner factors. Environmental factors and unmodifiable personal factors are clearly important factors which have a definite impact on the development of expertise in interpreting. Nevertheless, in order to permit a detailed examination of the modifiable learner factors and their role in the development of expertise in interpreting, this study did not include any environmental factors, or many unmodifiable learner factors.

Chapter 5

Research Questions and Methodology

5.1 Introduction

This chapter starts with a discussion of the overall methodological approach adopted. Then, the research instruments developed and utilized in this research are introduced. Finally, the actual design of data collection and data analysis procedures is outlined.

5.2 Research Questions and Sub-Questions

This study attempts to answer the following questions concerning modifiable learner factors in developing interpreting expertise:

1. How do trainee interpreters' modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort) change over time?

2. How do the relations between modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort) change over time?

3. How do modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort) correlate with/predict interpreting performances? In particular:

   (a) How do trainee interpreters' modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort) correlate with interpreting performances?

   (b) How do trainee interpreters' modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort) vary by performance?

   (c) How do trainee interpreters' modifiable personal factors (i.e.,

motivation, knowledge) and behavioural factors (i.e., strategy use, effort) predict interpreting performances?

5.3 The Overall Methodological Approach and Justification

5.3.1 A Longitudinal Approach

The research in interpreting studies undertaken to date has often opted to compare expert and novice performance in order to determine if there are observable differences in behaviours or abilities. Attention has tended to focus on describing underlying differences between the cognitive processes of novices and experts (Sawyer, 2004: 68) and on knowing how expert interpreters perform their craft differently from novices, rather than on finding out how expertise develops from novice level to expert. So far as I know, there have been no controlled longitudinal studies to trace the learning process of conference interpreting from one period to another. I have not found any research that surveyed trainee interpreters' development in expertise starting from their introduction to the domain as beginners.

Both common sense and expert knowledge tell us that there is a relatively long intermediate phase on the developmental continuum from being a novice to becoming an expert in a domain. For complex cognitive skills like conference interpreting, this intermediate phase, in which students gradually acquire competence, can have a very long duration. Moser-Mercer (1997) argues that if we total the hours a novice interpreter spends in class and in self-guided practice before achieving the level of expertise required to pass final exams, they usually come quite close to 5,000. Consequently, there is a strong need for longitudinal research on the development of expertise in conference interpreting during that long intermediate phase, allowing for the measurement of differences or change in learner variables from one period to another. Such a study would significantly advance our understanding of the interrelations between the factors outlined in our framework (see Chapter 4), and in particular, of the changes in the roles of motivation, strategies, effort and knowledge in the development of expertise in conference interpreting over an extended period of time. Indeed, it can be argued that any claims about 'development' (or learning, progress, improvement,

change, gains, and so on) can most meaningfully be interpreted only within a full longitudinal perspective (Ortega & Iberri-Shea, 2005). Liu (2008) has observed that knowing how expertise progresses along a developmental course is crucial to the success and efficiency of interpreter training. It is, therefore, unfortunate that the bulk of the disciplinary discussions within the field favour a cross-sectional view of the interpreting expertise and, as a consequence, longitudinal studies of the development of expert performance are extremely rare (Ericsson, 2000: 204). On the other hand, Ericsson (2000: 204) pointed out that it is often possible to study the rapid development of mastery during intensive education and training. Therefore, the present study takes a longitudinal approach to studying the relevant variables relating to the development of expertise in conference interpreting.

5.3.2 Quantitative Questionnaire Survey

In this study, I have chosen quantitative questionnaire surveys as the best approach to the research question. Although questionnaires have their own limitations (see 8.6 for a detailed discussion of the limitations of questionnaires), using the same self-report questionnaire in multiple waves of survey enhances the comparability of multi-wave data and is thus conducive to establishing the validity of the longitudinal study. This study aims to identify the dominant learner factors affecting the development of expertise in interpreting and their interrelationships, trace their changes over time, and specify their relationship to interpreting performance. It aims to quantify the variables, the changes as well as the relationships, by measuring them precisely, and hopefully to produce reliable and replicable data generalizable to other contexts.

At the same time, I am aware that qualitative methods are useful for making sense of quantitative data and for uncovering the reasons for particular observations, and that the quantitative data might well be improved with qualitative back-up. However, given the longitudinal design of this study, the use of qualitative methods such as asking students to keep learning diaries or conducting interviews to find out about student learning would inevitably affect students' responses in subsequent surveys. That is why multi-wave surveys were employed as the sole method of data collection in this study.

5.4 Sample

As postgraduate translation and interpreting programmes in different universities have different curricula, it hardly makes any sense to put together trainee interpreters from different universities just to get a larger sample size. In order to have a coherent sample, students from one single translation and interpreting programme were recruited as participants in this investigation. I chose students who entered the two-year Postgraduate Programme in Translating and Interpreting (Chinese strand) at Newcastle University in September 2009 to form the basis of this study.

Full ethical approval was obtained from the University Ethics Committee for access to students on the Postgraduate Programme in Translating and Interpreting (Chinese strand). Thirty students entered Stage 1 of the Programme in September 2009, their ages ranging from 21 to 36. Two of them were male, while 28 were female. With an exception of one local English student, the students were from either Taiwan or Mainland China, and their mother tongue was Chinese. These Chinese students had met the requirement of a minimum of IELTS 7, with no less than 6.5 on the sub-skills of writing and speaking. Meanwhile, another twelve students entered Stage 2 of the Programme directly, all of whom were female Chinese-speaking students from either Taiwan or Mainland China. They had met the requirement of a minimum of IELTS 7.5, with no less than 7 on all sub-skills as well as a satisfactory result in an admission interview. Eventually, one of the twelve direct-entry students was not included in the survey, one who, unlike the other eleven students, was registered only on the Consecutive Interpreting module rather than on both Consecutive Interpreting and Simulatneous Interpreting. Consequently, the participants in this study were 30 Stage-1 (i.e. first-year) students and 11 Stage-2 (i.e. second-year) direct-entry students on the Postgraduate Programme in Translating and Interpreting (Chinese strand) at Newcastle University during the academic year 2009–2010. Our sample represented a typical cohort of Chinese students studying in the UK who have a range of English language ability. Most of them were studying abroad (away from home) for the first time.

5.5 The Chinese T&I Programme at Newcastle University

Programme Description. According to its Course Handbook (2009–2010) and programme website (http://www.ncl.ac.uk/sml/postgrad/chinese/index.htm, accessed 20

April 2009), the Chinese T&I Programme at Newcastle University enables students to acquire a "starter professional level" (p.7, Course Handbook 2009–2010) of translating and interpreting skills so they may enter the interpreting profession when they leave the programme, especially in marketable fields such as technology, commerce, international relations and journalism.

The Chinese T&I Programme uses English and Chinese as working languages. For most students, Mandarin Chinese is their "A" language, i.e. their mother tongue, or strictly equivalent to their mother tongue (AIIC Training Committee, 2006), and English is their "B" language, i.e. a language other than their mother tongue, of which they have a perfect command and into which they work from one or more of their other languages (AIIC Training Committee, 2006). For a small number of other students, English is their "A" language, while Mandarin Chinese is their B language.

This programme consists of two stages of study over 24 months. In Stage 1 all students take the same compulsory modules, such as translating, simultaneous interpreting, consecutive interpreting, sight translation, information technology for translators and interpreters, and translation studies. Upon successful completion of this stage, they will take one of the four Stage-2 pathways (i.e., MA in Translating, MA in Interpreting, MA in Translating and Interpreting, and MA in Translation Studies), according to their academic results and their personal preferences.

In Stage 2 the students specialize in interpreting or translation. Stage-2 modules include: consecutive interpreting; simultaneous interpreting; bi-lateral interpreting; translation studies; research methods in translating and interpreting; professional issues in translating and interpreting. Direct entry to this stage is possible if applicants meet the Stage-2 entry requirements.

Table 5.1 presents the interpreting modules and class hours in Stage 1 and Stage 2 for the academic year 2009–2010.

		Semester 1	Semester 2
Stage 1	**CI module(s)**	CHN7013 Introduction to Interpreting (3 hour/week × 12 weeks)	CHN7011 Consecutive Interpreting I (2 hour/week × 12 weeks)
	SI module(s)		CHN7010 Simultaneous Interpreting I (2 hour/week × 12 weeks)
Stage 2	**CI module(s)**	CHN8024 Consecutive Interpreting II (3 hour/week × 12 weeks)	CHN8024 Consecutive Interpreting II (3 hour/week × 12 weeks)
	SI module(s)	CHN8025 Simultaneous Interpreting II (3 hour/week × 12 weeks)	CHN8025 Simultaneous Interpreting II (3 hour/week × 12 weeks)

Table 5.1 Interpreting modules and class hours in Stage 1 and Stage 2 (2009–2010)

Module Aims. According to its Course Handbook (2009–2010) and programme website (http://www.ncl.ac.uk/sml/postgrad/chinese/index.htm, accessed 20 April 2009), the modules of "Introduction to Interpreting" and "Consecutive Interpreting I" aim to introduce the nature of oral interpreting between languages, the skills involved, the training methods, the profession and the working environment. These two modules lay the foundation for students to develop the professional interpreting skills in order to confidently select and undertake consecutive interpreting assignments. Building on the knowledge and skills that students have acquired in the modules of "Introduction to Interpreting" and "Consecutive Interpreting I", the module of "Consecutive Interpreting II" provides training in professional proficiency in advanced consecutive interpreting skills and strategies, knowledge and ability at all stages of carrying out consecutive interpreting assignments, and awareness of the current developments, trends, as well as research in the profession.

The module of "Simultaneous Interpreting I" aims to introduce the principles of simultaneous interpreting and lay the foundation of developing the professional skills

for simultaneous interpreting training. The course starts with a general introduction to the principles of simultaneous interpreting, and follows up with a series of preparatory exercises to help students develop the concentration necessary for listening and speaking at the same time. Some basic skills and strategies for simultaneous interpreting will be introduced and practised. Building on the knowledge and skills that students have acquired in "Simultaneous Interpreting I", the module of "Simultaneous Interpreting II" is designed to develop the professional skills of simultaneous interpreting. Starting with an introductory session to simultaneous interpreting, this course consists of a series of seminar workshops and exercises to help students develop the skills required for working as a professional interpreter, including international conference etiquette, preparing for conference interpreting assignments, advanced strategies for simultaneous interpreting, etc.

Teaching Methods. Teaching sessions are conducted in small groups of around ten students. Lectures and workshops provide guidance/input in interpreting skills and subject contents. Teaching assistant-led practical sessions enable students to prepare, practise and discuss interpreting tasks assigned to them. Outside class, students are encouraged to spend as much time as possible in self-study.

Assessment Methods. All the interpreting modules mentioned above are assessed by a live panel, consisting usually of the module leader and another member of staff. Information about the themes/subject-matters addressed by the exam tasks is provided in advance, allowing students to practise their research and preparation skills for interpreting assignments. With the exception of the first continuous assessment of Introduction to Interpreting (i.e., CHN7013CA1), each assessment consists of two interpreting tasks (see Table 5.5, in Section 5.7), one from English to Chinese (60%), the other from Chinese to English (40%), which add up to a full mark of 100.

5.6 Data Collection Instruments

5.6.1 The Development of the Interpreting Learner Factors Questionnaire

This study is intended to generate information about the modifiable learner factors that affect the development of expertise in conference interpreting, including modifiable

personal factors (i.e. motivation, knowledge) and behavioural factors (i.e. strategy use, effort). A search of the literature did not reveal a suitable existing instrument. I decided to construct my own questionnaire in order to collect high-quality data for my research.

To develop the Interpreting Learner Factors Questionnaire (ILFQ), a theory-driven (or 'top-down') approach was used (Hox, 1997: 53). After extensively reviewing the existing literature on expertise development and self-regulated learning, I proposed a conceptual model of modifiable learner factors affecting the development of expertise in interpreting that was derived from the literature. This model served then as a basis for instrument development and validation. The ILFQ was not only conceptually based but also systematically developed in terms of establishing appropriate reliability and validity values. The main chronological steps involved in developing the Interpreting Learner Factors Questionnaire (ILFQ) are described in detail below.

5.6.1.1 Defining Constructs and Subcategories

I proposed a conceptual model of modifiable learner factors affecting the development of expertise in interpreting that was derived from the literature (see Table 4.4 in Chapter 4). The model of self-regulated conference interpreting learning includes knowledge, strategies, effort and motivation. In terms of motivational processes, I am concerned with three motivational components: task value, self-efficacy beliefs, and control of learning beliefs. Self-regulatory strategies to control cognition and resource management strategies represent the strategy-use aspect of self-regulated learning that will be examined in this study. Besides strategy use and motivational components, my model of self-regulated learning also includes the students' metacognitive knowledge (see Garcia & Pintrich, 1994: 128).

This model serves as a basis for the development of the ILFQ. The ILFQ assesses the students' conference interpreting learning experience in four major areas: (1) motivational processes; (2) metacognitive knowledge of strategies; (3) use of self-regulated learning strategies; and (4) effort.

5.6.1.2 Item Generation

Once the exact constructs to be measured have been defined, the questions/items operationalizing these constructs can be generated. The main aim of this stage of the procedure is to generate a list of items which thoroughly encompasses the construct(s) of interest. First, I used interviews for instrument development in this study. This was because in-depth knowledge of students' motivation, beliefs and strategies for conference interpreting learning acquired through qualitative interviews could be used to inform the design of survey questions for self-report questionnaires, so that better wording or more comprehensive closed answers could be generated in developing questionnaire and scale items. In developing the ILFQ, I interviewed four graduating trainee interpreters in May 2009, as well as consulting the Selector of the Newcastle T&I Postgraduate Programme about applicants' motivations for studying interpreting. As a result, a variety of motivation/strategy items were elicited, among which were the items comprising the scale of extrinsic motivation: "Because I want to become an interpreter", "Because I think it will be useful in getting a good job", "Because I think it can improve my English proficiency". Second, I borrowed conceptual categories and adapted questionnaire items from existing literature and instruments in the areas of language learning and self-regulated learning. The questionnaire items concerning motivation types (i.e. intrinsic motivation, extrinsic motivation or amotivation) were adapted from Noels et al.'s (2000) Language Learning Orientations Scale – Intrinsic Motivation, Extrinsic Motivation, and Amotivation Subscales (LLOS-IEA). The questionnaire items relating to self-efficacy beliefs and control of learning beliefs were derived from Pintrich et al.'s (1991) Motivated Strategies for Learning Questionnaire (MSLQ). The questionnaire items relating to beliefs about the importance of SRL strategies were derived from various sources (Cotterall, 1999; Moser-Mercer, 2008; Oxford, 1990; Pintrich et al, 1991; Skehan, 1989; Wen & Johnson, 1997). The questionnaire items relating to SRL strategies were adapted from Pintrich et al's (1991) Motivated Strategies for Learning Questionnaire (MSLQ).

5.6.1.3 Pilot Test

In developing a questionnaire it is essential to pilot-test it on a small group of people who are similar to the intended participants. This trial run allows the researcher to collect feedback about how the instrument works and whether it does the job it has been

designed for. For example, this will help the researcher find out if the participants will understand the questions, if the questions mean the same thing to all the participants, if the questionnaire provides the data needed, and how long the questionnaire takes to complete. It can also indicate problems or potential pitfalls concerning the administration of the questionnaire and the scoring and processing of the answers. On the basis of this information, the researcher can make alterations and fine-tune the final version of the questionnaire.

A pilot test of the questionnaire was carried out in July 2009 with sixteen MA Chinese/English interpreting students, who had just completed their taught modules and were writing their MA dissertations or conducting their MA T&I projects. They were all female. Twelve of the sixteen students had completed their two-year MA interpreting course, which comprised a Diploma Year and then a Degree Year (i.e. Stage 1 and Stage 2), while the other four had completed their one-year MA interpreting course as direct-entry students to the Degree Year (i.e. Stage 2). They were all native speakers of Chinese from Taiwan or Mainland China. This was an 'undeclared' pre-test in which the respondents were not told that this was a questionnaire under construction.

During the pilot test, all sixteen students were assembled and asked to complete the questionnaire individually. I encouraged them to write marginal comments on the actual questions, particularly if they spotted any ambiguities or difficult questions, and I told them that they could expand on their answers and include additional points if they wanted to, in the space near the questions. I also asked them to write down their general comments on the whole questionnaire after answering all questions. After the pilot test, I reviewed their written comments and the questionnaire responses, and evaluated the questionnaire's effectiveness. Then revisions were be made accordingly (see 5.6.1.4).

Questionnaires are measurement instruments and, accordingly, they must possess adequate reliability and validity. I took several steps to assess and maximize the validity and reliability of the ILFQ. The specific processes included construct validity using factor analysis, and internal consistency reliability using Cronbach's alpha correlation coefficient.

A technique known as confirmatory factor analysis was used to test how individual questionnaire items contribute to the overall construct measurement. For example, there are three items that are assumed to be indicators of a construct called 'Intrinsic Motivation'. The confirmatory factor analysis tests how closely the input correlations

can be reproduced given the constraints that items 4, 6 and 8 fall on one specific factor (Intrinsic Motivation). There are three items that are assumed to tap into a factor called 'Extrinsic Motivation'; three items for 'Amotivation', and so forth. The seventeen motivation items were tested to see how well they fitted five latent factors: intrinsic motivation, extrinsic motivation, amotivation, self-efficacy for learning and performance, and control beliefs for learning. The 32 self-regulated learning strategy items were tested to see how well they fitted six latent factors: metacognitive self-regulation, time and study environment management, effort regulation, peer learning for CI, peer learning for SI, and help seeking. Each item on the ILFQ was constrained to fall on one specific factor. Following the factor analyses, internal-consistency estimates of reliability (coefficient alphas) were computed. Internal consistency reliability refers to the homogeneity of the items making up the various multi-item scales within the questionnaire. The factor loadings and coefficient alphas of the scales/items comprising the pilot questionnaire can be found in Appendix C.

5.6.1.4 Revision

Reliability analysis revealed that all the scales of the questionnaire had acceptable alpha values. That is to say, all the scales were reliable. On the other hand, factor analysis showed that one item had an extremely poor loading of 0.064 on the factor of 'Metacognitive Self-regulation' (see Appendix C). This item was thus removed from the scale. The remaining items all had acceptable factor loadings, that is to say, all scales were valid.

The comments that students provided in their feedback about the pilot questionnaire were generally very positive. That said, the students did raise a few specific issues. For example, they pointed out that there was a need to distinguish between CI and SI in some of the questions, because they felt that their answers might differ depending on CI or SI. When rating the statement, 'Learning with others is important for success in learning interpreting', one student commented, 'For me, I prefer practising SI alone. It would be helpful to practise CI with a classmate.' Accordingly, relevant question items in the scales of 'Metacognitive Knowledge of Strategies' and 'Peer Learning' were re-worded and re-scaled (Table 5.2), even though these scales had demonstrated acceptable alpha values in the reliability tests. Students' feedback also included comments that some questions needed to be made easier to understand. For example,

students pointed out that it was unclear what 'setting up a productive study environment' meant in the question of 'Setting up a productive study environment is important for success in learning interpreting'. Accordingly, the question was amended by inserting a definition immediately after the problematic phrase (Table 5.2). Other feedback from the pilot testing raised issues relating to the sequencing of questions, because questions of the same category were not spread out. This was amended by mixing up randomly the constituent items of different categories. Table 5.2 illustrates some of the revisions made on the basis of the pilot test.

Pilot	**Revised**
1. Learning with others is important for success in learning interpreting.	1. Learning with others is important for success in learning Consecutive Interpreting (CI). 2. Learning with others is important for success in learning Simultaneous Interpreting (SI).
1. When studying interpreting, I often try to discuss interpreting learning matters with a classmate or a friend. 2. I try to work with other students to complete the course assignments. 3. When studying interpreting, I often set aside time to practice interpreting with other students.	1. I often try to discuss CI learning matters with a classmate or a friend. 2. I often try to discuss SI learning matters with a classmate or a friend. 3. I often practise CI with other students. 4. I often practise SI with other students.
1. Setting up a productive study environment is important for success in learning interpreting.	1. Setting up a productive study environment *(e.g. trying to study in a place where you can concentrate on your course work)* is important for success in learning interpreting.

Table 5.2 Re-worded and re-scaled question items

5.6.2 The Interpreting Learner Factors Questionnaire (ILFQ)

In this section, the structure of the questionnaire will be described first. This is followed by brief descriptions of the content of the questionnaire items.

5.6.2.1 Descriptions of the Structure of the ILFQ

The survey instrument for this study is the Interpreting Learner Factors Questionnaire (ILFQ). There are essentially three sections to the ILFQ, a motivation section, a knowledge section, and a learning strategies section. The motivation section consists of seventeen items that assess students' types of motivation, their self-efficacy beliefs, and their control of learning beliefs. The knowledge section includes ten items regarding students' metacognitive knowledge about conference interpreting learning. The learning strategy section includes 31 items regarding students' use of different self-regulated learning strategies. One extra item asks students to give an estimate of time spent in studying interpreting outside class every day. This is used as the indicator (index) of 'effort'. In addition, there is also a demographic information sheet which includes items concerning students' gender, age, IELTS score on admission, etc. Table 5.3 presents the structure of the questionnaire along with the number of items for each section. The full questionnaire can be found in Appendix D.

Section	Content	Question type	No. of items
Section A **Motivation**	● Type of motivation ■ Intrinsic motivation ■ Extrinsic motivation ■ Amotivation	7-point Likert scale	9
	● Self-efficacy beliefs	7-point Likert scale	4
	● Control beliefs	7-point Likert scale	4
Section B **Metacognitive Knowledge**	● Metacognitive knowledge of strategies	7-point Likert scale	10
Section C **Self-Regulated Learning Strategies**	● Metacognitive self-regulation	7-point Likert scale	11
	● Resource management ■ Time & Environment ■ Effort regulation ■ Peer learning ■ Help seeking	7-point Likert scale	20
Effort Indicator	Estimate of study time outside class per day	Open-ended numeric question	1
Demographic Information	Gender, age; IELTS scores on admission, etc.	Multiple Choice; Open-ended numeric question	7

Table 5.3 Structure of the Interpreting Learner Factors Questionnaire (ILFQ)

5.6.2.2 Descriptions of the Content of the ILFQ

This section will briefly describe the content of the questionnaire items concerning motivation, metacognitive knowledge, and self-regulated learning strategies.

5.6.2.2.1 Motivation (Items 1–9, 11, 13, 14, 16, 18, 20, 21, 26, see Appendix D)

The items addressing motivation fall into three conceptual categories: type of motivation (i.e. intrinsic motivation, extrinsic motivation, or amotivation), self-efficacy beliefs, and control of learning beliefs.

Intrinsic motivation is represented by items (4, 6, 8) such as 'For the "high" feeling that I experience while interpreting', and 'For the pleasure that I experience in learning new interpreting techniques and strategies'. Extrinsic motivation is represented by items (2, 3, 7) such as 'Because I want to become an interpreter', and 'Because I think it will be useful in getting a good job'. Amotivation is represented by items (1, 5, 9) such as 'I don't know why I study interpreting, and frankly, I don't care', and 'I don't know why I study interpreting; I don't really think my place is in interpreting'.

Self-efficacy is a self-appraisal of one's ability to master a task. Self-efficacy includes judgments about one's ability to accomplish a task as well as one's confidence in one's skills to perform that task. Self-efficacy beliefs are represented by items (11, 13, 16, 21) such as 'I'm confident I have the ability to learn interpreting successfully', and 'I'm confident I know how to find an effective way to learn interpreting'.

Control of learning refers to students' beliefs that their efforts to learn will result in positive outcomes. It concerns the belief that outcomes are contingent on one's own effort, in contrast to external factors such as the teacher. Control beliefs for learning are represented by items (14, 18, 20, 26) such as 'If I study in appropriate ways, then I will be able to learn interpreting well', and 'If I don't learn interpreting well, it is because I didn't try hard enough'.

5.6.2.2.2 Metacognitive Knowledge (Items 10, 12, 15, 17, 19, 22—25, 27, see Appendix D)

The knowledge items were constructed around metacognitive knowledge/beliefs about conference interpreting learning. Metacognitive knowledge tested students' knowledge about what can lead to success in conference interpreting learning. It focused on views/beliefs about the usefulness/importance of self-regulated learning strategies for success in conference interpreting learning. Beliefs about the usefulness/importance of SRL strategies for success in conference interpreting learning are represented by items

such as ‘Setting long-term and short-term learning goals is important for success in learning interpreting’, and ‘Constantly evaluating the effectiveness of learning strategies is important for success in learning interpreting’.

5.6.2.2.3 Self-Regulated Learning Strategies (Items 28–58, see Appendix D)

Self-regulated learning strategies are divided into two general categories: metacognitive self-regulation strategies and resource management strategies.

Metacognitive self-regulation strategies include three types of strategies: planning, monitoring, and regulating. Indicators of these strategies are items (31, 34, 37, 40, 44, 47, 50, 53, 54, 55, 56) such as ‘When faced with a new interpreting task, I often begin by analysing the nature of the task and using relevant sources of information to prepare for the task’, ‘I test myself with interpreting exercises to make sure I have mastered what I have been learning in class’, ‘If an interpreting exercise is difficult, I change the way I approach the material’, and ‘After I finish a task, I analyse the strengths and weaknesses of my performance as an interpreter’.

Resource management strategies concern strategies that students use to manage their environment such as their time, their study environment, and others including teachers and peers. Indicators of time management strategies are questionnaire items such as ‘I make good use of my study time’, and ‘I often find that I don’t spend very much time on interpreting work because of other assignments or activities (reversed)’. Study environment management strategies are represented by items (28, 32, 35, 38, 41, 45, 48, 51) such as ‘I usually study in a place where I can concentrate on my course work’, and ‘I have a regular place set aside for studying’. Effort management strategies are represented by items (29, 33, 36, 39) such as ‘When interpreting work is difficult, I give up or only study the easy parts (reversed)’, and ‘Even when interpreting materials are dull and uninteresting, I manage to keep working until I finish’. Peer learning management strategies are represented by items (30 & 43 for CI; 57 & 58 for SI) such as ‘I often try to discuss CI learning matters with a classmate or a friend’, and ‘I often practise SI with other students’. Help seeking management strategies are represented by items (42, 46, 49, 52) such as ‘Even if I have trouble learning interpreting, I try to do the work on my own, without help from anyone (reversed)’, and ‘I try to identify students in my class whom I can ask for help if necessary’.

5.7 Data Collection Procedures

Over the course of the academic year, participants were asked to complete three surveys, which were administered during the registration week at the beginning of the academic year (September 2009), at the end of Semester One (January 2010), and at the end of Semester Two (May 2010). Fortunately, throughout the study, there had been no participant dropout (attrition). The first questionnaire consisted primarily of demographic and other background-related questions (e.g. gender, age, IELTS scores), in addition to items assessing students' motivational types, self-efficacy and strategy beliefs. The returned first questionnaires revealed that only twenty-six of the thirty Stage-1 students and ten of the eleven Stage-2 direct-entry students reported valid IELTS scores. Among the five students who failed to provide IELTS test results, one reported a Chinese test score because he was a native speaker of English, and four reported TOEFL test results because those were what they had applied with for admission to the programme. Accordingly, the data regarding these five students' IELTS scores were coded as "missing data". The second and third questionnaires assessed participants' motivational types, self-efficacy, control beliefs, strategy beliefs and effort, as well as their use of various self-regulated learning strategies. Table 5.4 illustrates the contents of the ILFQ covered at each time point of the data collection phase.

Section	Content	Time 1	Time 2	Time 3
Section A **Motivation**	● Type of motivation ■ Intrinsic motivation ■ Extrinsic motivation ■ Amotivation	✓	✓	✓
	● Self-efficacy beliefs	✓	✓	✓
	● Control beliefs		✓	✓
Section B **Metacognitive Knowledge**	● Metacognitive knowledge of strategies	✓	✓	✓
Section C **Use of Self-Regulated Learning Strategies**	● Metacognitive self-regulation strategies		✓	✓
	● Resource management strategies ■ Time & Environment ■ Effort regulation ■ Peer learning ■ Help seeking		✓	✓
Effort Indicator	● Estimate of study time outside of class per day		✓	✓
Demographic Information	Gender, age; IELTS score on admission, etc.	✓		

Table 5.4 Contents of the ILFQ covered at each time point

Finally, with permission from the students, their interpreting examination results during the academic year 2009–2010 were later collected from Newcastle University as a measure of their interpreting performances. While all of the thirty Stage-1 students had given me permission to access their examination results, only eight of the eleven Stage-2 direct-entry students had done so. Table 5.5 illustrates the examinations concerned.

Stage	Module	Assessment	Language Direction	Assessment Time
Stage 1	CHN7013 Introduction to Interpreting	CA*1	E>C only	Middle of Semester 1
		CA2	E>C; C>E	End of Semester 1
	CHN7011 Consecutive Interpreting I	CA1	E>C; C>E	Middle of Semester 2
		CA2	E>C; C>E	End of Semester 2
	CHN7010 Simultaneous Interpreting I	CA1	E>C; C>E	Middle of Semester 2
		CA2	E>C; C>E	End of Semester 2
Stage 2	CHN8024 Consecutive Interpreting II	CA1	E>C; C>E	End of Semester 1
		CA2	E>C; C>E	End of Semester 2
	CHN8025 Simultaneous Interpreting II	CA1	E>C; C>E	End of Semester 1
		CA2	E>C; C>E	End of Semester 2

**CA = Continuous Assessment*

Table 5.5 Interpreting assessments during 2009–2010

5.8 Data Analysis Procedures

Items were scored on a 7-point Likert-type scale, from 1 (*not at all true of me/strongly disagree*) to 7 (*extremely true of me/strongly agree*). Scale scores were constructed by taking the mean of the items that make up that scale. For example, self-efficacy has four items. An individual's score for self-efficacy would be computed by summing the four items and taking the average. Some scales contain negatively worded items, and the ratings for those items should be reversed before an individual's score is computed, so that the statistics reported represent the positive wording of all the items and higher scores indicate greater levels of the construct of interest.

First of all, descriptive statistics were used to describe and summarize the basic features of the data. Secondly, Exploratory Data Analysis (EDA) was performed to test for a normal distribution and to determine whether parametric or non-parametric tests should be used. Thirdly, different statistical procedures were run to analyse the data to answer each research question or sub-question.

Chapter 6

Data Analysis and Results

6.1 Introduction

In the previous chapter, the research questions of the study were set out and the methodology adopted was described in detail. In this chapter, the results of the analysis of the collected data are presented. Data from both Stage-1 and Stage-2 students are analysed and the results presented, but the primary focus of the study is on Stage-1 results and Stage-2 results are used as a supplement. The reason for treating Stage-2 results as a supplement is that the sample size of Stage-2 direct-entry students was too small to permit robust statistical analysis. Although eleven Stage-2 direct-entry students initially answered the three questionnaires, only eight of them gave me permission to access their examination results. This chapter is divided into three parts, according to the three research questions set out in Chapter 5. The significance of test results is reported in the three ways suggested by Coolican (1990: 174), based on the probability level: 'significant' ($p < 0.05$), 'highly significant' ($p < 0.01$), and 'very highly significant' ($p < 0.001$). All probabilities reported are based on two-tailed tests as each comparison had two possible directions.

6.2 Data Analysis for Research Question 1

How do trainee interpreters' modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort) change over time?

6.2.1 Stage-1 Students ($n = 30$)

Over the course of the academic year 2009–2010, students were asked to complete three surveys, which were administered in the registration week in September 2009 (Time 1), at the end of Semester One in January 2010 (Time 2), and at the end of Semester Two in May 2010 (Time 3). To answer our first research question, Repeated Measures ANOVAs or Paired-Samples T-Tests were conducted on all the measures. Table 6.1

presents the means and standard deviations for intrinsic motivation, extrinsic motivation, amotivation, self-efficacy, and control beliefs.

Value component: intrinsic motivation, extrinsic motivation, amotivation (Questions 1—9 in questionnaire given in Appendix D). Prior to the start of the course, students had on average fairly high levels of both intrinsic motivation (M = 5.18 on a 7-point scale) and identified regulation (M = 5.81 on a 7-point scale) for learning conference interpreting. At the same time, they tended to be higher on identified regulation than intrinsic motivation. At each time point the mean scores of identified regulation were over 5 (representing '*Quite a bit true of me'*) or even approaching 6 (representing '*Very true of me'*), while for intrinsic motivation the mean score was less than 5 at Time 3. In other words, in terms of their underlying motive to learn interpreting, the students were more focused on the usefulness of learning interpreting than on the inherent interest and pleasure induced by learning interpreting.

As Table 6.1 shows, the mean scores of students' intrinsic motivation decreased over time. However, a Friedman Test (i.e. Friedman's ANOVA) revealed that there was no significant change in intrinsic motivation over time ($\chi^2(2, N = 30) = 0.916$, $p = 0.633$). The table also shows a declining trend in the scores of extrinsic motivation over the course of the academic year. Repeated Measures ANOVA revealed that there was a significant change in students' extrinsic motivation over time, $F(2, 58) = 5.904$, $p < 0.01$. Pairwise Comparisons showed that students' extrinsic motivation declined significantly from Time 1 to Time 3 ($p < 0.05$), while the decline in students' extrinsic motivation from Time 1 to Time 2 was marginally non-significant ($p = 0.055$). No significant difference was found between Time 2 and Time 3 ($p = 0.895$). In Table 6.6, the symbol of a tick is used to represent a statistically (near) significant difference between two time points, while the symbol of a cross is used for a non-significant difference. Accordingly, a tick is used for extrinsic motivation from Time 1 to Time 2 and Time 3 respectively, and a cross from Time 2 to Time 3. Although students' average levels of both intrinsic motivation and identified regulation declined over time, the decline was more rapid in identified regulation than in intrinsic motivation.

Interestingly, descriptive statistics about amotivation revealed that some students did report a certain degree of amotivation prior to the start of their learning – twelve students (40%) reported some level of amotivation at Time 1, although the mean value for all students was low in the present sample (M = 1.38 on a 7-point scale).

Amotivation is rooted in complex causes. For this sample of students, it might have come from not feeling competent to learn interpreting well, given the demanding nature of professional interpreting, or not believing that their interpreting learning will lead to a desirable outcome. Future research is needed to probe into the exact casues of trainee interpreters' amotivation on entry as well as their pedagogical implications.

Consistent with the general trend of declining motivation, the number of students who reported some level of amotivation increased over time. Fourteen students (44.8%) at Time 2 and twenty students (66.7%) at Time 3 reported some level of amotivation. As a result, the mean scores of amotivation increased over the course of the academic year. A Friedman Test (i.e. Friedman's ANOVA) revealed that there was a significant change in students' levels of amotivation over time, $\chi^2(2, N = 29) = 7.210$, $p < 0.05$. Wilcoxon Signed Ranks Tests were used to follow up this finding. However, Wilcoxon Signed Ranks Tests revealed no significant difference in students' amotivation between any two time points.

Expectancy component: self-efficacy and control beliefs (Questions 11, 13, 14, 16, 18, 20, 21, 26 in questionnaire given in Appendix D). As Table 6.1 shows, students on average were slightly self-efficacious in their ability to learn interpreting successfully prior to the start of the course ($M = 4.92$ on a 7-point scale). Over time, the mean scores for students' self-efficacy beliefs decreased. While at the outset students showed slight confidence about their abilities and skills, they became somewhat neutral or unsure towards the end of the academic year. However, Repeated Measures ANOVA revealed no significant change in students' self-efficacy over time (F (2, 58) = 2.204, $p = 0.119$).

Similarly, there was a slight average decrease in students' expectations about their ability to control the outcomes of learning from the end of Semester One to the end of Semester Two. As can be seen in Table 6.1, the mean scores for students' control beliefs decreased over time. However, Wilcoxon Signed Ranks Test found no significant difference in control beliefs for learning between Time 2 and Time 3 ($Z = -0.543$, $p = 0.587$).

Stage-1 students (n = 30)	T1		T2		T3	
	Mean	SD	Mean	SD	Mean	SD
Intrinsic Motivation (Qs 4, 6, 8)	5.18	1.543	5.14	1.240	4.84	1.298
Extrinsic Motivation (Qs 2, 3, 7)	5.81	0.796	5.34	1.092	5.13	1.102
Amotivation (Qs 1, 5, 9)	1.38	0.598	1.45	0.692	1.68	0.780
Self-Efficacy Beliefs (Qs 11, 13, 16, 21)	4.92	1.105	4.68	1.005	4.48	1.262
Control Beliefs (Qs 14, 18, 20, 26)	——	——	5.26	1.101	5.16	1.234

Table 6.1 Means and standard deviations (SD) of Stage-1 motivational types/beliefs over time

Metacognitive knowledge (Questions 10, 12, 15, 17, 19, 22—25, 27 in questionnaire given in Appendix D). Table 6.2 presents the means and standard deviations for students' metacognitive knowledge. Metacognitive knowledge tested students' knowledge about what can lead to success in conference interpreting learning. Students were asked to indicate their views on the importance of a number of self-regulated learning strategies for success in conference interpreting learning. All items were assessed on a seven-point Likert scale where (1) indicated 'Strongly disagree' and (7) indicated 'Strongly agree'. Prior to the start of the course (Time 1), students had on average rather high expectations of the importance of SRL strategies for success in conference interpreting learning (M = 6.20 on a 7-point scale). Towards the end of the first semester (Time 2), their initial expectations or assumptions declined, although they still retained a fairly high perception of the effectiveness of SRL strategies. Thereafter, their perceptions or beliefs appeared to stabilize. No further noticeable changes were observed towards the end of Semester Two (Time 3). A Friedman Test (i.e. Friedman's ANOVA) revealed that students' views/beliefs about the importance of self-regulated learning strategies changed significantly over time (χ^2 (2, N = 29) = 10.147, p < 0.01). Post-hoc Wilcoxon Signed Ranks Tests revealed that there was a significant decline in students' views/beliefs from Time 1 to Time 2 (Z = -2.763, p < 0.01) and from Time 1 to Time 3 (Z = -2.805, p < 0.01), but there was no significant difference between Time 2

and Time 3 (Z = -0.301, p = 0.764). Accordingly, in Table 6.6 a tick is used to represent the change of metacognitive knowledge from Time 1 to Time 2 and Time 3 respectively, and a cross from Time 2 to Time 3.

Stage-1 students (n = 30)	T1		T2		T3	
	Mean	SD	Mean	SD	Mean	SD
Metacognitive Knowledge (Qs 10, 12, 15, 17, 19, 22, 23, 24, 25, 27)	6.20	0.470	5.87	0.571	5.82	0.546

Table 6.2 Means and standard deviations (SD) of Stage-1 metacognitive knowledge over time

Self-regulated learning strategies (Questions 28—58 in questionnaire given in Appendix D). Table 6.3 presents the means and standard deviations of strategy use over time. In general, students' average use of self-regulated learning strategies remained at a moderate level during the academic year. In terms of changes in aspects of self-regulation over time, the mean scores for students' reported use of self-regulated learning strategies showed a mixed picture. The increase of students' use of self-regulated learning strategies over time reported in previous research (e.g. Zusho, Pintrich and Coppola, 2003) was partially confirmed, with the mean scores for students' reported use of time and study environment management strategies, help-seeking strategies, and peer learning strategies for CI increasing over time. On the other hand, there was almost no change at all in students' reported use of metacognitive self-regulation strategies (i.e. strategies to plan, monitor or regulate their learning) from Time 2 to Time 3. Furthermore, the mean score for students' reported use of effort regulation strategies (i.e. strategies to control their effort and attention in the face of distractions and uninteresting tasks) decreased over time. Paired Samples T-Tests revealed that there was a significant increase in students' reported use of peer learning strategies for Consecutive Interpreting (CI) [t (29) = -2.937, p < 0.01] (hence the symbol of a tick for the change of peer learning for CI from Time 2 to Time 3 in Table 6.6). Although there were average increases in students' use of strategies to manage and regulate their time/study environments, as well as in their use of strategies to enlist the support of others, these increases did not reach a significant level.

Stage-1 students (n = 30)	T2		T3	
	Mean	SD	Mean	SD
Metacognitive Self-Regulation (Qs 31, 34, 37, 40, 44, 47, 50, 53, 54, 55, 56)	4.57	0.976	4.53	1.054
Time/Study Environment (Qs 28, 32, 35, 38, 41, 45, 48, 51)	4.30	0.755	4.52	0.749
Effort Regulation (Qs 29, 33, 36, 39)	4.68	1.083	4.48	1.059
Help-Seeking (Qs 42, 46, 49, 52)	4.44	1.039	4.74	1.151
Peer Learning for CI (Qs 30, 43)	3.53	1.502	4.15	1.677
Peer Learning for SI (Qs 57, 58)	——	——	3.22	1.552

Table 6.3 Means and standard deviations (SD) of Stage-1 strategy use over time

Study time (Question 59 in questionnaire given in Appendix D). One item in the ILFQ (Question 59, see Appendix 4) was an open-ended numeric question asking students to give an estimate of the time they actually spent at Time 2 and Time 3 studying conference interpreting outside class every day. This is used as the indicator of 'effort'. Responses to this item are reported in Table 6.4, while the means and standard deviations of this item are presented in Table 6.5.

	T2 (*n* = 30)	T3 (*n* = 30)
Reported Study Time *(Hours)*	Frequency (Percent)	Frequency (Percent)
0.30	——	1 (3.3%)
0.33	——	1 (3.3%)
0.50	5 (16.7%)	1 (3.3%)
0.75	1 (3.3%)	——
1.00	13 (43.3%)	12 (40.0%)
1.50	2 (6.7%)	2 (6.7%)
2.00	4 (13.3%)	4 (13.3%)
2.50	1 (3.3%)	1 (3.3%)
3.00	1 (3.3%)	5 (16.7%)
3.50	——	1 (3.3%)
4.00	3 (10.0%)	2 (6.7%)

Table 6.4 Frequencies of Stage-1 students' reported study time

	N	Median	Mode	Min	Max	Sum	Mean	SD
Study Time *(Hours)*, T2	30	1.00	1.00	0.50	4.00	44.75	1.49	1.047
Study Time *(Hours)*, T3	30	1.25	1.00	0.30	4.00	53.13	1.77	1.088

Table 6.5 Means and standard deviations (SD) of Stage-1 study time over time

At Time 2, at the end of Semester 1, when they were asked to report their average study time per day outside class during the first semester, most students reported that they had spent less than or equal to 2.00 hours a day outside class studying interpreting, with twenty-five (83.3%) students reporting between 0.50 hours and 2.00 hours inclusive. Indeed, more than half of the thirty students surveyed reported less than or equal to 1.00 hour a day outside class studying interpreting, with thirteen students (43.3%) reporting 1.00 hour, one student (3.3%) reporting 0.75 hours, and a further five students (16.7%) reporting 0.50 hours. No student at Time 2 reported more than 4.00 hours a day outside class studying interpreting. Overall, at Time 2, the thirty students reported a total of

44.75 hours (or 44 hours 45 minutes) a day outside class studying interpreting during term time. The mean value was 1.49 hours (or 1 hour 29 minutes), and the standard deviation was 1.047. The median and the mode were both 1.00 hour.

At Time 3, at the end of Semester 2, when the students were asked to report their average study time a day outside class during the second semester, the mean value was 1.77 hours (or 1 hour 46 minutes), and the median was 1.25 hours, both slightly up from Time 2. At Time 3 the mode remained the same as Time 2 at the value of 1.00 hour, with twelve students (40.0%) reporting this figure. The standard deviation was 1.088. Although at Time 3 there were three students fewer reporting study hours of less than 1.00 hour than at Time 2, it is noteworthy that there were two students reporting only one third of an hour at Time 3, thus reducing the minimum value to only 0.30 hours. Thirteen students (43.3%) reported study hours between 2.00 and 4.00 hours inclusive. Just as for Time 2, no student reported anything over 4.00 hours at Time 3. Overall, at Time 3 the thirty students reported a total of 53.13 hours (or 53 hours 8 minutes) of study outside class a day, up 8.38 hours (or 8 hours 23 minutes) from Time 2.

In summary, students on average were spending approximately one hour twenty-nine minutes (or 1.49 hours) a day studying interpreting outside of class during the first semester. As they progressed to the second semester, an average student was spending approximately one hour forty-six minutes (or 1.77 hours) a day studying interpreting outside of class, an increase of 17 minutes (or 0.28 hours) over the previous semester. A Wilcoxon Signed Ranks Test indicated that there was no significant difference in students' reported study hours per day between Time 2 and Time 3 (Z = -1.240, p = 0.215).

To sum up, statistically significant changes were found in Stage-1 students' extrinsic motivation, metacognitive knowledge and peer learning strategies for CI. Table 6.6 presents a summary of the significant or non-significant differences in Stage-1 students' motivational types/beliefs, metacognitive knowledge, strategies and effort between measurement times.

	Stage-1 students (n = 30)		
	T1—T2	T2—T3	T1—T3
Intrinsic Motivation	✕	✕	✕
Extrinsic Motivation	✓ (p = 0.055)	✕	✓
Amotivation	✕	✕	✕
Self-Efficacy Beliefs	✕	✕	✕
Metacognitive Knowledge	✓	✕	✓
Control Beliefs	——	✕	——
Metacognitive Self-Regulation	——	✕	——
Time/Study Environment	——	✕	——
Effort Regulation	——	✕	——
Peer Learning for CI	——	✓	——
Help-Seeking	——	✕	——
Study Time	——	✕	——

Table 6.6 Summary of Stage-1 differences between time points
(✓ = statistically significant; ✕ = statistically non-significant)

6.2.2 Stage-2 Direct-Entry Students (n = 11)

Motivational types/beliefs (Questions 1—9, 11, 13, 14, 16, 18, 20, 21, 26 in questionnaire given in Appendix D). Table 6.7 presents the means and standard deviations of motivational types/beliefs over time for Stage-2 direct-entry students. As can be seen, Stage-2 students were comparable to their Stage-1 peers in terms of their initial average levels of intrinsic motivation, extrinsic motivation, amotivation, self-efficacy and control beliefs prior to the start of the course, as well as their average levels towards the end of the academic year. It is noteworthy, however, that Stage-2 students' motivational development followed a slightly different trajectory from that of Stage-1 students. In contrast to the steady decline in Stage-1 students' level of motivation all the way through the academic year, Stage-2 students' levels of

motivation first dipped towards the end of Semester One (Time 2), but then increased again towards the end of Semester Two (Time 3). In fact, towards the end of Semester One, Stage-2 students' intrinsic interest in conference interpreting learning decreased so dramatically that, as a result, their level of intrinsic motivation (M = 4.06, SD = 1.052) was significantly lower than that of Stage-1 students (M = 5.14, SD = 1.240) (t (39) = 2.574, $p < 0.05$), as indicated by an Independent-Samples T-Test.

Repeated Measures ANOVA showed that there was significant change in intrinsic motivation over time, with F (2, 20) = 3.755, $p < 0.05$. However, follow-up Pairwise Comparisons revealed no significant difference between the three time points. Repeated Measures ANOVA revealed no significant change in extrinsic motivation over time, F (2, 20) = 2.860, p = 0.081. A Friedman Test revealed that there was a significant change in amotivation over time (χ^2 (2, N = 11) = 8.467, $p < 0.05$). Wilcoxon Signed Ranks Tests were used to follow up this finding. The tests indicated that amotivation changed significantly from Time 1 to Time 2 (Z = -2.207, $p < 0.05$), and from Time 1 to Time 3 (Z = -2.410, $p < 0.05$) (hence the symbol of a tick for the change of amotivation from Time 1 to Time 2 and Time 3 respectively in Table 6.12). Repeated Measures ANOVA revealed no significant change in students' self-efficacy over time (F (2, 20) = 2.836, p = 0.082). A Paired-Samples T-Test indicated that there was no significant change in control beliefs over time (t (10) = -0.421, p = 0.683).

Stage-2 direct-entry students (n = 11)	T1		T2		T3	
	Mean	SD	Mean	SD	Mean	SD
Intrinsic Motivation (Qs 4, 6, 8)	5.15	1.486	4.06	1.052	4.82	0.959
Extrinsic Motivation (Qs 2, 3, 7)	5.58	0.920	4.64	1.378	5.27	1.073
Amotivation (Qs 1, 5, 9)	1.36	0.658	2.12	1.302	1.88	0.969
Self-Efficacy Beliefs (Qs 11, 13, 16, 21)	4.84	1.156	4.25	1.328	4.52	1.175
Control Beliefs (Qs 14, 18, 20, 26)	——	——	5.41	1.056	5.55	1.071

Table 6.7 Means and standard deviations (SD) of Stage-2 motivational types/beliefs over time

Metacognitive knowledge (Questions 10, 12, 15, 17, 19, 22—25, 27 in questionnaire given in Appendix D). Table 6.8 presents the means and standard deviations for Stage-2 direct-entry students' metacognitive knowledge. The table shows that Stage-2 students' levels of metacognitive knowledge were always higher than those of Stage-1 students across time. However, an Independent-Samples T-Test and a Mann-Whitney Test indicated that none of the differences reached a significant ($p < 0.05$) level. A Friedman Test (i.e. Friedman's ANOVA) indicated that there was no significant change in students' metacognitive knowledge about conference interpreting learning over time (χ^2 (2, N = 11) = 0.619, p = 0.734).

Stage-2 direct-entry students (n = 11)	T1		T2		T3	
	Mean	SD	Mean	SD	Mean	SD
Metacognitive Knowledge (Qs 10, 12, 15, 17, 19, 22, 23, 24, 25, 27)	6.35	0.611	6.02	0.506	5.93	0.636

Table 6.8 Means and standard deviations (SD) of Stage-2 metacognitive knowledge over time

SRL strategies (Questions 28—58 in questionnaire given in Appendix D). Table 6.9 presents the means and standard deviations of strategy use over time for Stage-2 direct-entry students (n = 11). It shows that the mean scores for Stage-2 students' metacognitive self-regulation, time/study environment management, help-seeking, peer learning for CI and peer learning for SI increased over time, while no increase was observed in the mean scores for Stage-2 students' effort regulation from Time 2 to Time 3. Paired-Samples T-Tests revealed that the increase in Stage-2 students' use of peer learning strategies in learning SI had reached a significant level (t (10) = -2.695, p < 0.05) (hence the symbol of a tick for peer learning for SI from Time 2 to Time 3 in Table 6.12). There were no significant differences in metacognitive self-regulation (t (10) = -0.457, p = 0.658), time/study environment management (t (10) = -0.570, p = 0.581), effort regulation (t (10) = 0.145, p = 0.888), help-seeking (t (10) = -0.527, p = 0.610), and peer learning for CI (t (10) = -1.951, p = 0.080) over time. However, when I

computed a new scale by summing up all the strategies, a Paired-Samples T-Test showed a significant change over time (t (10) = -5.238, $p < 0.01$).

Stage-2 direct-entry students (n = 11)	T2		T3	
	Mean	SD	Mean	SD
Metacognitive Self-Regulation (Qs 31, 34, 37, 40, 44, 47, 50, 53, 54, 55, 56)	4.34	1.072	4.46	1.233
Time/Study Environment (Qs 28, 32, 35, 38, 41, 45, 48, 51)	4.75	1.301	4.88	1.142
Effort Regulation (Qs 29, 33, 36, 39)	4.75	1.084	4.70	1.123
Help-Seeking (Qs 42, 46, 49, 52)	4.98	1.159	5.18	1.079
Peer Learning for CI (Qs 30, 43)	3.14	1.433	4.00	1.342
Peer Learning for SI (Qs 57, 58)	3.14	1.380	3.95	1.695

Table 6.9 Means and standard deviations (SD) of Stage-2 strategy use over time

Study Time (Question 59 in questionnaire given in Appendix D). Stage-2 direct-entry students' responses to this item are reported in Table 6.10, while the descriptive statistics are presented in Table 6.11. A Mann-Whitney test indicated that, at Time 2, Stage-2 direct-entry students spent significantly more time outside of class studying interpreting than did Stage-1 students (U = 69.500, Z = -2.882, $p < 0.01$). While Stage-1 students reported a mean value of 1.49 hours (SD = 1.047) at Time 2, Stage-2 students reported an average of 2.59 hours (SD = 1.261). A Paired-Samples T-Test indicated that there was no significant change in Stage-2 students' effort over time (t (10) = 1.491, p = 0.167).

	T2 (*n* = 11)	T3 (*n* = 11)
Reported Study Time (Hours)	Frequency (Per cent)	Frequency (Per cent)
0.50	——	1 (9.1%)
1.00	1 (9.1%)	2 (18.2%)
1.50	2 (18.2%)	——
2.00	3 (27.3%)	3 (27.3%)
2.50	1 (9.1%)	2 (18.2%)
3.00	1 (9.1%)	1 (9.1%)
4.00	2 (18.2%)	2 (18.2%)
5.00	1 (9.1%)	——

Table 6.10 Frequencies of Stage-2 direct-entry students' reported study time

	Stage-2 direct-entry students (*n* = 11)						
	Median	Mode	Min	Max	Sum	Mean	SD
Study Time (Hours), T2	2.00	2.00	1.00	5.00	28.50	2.59	1.261
Study Time (Hours), T3	2.00	2.00	0.50	4.00	24.50	2.23	1.148

Table 6.11 Means and standard deviations (SD) of Stage-2 study time over time

To sum up, significant changes were found in Stage-2 direct-entry students' level of amotivation and their use of peer learning strategies for SI. Table 6.12 presents a summary of the significant or non-significant changes between measurement times.

Stage-2 students (n = 11)	T1—T2	T2—T3	T1—T3
Intrinsic Motivation	✕	✕	✕
Extrinsic Motivation	✕	✕	✕
Amotivation	✓	✕	✓
Self-Efficacy Beliefs	✕	✕	✕
Metacognitive Knowledge	✕	✕	✕
Control Beliefs	——	✕	——
Metacognitive Self-Regulation	——	✕	——
Time/Study Environment	——	✕	——
Effort Regulation	——	✕	——
Peer Learning for CI	——	✕	——
Peer Learning for SI	——	✓	——
Help-Seeking	——	✕	——
Study Time	——	✕	——

Table 6.12 Summary of Stage-2 differences between time points
(✓ = statistically significant; ✕ = statistically non-significant)

6.2.3 Group Differences between Stage-1 and Stage-2 Students (n_1=30; n_2=11)

When Stage-1 and Stage-2 students were compared, no significant difference was found at Time 1. At Time 2, however, significant group differences were found in intrinsic motivation as well as in study time—the effort index. An Independent-Samples T-Test indicated that Stage-1 students expressed significantly higher levels of intrinsic motivation (M = 5.14, SD = 1.240) than did Stage-2 students (M = 4.06, SD = 1.052) (t

(39) = 2.574, $p < 0.05$). On the other hand, a Mann-Whitney test indicated that Stage-2 students spent significantly more time outside of class studying interpreting than did Stage-1 students ($U = 69.500$, $Z = -2.882$, $p < 0.01$). While Stage-1 students reported a mean value of 1.49 hours ($SD = 1.047$) at Time 2, Stage-2 students reported an average of 2.59 hours ($SD = 1.261$). No significant difference was found between the two groups at Time 3.

	T1	T2	T3
Intrinsic Motivation	✗	✓	✗
Extrinsic Motivation	✗	✗	✗
Amotivation	✗	✗	✗
Self-Efficacy Beliefs	✗	✗	✗
Metacognitive Knowledge	✗	✗	✗
Control Beliefs	——	✗	✗
Metacognitive Self-Regulation	——	✗	✗
Time/Study Environment	——	✗	✗
Effort Regulation	——	✗	✗
Peer Learning for CI	——	✗	✗
Peer Learning for SI	——	✗	✗
Help-Seeking	——	✗	✗
Study Time	——	✓	✗

Table 6.13 Summary of differences between Stage-1 and Stage-2 students at each time point (✓ = statistically significant; ✗ = statistically non-significant)

6.3 Data Analysis for Research Question 2

How do the relations between modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort) change over time?

6.3.1 Stage-1 Students (*n* = 30)

Before analysing the relations among students' modifiable learner variables and how these relations changed over time, it is necessary first and foremost to establish the relations between student entry characteristics (e.g. age and IELTS scores) and their initial levels of motivation and knowledge at the beginning of their course, as well as subsequent levels of all modifiable learner variables. Accordingly, results regarding the correlations between Stage-1 student entry characteristics and modifiable learner variables are reported first, followed by results regarding interrelations between modifiable learner variables. Full results regarding the correlations between Stage-1 students' modifiable learner variables over time can be found in Appendices E–G.

Relations between student entry characteristics and modifiable learner variables. Table 6.14 presents the correlations between Stage-1 student entry characteristics and modifiable learner variables. As can be seen, age was not significantly correlated with any of the motivational variables at Time 1. However, age was negatively and near-significantly correlated with extrinsic motivation at Time 2 (*rho* = -0.351, *n* = 30, *p* = 0.057), and negatively and significantly with extrinsic motivation at Time 3 (*rho* = -0.388, *n* = 30, *p* = 0.034). Age was negatively and significantly correlated with self-efficacy at Time 2 (*rho* = -0.414, *n* = 30, *p* = 0.023), and negatively and near-significantly with self-efficacy at Time 3 (*rho* = -0.335, *n* = 30, *p* = 0.071). In other words, older students were less motivated. No significant relationship was found between students' age and their metacognitive knowledge across measurements.

Significant correlations were found between students' IELTS scores and their initial motivational types/beliefs. Students' overall IELTS score was positively and significantly correlated with their intrinsic motivation at Time 1 (*rho* = 0.440, *n* = 26, *p* = 0.025). Students' IELTS score on writing was positively and significantly correlated with their intrinsic motivation at Time 1 (*rho* = 0.404, *n* = 26, *p* = 0.041), as well as with their intrinsic motivation at Time 3 (*rho* = 0.415, *n* = 26, *p* = 0.035). Students' IELTS score on writing was also positively and significantly correlated with their extrinsic motivation at Time 1 (*rho* = 0.547, *n* = 26, *p* = 0.004), and with their extrinsic motivation at Time 2 (*rho* = 0.428, *n* = 26, *p* = 0.029), as well as positively and near-significantly correlated with their extrinsic motivation at Time 3 (*rho* = 0.361, *n* = 26, *p* = 0.070). Students' IELTS score on speaking was positively and significantly correlated with their self-efficacy at Time 1 (*rho* = 0.449, *n* = 26, *p* = 0.021) and

positively and near-significantly correlated with their self-efficacy at Time 2 (*rho* = 0.375, *n* = 26, *p* = 0.059), as well as positively and significantly correlated with their self-efficacy at Time 3 (*rho* = 0.454, *n* = 26, *p* = 0.020). Students' IELTS score on speaking was negatively and near-significantly correlated with their level of amotivation at Time 1 (*rho* = -0.352, *n* = 26, *p* = 0.077). All these results seem to suggest that higher-achieving students in IELTS were more motivated and confident than lower-achieving students. No significant relationship was found between students' IELTS scores and their metacognitive knowledge across measurements.

No significant relationship was found between students' IELTS scores and their strategy use and effort expenditure. Although the relationship between students' age and their effort expenditure was not significant, the correlation was in the negative direction. In addition, results showed that students' age was negatively and significantly correlated with their use of metacognitive self-regulation strategies at Time 3 (*rho* = -0.438, *n* = 30, *p* = 0.015).

	IELTS Overall	IELTS Listening	IELTS Reading	IELTS Writing	IELTS Speaking	Age
Intrinsic Motivation, T1	**.440***	.194	.234	**.404***	.198	.192
Intrinsic Motivation, T2	-.199	-.185	-.248	.315	.204	.234
Intrinsic Motivation, T3	.168	.006	-.187	**.415***	.204	-.066
Extrinsic Motivation, T1	-.027	-.046	.126	**.547****	-.099	-.265
Extrinsic Motivation, T2	.114	.035	-.136	**.428***	.175	-.351
Extrinsic Motivation, T3	.253	.091	-.240	.361	.100	**-.388***
Amotivation, T1	.199	.199	.245	-.104	-.352	-.002
Amotivation, T2	.085	-.053	.084	.188	-.014	-.074
Amotivation, T3	-.114	-.163	.066	.089	-.296	-.054
Self-Efficacy Beliefs, T1	-.138	-.030	-.083	.063	**.449***	-.231
Self-Efficacy Beliefs, T2	.029	.295	-.173	-.034	.375	**-.414***
Self-Efficacy Beliefs, T3	-.082	.298	-.235	-.003	**.454***	-.335
Control Beliefs, T2	.147	.304	-.102	.103	-.100	.128

Control Beliefs, T3	.140	.119	-.188	.048	.023	-.071
Metacognitive Knowledge, T1	-.072	-.067	-.239	-.088	.309	-.042
Metacognitive Knowledge, T2	.197	.123	-.079	.083	.228	.021
Metacognitive Knowledge, T3	.337	.234	-.021	-.016	.226	-.210
Metacognitive Self-regulation, T2	.107	.292	-.095	.035	.368	-.288
Metacognitive Self-regulation, T3	.009	.149	-.103	.005	.152	**-.438***
Time/Study Environment, T2	.265	.072	.161	-.023	.080	-.146
Time/Study Environment, T3	-.125	.066	-.033	.029	-.039	-.309
Effort Regulation, T2	.017	-.048	-.005	.049	-.006	.154
Effort Regulation, T3	.112	-.088	.220	-.044	.045	-.046
Help-Seeking, T2	-.180	-.187	-.277	.030	.219	-.174
Help-Seeking, T3	.115	-.121	.001	.331	.212	-.213
Peer Learning for CI, T2	-.044	-.081	-.019	-.079	.134	-.007
Peer Learning for CI, T3	-.010	.108	-.140	.046	.177	.099
Peer Learning for SI, T3	.001	.016	-.136	.055	.367	-.051
Strategies Overall, T2	-.112	-.013	-.077	-.091	.180	-.188
Strategies Overall, T3	-.011	.015	-.058	.127	.211	-.210
Study time, T2	-.177	.011	-.206	-.043	.243	-.205
Study time, T3	.063	.272	.069	-.044	.158	-.219

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table 6.14 Correlations between Stage-1 student entry characteristics and modifiable learner variables

Relations among motivational types (intrinsic motivation, extrinsic motivation and amotivation). Intrinsic motivation and extrinsic motivation were significantly and positively correlated with each other both at Time 2 ($r = 0.494$, $n = 30$, $p < 0.01$) and at Time 3 ($r = 0.585$, $n = 30$, $p < 0.01$), and the strength of correlation appeared to be increasing over time. Although intrinsic motivation and extrinsic motivation were generally negatively correlated with amotivation, no significant relationship was found.

Relations between motivational types and motivational beliefs. Self-efficacy was significantly and negatively correlated with amotivation at all three time points, with correlations ranging from -0.369 to -0.437. On the other hand, self-efficacy was significantly and positively correlated with extrinsic motivation at Time 2 (r = 0.520, n = 30, p < 0.01) and Time 3 (r = 0.461, n = 30, p < 0.05). Although there was no significant relationship between self-efficacy and intrinsic motivation, the correlation appeared to be growing stronger over time, from -0.027 at Time 1 to 0.258 at Time 2, and further to 0.361 at Time 3 where the significance of correlation was bordering on the 0.05 level (r = 0.361, n = 30, p = 0.050).

There was no significant relationship between control beliefs and intrinsic motivation, extrinsic motivation or amotivation at Time 2. However, the correlation between control beliefs and amotivation at Time 3 was non-trivial although statistically non-significant (*rho* = -0.334, n = 30, p = 0.072).

Relations between self-efficacy and control beliefs. Self-efficacy was not significantly correlated with control beliefs either at Time 2 or at Time 3. However, the strength of correlation appeared to increase from Time 2 (*rho* = 0.176, n = 30, p = 0.351) to Time 3 (*rho* = 0.322, n = 30, p = 0.083).

Relations between motivational types and effort/SRL strategies. Among the motivational types, extrinsic motivation appeared to have the best correlations with SRL strategies. Extrinsic motivation was significantly and positively correlated with metacognitive self-regulation both at Time 2 (r = 0.472, n = 30, p < 0.01) and at Time 3 (r = 0.431, n = 30, p < 0.05). In addition, extrinsic motivation was also significantly and positively correlated with help-seeking at Time 3 (r = 0.472, n = 30, p < 0.01). Furthermore, intrinsic motivation was significantly and positively correlated with help-seeking at Time 3 (r = 0.415, n = 30, p < 0.05). On the other hand, amotivation was significantly and negatively correlated with metacognitive self-regulation at Time 2 (*rho* = -0.380, n = 29, p < 0.05). No significant relationship was found between motivational types and effort.

	Intrinsic Motivation			Extrinsic Motivation			Amotivation		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
Self-Efficacy Beliefs	-.027	.258	.361	.148	**.520****	**.461***	**-.437***	**-.369***	**-.379***

Control Beliefs	—	.128	.085	—	-.156	.102	—	-.104	-.334
Metacognitive Self-regulation	—	.284	.150	—	**.472****	**.431***	—	**-.380***	-.185
Time/Study Environment	—	-.190	-.121	—	.010	.066	—	-.162	.152
Effort Regulation	—	.010	-.168	—	-.031	.045	—	-.198	-.065
Help-Seeking	—	.172	**.415***	—	.170	**.472****	—	-.185	-.052
Peer Learning for CI	—	.105	-.084	—	-.074	.141	—	-.289	.048
Peer Learning for SI	—	—	.083	—	—	.164	—	—	-.209
Study Time	—	-.219	.083	—	.220	.192	—	.319	-.058

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table 6.15 Correlations between Stage-1 motivational types and motivational beliefs/strategy use/effort

Relations between motivational beliefs and effort/SRL strategies. Self-efficacy was significantly and positively correlated with metacognitive self-regulation both at Time 2 ($r = 0.621$, $n = 30$, $p < 0.01$) and at Time 3 ($r = 0.513$, $n = 30$, $p < 0.01$). Furthermore, self-efficacy was significantly and positively correlated with study time—the effort index at Time 3 (*rho* = 0.381, $n = 30$, $p < 0.05$). Students' control beliefs were not significantly correlated with their use of self-regulated learning strategies either at Time 2 or at Time 3.

	Self-Efficacy Beliefs		Control Beliefs	
	T2	T3	T2	T3
Metacognitive Self-Regulation	**.621****	**.513****	-.012	.054
Time/Study Environment	.060	.058	-.305	-.182
Effort Regulation	.047	.035	-.005	-.235
Help-Seeking	.219	.359	-.171	.077
Peer Learning for CI	.230	.210	.034	.026
Peer Learning for SI	—	.346	—	.118
Study Time	.165	**.381***	-.177	-.072

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table 6.16 Correlations between Stage-1 motivational beliefs and strategy use/effort

Relations among SRL strategies. At Time 2, strategies such as metacognitive regulation, time and study environment management, effort regulation and help-seeking were significantly and positively correlated with one another, with correlations ranging from 0.473 ($p < 0.01$) to 0.527 ($p < 0.01$). Furthermore, peer learning for CI was significantly and positively correlated with help-seeking at Time 2 ($r = 0.454$, $n = 30$, $p < 0.05$).

At Time 3, time and study environment management was significantly and positively correlated with effort regulation ($r = 0.527$, $n = 30$, $p < 0.01$). However, these two strategies were not significantly correlated with the rest of the strategies. On the other hand, the rest of the strategies, such as metacognitive self-regulation, help-seeking, peer learning for CI and peer learning for SI, were significantly and positively correlated with one another, with correlations ranging from 0.489 ($p < 0.01$) to 0.686 ($p < 0.01$).

Relations between motivational types/beliefs and metacognitive knowledge. At Time 3, students' control beliefs were significantly and positively correlated with their beliefs about the importance of self-regulated learning strategies for success in conference

interpreting learning (*rho* = 0.509, *n* = 29, *p* < 0.01), while at Time 2 the relationship between the two variables was not significant (*rho* = 0.232, *n* = 30, *p* = 0.217). This seemed to suggest that the relationship between control beliefs and beliefs about the importance of SRL strategies was growing over time. Otherwise, students' metacognitive knowledge was not significantly correlated with further motivational types or beliefs at any time point.

	Metacognitive Knowledge		
	T1	T2	T3
Intrinsic Motivation	-.022	.109	.261
Extrinsic Motivation	.186	.089	.226
Amotivation	-.055	-.113	-.238
Self-Efficacy Beliefs	.170	.188	.135
Control Beliefs	—	.232	**.509****

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6.17 Corrrelations between Stage-1 motivational types/beliefs and metacognitive knowledge

Relations between metacognitive knowledge and effort/SRL strategies. Metacognitive knowledge about conference interpreting learning was positively correlated with all strategies both at Time 2 and at Time 3. More specifically, at Time 2, metacognitive knowledge was significantly correlated with metacognitive self-regulation (*r* = 0.426, *n* = 30, *p* < 0.05), and help-seeking (*r* = 0.460, *n* = 30, *p* < 0.05), as well as with all strategies put together (*r* = 0.515, *n* = 30, *p* < 0.01). Furthermore, its relationship with time and study environment management was just bordering on the 0.05 significance level (*r* = 0.361, *n* = 30, *p* = 0.050), while its relationship with effort regulation was near-significant (*r* = 0. 349, *n* = 30, *p* = 0.058). At Time 3, a near-significant relationship was found between metacognitive knowledge and help-seeking (*rho* = 0.360, *n* = 29, *p* = 0.055), and between metacognitive knowledge and peer learning for SI (*rho* = 0.361, *n* = 29, *p* = 0.054). Furthermore, the correlation with metacognitive self-regulation (*rho* = 0.313, *n* = 29, *p* = 0.099) or with all strategies put together (*rho* =

0.330, n = 29, p = 0.081) was non-trivial. There was no significant relationship between metacognitive knowledge and study time—the effort index at Time 2 or at Time 3.

	Metacognitive Knowledge	
	T2	T3
Metacognitive Self-Regulation	**.426***	.313
Time/Study Environment	.361	.192
Effort Regulation	.349	.120
Help-Seeking	**.460***	.360
Peer Learning for CI	.260	.080
Peer Learning for SI	—	.361
All strategies	**.515****	.330
Study Time	-.133	-.058

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table 6.18 Correlations between Stage-1 metacognitive knowledge and strategy use/effort

In order to determine the impact of metacognitive knowledge on strategy use, a simple regression analysis was conducted on Time-2 measures. The results of the regression indicated that metacognitive knowledge was a significant predictor of overall strategy use, F (1, 28) = 10.089, p = 0.004 (β = 0.515) at Time 2.

However, a simple regression analysis on Time-3 measures indicated that metacognitive knowledge alone was not a significant predictor of overall strategy use, F (1, 27) = 3.034, p = 0.093 (β = 0.318). Therefore, a follow-up hierarchical regression analysis was conducted. First, self-efficacy was entered into the regression on top of the pre-existing 'metacognitive knowledge' variable. The overall relationship was still not significant (F (2, 26) = 3.292, p = 0.053), and neither variable was a significant predictor of strategy use. Then, when I added control beliefs into the equation, this step resulted in a highly significant regression model, F (3, 25) = 4.790, p = 0.009. The

overall model accounted for 28.9% (R^2_{adj} = 0.289) of the variance in strategy use. Examination of the independent influence of each of the variables revealed that when the three variables were included in the regression, metacognitive knowledge emerged as a significant predictor of overall strategy use (t = 2.176, p = 0.039), such that a higher level of metacognitive awareness was associated with more strategy use (β = 0.405). In addition, self-efficacy was positively and significantly correlated with strategy use (t = 2.673, p = 0.013, β = 0.474). On the other hand, control beliefs were negatively and significantly correlated with overall strategy use (t = -2.533, p = 0.018, β = -0.490). As the last step of the regression, self-efficacy was removed from the equation. This step allowed us to identify the effect of the remaining two predictors when the variance due to self-efficacy was not removed from strategy use. When self-efficacy was excluded, the regression model was no longer significant (F (2, 26) = 2.922, p = 0.072). Despite this, metacognitive knowledge remained a significant predictor (t = 2.364, p = 0.026, β = 0.484).

Relations between SRL strategies and effort. At Time 2, no strategy was significantly correlated with study time. At Time 3, effort regulation was significantly correlated with study time—the effort index (*rho* = 0.460, n = 30, p < 0.05).

	Study Time	
	T2	T3
Metacognitive Self-Regulation	.306	.189
Time/Study Environment	.261	.266
Effort Regulation	.073	**.460***
Help Seeking	.202	-.154
Peer Learning for CI	-.277	-.206
Peer Learning for SI	——	-.091

*. Correlation is significant at the 0.05 level (2-tailed).

Table 6.19 Correlations between Stage-1 strategy use and effort

6.3.2 Stage-2 Direct-Entry Students (*n* = 11)

Table 6.20 presents the correlations between Stage-2 direct-entry student entry characteristics and modifiable learner variables. Full results regarding the correlations between Stage-2 direct-entry students' modifiable learner variables over time can be found in Appendices H–J.

Relations between student entry characteristics and modifiable learner variables. As Table 6.20 shows, in contrast to the negative correlations between age and self-efficacy beliefs for the Stage-1 sample, age was positively and significantly correlated with self-efficacy beliefs at all three time points for the Stage-2 sample (Time 1: *rho* = .684, *n* = 11, *p* = .020; Time 2: *rho* = .699, *n* = 11, *p* = .017; Time 3: *rho* = .645, *n* = 11, *p* = .032). In addition, age was positively and highly significantly correlated with extrinsic motivation at Time 2 (*rho* = .789, *n* = 11, *p* = .004). Age was positively and highly significantly correlated with help-seeking at Time 3 (*rho* = .812, *n* = 11, *p* = .002). In contrast to the negative correlations between Stage-1 students' age and their amount of study time, Stage-2 students' age was positively and highly significantly correlated with their amount of study time both at Time 2 (*rho* = .811, *n* = 11, *p* = .002) and at Time 3 (*rho* = .796, *n* = 11, *p* = .003).

Stage-2 students' overall IELTS scores were negatively and significantly correlated with their levels of amotivation at Time 2 (*rho* = -.764, *n* = 10, *p* = .010). Students' IELTS score on listening was positively and significantly correlated with their extrinsic motivation at Time 1 (*r* = .703, *n* = 10, *p* = .023). Students' IELTS score on listening was negatively and significantly correlated with their metacognitive knowledge at Time 3 (*r* = -.780, *n* = 10, *p* = .008). Students' IELTS score on listening was also negatively and significantly correlated with their use of peer learning strategies in CI learning at Time 2 (*r* = -.842, *n* = 10, *p* = .002). No significant correlations were found between Stage-2 students' IELTS score on reading and modifiable learner variables at any time point. Stage-2 students' IELTS scores on writing were found to be positively and significantly correlated with their amount of study time at Time 3 (*r* = .655, *n* = 10, *p* = .040). Finally, Stage-2 students' IELTS scores on speaking were positively and significantly correlated with their use of help-seeking strategies at Time 2 (*rho* = .638, *n* = 10, *p* = .047).

	Age	IELTS Overall	IELTS Listening	IELTS Reading	IELTS Writing	IELTS Speaking
Intrinsic Motivation, T1	.380	-.229	-.145	-.252	-.230	-.307
Intrinsic Motivation, T2	.145	-.076	.340	-.408	.011	-.026
Intrinsic Motivation, T3	.443	.236	.342	-.020	.290	-.201
Extrinsic Motivation, T1	.242	-.153	**.703***	-.338	.136	-.051
Extrinsic Motivation, T2	**.789****	.382	.339	-.118	.421	-.096
Extrinsic Motivation, T3	.514	.076	.163	.026	.228	-.198
Amotivation, T1	-.155	-.518	-.491	-.148	-.159	-.404
Amotivation, T2	-.410	**-.764***	-.400	-.282	-.294	-.428
Amotivation, T3	-.318	-.426	-.378	.070	-.469	-.288
Self-Efficacy Beliefs, T1	**.684***	.000	-.086	-.232	.049	.115
Self-Efficacy Beliefs, T2	**.699***	.115	-.059	-.389	.168	.148
Self-Efficacy Beliefs, T3	**.645***	.038	.213	-.297	.358	-.032
Control Beliefs, T2	.220	-.268	-.201	-.544	.089	-.198
Control Beliefs, T3	-.146	-.038	-.432	-.157	.423	-.285
Metacognitive Knowledge, T1	.334	.269	.084	.046	-.305	.277
Metacognitive Knowledge, T2	.470	-.192	-.209	-.532	-.004	.436
Metacognitive Knowledge, T3	.269	-.115	**-.780****	-.158	-.066	.232
Metacognitive Self-regulation, T2	.480	-.038	.226	-.293	-.225	.299
Metacognitive Self-regulation, T3	.362	.494	.193	.293	.100	.464
Time/Study Environment, T2	.171	.114	.323	.098	.413	-.153
Time/Study Environment, T3	.256	.494	.454	.345	.285	.032
Effort Regulation, T2	.411	-.038	.250	-.254	-.347	.286
Effort Regulation, T3	-.016	.116	-.022	.311	-.045	-.203
Help-Seeking, T2	.289	.572	.268	.333	.079	**.638***
Help-Seeking, T3	**.812****	.076	-.290	-.255	.160	-.112
Peer Learning for CI, T2	.295	-.154	**-.842****	-.046	-.408	.039
Peer Learning for CI, T3	.236	.426	-.244	.385	-.207	.482
Peer Learning for SI, T2	.359	.191	-.248	.000	.194	.434
Peer Learning for SI, T3	.297	.115	-.289	-.020	.064	.435
Strategies Overall, T2	.544	.342	.023	.065	-.134	.362
Strategies Overall, T3	.490	.494	-.085	.228	.083	.483
Study time, T2	**.811****	.426	.026	-.043	.341	.343
Study time, T3	**.796****	.538	.143	.066	**.655***	.010

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6.20 Relations between Stage-2 student entry characteristics and modifiable learner variables

Relations among motivational types (intrinsic motivation, extrinsic motivation and amotivation). At Time 1, no significant relationships were found between the motivational types. At Time 2, intrinsic motivation was significantly and positively correlated with extrinsic motivation (r = 0.699, n = 11, $p < 0.05$). Extrinsic motivation was significantly and negatively correlated with amotivation (*rho* = -0.701, n = 11, $p < 0.05$). At Time 3, intrinsic motivation was significantly and positively correlated with extrinsic motivation (r = 0.712, n = 11, $p < 0.05$). In sum, intrinsic motivation was significantly and positively correlated with extrinsic motivation both at Time 2 and at Time 3, and the strength of relationship appeared to be growing over time.

Relations between motivational types and motivational beliefs. At Time 3, extrinsic motivation was significantly and positively correlated with self-efficacy (r = 0.827, n = 11, $p < 0.01$).

Relations between self-efficacy and control beliefs. There was no significant relationship between the students' self-efficacy beliefs and their control beliefs either at Time 2 (r = -0.085, n = 11, p = 0.804) or at Time 3 (r = -0.021, n = 11, p = 0.952).

Relations between motivational types and effort/SRL strategies. At Time 2, amotivation was significantly and negatively correlated with study time—the effort index (*rho* = -0.641, n = 11, $p < 0.05$). At Time 3, intrinsic motivation was significantly and positively correlated with time/study environment management (r = 0.796, n = 11, $p < 0.01$) and effort regulation (r = 0.603, n = 11, $p < 0.05$). Extrinsic motivation was significantly and positively correlated with metacognitive self-regulation (r = 0.685, n = 11, $p < 0.05$) as well as with time/study environment management (r = 0.827, n = 11, $p < 0.01$).

Relations between motivational beliefs and effort/SRL strategies. At Time 2, self-efficacy was significantly and positively correlated with metacognitive self-regulation (r = 0.728, n = 11, $p < 0.05$) as well as with study hours—the effort index (r = 0.814, n = 11, $p < 0.01$). At Time 3, self-efficacy was significantly and positively correlated with metacognitive self-regulation (r = 0.676, n = 11, $p < 0.05$),

time/study environment management ($r = 0.622$, $n = 11$, $p < 0.05$) and help-seeking ($r = 0.623$, $n = 11$, $p < 0.05$), as well as with study time—the effort index ($r = 0.617$, $n = 11$, $p < 0.05$). To summarize, self-efficacy was significantly and positively correlated with metacognitive self-regulation as well as study time—the effort index both at Time 2 and at Time 3. There was no significant relationship between students' control beliefs and their reported use of SRL strategies or their reports of study time either at Time 2 or at Time 3.

Relations among SRL strategies. At Time 2, metacognitive self-regulation was significantly and positively correlated with effort regulation ($r = 0.884$, $n = 11$, $p < 0.01$). Time/study environment management, help-seeking, peer learning for CI, or peer learning for SI were not significantly correlated with the rest of the strategies.

At Time 3, metacognitive self-regulation was significantly and positively correlated with time/study environment management ($r = 0.686$, $n = 11$, $p < 0.05$). Time/study environment management was significantly and positively correlated with metacognitive self-regulation ($r = 0.686$, $n = 11$, $p < 0.05$) and effort regulation ($r = 0.739$, $n = 11$, $p < 0.01$). Effort regulation was significantly and positively correlated with time/study environment management ($r = 0.739$, $n = 11$, $p < 0.01$). Peer learning for CI was significantly and positively correlated with peer learning for SI ($r = 0.726$, $n = 11$, $p < 0.05$).

Relations between motivational types/beliefs and metacognitive knowledge. At Time 2, students' control beliefs were significantly correlated with their beliefs about the importance of SRL strategies ($r = 0.654$, $n = 11$, $p < 0.05$). At Time 3, however, there was no significant relationship between the two variables. No further significant relationships were found between students' motivational types or beliefs and their metacognitive knowledge about conference interpreting learning at any time point.

Relations between metacognitive knowledge and effort/SRL strategies. No significant relationship was found between students' metacognitive knowledge about conference interpreting learning and their reported use of self-regulated learning strategies at Time 2 or at Time 3.

Relations between SRL strategies and effort. At Time 2, peer learning for SI was significantly and positively correlated with study time—the effort index ($r = 0.725$, $n =$

11, $p < 0.05$). At Time 3, help-seeking was significantly and positively correlated with study time—the effort index ($r = 0.660$, $n = 11$, $p < 0.05$).

6.4 Data Analysis for Research Question 3

How do modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort) correlate with/predict interpreting performances?

The following sub-questions were asked:

1. How do trainee interpreters' modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort) correlate with interpreting performances?
2. How do trainee interpreters' modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort) vary by performance?
3. How do trainee interpreters' modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort) predict interpreting performances?

6.4.1 Sub-Question 1

6.4.1.1 Stage-1 Students (n = 30)

Before we analyze the correlations between modifiable personal factors (i.e. motivation, knowledge) and behavioural factors (i.e. strategy use, effort) and their interpreting performances, it is necessary to examine the correlations between student entry characteristics (e.g. age and IELTS scores) and interpreting performances. Table 6.21 presents the correlations between Stage-1 students' age/IELTS scores and their exam results, while the full results regarding the correlations between Stage-1 students'

modifiable learner variables and their examination results can be found in Appendices K–L.

Correlation between student entry characteristics and exam results (n = 30). For Stage-1 students, there was virtually no relationship between their ages and CI exam results (i.e. CHN7013CA1, CHN7013CA2, CHN7011CA1, and CHN7011CA2) during the academic year. In contrast, the correlations between their ages and SI exam results (CHN7010CA1, CHN7010CA2) were interesting. Students' ages were negatively correlated with the results of their first SI exam (CHN7010CA1), although the correlation did not reach a significant level (*rho* = -.212, *n* = 30, *p* = .261). Furthermore, students' ages were negatively and highly significantly correlated with the results of their second/final SI exam (CHN7010CA2) (*rho* = -.517, *n* = 30, *p* = .003). Older students were more likely to get lower SI examination results.

Significant correlations were observed between students' IELTS scores and their CI or SI examination results. Specifically, students' overall IELTS scores were positively and significantly correlated with their results of the final CI examination (CHN7011CA2) at the end of the academic year (*rho* = .412, *n* = 26, *p* = .037). Students' IELTS writing scores were negatively correlated with all examination results during the academic year. Furthermore, the negative correlation between students' IELTS writing scores and their first SI examination (CHN7010CA1) results reached a significant level (*rho* = -.393, *n* = 26, *p* = .047). Students' IELTS listening scores and speaking scores were positively correlated with all CI/SI examination results. Particularly, both listening scores (*r* = .566, *n* = 26, *p* = .003) and speaking scores (*rho* = .423, *n* = 26, *p* = .031) were significantly correlated with the results of the students' first SI examination (CHN7010CA1). Furthermore, students' IELTS speaking scores were also near-significantly correlated with the results of their second/final SI exam (CHN7010CA2) at the end of the academic year (*rho* = .359, *n* = 26, *p* = .071).

	IELTS Overall (rho)	Listening	Reading	Writing (rho)	Speaking (rho)	Age (rho)
Introduction to Interpreting CA1	.062	.148	-.054	-.365	.258	.064
Introduction to Interpreting CA2	.005	.127	.042	-.175	.101	.021
Consecutive Interpreting I CA1	.230	.343	.188	-.253	.235	.062
Consecutive Interpreting I CA2	**.412***	.121	.286	-.199	.355	-.016
Simultaneous Interpreting I CA1	.159	**.566****	-.022	**-.393***	**.423***	-.212
Simultaneous Interpreting I CA2	-.023	.226	.199	-.270	.359	**-.517****

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

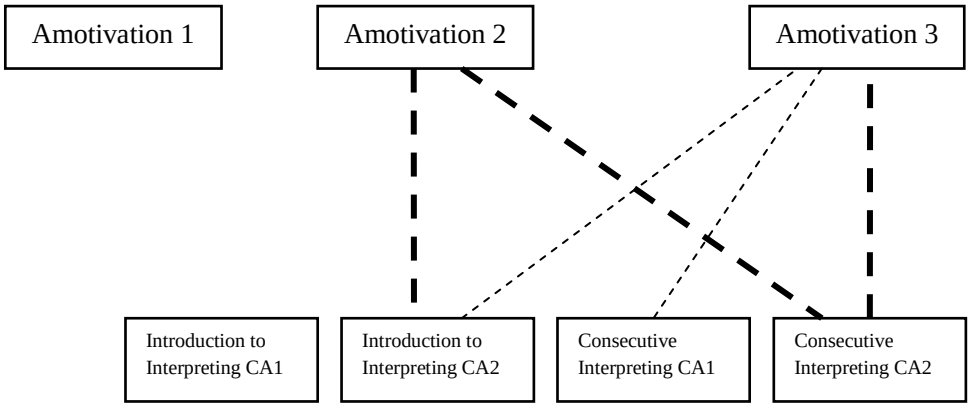
Table 6.21 Correlations between Stage-1 age/IELTS scores and exam results

Correlation between intrinsic/extrinsic motivation and exam results. Generally, there were no clear-cut differences between intrinsic motivation and extrinsic motivation in terms of their relations with examination results. Negative correlations as well as positive relations were found between the two types of motivation and some of the examinations results. For example, students' intrinsic motivation at Time 1 was significantly and negatively correlated with Introduction to Interpreting CA1 results (*rho* = -0.371, $n = 30$, $p < 0.05$). Extrinsic motivation at Time 1 was also negatively correlated with Introduction to Interpreting CA1 results, although the correlation was negligible and non-significant ($r = -0.073$, $n = 30$, $p = 0.701$). Students' intrinsic motivation and extrinsic motivation at Time 2 were positively correlated with Introduction to Interpreting CA2 results. Although they were non-significant, the correlations were of non-negligible magnitude ($r = 0.297$; *rho* = 0.273). Students' intrinsic motivation and extrinsic motivation at Time 3 were also positively correlated with Consecutive Interpreting I CA2 results. Although they were non-significant, the correlations were of non-negligible magnitude ($r = 0.198$; $r = 0.278$). However, there was absolutely no relationship between students' intrinsic motivation or extrinsic motivation at Time 3 and their Simultaneous Interpreting I CA2 results. The

correlations were negligible (r = -0.007; r = 0.013) and non-significant (p = 0.971; p = 0.945).

It is perhaps worth noting that students' extrinsic motivation at Time 1 was negatively correlated with all examination results during the academic year 2009–2010. Introduction to Interpreting CA1 results were negatively correlated with all measurements of intrinsic motivation and extrinsic motivation during the academic year. In particular, Introduction to Interpreting CA1 results were significantly and negatively correlated with intrinsic motivation at Time 1 (*rho* = -0.371, n = 30, $p < 0.05$) and intrinsic motivation at Time 3 (r = -0.375, n = 30, $p < 0.05$).

Correlation between amotivation and exam results. Amotivation was negatively correlated with examination results. Although students' level of amotivation at Time 1 was not significantly correlated with any subsequent assessment results, students' levels of amotivation at Time 2 and Time 3 were significantly correlated with some of their examination results. More specifically, students' level of amotivation at Time 2 was significantly correlated with Introduction to Interpreting CA2 marks. In addition, students' level of amotivation at Time 2 was also significantly correlated with Consecutive Interpreting I CA2 results. Students' level of amotivation at Time 3 was significantly correlated with Consecutive Interpreting I CA2 results. In addition, there was a near-significant correlation between amotivation at Time 3 and Introduction to Interpreting CA2 (*rho* = -0.334, n = 30, p = 0.072) or Consecutive Interpreting I CA1 (*rho* = -0.354, n = 30, p = 0.055). It is worth noting that both Introduction to Interpreting and Consecutive Interpreting I were Consecutive Interpreting modules. In stark contrast to the significant relations between amotivation and Consecutive Interpreting assessment results, there were no significant correlations between amotivation and Simultaneous Interpreting assessment results. This contrast seems to suggest that students' level of amotivation was more closely correlated with Consecutive Interpreting (rather than Simultaneous Interpreting) assessment results. The higher a student's level of amotivation, the lower his/her CI examination results.

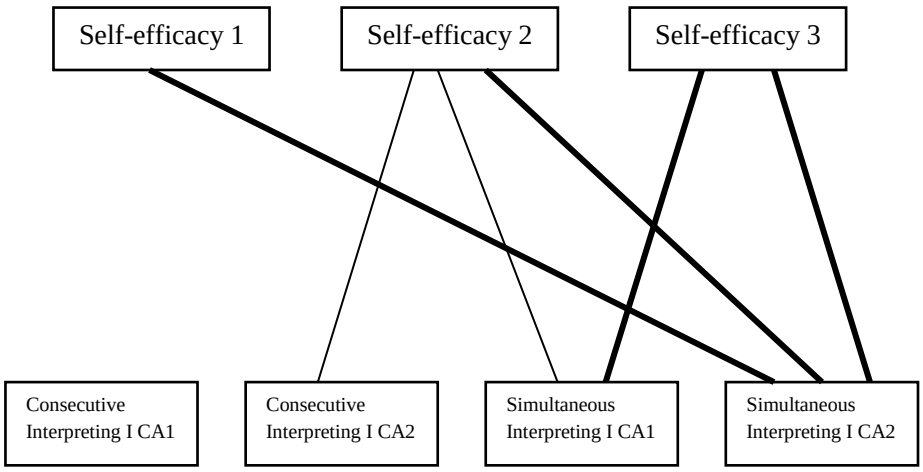


(Note: A boldfaced dotted line represents a significant negative correlation. A thin dotted line represents a near-significant negative correlation.)

Figure 6.1 Correlations between Stage-1 amotivation and exam results

Correlation between self-efficacy and exam results. Self-efficacy beliefs were positively correlated with examination results. Measurements of students' level of self-efficacy at all three time points were significantly and positively correlated with their Simultaneous Interpreting I CA2 results. In fact, students' level of self-efficacy at Time 3 was significantly correlated with the results of both Simultaneous Interpreting I CA1 and CA2. This seems to suggest that the relations between students' level of self-efficacy and their Simultaneous Interpreting I results were gaining momentum over time. Furthermore, there was a non-trivial correlation between students' level of self-efficacy at Time 2 and Simultaneous Interpreting I CA1 results, where the correlation was only marginally non-significant (r = 0.334, n = 30, p = 0.071). The enduring significant relations between students' level of self-efficacy and their Simultaneous Interpreting I results across time seem to suggest that the construct of self-efficacy was particularly applicable to Simultaneous Interpreting I results. In addition to the enduring significant relations between self-efficacy and Simultaneous Interpreting module results, there were also non-trivial correlations between self-efficacy and Consecutive Interpreting examination results. For example, the correlations between self-efficacy at Time 2 and CHN7011CA2 results (r = 0.326, n = 30, p = 0.079) were non-trivial. Nonetheless, the results overall seem to suggest that

students' level of self-efficacy was more closely related to Simultaneous Interpreting (rather than Consecutive Interpreting) examination results.



(Note: A boldfaced solid line represents a significant positive correlation. A thin solid line represents a near-significant positive correlation.)

Figure 6.2 Correlations between Stage-1 self-efficacy and exam results

Correlation between control beliefs and exam results. Students' control beliefs at Time 3 was significantly and positively correlated with Simultaneous Interpreting I CA1 results (*rho* = 0.377, $n = 30$, $p < 0.05$).

Correlation between metacognitive knowledge and exam results. Students' metacognitive knowledge about conference interpreting learning at Time 3 was significantly and positively correlated with Simultaneous Interpreting I CA1 results (*rho* = 0.403, $n = 29$, $p < 0.05$).

Correlation between exam results and subsequent beliefs. It is interesting to note that students' Simultaneous Interpreting exam results (i.e. Simultaneous Interpreting I CA1) were significantly and positively correlated with their subsequent self-efficacy beliefs, control beliefs and strategy beliefs at Time 3. In stark contrast, there was absolutely no relationship between students' Consecutive Interpreting exam (i.e. Consecutive Interpreting I CA1) results and their subsequent beliefs. The correlations were trivial and not significant.

	Introduction to Interpreting CA1	Consecutive Interpreting I CA1	Simultaneous Interpreting I CA1
Self-efficacy, T2	.302	.247	.334
Self-efficacy, T3	-.075	.060	**.460***
Control beliefs, T2	.088	.063	.285
Control beliefs, T3	.058	.049	**.377***
Strategy beliefs, T2	.163	-.006	.073
Strategy beliefs, T3	.151	.123	**.403***

*. Correlation is significant at the 0.05 level (2-tailed).

Table 6.22 Correlations between Stage-1 exam results and subsequent self-efficacy, control beliefs, and strategy beliefs

In order to determine the impact of Simultaneous Interpreting I CA1 results on students' self-efficacy beliefs, control beliefs and strategy beliefs at Time 3, a simple regression analysis was conducted between Simultaneous Interpreting I CA1 results and each of the beliefs variables. When Simultaneous Interpreting I CA1 results were entered into the equation to determine the impact of exam results on self-efficacy beliefs, the one-predictor model was significant (F (1, 28) = 5.639, p = 0.025). The model accounted for 14% of the variance in self-efficacy at Time 3 (R^2_{adj} = 0.138). With a standardized beta coefficient of 0.409, Simultaneous Interpreting I CA1 results were a significant predictor of self-efficacy at Time 3, such that a higher Simultaneous Interpreting I CA1 result was associated with a higher self-efficacy at Time 3. When Simultaneous Interpreting I CA1 results were entered into the equation to determine the impact of exam results on control beliefs at Time 3, the one-predictor model was significant (F (1, 28) = 5.503, p = 0.026). The model accounted for 13% of the variance in control beliefs at Time 3 (R^2_{adj} = 0.134). With a standardized beta coefficient of 0.405, Simultaneous Interpreting I CA1 results were a significant predictor of control beliefs at Time 3, such that higher Simultaneous Interpreting I CA1 results were associated with higher control beliefs at Time 3. When Simultaneous Interpreting I CA1 results were entered into the equation to determine the impact of exam results on strategy beliefs at Time 3, the one-predictor model was significant (F (1, 27) = 7.789, p = 0.01). The

model accounted for 20% of the variance in strategy beliefs at Time 3 (R^2_{adj} = 0.195). With a standardized beta coefficient of 0.473, Simultaneous Interpreting I CA1 results were a significant predictor of strategy beliefs at Time 3, such that higher exam results were associated with higher strategy beliefs.

Correlation between SRL strategies and exam results. There were no significant relations between students' reported use of self-regulated learning strategies at Time 2 and their Introduction to Interpreting CA2 results. However, students' use of self-regulated learning strategies seemed to have some significant (or near significant) relations with Introduction to Interpreting CA1 results. For example, peer learning strategies for CI at Time 2 was significantly and positively correlated with Introduction to Interpreting CA1 results (r = 0.400, n = 30, p < 0.05). The correlation between students' use of metacognitive self-regulation strategies and Introduction to Interpreting CA1 results was nontrivial (r = 0.326) and marginally non-significant (p = 0.078). When I computed a new variable by summing up all the self-regulated learning strategies at Time 2 and then tried to correlate it with Introduction to Interpreting CA1 results, I found that the correlation was of non-trivial magnitude (r = 0.352) and marginally non-significant (p = 0.056).

There were no significant relations between students' reported use of self-regulated learning strategies at Time 3 and their Consecutive Interpreting I CA2 results or Simultaneous Interpreting I CA2 results. It is worth noting that some of the strategies were even negatively correlated with some of the examination results, although the correlations were very weak and non-significant. For example, students' reported use of time and study environment management strategies at Time 3 were negatively correlated with Consecutive Interpreting I CA2 results (r = -0.167, n = 30, p = 0.376) as well as with Consecutive Interpreting I CA1 results (r = -0.208, n = 30, p = 0.270).

Correlation between study time and exam results. No significant relationships were found between students' reports of study time outside class (the effort index) and their examination results. However, the correlations between students' reports of study time at Time 3 and their Consecutive Interpreting I CA2 results (*rho* = 0.317, n = 30, p = 0.088) and Simultaneous Interpreting I CA2 results (*rho* = 0.285, n = 30, p = 0.128) were nontrivial, although statistically non-significant.

6.4.1.2 Stage-2 Direct-Entry Students (*n* = 8)

Table 6.23 presents the correlations between Stage-2 direct-entry students' age/IELTS scores and their exam results, while the full results regarding the correlations between Stage-2 direct-entry students' modifiable learner variables and their examination results can be found in Appendices M–N.

Correlation between student entry characteristics and exam results (n = 8). No significant correlations were found between Stage-2 students' ages and their CI or SI exam results during the academic year. Significant correlations were observed between students' IELTS scores and their CI or SI examination results. Specifically, students' IELTS listening scores were positively and significantly correlated with the results of both of the two CI continuous assessments during the academic year—Consecutive Intrepreting II CA1 (r = .766, n = 7, p = .045) and CA2 (r = .769, n = 7, p = .043). Students' IELTS writing scores were positively and significantly correlated with only the first of the two CI continuous assessments—Consecutive Intrepreting II CA1 (r = .826, n = 7, p = .022). Furthermore, students' IELTS speaking scores were positively and significantly correlated with the first of the two SI continuous assessments during the academic year—Simultaneous Interpreting II CA1 (*rho* = .778, n = 7, p = .039). No significant correlations were found between Stage-2 students' overall IELTS scores or IELTS Writing scores and their CI/SI examination results.

	Age (rho)	IELTS Overall (rho)	Listening	Reading (rho)	Writing	Speaking (rho)
Consecutive Interpreting II CA1	.495	.612	**.766***	-.178	**.826***	.231
Consecutive Interpreting II CA2	.137	.612	**.769***	.089	.501	.000
Simultaneous Interpreting II CA1	.138	.618	.045	.315	.354	**.778***
Simultaneous Interpreting II CA2	-.125	.000	-.078	.045	-.340	-.078

*. Correlation is significant at the 0.05 level (2-tailed).

Table 6.23 Correlations between Stage-2 age/IELTS scores and exam results

Correlation between motivational types/beliefs and exam results (n = 8). Stage-2 students' level of amotivation was negatively correlated with their examination results. Just as for Stage-1 students, Stage-2 students' level of amotivation appeared to be more closely correlated with Consecutive Interpreting examination results than with Simultaneous Interpreting examination results. For instance, amotivation at Time 2 was significantly and negatively correlated with Consecutive Interpreting II CA1 (r = -0.738, n = 8, $p < 0.05$) and CA2 (r = -0.735, n = 8, $p < 0.05$) results. In contrast, no significant correlation was found between amotivation and the Simultaneous Interpreting results. Nor were there any further significant relations between Stage-2 students' other motivational types/beliefs and their Consecutive or Simultaneous Interpreting examination results.

Correlation between metacognitive knowledge and exam results (n = 8). No significant relationship was found between students' metacognitive knowledge and their CI or SI examination results.

Correlation between SRL strategies and exam results (n = 8). The relations between Stage-2 students' reported use of self-regulated learning strategies and their examination results showed a mixed picture. Both positive and negative correlations were found between strategy measurements and examination results. Significant relations were only found between strategies and Simultaneous Interpreting examination results. More specifically, peer learning for SI at Time 2 was significantly and positively correlated with Simultaneous Interpreting II CA1 results (r = 0.727, n = 8, $p < 0.05$), while effort regulation at Time 3 was significantly and positively correlated with Simultaneous Interpreting II CA2 results (r = 0.710, n = 8, $p < 0.05$).

Correlation between study time and exam results (n = 8). Although there was no significant relationship between students' reports of study time (the effort index) and their examination results, the correlation between students' reports of study time at Time 2 and their Consecutive Interpreting II CA1 results was marginally non-significant (r = 0.681, n = 8, p = 0.063).

6.4.2 Sub-Question 2

6.4.2.1 Variation by CI Performance Level *(Consecutive Interpreting I CA2)*

I divided the Stage-1 students into three groups on the basis of their results in the CA2 of the module of Consecutive Interpreting I. Student results ranged from 53 to 71. High achievers (Group 3) were those scoring 64 and above (n = 8), medium achievers (Group 2) were those between 58 and 63 inclusive (n = 14), and low achievers (Group 1) were those 57 and below (n = 8). As Consecutive Interpreting I CA2 was an exam that took place at the end of Semester 2, measures of all three time points were used to examine potential variation of students' motivational types/beliefs, metacognitive knowledge, effort and use of SRL strategies by performance. Repeated Measures ANOVAs were conducted in order to examine potential variation of change over time, while Independent-Samples T-Tests were conducted to examine potential variation between high-, medium-, and low-achieving students. Table 6.26 presents the means and standard deviations of the various measures of motivational types/beliefs, metacognitive knowledge, strategy and effort by performance.

Over the course of the academic year, there was a significant change in low-achieving students' extrinsic motivation (χ^2 (2, N = 8) = 9.769, p < 0.01) and metacognitive knowledge (χ^2 (2, N = 8) = 5.600, p < 0.05). Low achievers' extrinsic motivation decreased significantly from Time 1 to Time 2 (Z = -2.214, p < 0.05), and from Time 1 to Time 3 (Z = -2.384, p < 0.05). Furthermore, low achievers' beliefs about the importance of SRL strategies declined significantly from Time 1 to Time 3 (Z = -2.035, p < 0.05). There was also a significant change in medium-achieving students' extrinsic motivation (F (2, 26) = 4.792, p < 0.05). Medium achievers' extrinsic motivation declined significantly from Time 1 to Time 3 (p < 0.05). A Repeated Measures ANOVA indicated that there was a significant change in medium-achieving students' metacognitive knowledge over time (F (2, 24) = 3.503, p < 0.05). However, follow-up Pairwise Comparisons failed to reveal any significant difference between time points. The biggest difference appeared to be between Time 1 (M = 6.20; SD = 0.562) and Time 2 (M = 5.80; SD = 0.466), but the difference was non-significant (p = 0.085). In terms of strategy use, there were significant differences in low-achieving students' reported use of time/study environment management strategies and in medium-achieving students' reported use of peer learning strategies for CI. More

specifically, low-achieving students' reported use of time/study environment management strategies increased significantly over time (t (7) = -2.967, $p < 0.05$). Medium-achieving students' reported use of peer learning strategies for CI increased significantly over time (t (13) = -2.879, $p < 0.05$). In terms of effort, a Wilcoxon Signed Ranks Test revealed that there was a significant difference in high-achieving students' reports of their study hours outside of class (Z = -2.047, $p < 0.05$), which increased significantly from Time 2 (M = 1.19; SD = 0.704) to Time 3 (M = 2.06; SD = 0.863).

Differences between Group 1 and Group 2. No significant difference was found.

Differences between Group 2 and Group 3. There was significant difference in students' amotivation at Time 2 (U = 24.000, $p < 0.05$). High achievers expressed significantly lower levels of amotivation at Time 2 than did average-achieving students.

Differences between Group 1 and Group 3. There were significant differences in students' intrinsic motivation at Time 2 (t (14) = -2.201, $p < 0.05$), amotivation at Time 2 (U = 8.000, $p < 0.01$) and amotivation at Time 3 (U = 13.000, $p < 0.05$), as well as time and study environment management at Time 2 (t (14) = -2.424, $p < 0.05$). High achievers expressed significantly higher levels of intrinsic motivation at Time 2 than low-achieving students. On the other hand, high achievers expressed significantly lower levels of amotivation at both Time 2 and Time 3 than did low-achieving students. Furthermore, in terms of strategy use, high achievers reported using significantly more time/study environment management strategies at Time 2 than low-achieving students. In addition, there was near-significant difference in students' intrinsic motivation at Time 1 (U = 14.000, p = 0.057). High achievers expressed higher levels of intrinsic motivation at Time 1 than did low-achieving students.

Grouping Variable: Consecutive Interpreting I CA2	Group 1 (n = 8)		Group 2 (n = 14)		Group 3 (n = 8)	
	Mean	SD	Mean	SD	Mean	SD
Intrinsic motivation, T1	4.9167	1.20515	4.9286	1.81720	5.8750	1.23362
Intrinsic motivation, T2	4.3333	1.25988	5.3810	1.25308	5.5417	.90742
Intrinsic motivation, T3	4.2083	1.14000	4.9524	1.23936	5.2917	1.45228
Extrinsic motivation, T1	6.1250	.77536	5.7381	.81836	5.6250	.78553
Extrinsic motivation, T2	4.9583	1.27786	5.4524	.98369	5.5417	1.12599

Extrinsic motivation, T3	4.7083	1.27786	5.0714	.88847	5.6667	1.18187
Amotivation, T1	1.2917	.45207	1.4762	.68829	1.2917	.60257
Amotivation, T2	1.9167	.88641	1.4359	.61440	1.0000	.00000
Amotivation, T3	2.2083	.95846	1.6190	.70234	1.2500	.38832
Self-efficacy, T1	4.6250	1.23924	4.9464	1.21757	5.1563	.77848
Self-efficacy, T2	4.0938	1.06852	4.9286	.97285	4.8125	.86344
Self-efficacy, T3	4.0938	1.60878	4.3571	1.21574	5.0625	.82104
Control beliefs, T2	5.1563	1.05168	5.5536	1.07943	4.8438	1.17213
Control beliefs, T3	4.9063	1.52326	5.2143	1.09570	5.3125	1.28695
Metacognitive knowledge, T1	6.2125	.37961	6.2000	.56159	6.2000	.43095
Metacognitive knowledge, T2	5.8750	.71664	5.8000	.46575	5.9875	.64017
Metacognitive knowledge, T3	5.5625	.73473	5.9308	.46437	5.9000	.42088
Metacognitive self-regulation, T2	4.1932	1.12337	4.6948	.85102	4.7273	1.05794
Metacognitive self-regulation, T3	4.6818	1.10489	4.3182	.83224	4.7500	1.38618
Time/Study environment, T2	4.0313	.58915	4.2768	.97095	4.5938	.28932
Time/Study environment, T3	4.6250	.35981	4.5714	.88349	4.3281	.82629
Effort regulation, T2	4.5313	1.22793	4.6429	1.20382	4.9063	.75519
Effort regulation, T3	4.4375	.82104	4.2321	1.21870	4.9375	.92341
Help-seeking, T2	4.1563	1.19476	4.5536	1.01042	4.5313	1.01275
Help-seeking, T3	4.7813	1.03887	4.5179	1.06276	5.0938	1.43886
Peer learning for CI, T2	3.6875	1.85043	3.3929	1.30352	3.6250	1.64208
Peer learning for CI, T3	3.8750	1.97755	4.3214	1.29507	4.1250	2.11711
Peer learning for SI, T3	3.6250	1.78786	2.8571	1.11680	3.4375	1.98993
All strategies, T2	20.5994	5.25095	21.5609	3.36511	22.3835	2.86167
All strategies, T3	26.0256	5.39451	24.8182	3.89477	26.6719	6.84341
Study time, T2	1.4688	1.08921	1.6786	1.20268	1.1875	.70394
Study time, T3	1.5375	1.26371	1.7379	1.13770	2.0625	.86344

Table 6.24 Means and standard deviations (SD) of motivational types/beliefs, metacognitive knowledge, strategy and effort by performance *(Grouping variable: Consecutive Interpreting I CA2)*

	Group 1 (*n* = 8)			**Group 2 (*n* = 14)**			**Group 3 (*n* = 8)**		
	T1—T2	T2—T3	T1—T3	T1—T2	T2—T3	T1—T3	T1—T2	T2—T3	T1—T3
Intrinsic Motivation	✕	✕	✕	✕	✕	✕	✕	✕	✕
Extrinsic Motivation	✓	✕	✓	✕	✕	✓	✕	✕	✕
Amotivation	✕	✕	✕	✕	✕	✕	✕	✕	✕
Self-Efficacy	✕	✕	✕	✕	✕	✕	✕	✕	✕
Metacognitive Knowledge	✕	✕	✓	✕	✕	✕	✕	✕	✕
Control Beliefs	—	✕	—	—	✕	—	—	✕	—
Metacognitive Self-Regulation	—	✕	—	—	✕	—	—	✕	—
Time/Study Environment	—	✓	—	—	✕	—	—	✕	—
Effort Regulation	—	✕	—	—	✕	—	—	✕	—
Help-Seeking	—	✕	—	—	✕	—	—	✕	—
Peer Learning (for CI)	—	✕	—	—	✓	—	—	✕	—
Study Time	—	✕	—	—	✕	—	—	✓	—

Table 6.25 Summary of variations in longitudinal change by performance *(Grouping variable: Consecutive Interpreting I CA2)* (✓ = statistically significant; ✕ = statistically non-significant)

Grouping Variable	Groups	Significant Variations
Consecutive Interpreting I CA2	G1 vs. G2 (Low vs. Medium)	
	G2 vs. G3 (Medium vs. High)	Amotivation (T2)
	G1 vs. G3 (Low vs. High)	*Intrinsic motivation (T1) (p = 0.057);* Intrinsic motivation (T2); Amotivation (T2); Amotivation (T3); Time/Study environment (T2)

Table 6.26 Summary of variations by performance *(Grouping variable: Consecutive Interpreting I CA2)*

6.4.2.2 Variation by SI Performance Level *(Simultaneous Interpreting I CA2)*

I divided the Stage-1 students into three groups on the basis of their results in the CA2 of the module of Simultaneous Interpreting I. Student results ranged from 46 to 72. High achievers (Group 3) were those 62 and above (n = 10), medium achievers (Group 2) were those between 57 and 61 inclusive (n = 9), and low achievers (Group 1) were those 56 and below (n = 11). As Simultaneous Interpreting I CA2 was an exam that took place at the end of Semester 2, all measures of the three time points were used to examine potential variation in students' motivational types/beliefs, metacognitive knowledge, effort and use of SRL strategies by performance. Repeated Measures ANOVAs were conducted in order to examine potential variation of change over time, while Independent-Samples T-Tests were conducted to examine potential variation between high-, medium-, and low-achieving students. Table 6.29 presents the means and standard deviations of the various measures of motivational types/beliefs, metacognitive knowledge, strategy and effort by performance.

In terms of students' motivational types/beliefs, the only significant difference over time was found in medium-achieving students' reports of their self-efficacy beliefs. More specifically, there was a significant decline in students' reports of their self-efficacy beliefs from Time 1 to Time 3 (F (2, 16) = 5.526, $p < 0.05$). Repeated Measures ANOVA indicated that there was a significant change in medium-achieving students' metacognitive knowledge over time (F (2, 16) = 4.042, $p < 0.05$). However, Pairwise Comparisons failed to reveal any significant difference between time points. The biggest difference was between Time 1 (M = 6.27; SD = 0.600) and Time 3 (M = 5.83; SD = 0.424), but it was non-significant (p = 0.097). In terms of strategy use, Paired Samples T-Tests (or Wilcoxon Signed Ranks Tests) revealed that low-achieving students' reported use of time/study environment management strategies (t (10) = -2.338, $p < 0.05$) and peer learning strategies for CI (Z = -2.066, $p < 0.05$), as well as medium-achieving students' peer learning strategies for CI (t (8) = -2.500, $p < 0.05$), increased significantly from Time 2 to Time 3. Furthermore, there was also a marginally non-significant increase in low-achieving students' reported use of help-seeking strategies (t (10) = -2.132, p = 0.059) from Time 2 to Time 3. In terms of effort, a Wilcoxon Signed Ranks Test indicated that there was a significant difference in high-achieving students' reports of study hours outside of class over time (Z = -2.047, $p < 0.05$), which increased significantly from Time 2 (M = 1.45; SD = 0.864) to Time 3 (M = 2.10; SD = 1.174).

Differences between Group 1 and Group 2. No significant difference was found. However, from Table 6.29 we can see that average achievers' ratings of their self-efficacy levels at Time 1 were much higher than those of low-achieving students (t (18) = -1.790, p = 0.090). Furthermore, average achievers also reported using more help-seeking strategies at Time 2 than low-achieving students (t (18) = -1.815, p = 0.086).

Differences between Group 2 and Group 3. There was significant difference in self-efficacy at Time 3 (t (17) = -2.150, $p < 0.05$). High achievers' ratings of their levels of self-efficacy at Time 3 were significantly higher than those of average-achieving students.

Differences between Group 1 and Group 3. There was significant difference in students' self-efficacy at Time 2 (t (19) = -2.124, $p < 0.05$) and self-efficacy at Time 3 (t

(19) = -2.148, $p < 0.05$). High achievers' ratings of their self-efficacy levels at both Time 2 and Time 3 were significantly higher than those of low-achieving students.

Grouping Variable: Simultaneous Interpreting I CA2	Group 1 (n = 11)		Group 2 (n = 9)		Group 3 (n = 10)	
	Mean	SD	Mean	SD	Mean	SD
Intrinsic motivation, T1	5.3636	1.14944	5.6296	.85707	4.5667	2.21136
Intrinsic motivation, T2	4.9697	1.46405	5.3704	.94933	5.1333	1.29767
Intrinsic motivation, T3	4.8485	1.13885	4.9630	1.20698	4.7333	1.63148
Extrinsic motivation, T1	5.9697	.78109	5.8148	.88367	5.6333	.77698
Extrinsic motivation, T2	5.1515	1.25045	5.6296	.97816	5.3000	1.05935
Extrinsic motivation, T3	5.2424	.84447	5.2222	1.13039	4.9333	1.38600
Amotivation, T1	1.4848	.56497	1.1481	.33793	1.4667	.78881
Amotivation, T2	1.6970	.92442	1.4074	.49379	1.1852	.44444
Amotivation, T3	2.0000	.90676	1.5185	.44444	1.4667	.81952
Self-efficacy, T1	4.3864	1.30558	5.2778	.79495	5.1750	.96501
Self-efficacy, T2	4.2273	1.21683	4.6667	.77055	5.1750	.74582
Self-efficacy, T3	4.0227	1.46396	4.2222	1.01122	5.2000	.97040
Control beliefs, T2	5.2273	1.10371	5.1667	1.15920	5.3750	1.15620
Control beliefs, T3	4.9318	1.28009	4.9444	1.48312	5.6000	.89907
Metacognitive knowledge, T1	6.1909	.47001	6.2667	.60000	6.1600	.37476
Metacognitive knowledge, T2	5.6909	.57001	5.8556	.65596	6.0800	.46857
Metacognitive knowledge, T3	5.5800	.67462	5.8333	.42426	6.0500	.43525
Metacognitive self-regulation, T2	4.3388	1.02859	4.4343	.91111	4.9455	.95750
Metacognitive self-regulation, T3	4.3388	.90644	4.4040	.93055	4.8545	1.31055
Time/Study environment, T2	4.0682	.80886	4.3194	.82942	4.5250	.61464
Time/Study environment, T3	4.5682	.66700	4.3333	.82443	4.6375	.80891
Effort regulation, T2	4.3864	1.33400	5.1111	.91950	4.6250	.86803
Effort regulation, T3	4.1136	1.35722	4.8333	.67315	4.5500	.93393
Help-seeking, T2	3.9545	1.00510	4.8611	1.23181	4.6000	.71880
Help-seeking, T3	4.3864	.78552	4.8333	1.37500	5.0500	1.27911
Peer learning for CI, T2	3.1364	1.76197	3.4444	.98249	4.0500	1.57145
Peer learning for CI, T3	3.8636	2.00114	4.2778	1.64148	4.3500	1.43469
Peer learning for SI, T3	2.8636	1.79012	3.1111	1.29368	3.7000	1.51291
All strategies, T2	19.8843	4.57165	22.1705	3.14131	22.7455	2.86963
All strategies, T3	24.1343	5.29512	25.7929	4.27016	27.1420	5.51691

Study time, T2	1.3409	.98915	1.7222	1.34887	1.4500	.86442
Study time, T3	1.5727	1.15680	1.6478	.93021	2.1000	1.17379

Table 6.27 Means and standard deviations (SD) of motivational types/beliefs, metacognitive knowledge, strategy and effort by performance *(Grouping Variable: Simultaneous Interpreting I CA2)*

	Group 1 (*n* = 11)			**Group 2 (*n* = 9)**			**Group 3 (*n* = 10)**		
	T1—T2	T2—T3	T1—T3	T1—T2	T2—T3	T1—T3	T1—T2	T2—T3	T1—T3
Intrinsic Motivation	✕	✕	✕	✕	✕	✕	✕	✕	✕
Extrinsic Motivation	✕	✕	✕	✕	✕	✕	✕	✕	✕
Amotivation	✕	✕	✕	✕	✕	✕	✕	✕	✕
Self-Efficacy	✕	✕	✕	✕	✕	✓	✕	✕	✕
Metacognitive Knowledge	✕	✕	✕	✕	✕	✕	✕	✕	✕
Control Beliefs	—	✕	—	—	✕	—	—	✕	—
Metacognitive Self-Regulation	—	✕	—	—	✕	—	—	✕	—
Time/Study Environment	—	✓	—	—	✕	—	—	✕	—
Effort Regulation	—	✕	—	—	✕	—	—	✕	—
Help-Seeking	—	✕ (p = 0.059)	—	—	✕	—	—	✕	—
Peer Learning (for CI)	—	✓	—	—	✓	—	—	✕	—
Study Time	—	✕	—	—	✕	—	—	✓	—

Table 6. 28 Summary of variations in longitudinal change by performance *(Grouping variable: Simultaneous Interpreting I CA2)* (✓ = statistically significant; ✕ = statistically non-significant)

Grouping Variable	Groups	Significant Variations
Simultaneous Interpreting I CA2	G1 vs. G2 (Low vs. Medium)	
	G2 vs. G3 (Medium vs. High)	Self-efficacy (T3)
	G1 vs. G3 (Low vs. High)	Self-efficacy (T2); Self-efficacy (T3)

Table 6.29 Summary of variations by performance *(Grouping variable: Simultaneous Interpreting I CA2)*

6.4.3 Sub-Question 3

6.4.3.1 Modifiable Learner Factors as Predictors

As a first step in examining how students' motivation, metacognitive knowledge, effort and use of SRL strategies predicted examination results, a multiple regression analysis was conducted on students' Consecutive Interpreting I CA2 results and Simultaneous Interpreting I CA2 results respectively, with all the modifiable learner factors (i.e. motivational measures, strategy measures, measures of metacognitive knowledge and effort) at Time 3 as predictors.

6.4.3.1.1 Predicting Consecutive Interpreting I CA2 Results

A multiple regression analysis was conducted, with the motivational measures, strategy measures and measures of metacognitive knowledge and effort at Time 3 as predictors of Consecutive Interpreting I CA2 results. Model Summary showed that the independent variables were not linearly related to the dependent variable (R^2_{adj} = 0.016) and the overall relationship was not significant (F (12, 16) = 1.038, p = 0.462). Furthermore, none of the independent variables was found to be significantly related to Consecutive Interpreting I CA2 results. However, when I used the 'backward

elimination' technique to identify a group of variables that predicted the dependent variable reasonably well, the technique resulted in five significant models ($p < 0.05$):

Model 1. Consecutive Interpreting I CA2 = 63.261 – (1.882 * Amotivation) + (1.333 * Self-Efficacy) – (0.940 * Metacognitive Self-Regulation) – (1.716 * Time/Study Environment) + (1.473 * Effort Regulation)

The five predictors in Model 1, taken together, were significantly associated with Consecutive Interpreting I CA2 results (F (5, 23) = 2.713, p = 0.045). Together they explained 23.4% of the variance (or variability) in students' Consecutive Interpreting I CA2 results (R^2_{adj} = 0.234). However, none of the independent variables was significantly related to Consecutive Interpreting I CA2 results ($p > 0.05$).

Model 2. Consecutive Interpreting I CA2 = 63.351 – (2.037 * Amotivation) + (0.938 * Self-Efficacy) – (1.942 * Time/Study Environment) + (1.185 * Effort Regulation)

The four predictors in Model 2, taken together, were significantly associated with Consecutive Interpreting I CA2 results (F (4, 24) = 3.150, p = 0.032). The four predictors together explained 23.5% of the variance in students' Consecutive Interpreting I CA2 results (R^2_{adj} = 0.235). However, none of the independent variables was significantly related to Consecutive Interpreting I CA2 results ($p > 0.05$).

Model 3. Consecutive Interpreting I CA2 = 65.938 – (2.301 * Amotivation) + (1.050 * Self-Efficacy) – (1.328 * Time/Study Environment)

The three predictors in Model 3, taken together, were significantly associated with Consecutive Interpreting I CA2 results (F (3, 25) = 3.644, p = 0.026). The three predictors together explained 22.1% of the variance in students' Consecutive Interpreting I CA2 results (R^2_{adj} = 0.221). However, only amotivation was significantly related to Consecutive Interpreting I CA2 results ($p < 0.05$). Neither self-efficacy nor

time/study environment management was significantly related to Consecutive Interpreting I CA2 results ($p > 0.05$).

Model 4. Consecutive Interpreting I CA2 = 60.475 – (2.375 * Amotivation) + (0.948 * Self-Efficacy)

The two predictors in Model 4, taken together, were significantly associated with Consecutive Interpreting I CA2 results (F (2, 26) = 4.570, p = 0.020). The two predictors together explained 20.3% of the variance in students' Consecutive Interpreting I CA2 results (R^2_{adj} = 0.203). However, only amotivation was significantly related to Consecutive Interpreting I CA2 results ($p < 0.05$), while self-efficacy was not ($p > 0.05$).

Model 5. Consecutive Interpreting I CA2 = 65.169 – (2.674 * Amotivation)

Model 5, where amotivation was the only variable, was significant (F (1, 27) = 6.743, p = 0.015). This final model explained 17% of the variance in students' Consecutive Interpreting I CA2 results (R^2_{adj} = 0.170). With a standardized beta coefficient of -0.447, amotivation was significantly related to students' Consecutive Interpreting I CA2 results ($p < 0.05$). This agreed with correlation results.

6.4.3.1.2 Predicting Simultaneous Interpreting I CA2 Results

A multiple regression analysis was conducted, with the motivational measures, strategy measures and measures of metacognitive knowledge and effort at Time 3 as predictors of Simultaneous Interpreting I CA2 results. The regression was a poor fit (R^2_{adj} = 0.193) and the overall relationship was not significant (F (12, 16) = 1.559, p = 0.201). Despite the fact that the model was overall non-significant, amotivation at Time 3 was found to be a significant predictor of Simultaneous Interpreting I CA2 results (t = -2.329, $p <$ 0.05). Furthermore, the relationship between extrinsic motivation at Time 3 and Simultaneous Interpreting I CA2 results was marginally non-significant (t = -2.050, p = 0.057). The significance of the relationship between self-efficacy at Time 3 (t = 1.883, p

= 0.078) or help-seeking at Time 3 (t = 1.946, p = 0.069) and Simultaneous Interpreting I CA2 results was also suggestive. When I used the 'backward elimination' technique to identify a group of variables that predicted the dependent variable reasonably well, the technique resulted in six significant models ($p < 0.05$):

Model 1. Simultaneous Interpreting I CA2 = 50.688 – (2.631 * Extrinsic Motivation) – (2.306 * Amotivation) + (2.371 * Self-Efficacy) + (1.608 * Metacognitive Knowledge) + (2.064 * Help-Seeking) – (1.179 * Peer Learning for SI)

The six predictors in Model 1, taken together, were significantly associated with Simultaneous Interpreting I CA2 results (F (6, 22) = 2.806, p = 0.035). The six predictors together explained 27.9% of the observed variability in students' Simultaneous Interpreting I CA2 results (R^2_{adj} = 0.279). Of the six independent variables, extrinsic motivation (t = -2.462, $p < 0.05$) and self-efficacy (t = 2.712, $p < 0.05$) were significantly related to Simultaneous Interpreting I CA2 results.

Model 2. Simultaneous Interpreting I CA2 = 58.360 – (2.417 * Extrinsic Motivation) – (2.419 * Amotivation) + (2.449 * Self-Efficacy) + (2.079 * Help-Seeking) – (1.064 * Peer Learning for SI)

The five predictors in Model 2, taken together, were significantly associated with Simultaneous Interpreting I CA2 results (F (5, 23) = 3.261, p = 0.023). The five predictors together explained 28.8% of the observed variability in students' Simultaneous Interpreting I CA2 results (R^2_{adj} = 0.288). Of the five independent variables, extrinsic motivation (t = -2.341, $p < 0.05$) and self-efficacy (t = 2.833, $p < 0.01$) were significantly related to Simultaneous Interpreting I CA2 results, while the relationship between amotivation and Simultaneous Interpreting I CA2 results was marginally non-significant (t = -2.013, p = 0.056).

Model 3. Simultaneous Interpreting I CA2 = 58.315 – (2.060 * Extrinsic Motivation) – (2.240 * Amotivation) + (2.247 * Self-Efficacy) + (1.118 * Help-Seeking)

The four predictors in Model 3, taken together, were significantly associated with Simultaneous Interpreting I CA2 results (F (4, 24) = 3.486, p = 0.022). The four predictors together explained 26.2% of the observed variability in students' Simultaneous Interpreting I CA2 results (R^2_{adj} = 0.262). Of the four independent variables, self-efficacy was significantly related to Simultaneous Interpreting I CA2 results (t = 2.592, $p < 0.05$), and extrinsic motivation's relationship with Simultaneous Interpreting I CA2 results was marginally non-significant (t = -2.027, p = 0.054).

Model 4. Simultaneous Interpreting I CA2 = 59.897 – (1.590 * Extrinsic) – (2.028 * Amotivation) + (2.461 * Self-Efficacy)

The three predictors in Model 4, taken together, were significantly associated with Simultaneous Interpreting I CA2 results (F (3, 25) = 4.062, p = 0.018). The three predictors together explained 24.7% of the observed variability of students' Simultaneous Interpreting I CA2 results (R^2_{adj} = 0.247). Of the three independent variables, self-efficacy was significantly related to Simultaneous Interpreting I CA2 results (t = 2.869, $p < 0.01$).

Model 5. Simultaneous Interpreting I CA2 = 54.574 – (1.357 * Extrinsic Motivation) + (2.614 * Self-Efficacy)

The two predictors in Model 5, taken together, were significantly associated with Simultaneous Interpreting I CA2 results (F (2, 26) = 4.400, p = .023). The two predictors together explained 19.5% of the observed variability in students' Simultaneous Interpreting I CA2 results (R^2_{adj} = 0.195). Only self-efficacy was significantly related to Simultaneous Interpreting I CA2 results (t = 2.966, $p < 0.01$).

Model 6. Simultaneous Interpreting I CA2 = 50.231 + (2.018 * Self-Efficacy)

Model 6, where self-efficacy was the only variable, was significant (F (1, 27) = 6.621, p = 0.016). This final model explained 16.7% of the observed variability in students' Simultaneous Interpreting I CA2 results (R^2_{adj} = 0.167). With a standardized beta coefficient of 0.444, self-efficacy was significantly related to Simultaneous Interpreting I CA2 results (t = 2.573, $p < 0.05$). This agreed with correlation results.

6.4.3.2 Modifiable Learner Factors plus Student Entry Characteristics as Predictors

As the second step in examining how students' motivation, metacognitive knowledge, effort and use of SRL strategies predicted examination results, a multiple regression analysis was conducted on students' Consecutive Interpreting I CA2 results and Simultaneous Interpreting I CA2 results respectively, with all the modifiable learner factors (i.e. motivational measures, strategy measures, measures of metacognitive knowledge and effort) at Time 3 plus students' entry characteristics (i.e. IELTS scores, age) as predictors.

6.4.3.2.1 Predicting Consecutive Interpreting I CA2 Results

A hierarchical regression analysis for 'Effort'. A hierarchical regression analysis was conducted. In the first step of the regression, the average study time outside of class per day at Time 3 was entered into the equation to determine the impact of study time in the absence of the other potential predictors. Next, motivation, metacognitive knowledge, and strategy use at Time 3 were entered into the regression. For the third step, age and IELTS scores were entered. For the final step of the regression, study time (the effort indicator) was removed from the equation. This step allowed us to identify both the variance independently accounted for by effort and the effect of the other predictors when the variance due to effort was not removed from Consecutive Interpreting I CA2 results.

The findings from the analyses can be found in Table 6.30. The results from the first step of the regression indicated that study time alone was not a significant predictor of

Consecutive Interpreting I CA2 results. The one variable model accounted for 0.6% of the variance in Consecutive Interpreting I CA2 (R^2_{adj} = .006), and the model was not significant, F (1, 28) = 1.182, p = .286 (β = .201). When motivation, metacognitive knowledge and strategy use were included in the equation, the model accounted for only 1.6% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .016), and it was not significant (F (12, 16) = 1.038, p = .462). In this model, the independent influence of effort on Consecutive Interpreting I CA2 results was negative (β = -.058, t = -.217, p = .831). At the third step of the regression, the overall model accounted for 58.6% of the variance in Consecutive Interpreting I CA2 (R^2_{adj} = .586), and the model was near-significant (F (17, 7) = 3.002, p = .072). Again, the independent influence of the effort variable was negative (β = -.132, t = -.636, p = .545). When the effort variable was excluded, the regression equation accounted for 61.7% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .617), and the overall relationship was significant (F (16, 8) = 3.419, p = .042).

	Variables entered	**Adjusted R Square**	**ANOVA**	**Sig Predictor**
Step 1	Effort	.006	F(1, 28) = 1.182, p = .286	None
Step 2	Effort, Strategies, Motivation, Knowledge	.016	F(12, 16) = 1.038, p = .462	
Step 3	Effort, Strategies, Motivation, Knowledge, Age, IELTS scores *(All)*	.586	F(17, 7) = 3.002, p = .072	-Amotivation; +Effort regulation; +PeerCI3; +Reading
Step 4	Strategies, Motivation, Knowledge, Age, IELTS scores *(Excluding effort)*	.617	F(16, 8) = 3.419, p = .042 R^2-change = -.007; F-change (1, 7) = .404, p = .545	-Amotivation; +Effort-regulation; +PeerCI3; +Reading

Table 6.30 A hierarchical regression analysis for 'Effort' *(Dependent variable: Consecutive Interpreting I CA2)*

A hierarchical regression analysis for 'Strategies'. A hierarchical regression analysis was conducted. In the first step of the regression, strategies at Time 3 were entered into the equation to determine the impact of strategies in the absence of the other potential predictors. Next, motivation, metacognitive knowledge and effort indicator was entered into the regression. For the third step, age was entered. For the fourth step, age was removed from the equation while IELTS sub-skill scores were entered. For the fifth step, age was entered into the equation again. For the final step of the regression, strategies were removed from the equation. This step allowed us to identify both the variance accounted for by all strategies together and the effect of the other predictors when the variance due to strategies was not removed from Consecutive Interpreting I CA2 results.

The findings from the analyses can be found in Table 6.31. The results from the first step of the regression indicated that none of the strategies was a significant predictor of Consecutive Interpreting I CA2 results. The model accounted for -0.7% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = -.007), and the overall relationship was not significant, F (5, 24) = .962, p = .460. When motivation, metacognitive knowledge, and effort were included in the equation, the model accounted for 1.6% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .016), and the overall model was not significant, F (12, 16) = 1.038, p = .462. None of the strategies was significantly associated with Consecutive Interpreting I CA2 results. When age was entered into the equation, the overall model accounted for -4.2% of the variance in Consecutive Interpreting I CA2 results, and the model was not significant, F (13, 15) = .914, p = .561. None of the strategies was significantly associated with Consecutive Interpreting I CA2 results. When age was removed and IELTS sub-skill scores were entered instead, the overall model accounted for 51% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .518), and the overall relationship was near significant, F (16, 8) = 2.615, p = .085. None of the strategies was significantly associated with Consecutive Interpreting I CA2 results. At the fifth step of the regression, when age was entered into the equation again, the overall model accounted for 58.6% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .586), and the overall relationship was near-significant, F (17, 7) = 3.002, p = .072. Only at this step of the regression did some of the strategy variables, such as effort regulation strategies and peer learning strategies in CI learning, emerge as significant predictors of Consecutive Interpreting I CA2 results. When all strategies were excluded, the regression equation accounted for 37.3% of the variance in Consecutive Interpreting I

CA2 results (R^2_{adj} = .373), and the removal of the strategy variables constituted a decrease in significance of the overall model, F (12, 12) = 2.192, p = .094.

	Variables entered	Adjusted R Square	ANOVA	Sig Predictor
Step 1	Strategies	-.007	F(5, 24) = .962, p = .460	None
Step 2	Strategies, Effort, Motivation, Knowledge	.016	F(12, 16) = 1.038, p = .462	None
Step 3	Strategies, Effort, Motivation, Knowledge, Age	-.042	F(13, 15) = .914, p = .561	None
Step 4	Strategies, Effort, Motivation, Knowledge, IELTS scores	.518	F(16, 8) = 2.615, p = .085	-Amotivation; +Reading;
Step 5	Strategies, Effort, Motivation, Knowledge, Age, IELTS scores *(All)*	.586	F(17, 7) = 3.002, p = .072	-Amotivation; +Effort regulation; +PeerCI3; +Reading
Step 6	Age, IELTS, Motivation, Knowledge, Effort *(Excluding strategies)*	.373	F(12, 12) = 2.192, p = .094 R^2-change = -.193; F-change (5, 7) = 2.236, p = .162	Reading; Speaking (p = 0.054)

Table 6.31 A hierarchical regression analysis for 'Strategies' *(Dependent variable: Consecutive Interpreting I CA2)*

A hierarchical regression analysis for 'Student entry characteristics'. A hierarchical regression analysis was conducted. Student's IELTS sub-skill scores were entered first into the model. Next, age was entered into the equation. For the third step of the regression, all modifiable learner variables, including strategies, effort indicator, motivational variables, and metacognitive knowledge measures, were entered into the

equation. For the final step of the regression, age and IELTS sub-skill scores were removed from the equation. This step allowed us to identify both the variance accounted for by student entry characteristics taken together and the effect of the other predictors when the variance due to these variables was not removed from Consecutive Interpreting I CA2 results.

The findings from the analyses can be found in Table 6.32. The results from the first step of the regression indicated that the four IELTS sub-skill scores, taken together, accounted for 20.2% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .202). The overall relationship was near-significant, F (4, 21) = 2.582, p = .067. Examination of the independent influence of each of the predictors revealed that IELTS reading score and speaking score were significantly and positively associated with Consecutive Interpreting I CA2 results. When age was included in the equation, the model accounted for 19.7% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .197), and the overall relationship was not significant, F (5, 20) = 2.227, p = .092. Nevertheless, IELTS reading score and speaking score remained significantly and positively associated with Consecutive Interpreting I CA2 results. When all the modifiable learner variables were included in the equation, the overall model accounted for 58.6% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .586) and the model was near significant, F (17, 7) = 3.002, p = .072. Examination of the independent influence of each of the predictors revealed that IELTS reading score, effort regulation and peer learning (for CI) were significantly and positively associated with Consecutive Interpreting I CA2 results, while amotivation was significantly and negatively associated with Consecutive Interpreting I CA2 results. However, when age and IELTS sub-skill scores were excluded, the regression equation accounted for only 1.6% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .016) and the model was not significant, F (12, 16) = 1.038, p = .462. The removal of these variables constituted a substantial decrease in the explained variance (R^2-change = -.190), although the decrease in significance of the overall model did not reach a significant level, F-change (5, 7) = 2.210, p = .165. Furthermore, no individual variable was significantly associated with Consecutive Interpreting I CA2 results in this model.

	Variables entered	Adjusted R Square	ANOVA	Sig Predictor
Step 1	IELTS scores	.202	F(4, 21) = 2.582, p = .067	+Reading; +Speaking
	Age	-.034	F(1, 28) = .056, p = .815	None
Step 2	IELTS scores, Age	.197	F(5, 20) = 2.227, p = .092	+Reading; +Speaking
Step 3	Strategies, Effort, Motivation, Knowledge, Age, IELTS scores *(All)*	.586	F(17, 7) = 3.002, p = .072	-Amotivation; +Effort regulation; +Peer CI; +Reading
	IELTS, Motivation, Knowledge, Effort, Strategies *(Excluding 'Age')*	.518	F(16, 8) = 2.615, p = .085 R^2-change = -.040; F-change (1, 7) = 2.315, p = .172	-Amotivation; +Reading
	Motivation, Knowledge, Effort, Strategies, Age *(Excluding ' IELTS')*	-.042	F(13, 15) = .914, p = .561 R^2-change = -.165; F-change (4, 7) = 2.387, p = .149	None
Step 4	Motivation, Knowledge, Effort, Strategies *(Excluding 'Age, IELTS')*	.016	F(12, 16) = 1.038, p = .462 R^2-change = -.190; F-change (5, 7) = 2.210, p = .165	None

Table 6.32 A hierarchical regression analysis for 'Student entry characteristics' *(Dependent variable: Consecutive Interpreting I CA2)*

A hierarchical regression analysis for 'Motivation'. A hierarchical regression analysis was conducted. In the first step of the regression, amotivation was entered into the equation to determine its impact in the absence of the other potential predictors. Next,

intrinsic motivation and extrinsic motivation were entered into the regression. For the third step, self-efficacy and control beliefs were entered. For the fourth step, other variables that were anticipated to influence Consecutive Interpreting performance were entered. These variables included age, IELTS sub-skill scores, motivational variables, metacognitive knowledge, effort indicator, and strategies. For the fifth step, self-efficacy and control beliefs were removed from the equation. This step allowed us to identify both the variance accounted for by self-efficacy and control beliefs together and the effect of the other predictors when the variance due to these variances was not removed from Consecutive Interpreting I CA2 results. For the sixth step of the equation, self-efficacy and control beliefs were returned into the equation while types of motivation (i.e. intrinsic motivation, extrinsic motivation, and amotivation) were removed. This step allowed us to identify both the variance accounted for by all types of motivation together and the effect of the other predictors when the variance due to types of motivation was not removed from Consecutive Interpreting I CA2 results. For the final step of the regression, all motivational variables were removed from the equation. This step allowed me to identify both the variance accounted for by all motivational types/beliefs taken together and the effect of the other predictors when the variance due to motivational types/beliefs was not removed from Consecutive Interpreting I CA2 results.

The findings from the analyses can be found in Table 6.33. The results from the first step of the regression indicated that amotivation alone was a significant predictor of Consecutive Interpreting I CA2 results, F (1, 28) = 6.055, p = .020 (β = -.422). This agreed with correlation results. Amotivation alone explained 14.8% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .148). However, when intrinsic motivation and extrinsic motivation were included in the equation, the model accounted for 12.4% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .124). The overall relationship was not significant, F (3, 26) = 2.370, p = .094, although amotivation remained a significant predictor of Consecutive Interpreting I CA2 results. When self-efficacy and control beliefs were entered, the model accounted for 7.5% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .075), and the overall relationship was not significant, F (5, 24) = 1.469, p = .237. No significant individual predictor was found in this model. At the fourth step of the regression, when all other variables were entered, the overall model accounted for 58.6% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .586). The overall relationship was

near-significant, F (17, 7) = 3.002, p = .072. Examination of the independent influence of each of the predictors revealed that IELTS reading score, effort regulation, peer learning (for CI) were significantly and positively associated with Consecutive Interpreting I CA2 results, while amotivation was significantly and negatively associated with Consecutive Interpreting I CA2 results. At the fifth step of the regression, when self-efficacy and control beliefs were excluded, the regression equation accounted for 58.3% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .583), and the overall relationship was significant, F (15, 9) = 3.236, p = .040. Examination of the independent influence of each of the predictors revealed that IELTS reading score, effort regulation and peer learning (for CI) were significantly and positively associated with Consecutive Interpreting I CA2 results, while amotivation and help-seeking were significantly and negatively associated with Consecutive Interpreting I CA2 results. At the sixth step of the regression, when types of motivation (i.e., intrinsic motivation, extrinsic motivation and amotivation) were excluded, the regression equation accounted for -20.4% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = -.204), and the overall relationship was not significant, F (14, 10) = .709, p = .730. The removal of motivational types constituted a substantial decrease in the explained variance (R^2-change = .381), as well as a significant decrease in significance of the overall model, F-change (3, 7) = 7.373, p = .014. That is to say, motivational variables together make a significant contribution to the overall model. No individual variable was a significant predictor of Consecutive Interpreting I CA2 results at this step of the regression. Finally, when all motivational variables were excluded, the regression equation accounted for -6.3% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = -.063), and the overall relationship was not significant, F (12, 12) = .882, p = .585. The removal of motivational variables constituted a significant decrease in the explained variance (R^2-change = .411) as well as in the significance of the overall model, F-change (5, 7) = 4.769, p = .032. At this step of the regression, no individual variable was a significant predictor of Consecutive Interpreting I CA2 results.

	Variables entered	Adjusted R Square	ANOVA	Sig Predictor
Step 1	Amotivation	.148	F(1, 28) = 6.055, p = .020	-Amotivation (β = -.422)
Step 2	Amotivation, Intrinsic motivation, Extrinsic motivation	.124	F(3, 26) = 2.370, p = .094	-Amotivation
	Self-efficacy	.051	F(1, 28) = 2.546, p = .122	None
	Self-efficacy, Control beliefs	.016	F(2, 27) = 1.229, p = .309	None
Step 3	Amotivation, Intrinsic motivation, Extrinsic motivation, Self-efficacy, Control beliefs	.075	F(5, 24) = 1.469, p = .237	-Amotivation (p = .061)
	Motivation, Knowledge, Effort, Strategies	.016	F(12, 16) = 1.038, p = .462	None
Step 4	Age, IELTS, Motivation, Knowledge, Effort, Strategies *(All)*	.586	F(17, 7) = 3.002, p = .072	-Amotivation; +Effort regulation; +Peer CI; +Reading
Step 5	Age, IELTS, Knowledge, Effort, Strategies, Types of motivation *(Excluding "Self-efficacy and Control beliefs")*	.583	F(15, 9) = 3.236, p = .040 R^2-change = -.036; F-change (2, 7) = 1.038, p = .403	-Amotivation; +Effort regulation; -Help-seeking; +Peer CI; +Reading
Step 6	Age, IELTS, Knowledge, Effort, Strategies, Self-efficacy and Control beliefs *(Excluding "Types of motivation")*	-.204	F(14, 10) = .709, p = .730 R^2-change = -.381; F-change (3, 7) = 7.373, p = .014	None
Step 7	Age, IELTS, Knowledge, Effort, Strategies *(Excluding "Motivation")*	-.063	F(12, 12) = .882, p = .585 R^2-change = -.411; F-change (5, 7) = 4.769, p = .032	None

Table 6.33 A hierarchical regression analysis for 'Motivation' *(Dependent variable: Consecutive Interpreting I CA2)*

A hierarchical regression analysis for 'Metacognitive knowledge'. A multiple regression analysis was conducted. In the first step of the regression, metacognitive knowledge was entered into the equation to determine the impact of metacognitive knowledge in the absence of the other potential predictors. Next, other variables that it was anticipated could influence Consecutive Interpreting performance were entered. For the third and final step of the regression, metacognitive knowledge was removed from the equation. This step allowed us to identify both the variance independently accounted for by metacognitive knowledge and the effect of the other predictors when the variance due to metacognitive knowledge was not removed from Consecutive Interpreting I CA2 results.

The findings from the analyses can be found in Table 6.34. The results from the first step of the regression indicated that metacognitive knowledge alone was not a significant predictor of Consecutive Interpreting I CA2 results, F (1, 27) = 1.761, p = .196 (β = .247). When all other variables were included in the equation, the model accounted for 58.6% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .586), and the overall relationship was near significant, F (17, 7) = 3.002, p = .072. Examination of the independent influence of each of the predictors revealed that IELTS reading score, effort regulation and peer learning (for CI) were significantly and positively associated with Consecutive Interpreting I CA2 results, while amotivation was significantly and negatively associated with Consecutive Interpreting I CA2 results. When metacognitive knowledge was excluded, the regression equation accounted for 58.1% of the variance in Consecutive Interpreting I CA2 results (R^2_{adj} = .581), and the overall relationship was significant, F (16, 9) = 3.165, p = .042. Examination of the independent influence of each of the predictors revealed that IELTS reading score, effort regulation and peer learning (for CI) were significantly and positively associated with Consecutive Interpreting I CA2 results, while amotivation, time/study environment management and help-seeking were significantly and negatively associated with Consecutive Interpreting I CA2 results.

	Variables entered	Adjusted R Square	ANOVA	Sig Predictor
Step 1	Metacognitive knowledge	.026	F(1, 27) = 1.761, p = .196	None (β = .247)
Step 2	Age, IELTS, Motivation, Knowledge, Effort, Strategies *(All)*	.586	F(17, 7) = 3.002, p = .072	-Amotivation; +Effort regulation; +Peer CI; +Reading
Step 3	Age, IELTS, Motivation, Effort, Strategies *(Excluding "Knowledge")*	.581	F(16, 9) = 3.165, p = .042 R^2-change = -.032; F-change (1, 7) = 1.864, p = .214	-Amotivation; -Time & Study Environment; +Effort regulation; -Help-seeking; +Peer CI; +Reading

Table 6.34 A hierarchical regression analysis for 'Metacognitive knowledge'
(Dependent variable: Consecutive Interpreting I CA2)

6.4.3.2.2 Predicting Simultaneous Interpreting I CA2 Results

A hierarchical regression analysis for 'Effort'. A hierarchical regression analysis was conducted. In the first step of the regression, the average study time outside of class per day (the effort indicator) was entered into the equation to determine the impact of study time in the absence of the other potential predictors. Next, all other variables that it was anticipated would influence Simultaneous Interpreting performance were entered. These variables included strategies, motivational variables, metacognitive knowledge, age, and IELTS sub-skill scores. For the final step of the regression, study time was removed from the equation. This step allowed me to identify both the variance independently accounted for by study time and the effect of the other predictors when the variance due to study time was not removed from Simultaneous Interpreting I CA2 results.

The findings from the analyses can be found in Table 6.35. The results from the first step of the regression indicated that study time alone was not a significant predictor of Simultaneous Interpreting I CA2 results, F (1, 28) = 1.924, p = .176 (β = .254). When all other variables were included in the equation, the model accounted for 65.1% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .651), and the overall relationship was significant, F (17, 7) = 3.630, p = .045. Examination of the independent influence of each of the predictors revealed that study time was still not a significant predictor of Simultaneous Interpreting I CA2 results. However, help-seeking was a significant positive predictor of Simultaneous Interpreting I CA2 results. IELTS Speaking score was a near-significant positive predictor. On the other hand, age and IELTS Writing score were significant negative predictors of Simultaneous Interpreting I CA2 results. When study time was excluded, the regression equation accounted for 66.1% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .661), and the overall relationship remained significant, F (16, 8) = 3.927, p = .028. Examination of the independent influence of each of the predictors revealed that help-seeking was a significant positive predictor of Simultaneous Interpreting I CA2 results, while IELTS Speaking score was a near-significant positive predictor. On the other hand, amotivation, age and IELTS Writing score were significant negative predictors of Simultaneous Interpreting I CA2 results.

	Variables entered	Adjusted R Square	ANOVA	Sig Predictor
Step 1	Effort	.031	F(1, 28) = 1.924, p = .176	None (β = .254)
	Effort, Strategies, Motivation, Knowledge	.193	F(12, 16) = 1.559, p = .201	-Amotivation;
Step 2	Effort, Strategies, Motivation, Knowledge, Age, IELTS scores *(All)*	.651	F(17, 7) = 3.630, p = .045	-Age; -Writing; +Speaking (p=0.052); +Help-seeking
Step 3	Strategies, Motivation, Knowledge, Age, IELTS scores *(Excluding effort)*	.661	F(16, 8) = 3.927, p = .028 R^2-change = -.011; F-change (1, 7) = .760, p = .412	-Amotivation; +Help-seeking; -Age; -Writing; + Speaking (p = 0.058)

Table 6.35 A hierarchical regression analysis for 'Effort' *(Dependent variable: Simultaneous Interpreting I CA2)*

A hierarchical regression analysis for 'Strategies'. A hierarchical regression analysis was conducted. In the first step of the regression, strategies were entered into the equation to determine the impact of strategies in the absence of the other potential predictors. Next, other modifiable learner variables (i.e. study time, motivational variables and metacognitive knowledge) were entered into the regression. For the third step, age was entered. For the fourth step, age was removed from the equation while IELTS sub-skill scores were entered. For the fifth step, age was returned into the equation. For the final step of the regression, strategies were removed from the equation. This step allowed me to identify both the variance accounted for by all strategies together and the effect of the other predictors when the variance due to strategies was not removed from Simultaneous Interpreting I CA2 results.

The findings from the analyses can be found in Table 6.36. The results from the first step of the regression indicated that none of the individual strategies was a significant predictor of Simultaneous Interpreting I CA2 results. The strategies taken together

accounted for -8.2% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = -.082), and the overall relationship was not significant, F (5, 24) = .561, p = .729. When study time, motivational variables and metacognitive knowledge were included in the equation, the model accounted for 19.3% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .193). The overall relationship was not significant, F (12, 16) = 1.559, p = .201. Examination of the independent influence of each of the predictors revealed that amotivation was the only significant predictor of Simultaneous Interpreting I CA2 results (β = -.457), such that a higher level of amotivation was associated with a lower Simultaneous Interpreting I CA2 result. None of the individual strategies was a significant predictor of Simultaneous Interpreting I CA2 results in this model. When age was entered into the equation, the model accounted for 24.8% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .248), and the overall relationship was not significant, F (13, 15) = 1.710, p = .160. Examination of the independent influence of each of the predictors revealed that self-efficacy was a significant predictor of Simultaneous Interpreting I CA2 results (β = .650), such that a higher level of self-efficacy was associated with a higher Simultaneous Interpreting I CA2 result. In addition, both extrinsic motivation and amotivation were significantly and negatively associated with Simultaneous Interpreting I CA2 results. In this model, none of the individual strategies was a significant predictor of Simultaneous Interpreting I CA2 results. At the fourth step, the model accounted for 34.7% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .347), and the overall relationship was not significant, F (16, 8) = 1.797, p = .202. Examination of the independent influence of each of the predictors revealed that there was no significant predictor of Simultaneous Interpreting I CA2 results in this model. At the fifth step, when both age and IELTS sub-skill scores as well as all modifiable learner variables were included in the regression equation, the overall model accounted for 65.1% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .651), and the overall relationship was significant, F (17, 7) = 3.630, p = .045. Examination of the independent influence of each of the predictors revealed that help-seeking emerged as a significant predictor of Simultaneous Interpreting I CA2 results (β = 1.132, p = .012). The more a student used help-seeking strategies, the higher his/her Simultaneous Interpreting exam result. IELTS Speaking score was a near-significant positive predictor of Simultaneous Interpreting I CA2 results (β = .529, p = .052). On the other hand, age and IELTS Writing score were significant negative predictors of Simultaneous Interpreting I CA2 results. When strategies were excluded, the regression equation accounted for 38.9% of the variance in

Simultaneous Interpreting I CA2 results (R^2_{adj} = .389), and the overall relationship was not significant, F (12, 12) = 2.273, p = .085. Examination of the independent influence of each of the predictors revealed that amotivation was the only significant predictor of Simultaneous Interpreting I CA2 results, such that a higher level of amotivation was associated with a lower Simultaneous Interpreting exam result.

	Variables entered	**Adjusted R Square**	**ANOVA**	**Sig Predictor**
Step 1	Strategies	-.082	F(5, 24) = .561, p = .729	None
Step 2	Strategies, Effort, Motivation, Knowledge	.193	F(12, 16) = 1.559, p = .201	-Amotivation; (β = -.457)
Step 3	Strategies, Effort, Motivation, Knowledge, Age	.248	F(13, 15) = 1.710, p = .160	-Extrinsic motivation; -amotivation; +self-efficacy;
Step 4	Strategies, Effort, Motivation, Knowledge, IELTS scores	.347	F(16, 8) = 1.797, p = .202	None
Step 5	Strategies, Effort, Motivation, Knowledge, Age, IELTS scores *(All)*	.651	F(17, 7) = 3.630, p = .045	-Age; -Writing; +Speaking (p=0.052); +Help-seeking
Step 6	Age, IELTS, Motivation, Knowledge, Effort *(Excluding strategies)*	.389	F(12, 12) = 2.273, p = .085 R^2-change = -.204; F-change (5, 7) = 2.798, p = .106	-Amotivation

Table 6.36 A hierarchical regression analysis for 'Strategies' *(Dependent variable: Simultaneous Interpreting I CA2)*

A hierarchical regression analysis for 'Student entry characteristics'. A hierarchical regression analysis was conducted. In the first step of the regression, IELTS sub-skill scores were entered into the equation to determine the impact of students' prior knowledge and skills in the absence of the other potential predictors. Next, IELTS sub-skill scores were removed from the equation, and age was entered instead in order to determine the impact of age in the absence of the other potential predictors. For the third step, both age and IELTS sub-skill scores were entered into the equation to determine the impact of student entry characteristics in the absence of the other potential predictors. For the fourth step, all modifiable learner variables were entered. For the fifth step, age was removed from the equation. This step allowed us to identify both the variance independently accounted for by age and the effect of the other predictors when the variance due to age was not removed from Simultaneous Interpreting I CA2 results. For the sixth step, age was returned into the equation while IELTS sub-skill scores were removed from the equation. This step allowed us to identify both the variance accounted for by all IELTS sub-skill scores together and the effect of the other predictors when the variance due to IELTS sub-skill scores was not removed from Simultaneous Interpreting I CA2 results. For the final step of the regression, both age and IELTS sub-skill scores were removed from the equation. This step allowed us to identify both the variance accounted for by student entry characteristics together and the effect of the other predictors when the variance due to student entry characteristics was not removed from Simultaneous Interpreting I CA2 results.

The findings from the analyses can be found in Table 6.37. The results from the first step of the regression indicated that the four IELTS sub-skill scores, taken together, accounted for 18.5% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .185), and the overall relationship was near significant, F (4, 21) = 2.422, p = .080. Examination of the independent influence of each of the predictors revealed that IELTS Speaking score was the only significant predictor of Simultaneous Interpreting I CA2 results (β = .409, p = .046), such that a higher IELTS Speaking score was associated with a higher Simultaneous Interpreting I CA2 result. When age was entered into the equation as the only variable, the regression results indicated that age alone was not a significant predictor of Simultaneous Interpreting I CA2 results, F (1, 28) = 2.578, p = .120 (β = -.290). At the third step of the regression, when both age and IELTS sub-skill scores were entered into the equation, the model accounted for 45.4% of the

variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .454), and the overall relationship was significant, F (5, 20) = 5.151, p = .003. Examination of the independent influence of each of the predictors revealed that IELTS Reading score and Speaking score were significantly and positively associated with Simultaneous Interpreting I CA2 results, while age and IELTS Writing score were significantly and negatively related with Simultaneous Interpreting I CA2 results. At the fourth step of the regression, when all modifiable learner variables were entered into the equation, the overall model accounted for 65.1% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .651), and the overall relationship remained significant, F (17, 7) = 3.630, p = .045. Examination of the independent influence of each of the predictors revealed that help-seeking emerged as a significant predictor of Simultaneous Interpreting I CA2 results (β = 1.132, p = .012). The more a student used help-seeking strategies, the better his/her Simultaneous Interpreting exam result. IELTS Speaking score was a near-significant positive predictor of Simultaneous Interpreting I CA2 results (β = .529, p = .052). On the other hand, age and IELTS Writing score were significant negative predictors of Simultaneous Interpreting I CA2 results. At the fifth step, when age was excluded, the regression equation accounted for 34.7% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .347), and the overall relationship was not significant, F (16, 8) = 1.797, p = .202. The removal of age constituted a substantial decrease in the explained variance (R^2-change = -.116) as well as a significant decrease in the significance of the overall model, F-change (1, 7) = 7.954, p = .026. Examination of the independent influence of each of the predictors revealed that there was no significant predictor of Simultaneous Interpreting I CA2 results in this model. At the sixth step, when age was returned into the equation while IELTS sub-skill scores were removed from it, the model accounted for 24.8% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .248), and the overall relationship was not significant, F (13, 15) = 1.710, p = .160. The removal of IELTS sub-skill scores constituted a substantial decrease in the explained variance (R^2-change = -.282) as well as a significant decrease in the significance of the overall model, F-change (4, 7) = 4.840, p = .034. Examination of the independent influence of each of the predictors revealed that self-efficacy was a significant predictor of Simultaneous Interpreting I CA2 results (β = .650), such that a higher level of self-efficacy was associated with a higher Simultaneous Interpreting I CA2 result. In addition, both extrinsic motivation and amotivation were significantly and negatively associated with Simultaneous Interpreting I CA2 results. Finally, when both age and IELTS sub-skill scores were excluded, the regression equation accounted

for 19.3% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .193). The overall relationship was not significant, F (12, 16) = 1.559, p = .201. The removal of age and IELTS sub-skill scores constituted a substantial decrease in the explained variance (R^2-change = -.318) as well as a significant decrease in the significance of the overall model, F-change (5, 7) = 4.369, p = .040. Examination of the independent influence of each of the predictors revealed that amotivation was the only significant predictor of Simultaneous Interpreting I CA2 results (β = -.457), such that a higher level of amotivation was associated with a lower Simultaneous Interpreting I CA2 result.

	Variables entered	**Adjusted R Square**	**ANOVA**	**Sig Predictor**
Step 1	IELTS scores	.185	F(4, 21) = 2.422, p = .080	+Speaking (β = .409)
Step 2	Age	.052	F(1, 28) = 2.578, p = .120	None (β = -.290)
Step 3	IELTS scores, Age	.454	F(5, 20) = 5.151, p = .003	-Age; +Reading; -Writing; +Speaking
Step 4	Strategies, Effort, Motivation, Knowledge, Age, IELTS scores *(All)*	.651	F(17, 7) = 3.630, p = .045	-Age; -Writing; +Speaking (p=0.052); +Help-seeking
Step 5	IELTS, Motivation, Knowledge, Effort, Strategies *(Excluding "Age")*	.347	F(16, 8) = 1.797, p = .202 R^2-change = -.116; F-change (1, 7) = 7.954, p = .026	None
Step 6	Motivation, Knowledge, Effort, Strategies, Age *(Excluding "IELTS")*	.248	F(13, 15) = 1.710, p = .160 R^2-change = -.282; F-change (4, 7) = 4.840, p = .034	-Extrinsic M; -Amotivation; +Self-efficacy

Step 7	Motivation, Knowledge, Effort, Strategies *(Excluding "Age, IELTS")*	.193	F(12, 16) = 1.559, p = .201 R^2-change = -.318; F-change (5, 7) = 4.369, p = .040	-Extrinsic M (p = .057); -Amotivation

Table 6.37 A hierarchical regression analysis for 'Student entry characteristics' *(Dependent variable: Simultaneous Interpreting I CA2)*

A hierarchical regression analysis for 'Motivation'. A hierarchical regression analysis was conducted. In the first step of the regression, self-efficacy was entered into the equation to determine the impact of self-efficacy in the absence of the other potential predictors. Next, control beliefs were entered into the regression. For the third step, types of motivation (i.e. intrinsic motivation, extrinsic motivation, and amotivation) were entered. For the fourth step, other modifiable learner variables (i.e. metacognitive knowledge, strategies and study time) as well as student entry characteristics (i.e., age and IELTS sub-skill scores) were entered. For the fifth step, self-efficacy and control beliefs were removed from the equation. This step allowed us to identify both the variance accounted for by self-efficacy and control beliefs together and the effect of the other predictors when the variance due to self-efficacy and control beliefs was not removed from Simultaneous Interpreting I CA2 results. For the sixth step, self-efficacy and control beliefs were put back into the equation, while types of motivation were removed instead. This step allowed us to identify both the variance accounted for by all types of motivation together and the effect of the other predictors when the variance due to types of motivation was not removed from Simultaneous Interpreting I CA2 results. For the final step of the regression, all motivational variables (i.e. types of motivation, self-efficacy and control beliefs) were removed from the equation. This step allowed me to identify both the variance accounted for by all motivational variables together and the effect of the other predictors when the variance due to these variables was not removed from Simultaneous Interpreting I CA2 results.

The findings from the analyses can be found in Table 6.38. The results from the first step of the regression indicated that self-efficacy alone was a near-significant predictor of Simultaneous Interpreting I CA2 results, F (1, 28) = 4.050, p = .054 (β = .355), such

that a higher level of self-efficacy was associated with a higher Simultaneous Interpreting I CA2 result. When control beliefs were included in the equation, the model accounted for 7.2% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .072), and the overall relationship was not significant, F (2, 27) = 2.125, p = .139. Self-efficacy remained a near-significant positive predictor of Simultaneous Interpreting I CA2 results. At the third step of the regression, with types of motivation included in the equation, the overall model accounted for 7.6% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .076), and the overall relationship was not significant, F (5, 24) = 1.475, p = .235. Examination of the independent influence of each of the predictors revealed that self-efficacy was the only significant predictor of Simultaneous Interpreting I CA2 results, such that a higher level of self-efficacy was associated with a higher Simultaneous Interpreting I CA2 result. At the fourth step of the regression, when all variables are included in the equation, the overall model accounted for 65.1% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .651), and the overall relationship was significant, F (17, 7) = 3.630, p = .045. Examination of the independent influence of each of the predictors revealed that help-seeking emerged as a significant predictor of Simultaneous Interpreting I CA2 results (β = 1.132, p = .012). The more a student used help-seeking strategies, the higher his/her Simultaneous Interpreting exam result. IELTS Speaking score was a near-significant positive predictor of Simultaneous Interpreting I CA2 results (β = .529, p = .052). On the other hand, age and IELTS Writing score were significant negative predictors of Simultaneous Interpreting I CA2 results. At the fifth step of the regression, when self-efficacy and control beliefs were excluded, the regression equation remained significant (F (15, 9) = 3.882, p = .023) and accounted for 64.3% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .643). Examination of the independent influence of each of the predictors revealed that help-seeking was a significant predictor of Simultaneous Interpreting I CA2 results. The more a student used help-seeking strategies, the better his/her Simultaneous Interpreting exam result. In addition, age, IELTS Writing score, as well as amotivation were significantly and negatively associated with Simultaneous Interpreting I CA2 results. At the sixth step of the regression, when types of motivation were removed instead, the overall model remained significant (F (14, 10) = 2.955, p = .045) and accounted for 53.3% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .533). Examination of the independent influence of each of the predictors revealed that students' use of time/study environment management strategies and help-seeking strategies, as well as their IELTS Speaking

scores, were significant positive predictors of Simultaneous Interpreting I CA2 results. The more they used time/study environment management strategies or help-seeking strategies, the higher their performance on Simultaneous Interpreting I CA2. The higher a student's IELTS Speaking score, the higher his or her performance on Simultaneous Interpreting I CA2. In addition, age and IELTS Writing score, as well as metacognitive knowledge, were significant negative predictors of Simultaneous Interpreting I CA2 results. The older a student, the lower his or her performance on Simultaneous Interpreting I CA2. The higher a student's IELTS Writing score, the lower his or her Simultaneous Interpreting I CA2 result. The higher a student's level of metacognitive awareness, the lower his or her performance on Simultaneous Interpreting I CA2. Finally, when all motivational variables were excluded, the regression equation accounted for 44.7% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .447), and the overall relationship was near significant, F (12, 12) = 2.617, p = .054. Although it resulted in a nontrivial decrease in the explained variance (R^2-change = .175), the removal of motivational variables did not constitute a significant change in the significance of the overall model, F-change (5, 7) = 2.399, p = .143). Examination of the independent influence of each of the predictors revealed that IELTS Speaking score and the use of help-seeking strategies were near-significant positive predictors of Simultaneous Interpreting I CA2 results, while age and IELTS Writing score were significant negative predictors.

	Variables entered	**Adjusted R Square**	**ANOVA**	**Sig Predictor**
Step 1	Self-efficacy	.095	F(1, 28) = 4.050, p = .054	+Self-efficacy (p = .054) (β = .355)
Step 2	Self-efficacy, Control beliefs	.072	F(2, 27) = 2.125, p = .139	+Self-efficacy (p = .054)
	Amotivation	.039	F(1, 28) = 2.189, p = .150	None
	Amotivation, Intrinsic motivation, Extrinsic motivation	-.029	F(3, 26) = .731, p = .543	None
Step 3	Self-efficacy, Control beliefs, Amotivation, Intrinsic	.076	F(5, 24) = 1.475, p = .235	+Self-efficacy

	motivation, Extrinsic motivation			
	Motivation, Knowledge, Effort, Strategies	.193	F(12, 16) = 1.559, p = .201	-Amotivation;
Step 4	Age, IELTS, Motivation, Knowledge, Effort, Strategies *(All)*	.651	F(17, 7) = 3.630, p = .045	-Age; -Writing; +Speaking (p=0.052); +Help-seeking
Step 5	Age, IELTS, Knowledge, Effort, Strategies, Types of motivation *(Excluding "Self-efficacy and Control beliefs")*	.643	F(15, 9) = 3.882, p = .023 R^2-change = -.032; F-change (2, 7) = 1.099, p = .385	-Amotivation; +Help-seeking; -Age; -Writing
Step 6	Age, IELTS, Knowledge, Effort, Strategies, Self-efficacy and Control beliefs *(Excluding "Types of motivation")*	.533	F(14, 10) = 2.955, p = .045 R^2-change = -.093; F-change (3, 7) = 2.125, p = .185	-Knowledge; +Time & Environ; +Help-seeking; -Age; -Writing; +Speaking;
Step 7	Age, IELTS, Knowledge, Effort, Strategies *(Excluding "Motivation")*	.447	F(12, 12) = 2.617, p = .054 R^2-change = -.175; F-change (5, 7) = 2.399, p = .143	+Help-seeking (p = .051); -Writing; +Speaking (p = .052); -Age

Table 6.38 A hierarchical regression analysis for 'Motivation' *(Dependent variable: Simultaneous Interpreting I CA2)*

A hierarchical regression analysis for 'Metacognitive knowledge'. A hierarchical regression analysis was conducted. In the first step of the regression, metacognitive knowledge was entered into the equation to determine the impact of study time in the absence of the other potential predictors. Next, other modifiable learner variables (i.e. metacognitive knowledge, strategies and study time) as well as student entry characteristics (i.e. age and IELTS sub-skill scores) were entered. For the final step, metacognitive knowledge was removed from the equation. This step allowed me to identify both the variance independently accounted for by metacognitive knowledge and

the effect of the other predictors when the variance due to metacognitive knowledge was not removed from Simultaneous Interpreting I CA2 results.

The findings from the analyses can be found in Table 6.39. The results from the first step of the regression indicated that metacognitive knowledge alone was not a significant predictor of Simultaneous Interpreting I CA2 results, F (1, 27) = 1.432, p = .242 (β = .224). When all variables were included in the equation, the overall model accounted for 65.1% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .651), and the overall relationship was significant, F (17, 7) = 3.630, p = .045. Examination of the independent influence of each of the predictors revealed that help-seeking emerged as a significant predictor of Simultaneous Interpreting I CA2 results (β = 1.132, p = .012), such that more use of help-seeking strategies was associated with a higher Simultaneous Interpreting I CA2 result. IELTS Speaking score was a near-significant positive predictor of Simultaneous Interpreting I CA2 results (β = .529, p = .052), such that a higher IELTS Speaking score was associated with a higher Simultaneous Interpreting I CA2 result. On the other hand, age and IELTS Writing score were significant negative predictors of Simultaneous Interpreting I CA2 results. In other words, the older a student, the lower his or her performance on Simultaneous Interpreting I CA2; the higher a student's IELTS Writing score, the lower his or her Simultaneous Interpreting I CA2 result. When metacognitive knowledge was excluded, the regression equation accounted for 54.9% of the variance in Simultaneous Interpreting I CA2 results (R^2_{adj} = .549), and the overall relationship was near-significant, F (16, 9) = 2.898, p = .055. Examination of the independent influence of each of the predictors revealed that help-seeking was a significant predictor of Simultaneous Interpreting I CA2 results (β = .890, p = .031), such that more use of this particular strategy was associated with a higher Simultaneous Interpreting I CA2 result. In addition, amotivation was also a significant predictor of Simultaneous Interpreting I CA2 results (β = -.423, p = .036), such that a higher level of amotivation was associated with a lower Simultaneous Interpreting I CA2 result. IELTS Writing score was also a significant predictor of Simultaneous Interpreting I CA2 results (β = -.513, p = .024), such that a higher writing score was associated with a lower Simultaneous Interpreting I CA2 result. Furthermore, age was a near-significant predictor of Simultaneous Interpreting I CA2 results (β = -.403, p = .056), such that an older age was associated with a lower Simultaneous Interpreting I CA2 result.

	Variables entered	**Adjusted R Square**	**ANOVA**	**Sig Predictor**
Step 1	Metacognitive knowledge	.015	F(1, 27) = 1.432, p = .242	None (β = .224)
Step 2	Age, IELTS, Motivation, Knowledge, Effort, Strategies *(All)*	.651	F(17, 7) = 3.630, p = .045	-Age; -Writing; +Speaking (p=0.052); +Help-seeking
Step 3	Age, IELTS, Motivation, Effort, Strategies *(Excluding "Knowledge")*	.549	F(16, 9) = 2.898, p = .055 R^2-change = -.072; F-change (1, 7) = 4.947, p = .061	-Amotivation; +Help-seeking; -Writing; -Age (p = 0.056)

Table 6.39 A hierarchical regression analysis for 'Metacognitive knowledge' *(Dependent variable: Simultaneous Interpreting I CA2)*

Chapter 7

Discussion

7.1 Introduction

This chapter presents an analysis of the findings set out in Chapter 6. The relationships of the statistical results are discussed and implications are explored. The primary focus of the discussion is on Stage-1 data, while Stage 2 is illustrative.

7.2 The Development of Modifiable Learner Variables

7.2.1 Motivation

The present findings concerning different aspects of student motivation, including types of motivation and self-efficacy, as well as control beliefs for learning, provide empirical support for the multi-dimensional view of motivation taken by social cognitive models of motivation (Schunk, Pintrich & Meece, 2008). Students who reported a high level of intrinsic motivation also reported a high level of identified regulation, particularly at Time 2 and Time 3. In other words, the inherent interest/enjoyment and the usefulness of Chinese/English interpreting are both underlying motives for students' studying interpreting. Furthermore, I also found a significant positive correlation between identified regulation and self-efficacy, which means that students who found studying interpreting useful or important were also likely to have confidence in their ability to learn interpreting well. Our findings suggest that students were motivated in multiple ways for the learning of Chinese/English interpreting, and that a variety of motivational components combine to produce a motivational pattern or profile for the sample of students.

According to self-determination theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2000, 2002), intrinsic motivation, identified regulation and amotivation are three types of motivation which vary in terms of their level of self-determination (i.e. the extent to which a behaviour is freely endorsed by individuals). The present results revealed that

students reported a fairly high average level of both intrinsic motivation and identified regulation as reasons for studying Chinese/English interpreting prior to the start of their course. Intrinsic motivation entails studying interpreting for reasons inherent in it, such as pleasure and satisfaction. Identified regulation is a type of motivation where students study interpreting because they personally find it important. At the same time, I found that students scored more highly on identified regulation than on intrinsic motivation. That is to say, in terms of their underlying motive for learning interpreting, these students were more focused on the usefulness of learning interpreting than on the inherent interest and pleasure induced by learning it. These results are consistent with previous findings on students' motivations for choosing university courses, which indicated that the most frequent kind of motivation is extrinsic motivation (Newstead, Franklyn-Stokes & Armstead, 1996; Kelly, 2005). On the other hand, some students did report a certain degree of amotivation prior to the start of their course, but the mean value of all students' initial reported amotivation was low in the present sample. Taken together, these results for types of motivation provide empirical evidence regarding the profile of student motivation on entry. It is encouraging to find that, prior to the start of their course, the students as a group displayed an autonomous profile (Ratelle et al., 2007), evidenced by high levels of intrinsic motivation (M = 5.18 on a 7-point scale) and identified regulation (M = 5.81 on a 7-point scale) and low levels of amotivation (M = 1.38 on a 7-point scale).

Defined as individuals' beliefs about their capacities for learning or performing actions at designated levels (Schunk, Pintrich & Meece, 2008: 379), self-efficacy is one of the most important motivational beliefs for student achievement (Linnenbrink & Pintrich, 2002; see also 4.3.2). The students were on average slightly confident about their ability to learn interpreting successfully prior to the start of the course (M = 4.92 on a 7-point scale).

The present data provide considerable evidence concerning the development of student motivation over the course of one academic year. In general, I found that, over time, students' average levels of intrinsic motivation and identified regulation declined, but the decline was more rapid in identified regulation than in intrinsic motivation, as intrinsic/personal interests are often difficult to change (Linnenbrink & Pintrich, 2003). In line with this trend of declining motivation, the number of students who reported some level of amotivation increased. This suggests an increasing perception of noncontingency between behaviours and outcomes and a growing sense of learned

helplessness over time (Ryan & Deci, 2000; Schunk, Pintrich & Meece, 2008). In addition, students' average level of confidence in their ability to learn interpreting successfully decreased over time. While at the outset students were slightly confident about their abilities and skills, towards the end of the academic year they became somewhat neutral or unsure. Similarly, there was a slight average decrease in students' expectations about their ability to control the outcomes of learning from the end of Semester One to the end of Semester Two. This general trend of decreasing motivation that I found among interpreting students has been well documented in the literature (Pajares & Usher, 2008; Schunk, Pintrich & Meece, 2008; Zusho, Pintrich & Coppola, 2003). For example, as students take examinations and receive feedback about their performance, it is not surprising that their confidence levels might also decrease. Researchers have also found that classrooms that allow for much social comparison tend to lower self-efficacy for students who find their performances inferior to those of peers (Schunk & Pajares, 2002). Furthermore, in interpreter training the usual standard of comparison in the classroom is the interpreting expert's performance, no matter what stage of learning the novice is at, as Moser-Mercer (2008) points out. Therefore, it is not surprising that on average interpreting students' motivation for learning decreased over time. At the same time, however, in this study the general decline in motivation seems to be most pronounced among the low achievers. In fact, students characterized as high achievers in Consecutive Interpreting (CI) or Simultaneous Interpreting (SI) actually reported higher levels of self-efficacy as well as control beliefs towards the end of Semester Two than toward the end of Semester One, as is revealed by an examination of variation in the students' motivational measures by performance. Similar findings have been reported previously in a study examining disciplinary differences in self-regulated learning in college students (VanderStoep, Pintrich & Fagerlin, 1996).

Additional light is shed on the development of student motivation by findings from the Stage-2 sample. Although Stage-1 and Stage-2 students were comparable in their initial levels of intrinsic motivation, extrinsic motivation, amotivation, and self-efficacy prior to the start of the course, as well as in their levels towards the end of the academic year, it is noteworthy that Stage-2 students' motivational development followed a slightly different trajectory from that of Stage-1 students. In contrast to the steady decline in Stage-1 students' level of motivation all the way through the academic year, Stage-2 students' levels of motivation rebounded towards the end of Semester Two after a sharp plunge towards the end of Semester One. That is to say, while Stage-1 students' level of

motivation declined all the way through the academic year, Stage-2 students were able to recover some of their motivation in the second (and final) semester. This Stage-2 finding is consistent with Jacobs and Newstead's (2000) report of undergraduate students recovering their motivation in the final year of their studies, which they suggested provides empirical support for the notion of 'exit velocity', the claim that students often perform much better in their final year (Jacobs & Newstead, 2000: 253).

In this study, on the basis of the results I cannot offer a well-founded explanation for the steadily declining trajectory (rather than a U-shaped curve) for Stage-1 students' motivation. This should be studied further in future research. However, it might be speculated that this may have something to do with the curriculum/syllabus. The Stage-1 syllabus featured an introductory Consecutive Interpreting module (*Introduction to Interpreting*) in the first semester, followed by an introductory Simultaneous Interpreting module (*Simultaneous Interpreting I*) along with a regular Consecutive Interpreting module (*Consecutive Interpreting I*) in the second semester (see 5.5). Given what was observed with the Stage-2 group, and following the idea of 'exit velocity', we might expect that students' motivation would increase again in the second semester after a dip at the end of the first semester. However, the introduction of a new Simultaneous Interpreting module in Semester Two might have prevented its happening, and instead have caused a further decline in students' levels of motivation. However, more research needs to be done before the link between syllabus and student motivation can be clearly established.

In sum, the present findings revealed that students were motivated in multiple ways, which is in line with the multi-dimensional view of motivation, one of the most important assumptions of social cognitive models of motivation (Schunk, Pintrich & Meece, 2008). The findings suggest that it would be inappropriate to label interpreting students as 'motivated' or 'unmotivated', and that the important thing is to understand how and why students are motivated for the learning behaviour. Interpreter trainers are urged to consider ways in which we can enhance students' motivation on the basis of a variety of motivational constructs including types of motivation and self-efficacy. Furthermore, this study found that students' levels of motivation were changeable over time. In general, students' average level of motivation declined over time, especially in the first semester, but this decline was more rapid in some aspects than in others. At the same time, despite a general trend for a decline, the exact developmental trajectory of

motivation may vary between a steady decline and a U-shaped curve where motivation revives at the end of the course.

7.2.2 Metacognitive Knowledge

The present data provide empirical evidence of how students' metacognitive knowledge changed over time. The construct of metacognitive knowledge in this study focused on students' views/beliefs about the importance or effectiveness of self-regulated learning strategies for success in conference interpreting learning. The empirical findings were that students' beliefs about the importance of SRL strategies declined over time, especially in the first semester, and thereafter students' perceptions or beliefs appeared to stabilize. Prior to the start of the course, students had on average rather high expectations of the importance of SRL strategies for success in conference interpreting learning. Towards the end of the first semester, however, their initial expectations or assumptions declined significantly, although they still retained a fairly strong perception of the effectiveness of SRL strategies. No further noticeable changes were observed towards the end of Semester Two. The present findings are consistent with the situated and dynamic nature of metacognitive knowledge (Ellis, 2008; Flavell, 1979, 1987; Pintrich, 2002; Pintrich & Zusho, 2002; Wenden, 2001; Zimmerman & Schunk, 2004), whereby students form an initial pre-use expectation or belief about a strategy, experience its use over time, and then form post-use perceptions of the strategy. Although the students might have a high expectation/belief about the usefulness/importance of SRL strategies prior to the start of the course, over time, as they gained first-hand experience with these strategies, they would evaluate the extent to which their initial perception was consonant or dissonant with actual experience, and revise their beliefs or perceptions. As a result, new metacognitive knowledge about strategies could be generated. This new metacognitive knowledge might then be used when making plans or decisions about how to maximize learning in later situations. Thus, the present result reflects the reaction or reflection phase of self-regulated learning in which students review and respond to their experiences (see 3.3). Given the importance of metacognitive knowledge in student learning (Pintrich, 2002), the decline in the students' perceptions/beliefs was negative and disappointing. If students do not perceive a strategy as useful or important, they are unlikely to use it when studying. It is therefore pedagogically imperative for interpreter trainers to rectify this situation by

helping students become more aware of the importance of self-regulated learning for success in conference interpreting learning.

7.2.3 Self-Regulated Learning Strategies

In general, students' average use of self-regulated learning strategies remained at a moderate level during the academic year. In terms of changes in aspects of self-regulation over time, this study produced mixed results. Students' average use of a study group or friends to help them learn Consecutive Interpreting increased significantly over time. This finding is consistent with the importance of collaborating with peers in interpreter training—students in conference-interpreter training programmes are required to set up informal groups of two to four or five people and practise on a daily basis (Gile, 2005: 135). Given that students were coping with both a CI module and a new SI module in Semester Two, one might expect the students to have used significantly more time/study environment management strategies as well as help-seeking strategies over time. However, there was only a slight average increase in students' use of strategies to manage and regulate their time and study environments, as well as to enlist the support of others. At the same time, it is worth noting that low achievers in the final end-of-year SI/CI exam actually significantly increased their use of time/study environment management strategies over time. In addition, no noticeable change was observed in students' average use of strategies to plan, monitor or regulate their learning over time. Furthermore, there was a slight average decrease in students' use of strategies to control their effort and attention in the face of distractions and uninteresting tasks. In actual fact, students of all performance levels in the final end-of-year SI/CI exam reported a decline in their use of effort regulation strategies over time. These findings are inconsistent with previous reports of college students' increasing use of self-regulatory strategies over time in the learning of chemistry (Zusho, Pintrich & Coppola, 2003).

7.2.4 Effort

In terms of effort, Stage-1 students were spending approximately one hour twenty-nine minutes (or 1.49 hours) a day studying interpreting outside of class during the first

semester. They expended more effort on learning as they went on to the second semester, spending approximately one hour forty-six minutes (or 1.77 hours) a day studying interpreting outside of class, an increase of seventeen minutes (or 0.28 hours) over the previous semester. While it is encouraging to see an increase in students' expenditure of effort in Semester Two, the increase appears to be small when it is put in the context of the Stage-1 syllabus. Stage-1 training featured an introductory Consecutive Interpreting module (*Introduction to Interpreting*) in the first semester, followed by an introductory Simultaneous Interpreting module (*Simultaneous Interpreting I*) along with a regular Consecutive Interpreting module (*Consecutive Interpreting I*) in the second semester. Apparently, the second half of Stage One was more demanding of students' study time outside of class. However, given that Simultaneous Interpreting is seen by students as the culmination of their training (Gile, 2005: 133), one might expect to find a more significant increase in their study time outside of class in Semester Two than one of a mere seventeen minutes, which would seem far too disproportionate to the demands of the new SI module. In effect, these results actually imply an average decline in students' effort expenditure over time.

There are several possible explanations for this result. First of all, examination of the variation in study time by performance revealed that low achievers and medium achievers in CI or SI were mainly responsible for the disproportionate nature of the increase. In fact, it was found that both high-achieving students in CI and those in SI increased their study time significantly in Semester Two. Towards the end of Semester Two, an orderly pattern emerged for the performance level differences in students' reported study time, with high achievers in CI or SI reporting the biggest amount of study time, followed by the medium achievers, followed by the low-achieving group. Second, this disproportionate nature of the increase may be a consequence of the decline in students' engagement over the course of learning that was reported in previous studies (Schunk, Pintrich & Meece, 2008). This explanation is in line with results from the Stage-2 sample which revealed that Stage-2 students were expending less effort on learning in Semester Two. Third, the rather disproportionate nature of the increase in study time might be a function of the decrease in students' motivation over time, particularly in self-efficacy. Although the introduction of an SI module would be expected to result in a big increase in study time, students' decreasing self-efficacy might prevent them from putting in a high level of effort. This interpretation is further

supported by the significant positive correlations between study time and self-efficacy towards the end of Semester Two.

Finally, the rather disproportionate nature of the increase in study time might also be a function of the decrease in students' effort regulation strategy use over time. Given the tough nature of conference interpreting learning, the ability to control one's effort and persistence in the face of distractions and uninteresting tasks is essential. Interpreting students often encounter situations that call for self-regulation of this sort. Students who were more able to regulate their effort in the face of difficult, boring or uninteresting interpreting tasks were more likely to spend more time studying. In other words, students who used more effort regulation strategies were more likely to report more study time outside of class each day, as evidenced by the significant positive correlations between study time and effort regulation towards the end of Semester Two.

7.3 The Interrelationships among Modifiable Learner Variables

7.3.1 Relations between Student Entry Characteristics and Modifiable Learner Variables

Before I discuss the relations among students' modifiable learner variables and how these changed over time, it is necessary first and foremost to establish the relations between student entry characteristics (e.g. age and IELTS scores) and modifiable learner variables (see Table 6.14). First of all, although there was no significant relationship between age and any of the motivational variables at Time 1, age was negatively and (near-) significantly related to extrinsic motivation and self-efficacy both at Time 2 and at Time 3. That is, the older a student, the less likely he or she is to be studying interpreting because of its usefulness or importance to personal goals. The older a student, the less likely he or she was to believe they were capable of learning interpreting successfully. Students' ages did not seem to have a direct relationship with their metacognitive knowledge during the academic year. The relation between students' ages and their effort expenditure, although not significant, was in the negative direction; older students tended to report less study time than younger ones. In addition, students' age was negatively and significantly related to use of metacognitive

self-regulation strategies at Time 3. The older a student, the less likely he or she was to carry out metacognitive self-regulatory activities such as planning, monitoring and regulating in their interpreting exercises towards the end of the academic year.

Students' levels of B-language (in this case English) on entry were found to have significant relationships with their motivational types/beliefs. For example, students with a higher overall level of B-language (in this case English) on entry were more likely to report that they were studying interpreting for its own sake prior to the start of their course. Students with a higher level of B-language writing skills were more likely to report that their underlying motive to learn interpreting was its inherent interest as well as its importance or usefulness to personal goals during the academic year. Students with a high level of B-language speaking skills on entry were less likely to be amotivated at the start of the course. Students with a higher level of B-language speaking skills on entry were more likely to believe they were capable of learning interpreting successfully throughout the academic year. These findings for the positive relations between students' level of B-language speaking skills on entry and their self-efficacy beliefs during the academic year supported Schunk's (1985) hypothesis that generic aptitudes and prior experiences can influence students' self-efficacy for learning new material. Chinese students who have previously performed well on English speaking skills were more likely to perceive themselves as capable of learning Chinese/English interpreting successfully than students who have experienced difficulties with English speaking.

7.3.2 Relations among Motivational Types/Beliefs

The present results revealed that students' level of intrinsic motivation was significantly and positively correlated with their level of identified regulation both at Time 2 and at Time 3, and that the strength of correlation appeared to increase over time. That is to say, a student who was intrinsically motivated to study interpreting was also likely to believe that studying interpreting was useful or important. In other words, a student may be high or low on both types of motivation at the same time. This finding is consistent with those of Lepper, Corpus and Iyengar (2005), who found that there is no such automatic relation as the higher the intrinsic motivation, the lower the extrinsic motivation. Although students' levels of intrinsic motivation and identified regulation

were generally negatively correlated with their level of amotivation during the academic year, no significant relationship was found.

The present findings are consistent with motivational theory and the findings of previous research which suggested that self-efficacy is reciprocally related to other motivational constructs (Bandura, 1997; Eccles et al., 1998; Schunk, Pintrich & Meece, 2008; Wigfield, 1994; Wigfield et al., 1997). Self-efficacy was found to be positively related to adaptive types of motivation, like intrinsic motivation and identified regulation, while being negatively related to maladaptive types of motivation like amotivation. Furthermore, the present findings about the relationships between self-efficacy and motivational types are consistent with the developmental perspective suggested by Wigfield (1994), whereby efficacy and interest/value beliefs might initially be somewhat separate from one another or uncorrelated but over time would become more correlated, as well as with the later research findings of Wigfield et al. (1997), which showed that the correlations between efficacy beliefs, interest and value became stronger over time. In this study, students' self-efficacy was initially uncorrelated with their intrinsic motivation or the identified regulation type of extrinsic motivation at Time 1. As time went on, students' self-efficacy and their intrinsic motivation or identified regulation became more correlated. Students who were motivated to learn, whether this motivation was based on inherent interest in conference interpreting learning itself or on extrinsic goals and purposes, tended to believe they were capable of learning interpreting successfully. At the same time, the present results suggest that students who were oriented toward an extrinsic goal were more likely to be confident about their capacity to learn interpreting than students who had been oriented towards an intrinsic goal. While a near-significant correlation was observed between intrinsic motivation and self-efficacy at Time 3, identified regulation was significantly related to self-efficacy both at Time 2 and at Time 3. On the other hand, amotivation was negatively and significantly related to self-efficacy from Time 1 to Time 3. Students who had no reason, intrinsic or extrinsic, for learning conference interpreting were less likely to believe they were capable of successful learning.

In terms of the relations between the types of motivation students endorsed and their control beliefs, no significant relationship was observed except for a near-significant relation between amotivation and control beliefs towards the end of Semester Two. Students who lacked intention and motivation for conference interpreting learning were less likely to believe that their efforts to learn would result in positive outcomes.

With respect to the relation between students' self-efficacy beliefs and their control of learning beliefs, the relation appeared to become stronger over time, resulting in a near-significant relationship towards the end of the academic year. Self-efficacious students were more likely to believe they were able to control the outcomes of their learning.

7.3.3 Relations between Motivational Types/Beliefs and Metacognitive Knowledge

Students' control beliefs were positively related to metacognitive knowledge throughout the academic year, and the relationship grew stronger over time. Towards the end of the academic year, the level of students' control beliefs was significantly related to the level of their beliefs about the importance of SRL strategies. That is to say, among this sample of students, those who believed that outcomes were contingent on their own effort also believed that self-regulated learning strategies were important for success in conference interpreting learning. No further significant relationship was found between students' motivational types/beliefs and their perceptions of the importance of SRL strategies.

7.3.4 Relations between Motivational Types/Beliefs and Strategy Use/Effort

Previous studies have highlighted the importance of intrinsic motivation for students' engagement in SRL (e.g. Linnenbrink & Pintrich, 2002; Vansteenkiste et al., 2004; Reeve et al., 2008; Zimmerman & Schunk, 2008). Researchers have found extrinsic motivation to be a less desirable motivational belief than intrinsic motivation (Pintrich et al., 1993; Vansteenkiste et al., 2004). In translator training, Kelly (2005) suggests that students are more likely to reach higher levels of understanding and adopt a deep approach to learning when they are intrinsically motivated (2005: 49). In Ryan and Deci's (2000) taxonomy of human motivation, intrinsic motivation is the most self-determined type of motivation, while identified regulation refers to a relatively autonomous regulatory style. Although in identifying the activity as important for personal goals, the individual is expressing more choice regarding her/his participation than when other styles of extrinsic motivation operate, the underlying motive to engage

is still instrumental as it is the usefulness of the activity, rather than the activity's inherent interest, that guides participation (Deci & Ryan, 2000). For example, a student who studies interpreting because she personally believes it is important to her future career is extrinsically motivated because she is doing it for its instrumental value rather than because she finds it interesting. Self-determination theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2000, 2002) posits that more autonomous motivational regulations lead to greater levels of effective functioning and personal adjustment.

In this study, both intrinsic motivation and the identified regulation form of extrinsic motivation were in some way positively related to use of SRL strategies. However, in contrast to previous findings and inconsistent with self-determination theory, this study has been unable to demonstrate the superiority of intrinsic motivation. Rather, the present results revealed that identified regulation was more prevalent on this sample of students, and that it played a more prominent role than intrinsic motivation in relation to students' use of SRL strategies in conference interpreting learning. For example, while I found that intrinsic motivation was not significantly related to metacognitive self-regulation during the academic year, identified regulation was found to be positively and significantly related to use of this strategy both towards the end of Semester One and towards the end of the academic year. While the present finding provides further support for self-determination theory, which hypothesizes that internal forms of extrinsic motivation, like intrinsic motivation, can strengthen students' sense of autonomy (i.e. their need to feel a sense of personal control or agency) and willingness to learn in a self-regulated way, the present results also add to this literature by showing that a student's level of self-determined extrinsic motivation towards a learning activity can be a better precursor of SRL strategy use than intrinsic motivation. On the other hand, the present results have revealed that students' amotivation levels were negatively related to their use of SRL strategies. In contrast to the relatively robust relationships between types of motivation and strategy use, no significant relationship was found between the types of motivation students endorsed and their reported study time.

In line with previous findings that have reported a positive correlation between self-efficacy judgments and self-regulation (Pintrich, 1999; Pintrich & De Groot, 1990; Schunk, Pintrich & Meece, 2008; Schunk, 1989, 1991, 1994; Pintrich & Zusho, 2002), the results of this study have showed that the relations between students' self-efficacy beliefs and their uses of SRL strategies became stronger over time. Generally, highly

self-efficacious students were more likely to use SRL strategies in their study. Students who believed they were capable were more likely to plan, monitor or regulate their learning. They were more likely to take the initiative in enlisting the help of teachers and peers, or to collaborate with others to practise and improve their interpreting skills.

Equally consistent with previous findings about the positive association between self-efficacy beliefs and quantity of effort and eventual persistence at a task (Bandura, 1997; Schunk, 1989, 1991; Schunk, Pintrich & Meece, 2008; Linnenbrink & Pintrich, 2003; Pajares, 2008), the present results revealed that students' self-efficacy was positively related to the amount of their study time across measurements and that the relation became stronger over time. Towards the end of the academic year, self-efficacy was significantly related to amount of study time. Students who believed they were capable were likely to spend more time on self-study every day than those who doubted their capabilities. In other words, students' engagement and persistence with regard to interpreting exercises are primarily a function of their self-efficacy beliefs. This is in line with previous work which suggests that, when students are facing difficulties, those who have a high sense of efficacy for learning expend greater effort and persist longer than those who doubt their capabilities (Bandura, 1997; Schunk, 1989, 1991; Schunk, Pintrich & Meece, 2008; Linnenbrink & Pintrich, 2003; Pajares, 2008). These findings further support the idea that motivational beliefs are the most useful for understanding students' engagement, effort, or persistence in academic tasks (Pintrich & Zusho, 2002). Such findings suggest the importance of maintaining self-efficacy levels over time.

Perceived control is a construct closely associated to self-efficacy. It refers to students' beliefs that their efforts to learn will result in positive outcomes. It is concerned with general expectations that outcomes are contingent on one's own efforts, rather than on external factors such as the teacher. The present results revealed that students' control beliefs were not significantly related to their use of self-regulated learning strategies or the amount of time they spent on self study every day. These results suggest that just because students believed that their efforts to study make a difference in their interpreting learning, this does not mean that they were more likely to study more strategically and effectively, or to expend more effort on learning. This finding is aligned with the social cognitive perspective. Bandura (1986) has questioned the value of general control beliefs that are not tied to personal agency beliefs. People exercise control by using appropriate means. It is difficult to conceive of a person controlling outcomes without wielding influence through certain means. From a social cognitive

perspective (Bandura, 1991), control beliefs, although important, are insufficient to motivate students to pursue academic activities. If students believe they lack the ability to master academic demands, they will tend to avoid them even though the outcomes are academically achievable. For example, students might believe that they can control their learning setting, but they feel they lack the capacity or strategy to learn. Indeed, this interpretation is in line with regression analysis results which showed that control beliefs, self-efficacy and metacognitive knowledge together constituted a highly significant regression model for overall strategy use at Time 3, where self-efficacy and metacognitive knowledge were significant positive predictors while control beliefs were a significant negative predictor.

7.3.5 Relations between Metacognitive Knowledge and Strategy Use/Effort

Previous work suggests that students' metacognitive knowledge was linked to how they would learn (e.g. Flavell, 1979; Pintrich & Garcia, 1991; Skinner, 1995, 1996; Bandura, 1997; Boekaerts, 1997; Wenden, 1998, 1999, 2001; Pintrich, 2002). In their review of work on the development of academic self-regulation, Pintrich and Zusho (2002) noted that the development of metacognitive knowledge would allow students to think more about their own learning and influence their strategy use and self-regulatory processes. In line with previous findings, the present results revealed that students' metacognitive knowledge was positively correlated with their use of all individual strategies throughout the academic year. At Time 2, students' metacognitive knowledge was highly significantly correlated with their overall strategy use. Students who believed that SRL strategies were important for conference interpreting learning were more likely to use them in general. Specifically, students who believed that SRL strategies were important were more likely to use metacognitive self-regulation strategies, time/study environment management strategies and effort regulation strategies, as well as help-seeking strategies. These findings seem to provide evidence for an assumed causal relation between learners' metacognitive knowledge/awareness and their actual use of self-regulated learning strategies. This is confirmed by regression analysis results, which showed that students' metacognitive knowledge alone was a significant predictor of their overall strategy use at Time 2. However, it is noteworthy that the strength of correlation between metacognitive knowledge and the use of individual SRL strategies declined over time. At Time 3, students' metacognitive knowledge was not significantly

related to their overall strategy use, although near-significant correlations were observed with individual strategies such as help-seeking and peer learning (for SI). Regression analysis results showed that metacognitive knowledge emerged as a significant predictor of students' overall strategy use at Time 3 only when joined by self-efficacy and control beliefs in the regression. The best predictor of students' overall strategy use was a combination of metacognitive knowledge of strategies plus adaptive motivational beliefs such as self-efficacy and control beliefs. This suggests that, in order for the students to use SRL strategies as they progressed to the second semester, they must not only believe that the strategies are effective and important, but must also have confidence in their ability to learn interpreting successfully as well as believe that their efforts to learn will result in positive outcomes. These findings provide interesting insights into the relation between students' metacognitive knowledge of strategies and their actual use of SRL strategies. The present longitudinal findings add substantially to our understanding of the development of academic self-regulation by demonstrating that students' development of self-regulated learning is influenced by different factors at different stages of learning. With respect to the relationship between metacognitive knowledge and effort, no significant correlation was found between students' beliefs about the importance of SRL strategies and their reported study time outside of class every day.

7.3.6 Relations between Strategy Use and Effort

Consistent with previous research examining engagement (e.g. Wolters, 2003, Wigfield et al., 2008), the present results showed that facets of SRL could be used to explain interpreting students' reported study time. It was found that students' reported study time was significantly related to their use of effort regulation strategies at Time 3 (Table 6.19). Students who could persist in the face of difficult or boring tasks were more likely to spend more time on study each day. This finding is consistent with the conceptualization of effort regulation in the theoretical framework of self-regulated learning (Pintrich, 2000, 2004). Effort regulation refers to students' ability to control their effort and attention in the face of distractions and uninteresting tasks. Effort management reflects a commitment to completing one's study goals, even when there are difficulties or distractions. Therefore it is not surprising that students who could persist in the face of difficult or boring tasks were more likely to spend more time on

study each day. This finding is consistent with previous research (e.g. Wigfield et al., 2008; Wolters, 2003) which found that students characterized as self-regulated learners tended to evidence greater effort, engagement or persistence in the short term. This finding also provides evidence in support of the idea that students' effort and persistence are an outcome of their self-regulated learning.

7.4 The Relationship between Modifiable Learner Variables and Interpreting Performance

7.4.1 Student Entry Characteristics *vs.* Performance

While my data analysis (see Chapter 6) is focused on modifiable learner variables that affect students' interpreting performance, I did examine the relationships between student entry characteristics (e.g. level of the B-language and age on entry) and interpreting exam results. The present findings show that the role of modifiable learner variables can be moderated by student entry characteristics, and moreover, that student entry characteristics can have a direct influence on students' interpreting performance. First of all, although there was virtually no relationship between students' ages and their CI exam results during the academic year, the correlations between students' ages and their SI exam results were interesting. Students' ages were negatively correlated with their results of the first SI exam, although the correlation did not reach a significant level. Furthermore, students' ages were negatively and highly significantly related to their results of the second/final SI exam. The older the student was, the poorer his or her SI examination results. Furthermore, in the regression analyses, age was found to be a significant negative predictor of SI performance, such that a greater age was associated with a lower performance in SI. This seems to suggest that older students were handicapped by their ages in their efforts to perform the operations involved in Simultaneous Interpreting. This finding is most probably related to the effects of cognitive ageing (Moser-Mercer, 2008). According to Burke and MacKay (1997, in Moser-Mercer, 2008: 22), for cognitive tasks that require new learning or depend on speed of responding, performance diminishes with age. Nonetheless, the present results are still somewhat surprising, for we are not talking about students who are in their late

60s or 70s, but those whose ages range from 21 to 36. Therefore, the present finding provides new insight into the issue of cognitive ageing in trainee interpreters.

Secondly, significant associations were observed between students' IELTS scores and their CI or SI examination results. Specifically, students' overall IELTS scores were positively and significantly related to their results in the final CI examination. Students' IELTS writing scores were negatively correlated with all examination results during the academic year. Furthermore, the negative correlation between students' IELTS writing scores and their first SI examination results reached a significant level. Students' IELTS listening scores and speaking scores were positively correlated with all CI/SI examination results. Particularly, both listening scores and speaking scores were significantly correlated with students' results in their first SI examination. Furthermore, students' IELTS speaking scores were also near-significantly correlated with their results in the second/final SI exam.

In the regression analysis, IELTS sub-skill scores together made a near-significant regression model for CI exam results, while age and IELTS sub-skill scores together made a significant regression model and accounted for nearly half of the variance in SI exam results. IELTS Reading and Speaking scores were significant positive predictors of both CI and SI exam results. At the same time, it is interesting to note that IELTS Writing score had a negative relation to interpreting exam results. Not only was IELTS Writing score negatively related to CI exam results although not a significant predictor, but it was also a significant negative predictor of SI exam results. The reason for this negative relation between writing and interpreting performance is not clear, but it might be related to the distinction between speech and writing, or that between interpreting and translation. Further research needs to be done to provide firm evidence about why and how writing skills are negatively associated with interpreting performances. Nonetheless, the present finding helps clear up the uncertainty regarding level of written language skills as an entry requirement in interpreter training (Pöchhacker, 2004: 180). Also, our findings that students' level of B-language skills on entry predicted their end-of-year CI and SI examination results are consistent with previous interpreting studies (e.g. Moser-Mercer, 1985; Gerver et al., 1989) which suggest that student results on selection tests correlated significantly with performance on final interpreting examinations.

The present findings about the relations between student entry characteristics and interpreting performances increase our understanding about factors that contribute to or inhibit students' development of expertise in conference interpreting. They also enable us to be in a better position to discuss the effects of modifiable learner factors on the development of expertise in conference interpreting, which is the focus of the current investigation.

7.4.2 Motivation *vs.* Performance

When the influence of student entry characteristics was statistically controlled, modifiable learner factors (e.g. motivation, metacognitive knowledge, and strategy use) associated with the current study revealed reliable relationships with students' interpreting performances. First, motivational components made a significant contribution to the overall relationship between learner variables and performance in conference interpreting. At the same time, the present results revealed that students' motivational types were more closely related to their CI exam results than to their SI exam results. While no significant relationship was found between motivational types and SI exam results, motivational types together added significantly to the prediction of CI performance. Although students' initial levels of intrinsic motivation, identified regulation and amotivation were not well calibrated to the results of their first CI exam, their relations with exam results became stronger over time. Students' levels of intrinsic motivation and identified regulation at both Time 2 and Time 3 were positively correlated with subsequent CI exam results, although the relationships did not reach statistical significance. However, contrary to our hypothesis that students who had a high level of intrinsic motivation and the 'identified regulation' type of extrinsic motivation would display better interpreting performance, intrinsic motivation was not a significant predictor of either CI performance or SI performance, and the 'identified regulation' type of extrinsic motivation did not reliably predict CI performance either. Furthermore, the 'identified regulation' type of extrinsic motivation was even negatively and significantly associated with SI performance before students' IELTS sub-skill scores are accounted for. This result may be explained by the finding that low-achieving students in Simultaneous Interpreting I CA2 actually had a higher average level of identified regulation than high achievers towards the end of Semester Two (see Table 6.29).

In contrast to the self-determined types of motivation, amotivation was found to have robust negative relations with actual interpreting performances. The higher a student's level of amotivation at Time 2, the lower his/her performance in the second continuous assessment for Introduction to Interpreting; the higher a student's level of amotivation at Time 3, the lower his/her performance in the second continuous assessment for Consecutive Interpreting I. High achievers in Consecutive Interpreting I CA2 had lower levels of amotivation than low achievers both at Time 2 and Time 3, despite having levels of initial amotivation comparable to those of low achievers at Time 1. The present results revealed that students' levels of amotivation reliably predicted their interpreting performance. Amotivation alone was a significant negative predictor of CI performance. After other factors were accounted for, amotivation was a significant negative predictor of both CI and SI performances. The higher a student's level of amotivation, the lower his or her interpreting performance. This finding complements and extends the expectancy-value motivation literature by showing that negative value beliefs like amotivation can have a significant relation to student performance. At the same time, this result also appears to suggest that the construct of amotivation, although sharing the same continuum of self-determination with intrinsic motivation and extrinsic motivation (Deci & Ryan, 1985, 1991; Ryan & Deci, 2000, 2002), also shares some of the features/functions of the expectancy components. This interpretation is in line with Ryan and Deci's (2000) conceptualization of the construct. According to Ryan and Deci (2000), amotivation results from not valuing an activity, not feeling competent to do it, or not believing it will yield a desirable outcome. In other words, the individual does not feel competent (low self-efficacy), and there is a perceived non-contingency between behaviours and outcomes (low control beliefs), as well as low value for the task or perceptions of the irrelevance of the task (Schunk, Pintrich & Meece, 2008: 253). Students with this motivational style would be unmotivated for conference interpreting learning owing to the low value, self-efficacy and internal control they feel in respect of interpreting learning activities. The interpretation that amotivation shares some of the features/functions of expectancy components is further supported by the significant negative correlations between amotivation and self-efficacy at all three measurements, as well as the near-significant negative correlation between amotivation and control beliefs at Time 3. At the same time, the fact that amotivation was all along so robustly correlated with self-efficacy beliefs while having no significant correlations with intrinsic motivation, identified regulation, or control beliefs, seems to suggest that, for this sample of students, amotivation results more from not feeling competent to learn

interpreting successfully (i.e. low self-efficacy) than from other sources. This implies that, pedagogically, an important strategy for reducing students' levels of amotivation would be to boost their confidence in their interpreting skills as well as their self-appraisals of their capacity to learn interpreting successfully.

In contrast to the types of motivation, students' levels of self-efficacy beliefs were more closely related to SI exam results than to CI exam results. For instance, students' levels of self-efficacy at all three time points were significantly and positively related to the results of their final end-of-year SI exam, while no significant relationship was found between students' self-efficacy beliefs and subsequent CI exam results (see 6.4.1.1 for the details).

The present results showed that self-efficacy did not reliably predict CI performance either alone or in combination with other variables, but it made a significant independent contribution to the prediction of SI performance, such that a higher level of self-efficacy was associated with a higher performance in SI. This finding is most probably related to the domain or situational specificity of self-efficacy beliefs (Pintrich, 2003). Self-efficacy is defined as individuals' beliefs about their performance capabilities in a particular context or domain (Bandura, 1997). As simultaneous interpreting is seen by students as the culmination of their training (Gile, 2005: 133), students' ratings of their levels of self-efficacy for interpreting in general (or their self-confidence in their capacity to interpret) may have been influenced more by their perceptions of their capabilities in SI than by their similar perceptions in relation to CI. This finding highlights the important role of SI performance in boosting student self-efficacy beliefs.

Another important finding was that self-efficacy was only a significant predictor of SI performance before IELTS scores were taken into consideration. After IELTS scores were accounted for, however, self-efficacy was no longer independently associated with SI performance. The IELTS sub-skill scores, speaking scores in particular, were better predictors of SI performance than students' levels of self-efficacy. This finding is not consistent with Zusho, Pintrich and Coppola's (2003) study of college students which found that self-efficacy was the best predictor of course performance even after controlling for prior achievement. Their findings showed that students' ratings of their levels of self-efficacy were better predictors of final course performance in chemistry than their prior achievement (indexed by their SAT-mathematics scores). This

inconsistency may be due to the differential impact of prior knowledge of mathematics on college chemistry classes and prior knowledge of the B-language (in this case English) on interpreting. It can be argued that trainee interpreters' level of B-language (in this case English) would have more direct impact on the learning of interpreting than did students' SAT-mathematics scores on their learning of college chemistry. Sound language skills are an absolute prerequisite for the learning of interpreting. As Seleskovitch (1978: iii–iv) put it, a school of interpretation is not a language teaching institution; it teaches the technique of interpretation. Accordingly, at the time of admission onto an interpreter training programme, 'students should already have a "near-perfect" command of their working languages' (Gile, 2009: 220), although this may not always be true with respect to Chinese students' level of B-language (in this case English) (see 5.4).

Furthermore, after age, IELTS sub-skill scores, metacognitive knowledge and strategy use were accounted for, self-efficacy even had a negative relation to SI performance. This apparent negative suppressor effect of self-efficacy on SI performance suggests that self-efficacy without the concomitant effect of age, language skills, metacognitive knowledge and use of self-regulated learning strategies is not conducive to SI performance. In addition to being efficacious as regards their ability to learn interpreting well, students must also be young, with sound language skills. They must also be metacognitively aware of self-regulated learning strategies, as well as use those strategies appropriately. This interpretation is in line with the social cognitive perspective of motivation, which emphasizes the importance of integrating motivational and cognitive factors (Pintrich & De Groot, 1990; Schunk, Pintrich & Meece, 2008). While student involvement in self-regulated learning is closely tied to students' efficacy beliefs about their ability to perform interpreting tasks and to learn interpreting successfully, at the same time motivational beliefs are not sufficient for successful academic performance. Pintrich and De Groot (1990) suggested that self-regulated learning components seem to be more directly implicated in performance. Students need to have both the motivational will and the cognitive skill to be successful in learning. Thus, we need to integrate motivational and self-regulated learning components in our model of interpreting learning.

Similarly, it was found that self-efficacy had a negative relation to CI performance when IELTS sub-skill scores were included in the regression model. This apparent negative suppressor effect of self-efficacy on CI performance suggests that self-efficacy

in the absence of the prerequisite language skills is not conducive to CI performance. This interpretation is in line with previous research which suggests that positive self-efficacy, although important for academic performance, will not by itself produce competent performance in the absence of the prerequisite skills and knowledge (Wentzel, 1999).

The present results revealed that self-efficacy beliefs at Time 3 were not only positively related to subsequent SI exam results, but were also significantly and positively related to previous SI exam results. In fact, students' levels of self-efficacy at Time 3 had a stronger correlation with the results of their previous SI exam than with the results of their subsequent SI exam. Likewise, students' levels of self-efficacy at Time 2 were more strongly correlated with the results of their previous CI exam than with the results of their subsequent CI exam, although neither correlation was significant. These results consistently suggest that, as students sat examinations and received feedback about their interpreting performances, their self-efficacy beliefs were subsequently refined. As a result, their levels of self-efficacy were more strongly related to previous examination results than to subsequent examination results. This interpretation is in line with Linnenbrink and Pintrich's (2003) general framework for conceptualizing self-efficacy, engagement and learning, which suggested that the relation between self-efficacy and achievement became reciprocal over time. That is, self-efficacy led to better achievement; the better a student performed, the higher their self-efficacy. This finding lends further support to the assumption that self-efficacy is situated and contextualized and is based on actual accomplishments and success and failures, not on a general belief about self-concept or self-esteem (Linnenbrink & Pintrich, 2002). By the end of Semester Two, having received a fair amount of feedback on their consecutive and simultaneous interpreting performances, students had calibrated their judgments of self-efficacy well to their actual level of performance. Therefore, students characterized as high achievers, regardless of the mode of interpreting, actually reported higher levels of self-efficacy beliefs towards the end of Semester Two than towards the end of Semester One.

Similarly, it is interesting to note that students' control beliefs at Time 3 were significantly and positively related to the results of previous SI examination, although not to the results of subsequent SI exams. Students who did well in the mid-term Simultaneous Interpreting examination were more likely to believe subsequently that their efforts to learn would result in positive outcomes towards the end of Semester Two.

They were more likely to believe that outcomes were contingent on their own effort, in contrast to external factors such as the teacher. The fact that control of learning beliefs at Time 3 did not reliably predict either CI or SI performance, while having a significant correlation with the results of the previous SI exam, appears to suggest that these students' control beliefs were more post-hoc explanations for their performance in the previous SI exam than prospective beliefs about the next exam. This finding supports the 'reaction and reflection' phase of Pintrich's (2000, 2004) model. According to Pintrich (2000: 460), after students complete a task, they may reflect on the reasons for the outcome; that is, make attributions for the outcome (Weiner, 1986). Research on attributions suggests that it is adaptive to attribute success as well as failure to unstable but controllable internal factors such as effort, as effort can be modified according to the demands of the situation. According to Zimmerman (1998b), good self-regulators are more likely to make adaptive attributions for their performance. In addition, the present results showed that students' control of learning beliefs did not reliably predict either CI or SI performance.

7.4.3 Metacognitive Knowledge *vs.* Performance

A similar pattern emerged in the correlations between metacognitive knowledge and results of SI exams. The present results revealed that students' metacognitive knowledge of self-regulated learning strategies at Time 3 was significantly and positively related to their first SI examination results, although not to their second SI examination results (see Table 6.24). Students who did well in Simultaneous Interpreting I in the middle of Semester Two were subsequently more likely to believe that SRL strategy use was important for success in conference interpreting learning towards the end of Semester Two. This is not surprising, since the students' first Simultaneous Interpreting exam after entering the interpreter training course was the first test of the effectiveness of their Simultaneous Interpreting learning strategies. Their performance in the exam and the related feedback naturally influenced their subsequent perception of the effectiveness or importance of self-regulated learning strategies. This result was further supported by regression analysis results which revealed that students' Simultaneous Interpreting I CA1 results were a significant predictor of their metacognitive knowledge at Time 3. This finding provides evidence for the 'reaction and reflection' phase of self-regulated learning (Pintrich, 2004). One key aspect of this

phase is the generation of new meta-level knowledge about the tasks, strategies or self. Thinking back on their performance in the exam and their prior learning experience, the students might come to understand or recognize that using self-regulated learning strategies was important for success in conference interpreting learning. These new insights might then be stored as metacognitive knowledge that is used when making plans or decisions about how to maximize learning in later situations. In addition, it is worth mentioning that the relationships between students' CI exam results and their subsequent metacognitive knowledge, although not significant, were in the positive direction; high achievers reported a higher level of perception of the importance of SRL strategies.

Metacognitive knowledge alone had a positive relation to CI performance as well as SI performance, although it is not a significant predictor. The removal of the metacognitive knowledge variable constituted a near-significant decrease in the significance of the overall model to predict SI performance. However, when the effects of other variables were taken into account, the relation became much weaker. In fact, when age, IELTS sub-skill scores, effort, strategies, self-efficacy and control beliefs were all included in the regression (in the absence of motivational types), metacognitive knowledge became a negative and significant predictor of SI performance, such that a higher level of metacognitive knowledge was associated with a lower performance on SI. These findings suggested that, while metacognitive knowledge of SRL strategies was associated with students' interpreting performance, other variables such as age, IELTS sub-skill scores, effort, strategies, self-efficacy and control beliefs were stronger predictors of interpreting performance than metacognitive knowledge, meaning that metacognitive knowledge's effect on interpreting performance was probably mediated by the other variables rather than having a standalone impact. That is to say, students' metacognitive knowledge by itself does not lead to better interpreting performance, but was linked to how students would learn (Pintrich, 2002; see 7.3). This in turn would probably translate to better interpreting performance. The real cause of better interpreting performance, then, is not exactly metacognitive knowledge. Rather, the relationship between metacognitive knowledge and better interpreting performance is mediated by the increase in students' levels of self-efficacy and control beliefs, as well as their levels of effort and SRL strategy use as their level of metacognitive knowledge increases.

7.4.4 Self-Regulated Learning Strategies *vs.* Performance

I had particularly expected to replicate the results of many studies which found a positive relationship between self-regulated learning strategy use and academic performance (e.g. Pintrich & De Groot, 1990; Zimmerman & Martinez-Pons, 1986, 1988). Therefore it is somewhat surprising that no significant relations were found between students' reported use of self-regulated learning strategies and their CI or SI exam results. Additionally, contrary to our expectations, some of the strategies were even negatively correlated with examination results, although the correlations were very weak and not significant. For example, students' reported use of time and study environment management strategies at Time 3 were negatively correlated with Consecutive Interpreting I CA2 and CA1 results. A possible reason for this may be that the interpreting students in this study held strong beliefs regarding their self-regulated learning strategy use regardless of their ability, or that low achievers could even report more use of some strategies than high achievers. This interpretation is indeed in line with the results obtained when I examined the variation in students' use of strategies at Time 3 by performance with Consecutive Interpreting I CA2 results as the grouping variable. It was found that low achievers reported more use of time/study environment management strategy than medium- and high-achieving students, with high achievers reporting the least use of this strategy. Nevertheless, it appears that low-achiever users of this strategy showed less benefit from using the strategy, a problem called utilization deficiency (Miller, 1990, 1994; Miller & Seier, 1994, in Pintrich & Zusho, 2002).

The present results revealed that strategies alone were not significant predictors of CI performance or SI performance. This agreed with correlation results. Joined by other modifiable learner variables such as motivation, knowledge and effort, strategies were still not significant predictors of interpreting performance. However, once students' age and their IELTS scores on sub-skills were included in the regression equation, some strategies emerged as significant predictors of CI performance or SI performance. For example, effort regulation and peer learning (for CI) were significant positive predictors of CI performance, while time/study environment management and help-seeking were significant positive predictors of SI performance. That is to say, strategies only emerged as significant predictors of interpreting performance (CI or SI) when both students' ages and their IELTS scores on sub-skills were included in the regression equation. Thus, it appears that the use of self-regulated learning strategies may only emerge as a reliable factor that determines interpreting performance when the students' entry characteristics

such as age and language skills are taken into consideration. This finding is consistent with the importance of concentrated, deliberate practice for predicting high levels of performance (Ericsson, 1996, 2002; Ericsson et al., 1993). Younger students are generally assumed to be in a more advantaged position in terms of concentration and cognitive processing speed (Moser-Mercer, 2008). In addition, as sound language skills are a prerequisite for quality of interpreting practice, students with better English language skills are in a better position to carry out deliberate practice as well. The present results add to the literature on deliberate practice and self-regulated learning by showing that the role of strategy use can be moderated by unmodifiable learner factors such as students' prior knowledge and age.

Meanwhile, this pattern of results suggests that students with higher IELTS scores on sub-skills like speaking, most probably reflecting a higher level of previously attained language skills in English, can attain the same or better performance in CI, as well as SI, with less use of self-regulated learning strategies. Independent of that effect, those who are younger may study more effectively and, therefore, may attain a comparable performance with less use of self-regulated learning strategies than those who are older. Additionally, it was found that metacognitive self-regulation was negatively correlated with Consecutive Interpreting I CA2 results in the absence of IELTS scores, and positively in the presence of IELTS scores, although in neither case was the correlation significant. These findings highlight the important role of students' English language proficiency as a prerequisite for conference interpreting learning and as an indicator of students' readiness for interpreter training. In the mean time, these findings also corroborate the ideas of Alexander and Judy (1988), who suggested that prior knowledge relates to student academic performance and potentially interacts with cognitive and metacognitive strategy use.

The present study found that individual strategies were not equally predictive of CI and SI performances. For example, I found that the strategies which had a positive relation to CI performance were negatively associated with SI performance, while the strategies which had a negative relation to CI performance turned out to be positively associated with SI performance. More specifically, I found that effort regulation and peer learning (for CI) were significant positive predictors of CI performance, while time/study environment management and help-seeking were significant negative predictors. Metacognitive self-regulation had a positive relation to CI performance, but the relation was not significant. In contrast, I found that time/study environment management and

help-seeking were significant positive predictors of SI performance, while metacognitive self-regulation and effort regulation as well as peer learning (for SI) had a negative relation, although not significant, to SI performance.

In line with regulation of behaviour in self-regulated learning (Pintrich, 2000, 2004; see 3.3), students who indicated that they were able to regulate their effort in the face of difficult, boring or uninteresting tasks tended to perform better on CI. This finding was consistent with empirical evidence that demonstrates the importance of students' ability to control their effort and attention in order to do well on the course (Pintrich et al., 1991). Effort management is self-management, and reflects a commitment to completing one's study goals, even when there are difficulties or distractions. Effort management is important for academic success because it not only signifies goal commitment, but also regulates the continued use of learning strategies.

In addition, students who indicated that they often collaborated with their peers to learn CI tended to perform better on CI. This finding concerns an important aspect of the regulation of context (see 3.3), that is, how effective an individual student is in using peers as a resource for his or her learning of interpreting. It is not surprising that collaborating with peers has been found to have positive effects on achievement, as CI learning requires peer interaction and peer learning in study groups or co-operative learning groups and the ability to work well with peers is essential (Gile, 2005). In comparison to regulation of cognition and behaviour, contextual control may be more difficult because it is not always under direct control of the individual learner. However, in terms of self-regulated learning, most models include strategies to shape, control or structure the learning environment as important strategies for self-regulation (Zimmerman, 1998). Interpreting students have a great deal of autonomy and responsibility for contextual control and regulation, so they have to be able to control and regulate their study environment in ways which facilitate goals and task completion.

On the other hand, both time/study environment management and help-seeking were negatively associated with CI performance. Furthermore, when strategy beliefs (metacognitive knowledge) were removed from the regression model, time/study environment management and help-seeking even became significant negative predictors of CI performance. In other words, the more a student managed and regulated his or her time and study environments, the lower his or her performance in CI. This interpretation is further supported by the finding that low achievers in the final CI exam actually used

more time/study environment management strategies than high achievers at Time 3. Likewise, the more a student sought the help of peers and teachers, the lower his or her performance in CI. This apparent negative suppressor effect of time/study environment management strategy use and help-seeking strategy use on CI performance suggests that, without the concomitant use of metacognitive self-regulation strategies, effort regulation strategies and peer learning strategies (for CI), the use of time/study environment management strategies and help-seeking strategies was not conducive to CI performance.

The literature on deliberate practice and self-regulated learning by skilled and expert performers shows that engagement in deliberate practice and study is typically carefully scheduled in a productive study environment (Ericsson, 1996, 2002; Zimmerman, 1998a, 2002). Consistent with previous research, this study found that the degree to which students managed and regulated their time and study environments positively and significantly predicted their SI performance. This finding is also consistent with the model of deliberate practice and self-regulated learning. Zimmerman and Martinez-Pons (1986) have shown that self-regulating learners and high achievers do engage in time management activities. In addition, Zimmerman (1998a) discussed how expert writers, musicians, and athletes, not just students, also engage in time management activities. As part of their time management, students also may make decisions and form intentions about how they will allocate their effort and the intensity of their work. Most models of self-regulated learning include strategies to shape, control or structure the learning environment as important strategies for self-regulation (Zimmerman, 1998a). In settings of interpreter education, students have much freedom to structure their environment in terms of their learning. Much of the learning that goes on takes place outside the classroom, and students have to be able to control and regulate their study environment. Monitoring of the study environment for distractions (music, TV, talkative friends or peers), and then attempts to control or regulate their study environment to make it more conducive for studying (removing distractions, having an organized and specific place for studying), can facilitate learning and seem to be an important part of self-regulated learning (Hofer et al., 1998; Zimmerman, 1998a). Zimmerman (1998a) also discusses how writers, athletes and musicians attempt to exert contextual control over their environment by structuring it in ways that facilitate their learning and performance.

In addition, seeking the help of others was also a positive and significant predictor of SI performance. The self-regulatory process of help-seeking is defined as choosing specific

models, teachers or books to assist oneself to learn. It is important to note that help-seeking differs from social dependence by its selective focus and limited duration, and there is considerable evidence that students who are not self-regulated tend to avoid asking for assistance because of concern about adverse social consequences of such requests. Self-regulated students often report finding a study partner to help them study and prepare themselves for examinations (Zimmerman & Martinez-Pons, 1986). Self-regulated students know when, why, and from whom to seek help (Karabenick & Sharma, 1994; Newman, 1998; Ryan & Pintrich, 1997). Help-seeking is a strategy that involves not only the person's own behaviour, but also contextual control because it necessarily involves the procurement of help from others in the environment. In this study, students who indicated that they sought the help of peers and teachers tended to perform better on SI.

In addition to the effect of strategy use on interpreting performance, the present results also revealed that students' interpreting performance and related feedback influenced their subsequent use of SRL strategies. For example, students' results of Introduction to Interpreting CA1 were significantly and positively related to their subsequent use of peer learning strategies to learn CI, and near-significantly related to their subsequent use of metacognitive self-regulation strategies as well as to their overall SRL strategy use at Time 2. This finding is consistent with the reaction and reflection phase (or the self-reflection phase, in Zimmerman's terms) in a cyclic phase model of academic self-regulation (Zimmerman, 2000; Pintrich, 2000). After the students have completed a task, they may evaluate their performance on the task as well as reflect on the reasons for the outcome, that is, make attributions for the outcome (Weiner, 1986). The evaluations and attributions that students make for their success or failure cyclically influence subsequent self-motivational beliefs and strategy choices for further self-regulatory efforts to learn (Zimmerman & Schunk, 2004). Since Introduction to Interpreting CA1 was the students' first (CI) interpreting exam after entering the course, it is not surprising that they attached great importance to it by reacting and reflecting strongly. For example, I found evidence for students' reactions and reflections of their CI learning context. Students who did well in the CI exam (Introduction to Interpreting CA1) were subsequently more likely to structure their CI learning environment by working with peers in study groups or co-operative learning groups. I also found evidence for their cognitive reaction and reflection after the CI exam. Students who did well in the Introduction to Interpreting CA1 exam were subsequently more likely to

plan, monitor and regulate their learning activities. I found additional evidence for students' cognitive, behavioural and contextual reactions and reflections, in that students who did well in the CI exam (Introduction to Interpreting CA1) were subsequently more likely to engage in SRL activities in general at Time 2. It is worth noting that students who performed well on Introduction to Interpreting CA1 appeared subsequently to have higher levels of self-efficacy at Time 2 as well, given the non-trivial correlation. This result provides evidence for students' motivational reaction and reflection. This finding may partly explain the robust correlations between Introduction to Interpreting CA1 results and subsequent engagement in SRL learning activities. This interpretation is in line with Bandura's (1986) conception of reciprocal determinism. That is, how individuals interpreted the results of their performance attainments on Introduction to Interpreting CA1 informed and altered their self-efficacy beliefs, which in turn informed and altered their subsequent engagement in self-regulated learning activities.

7.4.5 Effort *vs.* Performance

In this study, students' effort expenditure was indicated by their reported study time outside of class every day. No significant relationship was found between students' reports of study time and their interpreting examination results. A possible explanation for the relatively weak relation between effort and interpreting exam performance might be that effort was only represented by the quantitative aspect of study time. According to the theoretical frameworks of deliberate practice (Ericsson, 1996, 2002; Ericsson et al., 1993) and self-regulated learning (Zimmerman, 1998a, 2002), the quality aspect of effort is equally or even more important for success in learning. In the regression analysis, students' effort was not a reliable predictor of their CI performance or SI performance. Effort alone had a positive relation to both CI performance and SI performance. However, when other variables are also entered as predictors of CI performance, effort had a negative relation to CI performance. This apparent suppressor effect of effort on CI performance suggests that effort without the concomitant existence of other factors (including SRL strategy use) is not conducive to CI performance. In contrast, when joined by all other variables in the regression for SI performance, effort had a positive relation to SI performance. However, when strategies were removed from the regression model, effort no longer had a positive relation to SI performance. This

finding highlights the important role of SRL strategy use in SI learning. It appears that quantity of study time may only have a positive relation to SI performance when quality of study time is also taken into consideration. In fact, the removal of the effort variable actually improved the predictive power of the regression model for either CI performance or SI performance. Taken together, these findings suggest that, as far as conference interpreting learning is concerned, the quality of effort is more important than the quantity. This finding is consistent with the importance of deliberate practice for predicting high levels of performance (Ericsson, 1996, 2002; Ericsson et al., 1993) and self-regulated learning (Zimmerman, 1998; 2002).

7.5 The Role of Modifiable Learner Factors in the Development of Expertise in Interpreting

Self-regulated learning has been used as a model for understanding student learning or developing instructional interventions to improve learning and performance in diverse disciplines as well as across a range of academic levels in prior research (see Chapter 3; Cleary, Platten & Nelson, 2008; Hofer & Yu, 2003; Hofer, Yu & Pintrich, 1998; Pintrich & De Groot, 1990; VanderStoep, Pintrich & Fagerlin, 1996; Weinstein, Husman & Dierking, 2000; Wigfield et al., 2008; Wolters & Pintrich, 1998; Zimmerman & Martinez-Pons, 1990; Zusho, Pintrich & Coppola, 2003). However, it has never been used as a framework for understanding trainee interpreters' development of expertise in conference interpreting in educational settings. In the present study, drawing upon the theoretical frameworks of expertise studies and self-regulated learning, I propose a self-regulated learning model that integrates existing knowledge of the factors affecting the development of expertise (see Figure 4.2, Ch. 4). This model serves as a framework for describing the relations among factors affecting the development of expertise in conference interpreting, and for understanding how trainee interpreters develop their expertise in conference interpreting in educational settings. In accordance with a social cognitive and self-regulated learning perspective, this model posits that, in the context of interpreter education, development of expertise in interpreting is decided by personal, behavioural and environmental factors. Learners' personal, behavioural and environmental factors all operate as interacting determinants of each other. Although they all influence the development of expertise in interpreting, only learners' personal and behavioural factors affect it directly. Environmental factors can influence the

development of expertise in interpreting only indirectly through the learner factors, that is, personal factors and behavioural factors. In other words, the learner factors serve as mediators through which environmental factors can exert influence on learning outcomes. Learner factors are further divided into two sub-groups: unmodifiable (e.g. age, gender, language level on entry) and modifiable (e.g. motivational beliefs, knowledge, effort, strategy use). It is assumed that unmodifiable learner factors can affect the development of expertise in interpreting through modifiable learner variables. Finally, it is also assumed that students' achievement in developing expertise in interpreting can in turn influence their modifiable personal factors, especially their motivational beliefs and knowledge base. For the purposes of the present study, I focused on only the modifiable components of the model: motivational beliefs, knowledge base, use of SRL strategies, effort, and outcomes. Making use of this model to place the different variables I assessed, I have tried to assess different aspects of self-regulated learning. Relevant findings have been reported and discussed in the previous sections of this chapter. In this section I will, on the basis of these findings and discussions, explore, discuss and clarify the intricate relations of various components and factors in the proposed model, including the validity of each construct and its unique contribution. This discussion will focus on modifiable learner factors, while at the same time drawing on findings about unmodifiable learner factors such as IELTS scores and age and environmental factors such as syllabus, as well as findings about the Stage-2 sample, in order to paint a more coherent picture of the antecedents and consequences of each component, and its developmental trajectory, as well as its relation to other constructs.

7.5.1 The Moderating Role of Student Entry Characteristics

The present results revealed that student entry characteristics, such as levels of B-language (in this case English) and age on entry, not only influenced interpreting students' learning through their persistent impact on modifiable learner variables such as motivational factors and use of SRL strategies (see 7.3.1), but they are directly related to students' eventual learning outcomes as well (see 7.4.1). In addition, the present results revealed that the use of SRL strategies only emerged as a significant predictor of interpreting performance when students' ages and IELTS scores on sub-skills were taken into consideration. This finding suggests that strategic learning or

deliberate practice in conference interpreting does not exist in isolation. Students' language skills are an indispensable condition for strategic learning and deliberate practice. This finding is consistent with the theoretical frameworks of deliberate practice (Ericsson, 1996, 2002; Ericsson et al., 1993) and self-regulated learning (Zimmerman, 1998a, 2002). It is also consistent with the AIIC Training Committee's advice to students wishing to become conference interpreters, which suggests that anybody who intends to train as an interpreter needs to have sound language skills (AIIC Training Committee, 2006).

The magnitude of the influence of unmodifiable personal factors on the students' interpreting learning and achievement suggests that we should extend the discussion to take in the role of prior knowledge and age as moderators of the relations between the cognitive and motivational factors and the development of self-regulated learning, as well as the relations between self-regulated learning and eventual achievement. In other words, we cannot talk about the importance of self-regulated learning and deliberate practice in the development of expertise in interpreting without considering the moderating role of unmodifiable learner factors such as students' prior knowledge of the working languages, as well as their age.

In summary, the present findings extend our current understanding of self-regulated learning and deliberate practice by underlining the importance of unmodifiable learner variables (e.g. prior knowledge of the English language and age) as prerequisites/conditions for adaptive and effective self-regulated learning or deliberate practice. In addition, the present findings concerning the moderating role of unmodifiable learner variables extend Bandura's (1986) model of triadic reciprocal determination by providing empirical evidence of the links between unmodifiable personal factors and modifiable personal factors as well as behavioural factors. Given the focus of the present study, further studies with more focus on unmodifiable personal factors are needed to provide more evidence about why and how prior knowledge of the B-language, and age, facilitate or inhibit trainee interpreters' self-regulated learning and deliberate practice as well as their development of expertise in interpreting. In the following sections, I will discuss the antecedents and consequences of modifiable learner variables (i.e. motivational beliefs, metacognitive knowledge, effort, use of SRL strategies) and how these factors can facilitate or constrain the development of self-regulated learning, as well as how they relate to or predict interpreting learning outcomes.

7.5.2 The Role of Motivation

7.5.2.1 Multiple Sources of Influence on Motivation

In line with social cognitive models of motivation as well as with our proposed model of the development of expertise in conference interpreting, the present results revealed that there were multiple sources of influence on students' levels of motivation during the course of the academic year. These include unmodifiable personal factors such as the students' level of B-language on entry (indexed by IELTS scores) and their age, and contextual factors such as syllabus, as well as the students' eventual achievement and related feedback.

Students entered the postgraduate interpreting programme with various aptitudes and degrees of prior knowledge. The students' scores on a prior IELTS test, which are part of the entrance requirements, represent their prior knowledge of the B-language. The present results indicated that their levels of motivation for learning conference interpreting turned out to be strongly correlated with their English language abilities (see 7.3.1). Another unmodifiable personal factor affecting students' levels of motivation is their age. Results revealed that age exerted a negative influence on the students' levels of identified regulation and self-efficacy beliefs during the course of the academic year. The older a student was, the lower his or her levels of identified regulation and self-efficacy beliefs. This negative influence of age on students' levels of identified regulation and self-efficacy beliefs became stronger over time. Given that unmodifiable learner variables such as age were not the focus of this study, further studies are needed to probe into the relations between students' ages and their motivational beliefs to provide more evidence about why and how students' ages are linked to their levels of identified regulation and self-efficacy beliefs.

In addition to unmodifiable personal factors, another important influence on the students' level of motivation is environmental factors. For example, the syllabus might have had an impact on the students' motivational development during the academic year (see 7.2). Furthermore, the present results revealed that the students' interpreting

performance outcomes exerted an important influence on their level of self-efficacy, as well as on their level of control beliefs (see 7.4).

In summary, in this study I have identified multiple sources of influence on the interpreting students' motivational beliefs during the academic year. These include unmodifiable personal factors such as prior knowledge of the B-language (indexed by IELTS scores) and age, as well as the students' eventual achievement and related feedback. I have also speculated that contextual factors such as syllabus might have had some influence on students' level of motivation.

7.5.2.2 The Role of Value Components

The findings for the variables of motivational types provide ecologically valid empirical evidence for the importance of considering value components in our models of factors affecting the learning of conference interpreting. First, the present results revealed that students who are more personally interested in studying interpreting as well as those who see it as more important or useful to them are more likely to use self-regulated learning strategies, while students who were unmotivated and had no reason, intrinsic or extrinsic, for learning conference interpreting were less likely to plan, monitor or regulate their learning. Furthermore, amotivation, the least autonomous regulation embraced by self-determination theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2000), emerged as a negative predictor of both CI and SI examination results. These findings are in line with self-determination theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2000, 2002), as well as with the findings of previous studies in a variety of contexts, which showed self-determined motivation (intrinsic motivation and identified regulation) to be associated with desirable consequences, while a lack of motivation corresponded to maladaptive outcomes (e.g. Deci & Ryan, 1991; Ryan & Deci, 2000; Standage, Duda & Ntoumanis, 2005; Vallerand, 1997). Second, the present results revealed that motivational types together added significantly to the amount of variance explained as well as the significance of the overall model for Consecutive Interpreting. The removal of motivational types constituted a substantial decrease in the explained variance as well as a significant decrease in significance of the overall model. Accordingly, students' types of motivation to learn interpreting are an important component to be considered in our model of factors that influence the development of expertise in conference interpreting for trainee interpreters.

The present findings indicated that there were differential links between different types of motivation and different outcomes. First of all, identified regulation was more strongly related to use of SRL strategies than intrinsic motivation (see 7.3.4). Secondly, intrinsic motivation and identified regulation appeared only to be positively and significantly correlated with students' reported use of various SRL strategies, but not with students' interpreting performance. These findings parallel the work of Pintrich and De Groot (1990), who found that while task value was a strong predictor of cognitive and metacognitive strategy use, it did not have a significant direct relation to student performance when cognitive and metacognitive strategy use were considered. In addition, work that has been done with expectancy-value theory (Eccles, 1983; Eccles & Wigfield, 1995; Eccles et al., 1998) showed that in general, value components do not directly influence achievement, but rather are closely tied to students' choice behaviour. Similarly, our data suggest that intrinsic motivation and identified regulation are an important component of students' 'choice' about becoming metacognitively engaged in their conference interpreting learning. Although our correlation data cannot address causality, it appears that the students who chose to become metacognitively engaged and self-regulating are those who were intrinsically interested in learning interpreting and those who identified the endeavour as important in terms of personal goals. In contrast to the self-determined types of motivation, amotivation was found to have robust negative relations with both metacognitive self-regulation strategy use and actual interpreting performances (see 7.4.2).

7.5.2.3 The Role of Expectancy Components

Self-efficacy, defined as 'one's perceived capabilities for learning or performing actions at designated levels' (Schunk et al., 2008: 379), is an expectancy component of student motivation. It concerns students' beliefs about their ability to learn Chinese/English interpreting well, not their underlying motives to learn it. Consistent with previous research, the results of this study showed that students who felt capable and confident about their capacity to learn interpreting successfully were much more likely to use self-regulated learning strategies, to try hard, to persist, and to perform well on interpreting tasks. In fact, the strength of the relations between self-efficacy and these different outcomes in this research, as well as in other research (Bandura, 1997; Eccles et al., 1998; Schunk, Pintrich & Meece, 2008; Schunk, 1991), suggests that self-efficacy

is one of the best and most powerful motivational predictors of learning and achievement. In contrast to this powerful role of self-efficacy, the present study found that students' control beliefs were not significantly related to their use of SRL strategies or the amount of time they spent per day on self-study. That is, control beliefs alone were insufficient to motivate students to study more strategically or expend more effort on learning (see 7.3.4).

7.5.2.4 Differential Prediction of Outcomes for Value and Expectancy Components

Another important finding of the present study is the differential prediction of outcomes for students' self-efficacy beliefs and their types of motivation, although self-efficacy was found to be reciprocally related to motivational types (see 7.3.2). The present results revealed that students' self-efficacy beliefs were positively related to adaptive SRL strategy use and effort expenditure, as well as to actual interpreting performance. By contrast, students' intrinsic motivation and identified regulation were only positively related to students' reported use of various SRL strategies. No significant relationship was found between the types of motivation students endorsed and the amount of time they spent on self-study every day. In addition, neither intrinsic motivation nor identified regulation had any significant positive relation to performance in CI or SI. Furthermore, it is interesting to note that, while both identified regulation and self-efficacy were positively related to students' reported use of metacognitive self-regulation strategies, self-efficacy was consistently more strongly related to metacognitive self-regulation strategy use. Given the present results, self-efficacy appeared to be a stronger predictor of SRL strategy use, although intrinsic motivation and identified regulation also showed positive relations. Self-efficacy was also a stronger predictor of effort expenditure. Self-efficacy was a significant positive predictor of interpreting performance, while intrinsic motivation and identified regulation were not. These findings parallel the work of Eccles and her colleagues (Eccles et al., 1998), who found that value beliefs are better predictors of choice behaviour, whereas expectancy components (e.g. self-efficacy) are better predictors of actual achievement. In other words, task value beliefs help to predict what courses students might take, but after students actually enrol in those courses self-efficacy is a better predictor of their performance. In this regard, amotivation appeared to be an

exception. The present results showed that amotivation had robust correlations with both metacognitive self-regulation strategy use and actual interpreting performances. At the same time, since students' levels of amotivation were found to result more from their low level of self-efficacy beliefs, why is it that amotivation was a better predictor of CI whereas self-efficacy was a better predictor of SI performance? Further studies are needed to explain this differential prediction of CI/SI interpreting performances for students' levels of amotivation and self-efficacy beliefs, as well as to find out how different motivational components can facilitate or constrain different interpreting learning outcomes.

7.5.3 The Role of Metacognitive Knowledge

The construct of metacognitive knowledge tested students' knowledge about what can lead to success in conference interpreting learning. It focused on views/beliefs about the importance or effectiveness of self-regulated learning strategies for success in conference interpreting learning. In line with the "reaction and reflection" phase of self-regulated learning (Pintrich, 2004), the present results revealed that an important source of influence on students' metacognitive knowledge came from their examination performance and related feedback. For example, students' metacognitive knowledge at Time 3 was significantly and positively related to the results of their first SI assessment after entry. Students who did well in the assessment were subsequently more likely to believe that SRL strategy use was important for success in conference interpreting learning.

The results provide empirical evidence for the importance of considering metacognitive knowledge a component in our model of factors affecting students' development of expertise in conference interpreting. The present findings revealed that students who believed that SRL strategies were important for success in conference interpreting also believed that outcomes were contingent on their own effort. Students who believed that SRL strategies were important were more likely to use them when studying. Examples included the use of strategies to plan, monitor, and regulate their learning, as well as the use of resource management strategies to control their learning, particularly in the first semester (see 7.3.5). High achievers in CI or SI had higher levels of metacognitive knowledge. Regression analysis revealed that the removal of the metacognitive knowledge variable constituted a near significant decrease in the significance of the

overall regression model in predicting SI performance. Accordingly, metacognitive knowledge is an important component to be considered in our model of factors affecting students' development of expertise in conference interpreting.

Metacognition refers to the awareness, knowledge and control of cognition. Previous efforts to assess students' SRL as a metacognitive, motivational and behavioural construct have focused on the control and self-regulation aspects of metacognition, rather than the knowledge aspect (e.g. LASSI: Weinstein et al., 1987; MSLQ: Pintrich et al., 1993; SRLIS: Zimmerman & Martinez-Pons, 1986, 1988). This current metacognitive knowledge construct represented an effort to fill the gap. This is an important addition to the current literature on self-regulated learning. It extended the existing literature by indicating that knowledge and regulation may work in unison to help students become self-regulated learners.

7.5.4 The Role of Self-Regulated Learning Strategies

7.5.4.1 Antecedents of Strategy Use

While the present results revealed no influence of students' English language skills on their use of SRL strategies during the course of the academic year, results did show that students' age was negatively and significantly related to students' use of metacognitive self-regulation strategies at Time 3 (see also 7.3.1). That is, for this sample of students with ages ranging from 21 to 36, the older a student the less likely they were to plan, monitor or regulate their interpreting activities in Semester Two. This result is somewhat surprising, as developmentally it might be expected that older students are more capable of regulating their cognition than younger students (Pintrich & Zusho, 2002). There are several possible explanations for this result. For example, despite having the general competence or capability to use SRL strategies, the older students might not know about various metacognitive self-regulation strategies. Or, even if they had knowledge of the strategies, they might not be motivated to use them. Or perhaps the general age-graded developmental trajectory (Pintrich & Zusho, 2002), with older students being more capable of regulating their cognition than younger students, might cease to work at certain ages or academic levels. Given that unmodifiable learner

variables such as students' age were not the focus of this study, further studies are needed to probe into the relations between students' ages and their use of SRL strategies in conference interpreting learning to provide more evidence about why and how students' ages are linked to their SRL strategy use.

The present results also revealed that students' metacognitive knowledge of SRL strategies and their motivational beliefs can facilitate or constrain their use of SRL strategies (see Tables 6.15, 6.16, and 6.18, in Section 6.3.1; see also 7.3.4, 7.3.5). Furthermore, the results of the present study, which utilizes longitudinal study data, provide more definitive insight into this issue. I found that at different stages of students' conference interpreting learning, different factors interacted to influence their development of self-regulated learning. During the initial transitional period (Semester One), students' metacognitive knowledge appeared to be a dominant factor influencing their strategy use, with their level of amotivation playing a role as well. However, at a later stage (Semester Two), when students' metacognitive knowledge stabilized, metacognitive knowledge only influenced students' strategy use in combination with self-efficacy and control beliefs. Thus the present longitudinal findings extend our current understanding of the development of academic self-regulation by demonstrating that students' development of self-regulated learning is influenced by different factors at different stages.

The present results also provided evidence that students' interpreting performance and related feedback influenced their subsequent use of SRL strategies (see 7.4.4). For example, students who did well in their first (consecutive) interpreting assessment after entry were subsequently more likely to structure their CI learning environment by working with peers in study groups or co-operative learning groups, and more likely to plan, monitor and regulate their learning activities, as well as more likely to engage in SRL activities in general.

7.5.4.2 Consequences of Strategy Use

In line with the theoretical framework of self-regulated learning, the present results revealed that students' use of effort regulation strategies was significantly and positively related to their reported study time at Time 3 (see 7.3.6). Students who could persist in the face of difficult or boring tasks were more likely to spend more time on study

outside of class each day. This finding provides evidence that students' effort and persistence is an outcome of their self-regulated learning. Not only was students' use of SRL strategies a predictor of their effort expenditure, it also predicted their exam results in combination with other learner variables. The present findings show that, although SRL strategies alone did not significantly predict CI performance or SI performance, strategy use did predict exam results in combination with other learner variables, particularly unmodifiable learner factors such as age and level of B-language (in this case English) on entry (see 7.4.4). At the same time, in line with the social cognitive model of self-regulated learning, I found that individual strategies were not equally predictive of CI or SI performance (see 7.4.4). For example, effort regulation and CI peer learning were significant positive predictors of CI performance, while time/study environment management and help-seeking were significant positive predictors of SI performance.

7.5.5 The Role of Effort

The present results revealed that self-efficacy was the only modifiable personal factor significantly related to effort (see 7.3.4). Students with strong efficacy beliefs were more likely to spend more time on self study every day. In addition, students' use of effort regulation strategies was also significantly related to their reported study time. Students who could persist in the face of difficult or boring tasks were more likely to spend more time on study outside of class every day. In addition, environmental factors such as syllabus might have an impact on students' effort expenditure. For example, the different syllabuses of Stage 1 and Stage 2 might be partially able to explain the big differences in average amount of reported study time between the two groups.

Although no significant relationship between students' study time and their interpreting performances was observed through correlation and regression analyses, examination of the variation in study time by performance revealed some interesting findings. From Semester One to Semester Two, most students' reported study time increased, but only high-achieving students increased their study time significantly. As a result, high achievers in both CI and SI also reported more study time than other groups in Semester Two, with an average of over two hours a day outside of class. Considering that in Semester Two the students had a new module of SI to deal with on top of a CI module, the marginal increase in study time reported by low and medium achievers in CI and

low achievers in SI, and even the slight decline in study time reported by medium achievers in SI, was disproportionate and surprising. In fact, an orderly pattern emerged for the performance level differences in study time in Semester Two, with high achievers in both CI and SI reporting the biggest amount of study time, followed by the medium achievers, followed by the low-achieving group. This finding was somewhat supported by the non-trivial, although statistically not significant, correlations between students' reported study time at Time 3 and their final end-of-year CI or SI examination results.

Therefore, we must not be led by the lack of significant relationship between study time and students' interpreting performance to assume that high-achieving students achieve their outstanding performance with the same or even less practice than others. On the contrary, high achievers study and undertake interpreting practice for a larger amount of time than others. This finding is in line with the position of Ericsson, Krampe, and Tesch-Römer (1993), who provided compelling evidence for a conclusion of some generality with respect to acquisition of expertise. Their conclusion is that level of expertise is a direct function of the amount of effortful formal practice of that skill undertaken by an individual. Their own work on student and professional players of musical instruments showed that the highest-achieving individuals consistently undertook around twice as much daily practice as moderate achievers, over long periods of childhood, adolescence and early adulthood. Similar findings have been obtained in other domains such as chess (Charness et al., 1996), sport (Starkes et al., 1996), and music (Sloboda, 1996).

Chapter 8

Conclusions and Implications

8.1 Introduction

This chapter will, first, summarize the major findings emerging from this study. Next, theoretical implications for constructing interpreter training theories will be presented. This will be followed by a discussion of the practical implications for interpreting teaching and learning. Then, the chapter will comment on the possible limitations of the study. Finally, it will suggest a set of topics and methodologies for further research.

8.2 Conclusions about Research Questions

This study has aimed to investigate how trainee interpreters go about learning of conference interpreting, and in particular, to ascertain the role of self-regulated learning in the journey of trainee interpreters towards expertise in interpreting. The primary purpose of the study has been to explore this complex issue, through identifying and quantifying the dominant modifiable learner factors that contribute to the development of interpreting expertise, charting their development over time, and unravelling their interrelationships as well as their relationship to interpreting performance. This has enabled me to build a robust model for the acquisition of interpreting expertise which provides a framework to aid understanding of how trainee interpreters go about learning of conference interpreting, and thus can inform our interpreter training pedagogy.

For the purposes of the present study, I focused only on the modifiable learner factors, including modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort). I investigated trainee interpreters' profile of modifiable learner factors over the course of an academic year and their relation to students' consecutive and simultaneous interpreting performances, in order to ascertain the role of self-regulated learning in the development of expertise in interpreting. This study has attempted to answer these questions: (1) how do trainee interpreters' modifiable personal factors (i.e., motivation, knowledge) and behavioural factors (i.e., strategy use, effort) change over time?; (2) what are the factors that facilitate or constrain the

development of self-regulation?; and (3) how does trainee interpreters' self-regulated learning relate to (or predict) their interpreting performances/learning outcomes?

8.2.1 Changes in Modifiable Personal Factors and Behavioural Factors over Time

Prior to the start of the course, the students as a group displayed an autonomous profile, evidenced by high levels of intrinsic motivation and identified regulation and low levels of amotivation. Students were slightly confident about their ability to learn interpreting well. Over time, their average level of motivation declined, especially in the first semester. The decline in motivation was more rapid in some respects than in others. In addition, while the general trend appeared to be a decline, the exact developmental trajectory of motivation may have varied. Prior to the start of the course, trainee interpreters had a high initial expectation/belief about the importance or usefulness of the use of SRL strategies. Over time, as they gained first-hand experience with strategy use, their perception decreased drastically towards the end of the first semester. Thereafter, their perception of strategies appeared to stabilize. In general, students' average use of self-regulated learning strategies remained at a moderate level during the academic year. This study found mixed results for changes in aspects of self-regulation over time. The only significant increase was found in the students' use of a study group or friends in Consecutive Interpreting learning. In terms of effort, the study found a decline in engagement over the course of learning. Although there was an increase in the actual amount of study time in Semester Two, it was far too disproportionate to the addition of a new SI module. In effect, these results imply an average decline in students' effort expenditure over time.

8.2.2 Factors Facilitating or Constraining the Development of Self-Regulation

The present study has found evidence that modifiable personal factors (i.e., motivation, knowledge) affected the development of self-regulation. In addition, unmodifiable personal factors (i.e., level of B-language and age on entry) were also found to influence the development of self-regulation.

Metacognitive knowledge. The construct of metacognitive knowledge tested students' knowledge about what can lead to success in conference interpreting learning. It focused on views/beliefs about the importance or usefulness of self-regulated learning strategies for success in conference interpreting learning. The study found that students who believed that SRL strategies were important were more likely to use them when studying, although metacognitive knowledge did not automatically lead to the use of self-regulated learning strategies. In addition, the magnitude of the role of metacognitive knowledge in the development of self-regulation appeared to change with time. During the initial transitional period (Semester One), students' metacognitive knowledge appeared to be a dominant factor influencing their strategy use. However, at a later stage (Semester Two), metacognitive knowledge only influenced students' strategy use in combination with motivational beliefs.

Motivational components. The present results revealed that students who are more personally interested in studying interpreting as well as those who see it as more important or useful to them are more likely to use self-regulated learning strategies, while students who were unmotivated and had no reason, intrinsic or extrinsic, for learning conference interpreting were less likely to plan, monitor or regulate their learning. At the same time, it was found that students who see studying interpreting as important or useful are more likely to use SRL strategies than those who are personally interested.

Self-efficacy, defined as 'one's perceived capabilities for learning or performing actions at designated levels' (Schunk et al., 2008: 379), concerns students' beliefs about their ability to learn Chinese/English interpreting successfully. The results of this study showed that students who felt capable and confident about their capacity to learn interpreting successfully were much more likely to use self-regulated learning strategies. In contrast to this powerful role of self-efficacy, the present study found that students' control beliefs were not significantly related to their use of SRL strategies. That is, control beliefs alone were insufficient to motivate students to study more strategically (see 6.3 for the results, 7.3 for the discussion). Given the present results, self-efficacy appeared to be a stronger predictor of SRL strategy use, although intrinsic motivation and identified regulation also showed positive relations.

Language level & Age. Although the present results revealed no direct influence of the level of B-language (in this case English) on entry on the use of SRL strategies during

the course of the academic year, results did show that trainee interpreters' prior knowledge of the B-language was positively correlated with their initial levels of motivation at the start of the course, as well as their levels of motivation during the course, which in turn had an impact on the development of self-regulated learning. On the other hand, trainee interpreters' age was found to be negatively and significantly correlated with the use of metacognitive self-regulation strategies towards the end of Semester Two. That is, for this sample of students with ages ranging from 21 to 36, the older a student the less likely they were to plan, monitor or regulate their interpreting activities in Semester Two. Meanwhile, trainee interpreters' age was also found to be negatively correlated with their levels of motivation and, thus, influenced their self-regulated learning through this avenue as well.

8.2.3 Self-Regulated Learning as a Predictor of Interpreting Performance

The present study has found evidence that motivational and metacognitive aspects of self-regulated learning predicted students' interpreting performances. The relation between students' motivational types and their Consecutive Interpreting performances became stronger over time. Students' levels of self-efficacy beliefs were robustly related to their Simultaneous Interpreting performances (see 6.4 for the details) – a higher level of self-efficacy was associated with a higher performance in SI. The study found that strategies only emerged as significant predictors of interpreting performance when both students' ages and their IELTS scores on sub-skills were taken into consideration. This finding suggests that strategic learning or deliberate practice in conference interpreting does not exist in isolation. Students' knowledge of the English language is an indispensable condition for strategic learning and deliberate practice. The present findings extend our current understanding of self-regulated learning and deliberate practice by underlining the importance of unmodifiable learner variables (e.g. prior knowledge of the English language and age) as prerequisites/conditions for adaptive and effective self-regulated learning or deliberate practice. In addition, individual strategies were not equally predictive of CI and SI performances. For example, effort regulation and peer learning (for CI) were significant positive predictors of CI performance, while time/study environment management and help-seeking were significant positive predictors of SI performance.

The present findings show that student entry characteristics can have a direct influence on students' interpreting performances. For example, students' ages were negatively and highly significantly related to their results of the final SI exam. The older the student was, the lower his or her SI examination results. Students' overall IELTS scores were positively and significantly related to their results in the final CI examination. IELTS Reading and Speaking scores were significant positive predictors of both CI and SI exam results. IELTS Writing score was negatively related to, although not a significant predictor of, CI exam results and a significant negative predictor of SI exam results. These findings increase our understanding about the factors that contribute to or inhibit students' development of expertise in conference interpreting.

8.3 Conclusions about the Research Problem

Drawing upon the theoretical frameworks of expertise studies and self-regulated learning, I propose a self-regulated learning model that integrates existing knowledge about the factors affecting the development of expertise (see Figure 4.2). This model serves as a framework for describing the relations among factors affecting the development of expertise in conference interpreting, and for understanding how trainee interpreters develop their expertise in conference interpreting in educational settings. By focusing on the modifiable learner factors in this model, I was able to address this research problem: w*hat is the role of self-regulated learning in the journey of trainee interpreters towards expertise in interpreting?*

The present findings provide strong support for the proposed model of the development of expertise in interpreting (see Figure 4.2). The results provided support for all proposed relations among the model variables, except for those between environmental factors and personal/behavioural factors which were not our focus and, thus, were not explicitly tested in the present study. First, consistent with social cognitive models of self-regulated learning, trainee interpreters' motivational types/beliefs and their metacognitive knowledge of strategies were found to be major influences on their use of SRL strategies. Trainee interpreters' intrinsic motivation, identified regulation and self-efficacy, and their metacognitive knowledge, were positively related to their use of self-regulated learning strategies, while amotivation was negatively related to strategy use. Trainee interpreters' motivational beliefs influenced their effort expenditure. There

was a positive association between students' self-efficacy beliefs and their reported study time outside class. Within the modifiable personal factors (i.e. motivational types/beliefs and metacognitive knowledge), I found that trainee interpreters' self-efficacy beliefs were reciprocally related to their motivational types. Self-efficacy was positively related to intrinsic motivation and identified regulation, and negatively to amotivation. Trainee interpreters' motivational beliefs were also found to be correlated with their metacognitive knowledge. Control beliefs were positively related to metacognitive knowledge of strategies. Results also revealed that trainee interpreters' self-efficacy, control beliefs and metacognitive knowledge together predicted their overall strategy use. Within the behavioural factors (i.e. effort and use of SRL strategies), trainee interpreters' use of effort regulation strategies was positively related to their reported study time. As for the correlates of interpreting performance, this study found that trainee interpreters' motivational types/beliefs and their use of SRL strategies predicted their interpreting performances.

Second, in line with the social cognitive perspective of self-regulated learning, the present study found that the relationship between modifiable learner factors and the development of expertise in interpreting was reciprocal. That is, not only did modifiable learner factors contribute to the development of expertise, expertise in turn also influences modifiable learner factors over time. For example, trainee interpreters' performances in examinations were found to influence their subsequent self-efficacy beliefs, control beliefs and metacognitive knowledge, as well as their subsequent use of SRL strategies.

Third, this study found that student entry characteristics such as level of B-language (in this case English) and age, which are referred to as unmodifiable learner factors in this study, played a moderating role in the relations between the cognitive and motivational factors and the development of self-regulation, as well as in the relations between self-regulated learning and the acquisition/development of expertise in interpreting (see 6.3–6.4 for the results, 7.3, 7.4, and 7.5.1 for the discussion, and 8.2.2–8.2.3 for the summary). More importantly, this study also found that trainee interpreters' level of B-language and age on entry were directly related to their eventual learning outcomes (see 7.4.1).

On the basis of the current findings, a schematic model of the relationship among modifiable learner factors, unmodifiable learner factors and the development of

expertise in interpreting can thus be formulated. As Figure 8.1 shows, this revised model not only carries all the proposed relations among model variables in Figure 4.2 (see p.77), but also has an important addition. In this revised model, unmodifiable personal factors (or student entry characteristics) are directly linked with learning achievement—development of expertise in interpreting. This is because the present study found that trainee interpreters' IELTS scores on entry as a measure of prior knowledge of B-language, and their ages, reliably predicted their final end-of-year interpreting performances (see 6.4, 7.5.1, and 8.2.3). Because they were not explicitly assessed in this study, environmental factors in the model were faded out by using a light grey colour rather than straight black.

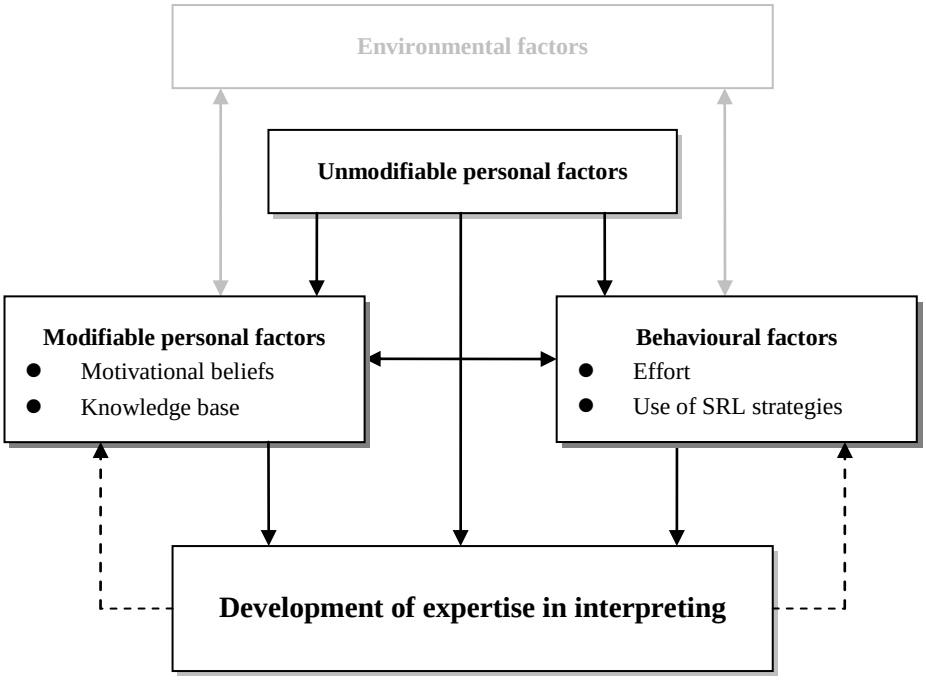


Figure 8.1 A revised model of the development of expertise in interpreting

8.4 Theoretical Implications

This section will focus on the theoretical implications which can be drawn from the findings of the present study. The findings from this study have a number of implications for interpreter training and self-regulated learning, as well as for deliberate-practice theory and research.

The role of modifiable learner variables. A first theoretical implication of this study concerns the role of modifiable learner variables in accounting for individual differences in conference interpreting learning. To the best of our knowledge, this is the first study to theoretically articulate or empirically test the changes in modifiable learner variables related to conference interpreting learning or the underlying drivers of such changes, as well as the role of modifiable learner variables in the journey of trainee interpreters towards expertise in interpreting. Previous studies either investigated non-learner variables such as teachers' instruction and unmodifiable learner variables such as aptitude (e.g. Moser-Mercer et al, 2000; Timarová & Ungoed-Thomas, 2009; Pöchhacker, 2011), or else examined modifiable learner variables in such a way that one or two types of variables were investigated in isolation rather than a whole set of variables (e.g. Rosiers et al., 2011; Timarová & Salaets, 2011; Bontempo & Napier, 2011). Therefore, this study has made an important contribution to the present literature on factors affecting the development of expertise in interpreting. The findings emerging from this study show that a set of variables do function as a network rather than each variable working in isolation, and furthermore, modifiable learner variables are crucial for accounting for individual differences in interpreting performances.

Furthermore, the study has also contributed methodologically to the interpreting studies literature, in that it offers one of the few three-time-point studies of conference interpreting learning. Such longitudinal study is particularly important for understanding complex temporal behaviours such as conference interpreting learning, and will hopefully pave the way for additional studies of this type. The three-time-point design allowed me to examine not only beliefs and behaviour changes over time, but also the rate of such changes across time on an interpreter training course. It is hoped that this study will inspire the research community to move from the traditional static perspective to a dynamic perspective by focusing on understanding trainee interpreters' learning processes.

A model of the development of expertise in interpreting. This study proposed a model of the development of expertise in interpreting by integrating expertise studies constructs with self-regulated learning theory, and validated the model using survey data from a longitudinal study in the educational context. On the one hand, the present findings provide a much-needed test of existing theory and knowledge of expertise acquisition/development and self-regulated learning in the field of interpreter training. On the other hand, the study contributes to interpreter training research by presenting a

theoretical model to explain how trainee interpreters go about their learning of conference interpreting in educational settings, as well as the intricate relations among factors affecting the development of expertise in conference interpreting. By combining the deliberate-practice framework and the theoretical approaches of self-regulated learning, and by considering both the activities that increase the productivity and efficiency of study time (i.e. deliberate practice) and the social, cognitive and motivational factors that lead certain students to engage in these effective study activities, I was able to describe the multiple factors related to trainee interpreters' development of expertise in interpreting in educational settings. I hope that this model will provide a foundation for future inquiries into the development of expertise in interpreting.

Insights for deliberate-practice or self-regulated learning approaches to developing expertise in interpreting. In Section 4.2.2.3, Chapter 4, I introduced the debate between the so-called common-sense approach to expertise and the deliberate-practice/expert-performance approach. Ericsson (1996, 2003) argues that deliberate practice is the primary determinant of developing expertise. This claim has been hotly debated because Ericsson (1996) appears to dismiss the role of native ability and talent in the development of expertise. Sternberg (1996, 2001), for example, suggests that very high levels of expertise require native ability, talent and deliberate practice, rather than only deliberate practice.

The findings from this study seem to underline the need to counter extreme positions, such as the view that deliberate practice leads to expertise in interpreting no matter where you start. While the findings of this study are generally consistent with the importance of deliberate practice for predicting high levels of performance, they also underline the importance of unmodifiable learner variables (e.g. level of B-language on entry and age) as prerequisites/conditions for adaptive and effective self-regulated learning or deliberate practice. It was found that trainee interpreters' levels of B-language on entry and ages had a persistent impact on their motivational beliefs and strategy use. Furthermore, level of B-language on entry and age were directly related to the students' eventual learning outcomes as well. In addition, it appears that the use of SRL strategies may only emerge as a reliable factor that determines interpreting performance when the trainee interpreters' age and level of B-language are also taken into consideration. The magnitude of the influence of B-language level on entry and age on interpreting learning and achievement suggests that we cannot talk about the

importance of self-regulated learning and deliberate practice in the development of expertise in interpreting *without* considering factors such as trainee interpreters' level of B-language and age.

It is uncertain whether the findings of the present study are universally applicable, given the sample's language combination and level of interpreting expertise. At the very least, however, the present findings underline the need for interpreter training researchers to consider the factors of language level and age in their deliberate-practice and self-regulated learning approaches to the development of expertise in interpreting. To borrow Sternberg's words, 'without the (language) ability, practice can be for minimal or no rewards' (1996: 349).

8.5 Practical Implications

Practical implications can be drawn from the findings of this study. Interpreter trainers can make use of the findings concerning the overall relations between modifiable learner variables and interpreting performance to promote the efficiency of conference interpreting learning and self-regulated learning. Effective interpreter trainers should not only teach interpreting skills and strategies, but also help students become aware of their own knowledge/beliefs and strategies and develop their ability to study effectively and efficiently on their own. Interpreter trainers should train students to be independent and self-regulating and at the same time to be effective and efficient in learning. To fulfil this task, interpreter trainers should know what is meant by self-regulated learning in the first place. Teachers should be aware of the role beliefs/knowledge and strategies may play in student learning and how their classroom instructions may influence these motivational and cognitive factors. The findings of this study provide important information for interpreter trainers to fulfil the task just mentioned. Hopefully, these findings can be disseminated to interpreter trainers through publication or research seminars in the near future.

Motivation. It is important to facilitate adaptive motivational beliefs. The findings of this study revealed that trainee interpreters are motivated in multiple ways and that motivation is not a stable trait but reflects an interaction between the context and what the student brings to the context. Accordingly, interpreter trainers are urged to consider ways in which the learning environment can be altered to facilitate adaptive efficacy

beliefs, encourage interest and value, and combat amotivation. For example, one can help maintain self-efficacy levels by communicating the role of practice and strategies. In other words, it is essential for interpreter trainers to convey to trainee interpreters that interpreting is indeed learnable, and that one can improve one's interpreting skills by employing specific strategies. It is also vital for interpreter trainers to focus on task value in their pedagogy and explanations of interpreting exercises, as well as relate instruction and assessment to the relevance and utility of interpreting in real settings. Because many of the interpreting exercises are not inherently interesting or enjoyable, we cannot always rely on intrinsic motivation to foster learning. A central question concerns how to motivate students to value and self-regulate such activities, and, without external pressure, to carry them out on their own (Ryan & Deci, 2000). In this case, knowing how to promote the identified regulation forms of extrinsic motivation becomes an essential strategy for successful teaching.

Metacognitive knowledge. Metacognitive knowledge of strategies is linked to how trainee interpreters will learn. Students who believe that SRL strategies are useful or important are more likely to use them when studying. In this study, the trainee interpreters initially had a strong expectation/belief about the importance of SRL strategies, but this belief declined drastically towards the end of the first semester. This drastic decline had a negative effect on their subsequent use of SRL strategies. Hence, there is a need for interpreter trainers to rectify this situation by helping students have a more accurate and adaptive perception of the usefulness of SRL strategies for success in conference interpreting learning. One way of achieving this is to teach for metacognitive knowledge explicitly. Metacognitive knowledge could certainly be taught in separate courses or units, but more importantly, it could be embedded within the usual interpreting-skill-based sessions in the context of specific interpreting exercises. For example, the interpreter trainer can explicitly label and discuss metacognitive knowledge when it comes up during a classroom session. According to Pintrich (2002), making the discussion of metacognitive knowledge part of the everyday discourse of the classroom helps foster a language in which trainee interpreters can talk about their own cognition and learning. The shared language and discourse about cognition and learning among peers, and between trainees and trainers, helps trainee interpreters become more aware of their own metacognitive knowledge as well as their own strategies for learning and thinking. As they hear and see how their classmates approach a task, they can compare their own strategies with their classmates' and make judgments about the

relative utility of different strategies. In addition to the development of a classroom discourse around metacognitive knowledge, interpreter trainers can also model and explain specific strategies to trainee interpreters. For example, when the interpreter trainer demonstrates to the trainee interpreters how to approach an interpreting exercise or solve a problem, he might talk aloud about his own cognitive processes as he works through the exercise/problem. This provides a model for trainee interpreters, showing them how they use strategies in solving real problems. In addition, the interpreter trainer also might discuss why he or she is using this particular strategy for this specific problem, thereby also engaging trainee interpreters in issues concerning the conditional knowledge that governs when and why different strategies should be used.

Self-regulated learning strategies. It should be made clear to trainees from the very beginning that quality is more important than quantity in terms of interpreting practice. In order to ensure that students' self-study sessions provide optimal opportunity for learning and skill acquisition (Ericsson & Charness, 1994), use of self-regulated learning strategies is crucial – for example, defining short-term objectives, preparing suitable speeches, providing objective-related feedback, and following training stages. At the same time, self-regulated learning strategies are not easily developed or learned and there must be instruction in and scaffolding of these strategies. According to Zimmerman (2000), self-regulated learning strategies can be acquired from and are sustained by social sources as well as self-sources of influence (see 3.4 for the details). Zimmerman and his colleagues formulated a social cognitive model of the development of self-regulatory competence (see Table 3.2), which predicts that self-regulatory competence develops initially from social sources and subsequently shifts to self sources in a series of levels: observational level, emulative level, the self-controlled level, and the self-regulated level. This model highlights the importance of modelling because students require exposure to models for observational and emulative learning. Accordingly, interpreter trainers might consider modelling specific strategies or ways of thinking for learning interpreting in class, in addition to encouraging trainee interpreters to share their own strategies for learning CI and SI.

One important implication that can be drawn from this study is that interpreter trainers should help trainee interpreters improve the whole learning system rather than focus on one variable only. As this study shows, learners' behaviours quite often result from the joint effects of several factors. For example, failure to use an individual strategy may result from the learner's beliefs about its usefulness and/or from his/her lack of

motivation for using it. Therefore, the emphasis of any intervention to teach self-regulated learning should be placed as much on the relations among modifiable learner variables as on the variables per se. It is important to consider both 'motivational' interventions and 'cognitive' interventions in our attempts to teach trainee interpreters to be self-regulated learners. After all, knowing when and how to use a SRL strategy does not automatically mean that it will be used. Motivational and environmental elements may influence the final decision.

Language enhancement. The present study found that use of SRL strategies alone is not sufficient to ensure the quality of interpreting practice. Trainee interpreters' command of their working languages is an indispensable prerequisite/condition for deliberate practice in interpreting. Hence, another important implication we can draw from the findings of the present study is that interpreter trainers need to ensure that linguistic prerequisites are met by trainee interpreters in order for their interpreting practice to be really effective and efficient. Theoretically, at the time of admission into an interpreter training programme, trainee interpreters should already have a 'near-perfect' command of their working languages (Gile, 2009: 220). Yet, as Gile (2009: 220) pointed out, linguistic prerequisites are not always met. If they are not, it is necessary to seek remedies. Gile (2009) suggested two types of possible remedy. One is to set up language enhancement courses. Another is to instruct students to improve their language skills on their own.

8.6 Limitations of the Study

As with any study, there are several limitations to the findings of this study.

The first limitation concerns the instrument of data collection. All the students' motivational beliefs, and their metacognitive knowledge, effort expenditure and use of SRL strategies, were measured with a self-report instrument. Self-reports can be used effectively to measure the personal attributes of self-regulated learning (Pintrich et al., 1993; Winne & Perry, 2000; Zimmerman, 2008), but the results need to be replicated with other measures, such as trace logs of SRL processes, think-aloud protocols, structured diaries, direct observations or microanalytic measures (Zimmerman, 2008; see also 3.5.1). One of the serious limitations of questionnaires is the simplicity and superficiality of answers:

> Because respondents are left to their own devices when filling in self-completed questionnaires, the questions need to be sufficiently simple and straightforward to be understood by everybody. Thus, this method is unsuitable for probing deeply into an issue, and it results in rather superficial data. The necessary simplicity of the questions is further augmented by the fact that the amount of time respondents are usually willing to spend working on a questionnaire is rather short, which again limits the depth of the investigation. (Dörnyei, 2003: 10)

At the same time, subjects' responses to the questionnaire items might not always be reliable for the following three reasons. The first is that the subjects may have different interpretations of the questionnaire items. There is also the potential for misunderstanding of questionnaire items. The second is that discrepancies may exist between what the subjects think they have done and what they have actually done. The third is that the subjects may not always report their beliefs/strategies accurately (i.e. they may instead report the beliefs/strategies that they think they should hold/use and that the researcher wishes to hear). In addition, the scope of the survey is limited. The questionnaire was pre-set and thus constrained learners to describe their interpreting learning experience within the framework of ideas provided by the researcher. The use of rating scales also made it almost impossible to report how the students used different approaches to cope with different tasks in different situations.

The second limitation concerns the sample. The participants in this study were a small convenience sample and not representative of all trainee interpreters, and generalisability to trainee interpreters from other institutions or socio-demographic backgrounds is not certain. The participants consisted of a cohort of 30 students admitted into the Postgraduate Programme of Chinese/English interpreting at Newcastle University in September 2009, their ages ranging from 21 to 36. With the exception of one local English-speaking student, the participants are Chinese-speaking students from either Taiwan or Mainland China. Two participants were male, while 28 were female. This homogeneity of sample is going to have a direct bearing on the applicability and generalizability of the research findings.

The third limitation concerns the longitudinal design of this study. First of all, longitudinal studies can suffer from the conditioning effect. This describes

> the situation where, if the same respondents are contacted frequently, they begin to know what is expected of them and may respond to questions without thought, or they may lose interest in the inquiry, with the same result. (Kumar, 2005: 98)

Secondly, there is also the reactive effect of the instrument:

> Sometimes the instrument itself educates the respondents. This is known as the reactive effect of the instrument. Many studies designed to measure the impact of a program on participants' awareness face the difficulty that a change in the level of awareness, to some extent, may be because of this reactive effect. (Kumar, 2005: 97)

In other words, participants 'may change their behaviour as a result of the greater awareness produced by repeated questioning' (Oppenheim, 1992: 34). In addition, longitudinal designs tend to have weak causal attribution. In this longitudinal study I took repeated measures of the same respondents at several time intervals. Longitudinal designs tend to be somewhat weaker in terms of causal attribution. This is because there were several months between the time the base-line measures were taken and the final measurement stage. During such a lengthy interval, many intervening variables may influence the effects being studied (Oppenheim, 1992).

Owing to the limitations mentioned above, the eventual findings obtained from the surveys have to be interpreted cautiously.

8.7 Suggestions for Further Research

The present study has produced some interesting findings regarding the role of self-regulated learning in the journey of trainee interpreters towards expertise in interpreting. Meanwhile, the outcomes of the present study also highlight the need for further research.

The present research has centred on trainee interpreters' learning of Chinese/English interpreting, but did not examine how interpreter trainers' classroom practices were linked to trainee interpreters' motivation, metacognitive knowledge, use of SRL strategies, or interpreting performances. Future studies could usefully investigate the interaction between teacher variables and learner variables, for example by comparing

interpreter trainers' metacognitive knowledge as well as their strategy use with those of trainee interpreters. It would be interesting to see how interpreter trainers' knowledge and strategy use match or are at variance with those of trainee interpreters. Future studies could also investigate interpreter trainers' overt teaching of knowledge, skills, or strategies in interpreting classes. Such studies will provide us with more understanding about the influence of interpreter trainers on trainee interpreters, as well as of how classroom practices can be changed to foster adaptive motivation and self-regulation and to help trainee interpreters acquire knowledge about the learning of interpreting. On the basis of the findings from such studies, a better and more comprehensive model of the development of expertise in interpreting can be developed.

All the participants in the present study came from the same Chinese/English interpreter training programme at Newcastle University. It is therefore not known whether students from other Chinese/English interpreter training programmes at other universities would reveal similar patterns. Hence, the results of this study cannot be read as applying to all trainee interpreters in Chinese/English interpreting. To gain a more generalizable picture of the learning of Chinese/English interpreting and verify the reliability of the instruments used in the current study, the same study can be replicated with a larger sample size, using subjects of different age groups, different language levels, and different levels of expertise in interpreting. In addition, the present study, which mainly examined trainee interpreters whose A-language is Chinese, can also be replicated using subjects whose A-language is English to compare the similarities and differences in self-regulated learning.

In the present study, the focus has been on the quantitative analysis of trainee interpreters' motivation and cognitive components, measured with multiple waves of self-report questionnaires. Follow-up studies using qualitative methods, such as think-aloud protocols, stimulated recall procedures, structured interviews, structured diaries, or direct observations, could provide contextually rich data that could be used to illustrate and supplement the present findings. It is also conceivable that future studies using more naturalistic methods would result in a better appreciation of the dynamic nature of self-regulated learning.

The present study has produced clear evidence that SRL is an important construct that merits further research. The next step would be to focus down on certain key areas. For example, we could undertake a close and in-depth analysis of learners' reasons for

studying interpreting and see how their motivations are related to their metacognitive knowledge and actual learning behaviours. The present study has underlined the importance of trainee interpreters' language levels and age as prerequisites for adaptive and effective self-regulated learning or deliberate practice. Further studies are needed to provide more evidence about why and how the level of the B-language and age facilitate or inhibit trainee interpreters' self-regulated learning and deliberate practice as well as their development of expertise in interpreting. Another aspect which we could explore is the differential prediction of learning outcomes for motivational beliefs and strategy use. For example, why is self-efficacy more closely related to SI exam results than to CI exam results? In terms of the predictive power of individual strategies, why are some strategies positive predictors of CI performance but negative predictors of SI performance, or negative predictors of CI performance but positive predictors of SI performance? The answers to these questions can lead to enhanced provision of guidance for trainee interpreters.

Finally, interpreter training is an educational process and so comparable with any other course. Thus the insights from the present study regarding the factors that influence the development of expertise in interpreting can be applied to learning in other university disciplines readily and profitably. The present findings are not only useful to issues in relation to the development of expertise in the domain of sport, music, or writing in a university setting, but should also be relevant to learning activities in academic domains such as history, law, or languages. It would be insightful in future work to examine the cross-disciplinary generalisability of the present findings in other university disciplines. Such work would reveal how much our conclusions and model apply to any university degree, as well as shedding light on the differences from other university disciplines.

Appendix A: A Proficiency Scale (Chi, 2006: 22; adapted from Hoffman, 1998)

Naïve	One who is totally ignorant of a domain
Novice	Literally, someone who is new – a probationary member. There has been some minimal exposure to the domain.
Initiate	Literally, a novice who has been through an initiation ceremony and has begun introductory instruction.
Apprentice	Literally, one who is learning – a student undergoing a program of instruction beyond the introductory level. Traditionally, the apprentice is immersed in the domain by living with and assisting someone at a higher level. The length of an apprenticeship depends on the domain, ranging from about one to 12 years in the Craft Guilds.
Journeyman	Literally, a person who can perform a day's labor unsupervised, although working under orders. An experienced and reliable worker, or one who has achieved a level of competence. Despite high levels of motivation, it is possible to remain at this proficiency level for life.
Expert	The distinguished or brilliant journeyman, highly regarded by peers, whose judgments are uncommonly accurate and reliable, whose performance shows consummate skill and economy of effort, and who can deal effectively with certain types of rare or "tough" cases. Also, an expert is one who has special skills or knowledge derived from extensive experience with subdomains.
Master	Traditionally, a master is any journeyman or expert who is also qualified to teach those at a lower level. Traditionally, a master is one of an elite group of experts whose judgments set the regulations, standards, or ideals. Also, a master can be that expert who is regarded by the other experts as being "the" expert, or the "real" expert, especially with regard to sub-domain knowledge.

Appendix B: Levels of Expertise in Interpreter Education Programs

(Sawyer, 2004: 72; adapted from Klein & Hoffman, 1993: 206; Hoffman et al., 1995: 132)

Program Entry (entry-level assessment)

Novice

Has little experience; learns about objective, measurable attributes;

context-free rules guide action; behaviour is limited and inflexible

A naivette is ignorant of the domain.

A novice is a new, probationary member of the domain and has some exposure to the domain.

An initiate has completed an initiation ceremony and begun introductory instruction.

Goal: Familiarity with domain

Degree-Track Selection (intermediate assessment)

Advanced Beginner

Notes recurring, meaningful situations; understands global characteristics; operates on general guidelines; begins to perceive recurrent, meaningful patterns

An apprentice is undergoing a program of instruction beyond the introductory level and is immersed in the domain through involvement with the professional community, in particular by assisting a mentor.

Goal: Basic consecutive and simultaneous interpreting tasks

Program Exit (final assessment)

Competent

Sees actions in terms of long-range goals or plans; is consciously aware of formulating, evaluating, and modifying goals; generates plans in terms of current and future priorities; can cope with and manage a variety of types of situations

A journeyman can perform a day's work unsupervised, although working under orders, and is an experienced and reliable worker who has achieved a level of competence.

Goal: Difficult consecutive and simultaneous interpreting tasks

Appendix C: Cronbach's Alpha Coefficients and Factor Loadings for the Pilot Questionnaire

Intrinsic motivation	Factor loadings[1]	Alpha[2]
For the "high" feeling that I experience while interpreting.	0.857	0.837
For the satisfaction I feel when I am in the process of accomplishing difficult exercises in interpreting.	0.865	
For the pleasure that I experience in learning new interpreting techniques and strategies.	0.885	

[1] The factor loadings represent the weights and correlations between the items and the factor.
[2] The alpha values indicate the internal consistency of the items in each scale.

Extrinsic motivation	Factor loadings	Alpha
Because I want to become an interpreter.	0.599	0.489
Because I think it will be useful in getting a good job.	0.888	
Because I think it can improve my English proficiency.	0.629	

Amotivation	Factor loadings	Alpha
I don't know why I study interpreting, and frankly, I don't care.	0.758	0.703
I don't know why I study interpreting; I have the impression that I am incapable of succeeding in learning interpreting.	0.852	
I don't know why I study interpreting; I don't really think my place is in interpreting.	0.849	

Self-efficacy	Factor loadings	Alpha

I’m confident I have the ability to learn interpreting successfully.	0.956	0.866
I’m confident in my interpreting abilities at this time.	0.717	
I’m confident I have the ability to get the score I’m trying for in my next interpreting test.	0.936	
I’m confident I know how to find an effective way to learn interpreting.	0.767	

Metacognitive knowledge of strategies	**Factor loadings**	**Alpha**
Setting long-term and short-term learning goals is important for success in learning interpreting.	0.566	0.751
Planning and managing study time is important for success in learning interpreting.	0.451	
Closely following the teacher’s instructions is important for success in interpreting learning.	0.582	
Asking others for help when needed is important for success in learning interpreting.	0.480	
Constantly summarizing the progress that has been made and identifying the areas for improvement is important for success in learning interpreting.	0.761	
Selecting appropriate learning strategies is important for success in learning interpreting.	0.738	
Constantly evaluating the effectiveness of learning strategies is important for success in learning interpreting.	0.688	
Learning with others is important for success in learning interpreting.	0.461	
Setting up a productive study environment is important for success in learning interpreting.	0.536	

Metacognitive self-regulation	Factor loadings	Alpha
During an interpreting exercise I often miss important points because I'm thinking of other things.	0.064	0.791
When doing an interpreting exercise, I set specific goals to help focus my performance.	0.697	
I ask myself if I could have prepared for it more effectively after I finish an interpreting task.	0.641	
If an interpreting exercise is difficult, I change the way I approach the material.	0.568	
When faced with a new interpreting task, I often begin by analyzing the nature of the task and using relevant sources of information to prepare for the task.	0.657	
I test myself with interpreting exercises to make sure I have mastered what I have been learning in class.	0.560	
I try to change the way I study in order to fit the course requirements and teacher's teaching style.	0.517	
I often find that I have been practising interpreting but don't know what I have learned after I finish.	0.466	
I try to think through an interpreting exercise and decide what I am supposed to learn from it rather than just doing it.	0.774	
I analyze the strengths and weaknesses of my performance as an interpreter after I finish a task.	0.736	
When I study interpreting, I set goals for myself in order to direct my activities in each study period.	0.802	
If I get confused about something I am interpreting, I make sure I sort it out afterwards.	0.631	

Time/Study environment management	Factor loadings	Alpha
I usually study in a place where I can concentrate on my course work.	0.899	0.762

I make good use of my study time.	0.740	
I find it hard to stick to a study schedule.	0.642	
I have a regular place set aside for studying.	0.812	
I make sure I keep up with the weekly assignments for my courses.	0.804	
I attend class regularly.	0.644	
I often find that I don't spend very much time on school work because of other activities.	0.733	
I rarely find time to prepare before an exam.	0.546	

Effort regulation	**Factor loadings**	**Alpha**
I often feel so lazy or bored or frustrated when I study that I quit before I finish what I planned to do.	0.655	0.679
I work hard to do well even if I don't like what we are doing.	0.745	
When interpreting work is difficult, I give up or only study the easy parts.	0.693	
Even when interpreting materials are dull and uninteresting, I manage to keep working until I finish.	0.771	

Peer learning	**Factor loadings**	**Alpha**
When studying interpreting, I often try to discuss interpreting learning matters with a classmate or a friend.	0.850	0.881
I try to work with other students to complete the course assignments.	0.974	
When studying interpreting, I often set aside time to practice interpreting with other students.	0.879	

Help seeking	Factor loadings	Alpha
Even if I have trouble learning interpreting, I try to do the work on my own, without help from anyone.	0.454	0.677
I seek the teacher's advice if my progress and achievements do not meet my expectations.	0.750	
I ask the teacher or another student for help when I don't understand something.	0.892	
I try to identify students in my class whom I can ask for help if necessary.	0.834	

Appendix D: The Interpreting Learner Factors Questionnaire (ILFQ)

The attached questionnaire has been designed to survey interpreting students like you to find out about your learning. The questionnaire asks you about your study habits, your motivation as an interpreting learner, and your views about learning interpreting. The questionnaire is not a test; there are no right or wrong answers. You are urged to respond to the questionnaire as accurately as possible, reflecting your own opinions and learning experience. Please be assured that all information you provide will be treated in a confidential manner and will be used for the research only.

I. Why are you studying interpreting? Using the scale below, please indicate to what extent each of the following statements is true of you. <u>Please circle the appropriate number</u>.

1	**2**	**3**	**4**	**5**	**6**	**7**
Not at all true of me	A little bit true of me	Somewhat true of me	Moderately true of me	Quite a bit true of me	Very true of me	Extremely true of me

Why are you studying interpreting?

1.	I don't know why I study interpreting, and frankly, I don't care.	1	2	3	4	5	6	7
2.	Because I want to become an interpreter.	1	2	3	4	5	6	7
3.	Because I think it will be useful in getting a good job.	1	2	3	4	5	6	7
4.	For the "high" feeling that I experience while interpreting.	1	2	3	4	5	6	7

5.	I don't know why I study interpreting; I have the impression that I am incapable of succeeding in learning interpreting.	1	2	3	4	5	6	7
6.	For the satisfaction I feel when I am in the process of accomplishing difficult exercises in interpreting.	1	2	3	4	5	6	7
7.	Because I think it can improve my English proficiency.	1	2	3	4	5	6	7
8.	For the pleasure that I experience in learning new interpreting techniques and strategies.	1	2	3	4	5	6	7
9.	I don't know why I study interpreting; I don't really think my place is in interpreting.	1	2	3	4	5	6	7

II. Following are a number of statements with which some people agree and others disagree. Please rate each statement by <u>circling the number</u> which best indicates the extent to which you disagree or agree with that statement.

1	2	3	4	5	6	7
strongly disagree	moderately disagree	slightly disagree	neutral (not sure)	slightly agree	moderately agree	strongly agree

10.	Planning and managing study time is important	1	2	3	4	5	6	7

for success in learning interpreting.

11. I'm confident in my interpreting abilities at this time.	1	2	3	4	5	6	7
12. Asking others for help when needed is important for success in learning interpreting.	1	2	3	4	5	6	7
13. I'm confident I have the ability to get the score I'm trying for in my next interpreting test.	1	2	3	4	5	6	7
14. If I study in appropriate ways, then I will be able to learn interpreting well.	1	2	3	4	5	6	7
15. Setting long-term and short-term learning goals is important for success in learning interpreting.	1	2	3	4	5	6	7
16. I'm confident I have the ability to learn interpreting successfully.	1	2	3	4	5	6	7
17. Closely following the teacher's instructions is important for success in learning interpreting.	1	2	3	4	5	6	7
18. It is my own fault if I don't learn interpreting well.	1	2	3	4	5	6	7
19. Constantly summarizing the progress that has been made and identifying the areas for improvement is important for success in learning interpreting.	1	2	3	4	5	6	7

20. If I try hard enough, then I will learn interpreting well.	1	2	3	4	5	6	7
21. I'm confident I know how to find an effective way to learn interpreting.	1	2	3	4	5	6	7
22. Learning with others is important for success in learning Consecutive Interpreting (CI).	1	2	3	4	5	6	7
23. Setting up a productive study environment *(e.g. trying to study in a place where you can concentrate on your course work)* is important for success in learning interpreting.	1	2	3	4	5	6	7
24. Learning with others is important for success in learning Simultaneous Interpreting (SI).	1	2	3	4	5	6	7
25. Constantly evaluating the effectiveness of learning strategies is important for success in learning interpreting.	1	2	3	4	5	6	7
26. If I don't learn interpreting well, it is because I didn't try hard enough.	1	2	3	4	5	6	7
27. Selecting appropriate learning strategies is important for success in learning interpreting.	1	2	3	4	5	6	7

III. The following statements are about how you study interpreting. How much is each statement true of you? Please rate each statement by <u>circling the number</u> that best describes how much the statement is true of you.

1	2	3	4	5	6	7
Not at all true of me	A little bit true of me	Somewhat true of me	Moderately true of me	Quite a bit true of me	Very true of me	Extremely true of me

28. I usually study in a place where I can concentrate on my course work.	1	2	3	4	5	6	7
29. I often feel so lazy or bored or frustrated when I study that I quit before I finish what I planned to do.	1	2	3	4	5	6	7
30. I often try to discuss Consecutive Interpreting (CI) learning matters with a classmate or a friend.	1	2	3	4	5	6	7
31. When doing an interpreting exercise, I set specific goals to help focus my performance.	1	2	3	4	5	6	7
32. I make good use of my study time.	1	2	3	4	5	6	7
33. I work hard to do well even if I don't like what we are doing.	1	2	3	4	5	6	7
34. After I finish an interpreting task, I ask myself	1	2	3	4	5	6	7

if I could have prepared for it more effectively.

35. I find it hard to stick to a study schedule. 1 2 3 4 5 6 7

36. When interpreting work is difficult, I give up or only study the easy parts. 1 2 3 4 5 6 7

37. If an interpreting exercise is difficult, I change the way I approach the material. 1 2 3 4 5 6 7

38. I have a regular place set aside for studying. 1 2 3 4 5 6 7

39. Even when interpreting materials are dull and uninteresting, I manage to keep working until I finish. 1 2 3 4 5 6 7

40. When faced with a new interpreting task, I often begin by analyzing the nature of the task and using relevant sources of information to prepare for the task. 1 2 3 4 5 6 7

41. I make sure I keep up with the weekly assignments for my courses. 1 2 3 4 5 6 7

42. Even if I have trouble learning interpreting, I try to do the work on my own, without help from anyone. 1 2 3 4 5 6 7

43. I often practise CI with other students. 1 2 3 4 5 6 7

44. I test myself with interpreting exercises to 1 2 3 4 5 6 7

make sure I have mastered what I have been learning in class.							
45. I attend class regularly.	1	2	3	4	5	6	7
46. I seek the teacher's advice if my progress and achievements do not meet my expectations.	1	2	3	4	5	6	7
47. I try to change the way I study in order to fit the course requirements and teacher's teaching style.	1	2	3	4	5	6	7
48. I often find that I don't spend very much time on interpreting work because of other assignments or activities.	1	2	3	4	5	6	7
49. I ask the teacher or another student for help when I don't understand something.	1	2	3	4	5	6	7
50. I often find that when I have been practising interpreting, after I finish I don't know what I have learned.	1	2	3	4	5	6	7
51. I rarely find time to prepare properly before an exam.	1	2	3	4	5	6	7
52. I try to identify students in my class whom I can ask for help if necessary.	1	2	3	4	5	6	7

53. I try to think through an interpreting exercise and decide what I am supposed to learn from it rather than just doing it.	1	2	3	4	5	6	7
54. After I finish a task, I analyze the strengths and weaknesses of my performance as an interpreter.	1	2	3	4	5	6	7
55. When I study interpreting, I set goals for myself in order to direct my activities in each study period.	1	2	3	4	5	6	7
56. If I get confused about something I am interpreting, I make sure I sort it out afterwards.	1	2	3	4	5	6	7
57. I often try to discuss Simultaneous Interpreting (SI) learning matters with a classmate or a friend.	1	2	3	4	5	6	7
58. I often practise SI with other students.	1	2	3	4	5	6	7

IV. Please answer the following item with respect to your study time by filling in the blank.

59. On average I spend approximately _____ hours a day outside class studying interpreting during term time.

DEMOGRAPHIC INFORMATION

1. Gender (circle the corresponding letter): a) Male b) Female

2. Age: _____

3. IELTS Test Results:

Overall Band Score _____

Listening _____ Reading _____ Writing _____ Speaking _____

Thank you very much for your participation!

Appendix E: Correlations between modifiable learner variables at Time 1 (N = 30)

	Intrinsic1 (rho)	Extrinsic1	Amotivation1 (rho)	Self-efficacy1	StratBelief1	Hours1 (rho)
Intrinsic1 (rho)	1.0					
Extrinsic1	.253	1				
Amotivation1 (rho)	.047	-.115	1.0			
SelfEfficacy1	-.027	.148	**-.437***	1		
StratBelief1	-.022	.186	-.055	.170	1	
Study hours1 (rho)	.015	**.389***	**-.397***	**.364***	.083	1.0

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Appendix F: Correlations between modifiable learner variables at Time 2 (N = 30)

	Intrin2	Extrin2	Amoti2(rho)	Efficacy2	CntrlB2(rho)	StratB2	Selfreg2	TimeEnv2	EffortReg2	HelpSk2	PrCI2	SumStrat2	Hours2(rho)
Intrinsic2	1												
Extrinsic2	**.494****	1											
Amot2 (rho)	-.344	-.111	1.0										
Efficacy2	.258	**.520****	**-.369***	1									
CntrlB2 (rho)	.128	-.156	-.104	.176	1.0								
StratBelief2	.109	.089	-.113	.188	.232	1							
Compet2	.342	.229	**-.390***	**.451***	-.053	.241							
Selfregul2	.284	**.472****	**-.380***	**.621****	-.012	**.426***	1						
TimeEnv2	-.190	.010	-.162	.060	-.305	.361	**.503****	1					
EffortReg2	.010	-.031	-.198	.047	-.005	.349	**.501****	**.527****	1				
HelpSeek2	.172	.170	-.185	.219	-.171	**.460***	**.473****	**.510****	**.508****	1			
PeerCI2	.105	-.074	-.289	.230	.034	.260	.264	.037	.084	**.454***	1		
Findabout2	**.379***	**.578****	-.312	**.631****	.102	**.433***	**.910****	**.408***	**.440***	**.510****	.298		
SumStrats2	.128	.133	-.324	.339	-.196	**.515****	**.741****	**.639****	**.697****	**.829****	**.625****	1	
Hours2 (rho)	-.219	.220	.319	.165	-.177	-.133	.306	.261	.073	.202	-.277	.147	1.0

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix G: Correlations between modifiable learner variables at Time 3 (N = 30)

	Intrin3	Extrin3	Amot3(rho)	Efficacy3	CntrlB3(rho)	StratB3(rho)	Selfreg3	TimeEn3	EffrtReg3	HelpSk3	PrCI3	PrSI3	SumStr3	Hrs3(rho)
Intrin3	1													
Extrin3	**.585****	1												
Amot3 (rho)	-.298	-.182	1.0											
Efficacy3	.361	**.461***	**-.379***	1										
CntrlB3(rho)	.085	.102	-.334	.322	1.0									
StratB3(rho)	.261	.226	-.238	.135	**.509****	1.0								
Compt3(rho)	.352	**.638****	**-.427***	**.661****	**.366***	.079								
Selfregl3	.150	**.431***	-.185	**.513****	.054	.313	1							
TimeEnv3	-.121	.066	.152	.058	-.182	.192	.337	1						
EffortRg3	-.168	.045	-.065	.035	-.235	.120	.358	**.463***	1					
HelpSk3	**.415***	**.472****	-.052	.359	.077	.360	**.601****	-.101	.215	1				
PrCI3	-.084	.141	.048	.210	.026	.080	**.489****	-.099	.073	**.559****	1			
PrSI3	.083	.164	-.209	.346	.118	.361	**.678****	.066	.166	**.614****	**.686****	1		
Findt3	-.041	**.397***	-.107	.359	-.012	.051	**.854****	.250	.349	**.549****	**.616****	**.620****		
SumStrat3	.070	.312	-.099	**.379***	-.037	.330	**.837****	.279	**.475****	**.753****	**.769****	**.856****	1	
Hours3(rho)	.083	.192	-.058	**.381***	-.072	-.058	.189	.266	**.460***	-.154	-.206	-.091	.002	1.0

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix H: Correlations between Modifiable Learner Variables at Time 1 (N = 11)

	Intrinsic1	Extrinsic1	Amotivation1(rho)	SelfEfficacy1	StratBelief1
Intrinsic1	1				
Extrinsic1	.361	1			
Amotivation1(rho)	.226	-.107	1.0		
SelfEfficacy1	.556	.339	-.103	1	
StratBelief1	-.065	.033	-.347	.522	1

Appendix I: Correlations between modifiable learner variables at Time 2 (N = 11)

	Intr2	Extr2	Amt2(rho)	Effccy2	CntrlB2	StratB2	Selfreg2	TmEn2	EffrtReg2	HlpSk2	PrCI2(rho)	PrSI2	SmStrts2	Hours2
Intrinsic2	1													
Extrinsic2	**.699***	1												
Amotivation2 (rho)	-.469	**-.701***	1.0											
SelfEfficacy2	.233	.460	-.469	1										
ControlBelief2	.170	-.036	.400	-.085	1									
StratBelief2	-.096	-.152	.207	.305	**.654***	1								
Competence2	.006	.333	-.403	**.819****	-.256	.267								
Selfregulated2	.276	.248	-.294	**.728***	-.203	.283	1							
TimeEnviron2	-.155	.079	-.041	.385	-.161	.199	.510	1						
EffortRegul2	.548	.268	-.341	.508	-.049	.296	**.884****	.352	1					
HelpSeek2	-.053	-.089	-.411	.500	-.109	.321	.598	.510	.522	1				
PeerCI2 (rho)	.023	.225	-.205	.433	-.105	.165	.187	-.065	.248	-.026	1.0			
PeerSI2	-.224	.011	-.261	.478	-.059	.534	.242	.233	.067	.221	.539	1		
Findabout2	.492	.582	**-.645***	**.851****	-.114	.151	**.672***	.350	**.611***	**.617***	.077	.173		
SumStrategies2	.142	.150	-.432	**.749****	-.139	.410	**.894****	**.643***	**.806****	**.742****	.298	.411	1	
Study hours2	.096	.529	**-.641***	**.814****	-.125	.389	.483	.251	.274	.378	.407	**.725***	.536	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix J: Correlations between modifiable learner variables at Time 3 (N = 11)

	Intr3	Extr3	Amt3(rho)	Effccy3	CntrlB3	StrtB3(rho)	Selfreg3	TmEn3	EffrtReg3	HlpSk3	PrCI3	PrSI3	SmStrts3	Hours3
Intrinsic3	1													
Extrinsic3	**.712***	1												
Amotivation3(rho)	-.326	-.277	1.0											
SelfEfficacy3	.544	**.827****	-.476	1										
ControlBelief3	-.186	-.186	-.350	-.021	1									
StratBelief3(rho)	-.424	-.051	.009	.361	.329	1.0								
Competence3	.607	**.717***	**-.753***	**.745***	-.136	.215								
Selfregulated3	.545	**.685***	-.566	**.676***	-.357	.147	1							
TimeEnviron3	**.796****	**.827****	-.579	**.622***	-.245	-.386	**.686***	1						
EffortRegul3	**.603***	.544	-.331	.356	.111	-.056	.547	**.739****	1					
HelpSeek3	.341	.572	-.422	**.623***	.279	.382	.419	.401	.426	1				
PeerCI3	-.026	.150	.171	.143	-.452	.363	.503	-.037	-.083	.138	1			
PeerSI3	-.283	.182	-.147	.321	-.033	.589	.464	-.162	-.172	.176	**.726***	1		
Findabout3	**.683***	.527	**-.806****	**.734***	.109	.211	**.683***	.513	.402	.518	.032	.133		
SumStrategies3	.425	**.710***	-.524	**.674***	-.193	.349	**.914****	.589	.543	**.607***	**.645***	**.614***	1	
Study hours3	.435	.594	-.335	**.617***	.072	.163	.503	.467	.145	**.660***	.406	.391	**.651***	1

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Appendix K: Correlations between Motivation/Knowledge vs. Examination Results (N = 30)

	Intrin1 (rho)	Intrin2	Intrin3	Extrin1	Extrin2 (rho)	Extrin3	Amot1 (rho)	Amot2 (rho)	Amot3 (rho)	Efficacy1	Efficacy2	Efficacy3 (rho)	Control2 (rho)	Control3 (rho)	StratBl2	StratBl3 (rho)
CHN7013CA1	**-.371***	-.116	**-.375***	-.073	-.134	-.095	-.244	-.137	.120	.057	.302	-.075	.088	.058	.163	.151
CHN7013CA2	.216	.297	.083	-.306	.273	-.018	-.228	**-.369***	-.334	.185	.130	-.042	-.075	-.119	.127	.000
CHN7013	.099	.245	-.026	-.305	.214	-.043	-.269	**-.385***	-.268	.188	.204	-.053	-.054	-.121	.163	-.012
CHN7011CA1	.213	.269	.153	-.161	.125	.005	-.135	-.157	-.354	.084	.247	.060	.063	.049	-.006	.123
CHN7011CA2	.351	.198	.198	-.174	.211	.278	-.036	**-.492****	**-.395***	.277	.326	.236	-.120	.194	.185	.265
CHN7011	.310	.244	.203	-.188	.228	.212	-.073	**-.418***	**-.421***	.239	.333	.198	-.069	.189	.138	.259
CHN7010CA1	-.100	-.142	.026	-.353	-.165	.011	.082	-.059	-.289	.183	.334	**.460***	.285	**.377***	.073	**.403***
CHN7010CA2	-.058	.002	-.007	-.086	.137	.013	-.147	-.246	-.257	**.425***	**.437***	**.384***	-.029	.151	.095	.296
CHN7010	-.161	-.046	.003	-.185	-.017	.014	-.043	-.156	-.261	**.388***	**.448***	**.382***	.111	.277	.097	**.368***

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix L: Correlations between Strategies/Effort vs. Examination Results (N = 30)

	Selfreg2	Selfreg3	TmEn2	TmEn3	EffrtRg2	EffrtRg3	HlpSk2	HlpSk3	PrCI2	PrCI3	PrSI2	PrSI3	SumStrts2	SumStrts3	Hours2 (rho)	Hours3 (rho)
CHN7013CA1	.326	.035	.101	-.136	.112	-.035	.199	.024	**.400**[*]	**.467**[**]	.[a]	.172	.352	.192	.218	-.013
CHN7013CA2	.107	-.090	.076	-.345	-.057	-.008	.103	.087	-.041	.093	.[a]	-.055	.039	-.038	.088	.062
CHN7013	.190	-.075	.099	-.360	-.022	-.017	.151	.088	.072	.215	.[a]	-.003	.133	.018	.162	.073
CHN7011CA1	.055	-.093	.022	-.208	-.271	-.125	-.070	-.022	-.021	-.011	.[a]	-.137	-.087	-.126	.017	.032
CHN7011CA2	.257	.008	**.361**[*]	-.167	.193	.240	.209	.116	.000	-.024	.[a]	-.093	.253	.017	-.032	.317
CHN7011	.214	-.026	.281	-.199	.052	.138	.134	.080	-.007	-.022	.[a]	-.118	.161	-.031	-.024	.264
CHN7010CA1	.119	.036	-.003	-.021	-.225	-.046	-.161	-.103	.022	-.177	.[a]	-.054	-.070	-.103	.111	.233
CHN7010CA2	.270	.187	.300	.075	-.056	.207	.149	.217	.107	.027	.[a]	.030	.198	.160	.211	.285
CHN7010	.248	.155	.230	.051	-.118	.144	.060	.132	.090	-.039	.[a]	.005	.129	.088	.226	.318

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

a. Cannot be computed because at least one of the variables is constant.

Appendix M: Correlations between Motivation/Knowledge vs. Examination Results (N = 8)

	Intrin1	Intrin2	Intrin3	Extrin1	Extrin2	Extrin3	Amot1 (Rho)	Amot2	Amot3	Efficacy1	Efficacy2	Efficacy3	CntrlB2	CntrlB3	StratB1	StratB2	StratB3
CHN8024CA1	-.157	.275	.413	.490	.639	.215	-.129	**-.738***	-.396	.179	.323	.430	-.164	.313	-.059	.039	.011
CHN8024CA2	-.345	.556	.346	.425	.506	.077	-.617	**-.735***	-.496	.004	-.006	.127	.070	.337	.058	.197	-.283
CHN8025CA1	-.638	-.093	-.494	-.316	-.126	-.382	-.246	-.319	-.351	-.158	.058	-.171	.166	.324	-.139	.541	.585
CHN8025CA2	-.351	.493	-.061	-.197	.037	-.135	-.664	-.090	-.208	-.250	-.255	-.237	.552	.159	.338	.217	-.439

Appendix N: Correlations between Strategies/Effort vs. Examination Results (N = 8)

	Selfreg2	Selfreg3	TmEn2	TmEn3	EffrtReg2	EffrtReg3	HlpSk2	HlpSk3	PrCI2	PrCI3	PrSI2	PrSI3	SmStrats2	SmStrats3	Hours2	Hours3
CHN8024CA1	.061	.276	.280	.209	-.042	-.055	-.068	.160	-.470	-.119	.528	.242	-.050	.256	.681	.637
CHN8024CA2	.094	.261	.325	.455	.303	.552	.030	.141	-.367	-.624	.388	-.218	.131	.159	.298	.196
CHN8025CA1	-.222	.287	-.133	-.279	-.129	-.226	.311	.085	.059	.308	**.727***	.550	-.041	.290	.470	.262
CHN8025CA2	.033	-.057	-.053	.356	.395	**.710***	.186	.303	.257	-.571	-.212	-.638	.230	-.062	-.352	-.282

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

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