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INVESTIGATING LINGUISTIC KNOWLEDGE OF A SECOND LANGUAGE AND ITS RELATIONSHIP TO GENERAL LANGUAGE PROFICIENCY AND INDIVIDUAL LEARNER DIFFERENCES IN AN EFL CONTEXT

by

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A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in the Department of Applied Language Studies and Linguistics
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ABSTRACT

A psycholinguistic modelling of language proficiency in terms of L2 linguistic knowledge (i.e., implicit and explicit knowledge) can contribute to both SLA theories and language testing practice. Yet to date few empirical studies have attempted this. The main reason is the lack of validated instruments for measuring implicit and explicit knowledge. The current study is intended to fill the this gap by examining three important issues: (1) whether the four tests (i.e., the Elicited Imitation Test, Timed Grammaticality Judgment Test, Untimed Grammaticality Judgment Test and Metalinguistic Knowledge Test) that R. Ellis (2009) showed can distinguish implicit and explicit knowledge of an L2 can also provide separate measures of these two types of L2 knowledge in a foreign language context (i.e. mainland China); (2) whether language proficiency can be conceptualised in terms of these two types of knowledge, and (3) whether four psychological factors (i.e., language analytic ability, language learning motivation, language anxiety and learner beliefs) can distinguish learners in terms of their implicit and explicit knowledge.

A total of 192 full-time university English majors participated in this study. 100 were first year students and 92 were third year students. They were English major students in a four-year programme at a key university in Beijing, China. Four of the tests used in R. Ellis’s (2009) study were employed to distinguish implicit and explicit knowledge. The findings showed that R. Ellis’s model of implicit and explicit knowledge could account for the first year students’ results but that it failed to do so for the third year students. A factor analysis of the third year students’ test scores identified three rather than two factors. These were interpreted as follows: (1) the automated declarative knowledge needed for online production; (2) the non-automated declarative knowledge needed to judge ungrammaticality, and (3) the more automated declarative knowledge needed to judge grammatical sentences. The results for the third year students led to a re-evaluation of those for the first year students. It is proposed that both groups of learners were drawing on their declarative (explicit) knowledge and that various tests distinguished whether they were drawing on their automated declarative knowledge or their non-automated. This re-interpretation supports DeKeyser’s (2009) claims that older learners are unlikely to develop true implicit knowledge and instead have to rely on their explicit knowledge and that automated declarative knowledge is functionally equivalent to implicit knowledge.
The findings of this study shed light on the relationship between general language proficiency and L2 linguistic knowledge. Two general proficiency tests were administered – the Oxford Placement Test (for the first year students) and the Test for English Majors, Band 4 (for the third year students). Scores representing the two factors identified for the first year students and the three factors for the third year students all entered into multiple regression analyses with the proficiency scores as the dependent variables. However, in both groups, it was the most explicit factor that proved the strongest predictor of proficiency. This suggests that these learners were primarily drawing on their non-automated declarative knowledge in the proficiency tests supporting Elder’s (2009) contention that proficiency tests by their very nature incline learners to make use of their explicit knowledge.

Finally, the study examined the relationship between measures of individual difference factors and their scores on the battery of tests. Language anxiety was negatively correlated with measures of declarative knowledge supporting the findings of previous studies that have investigated this learner factor. However, somewhat surprisingly, very few other significant relationships were found although limited qualitative data derived from interviews with a small sample of the first and third year students suggested that individual learner differences were at work. Thus the thesis points to the need for more qualitative investigation of learner difference factors.

This thesis concludes with a consideration of the theoretical and practical implications of the study and also points to several limitations (e.g., the battery of tests did not include the Oral Narrative Production Task used in R. Ellis’s study).
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LIST OF ACRONYMNS

EFL  English as a Foreign Language
L2   Second Language
TOEFL Test of English as a Foreign Language
IELTS International English Language Testing System
SLEP Secondary Level English Proficiency Test
EIT  Elicited Imitation Test
TGJT Timed Grammaticality Judgment Test
UGJT Untimed Grammaticality Judgment Test
MKT  Metalinguistic Knowledge Test
EIT G Elicited Imitation Test grammatical items
EIT UG Elicited Imitation Test ungrammatical items
TGJT G Timed Grammaticality Judgment Test grammatical items
TGJT UG Timed Grammaticality Judgment Test ungrammatical items
UGJT G Untimed Grammaticality Judgment Test grammatical items
UGJT UG Untimed Grammaticality Judgment Test ungrammatical items
ONPT Oral Narrative Production Task
OPT  Oxford Placement Test
TEM  Test for English Majors
LA  Language Analysis
CHAPTER ONE
INTRODUCTION

There are three major purposes of the current study. First, it is intended to develop separate measures of implicit and explicit L2 knowledge for a population of foreign language learners. Second, it aims to explore the relationship between linguistic knowledge of an L2 (i.e., implicit and explicit grammatical knowledge) and the L2 proficiency of foreign language learners. Last but not least, this study aims to explore the relationship between individual learner factors and the learners’ implicit and explicit L2 knowledge. Generally speaking, implicit knowledge is intuitive knowledge enabling spontaneous language use without any reflection, whereas explicit knowledge is conscious and declarative knowledge used to monitor language production. These constructs are defined more fully in Chapter 2. As I am an L2 learner (i.e., English learner) in a non-L2 speaking country, I would like to start with some personal comments about my experiences of learning an L2 (i.e., English) in China and the reasons for why I have chosen to examine the topic of implicit/explicit knowledge and language proficiency.

1.1 Personal experiences of learning English and motivation for the research
I have been learning English since I was in my primary school in the 1980s. English was not a mandatory course in primary school at that time. I learnt it because English began to be in vogue in China and many of my parents’ colleagues sent their children to study English. By and large, the English teaching methods in China were greatly influenced by the Grammar Translation Method at that time. In class, I was taught a large number of grammatical rules and vocabulary. After class, I needed to review what I had learnt in class and to try to memorise the new words by writing them down repeatedly. English became a compulsory course in my junior high school. However, the teaching and learning methods still emphasised grammatical rules, vocabulary and reading. Very few opportunities were given for speaking and listening. I was successful in studying English as reflected by my high scores in the examinations. I continued learning English until the end of my senior high school when I entered university.

I chose English as my major and almost all the courses were taught in English using the communicative teaching method. The reasons I became an English major were as follows: (1)
English was one of the most popular languages in the world; (2) English had become very important in China; (3) I was interested in English and wanted to learn more about this language including English literature; (4) I was good at this subject and thought it would be a good idea to choose it as my major, and (5) my parents suggested I choose this major and thought I might find a good job in the future. Being an English major studying at university was different from learning English before. We had separate courses for listening, speaking, pronunciation, reading and writing. Although I had been very good at English before entering university, I began to realise that I was relatively weak in speaking and listening because I had not had much previous training in these two skills. When I spoke, I always tried to apply the rules I had learnt and was quite afraid to make mistakes in front of my classmates. It happened when I listened as well. When I listened to a recording, I always tried to figure out the rules and the meanings of the new words first. Otherwise I felt very unsafe. However, by the time I finished my study at university, I found I could speak English more fluently and did not pay so much attention to memorising grammatical rules and new words. Sometimes, I processed English quickly without thinking too much about whether my grammar was correct or not. I was more concerned with just trying to communicate effectively.

Later the experience of studying in the UK where English was spoken everywhere exposed me to an environment rich in English. The instruction was completely in English and I had more opportunities to speak to native English speakers. I was puzzled by two issues I encountered: (1) why could my English speaking friends not explain some grammatical rules when I asked them why they spoke like this or that, and (2) why, although I had learnt so many grammatical rules, I still had problems in speaking and listening.

Reading N. Ellis’s (2008, 2011) articles, however, gave me some insights regarding the answers to these questions. He stated ‘Children acquire their first language (L1) by engaging with their caretakers in natural meaningful communication. From this “evidence” they automatically acquire complex knowledge of the structure of their language’ (N. Ellis, 2011, p.35). In contrast, ‘adult acquisition of second language (L2) is a different matter in that what can be acquired implicitly from communicative contexts is typically quite limited in comparison to native speaker norms, and adult attainment of L2 accuracy usually requires additional resources of consciousness and explicit learning’ (N. Ellis, 2011, p.35). In other words, native English speakers acquire English in a natural context full of English from the time they are born. They begin with listening and then speaking. However, most L2 English
learners like me learn English in non-English speaking contexts. We begin with learning English grammar and vocabulary. Thus, the attainment of native English speakers and L2 English learners is different. N. Ellis explained this difference in terms of the distinction between implicit and explicit knowledge, which seemed to provide answers to the questions I had asked. This led me to ask further questions such as ‘What is implicit and explicit knowledge?’, ‘Are they distinct?’, ‘Can I test them?’ and ‘Do they have any relationship with language proficiency’. These are the questions that motivated me to conduct the current research.

1.2 Significance of the research

Bachman (1990) and Bachman & Palmer (1996) distinguish between ‘language knowledge’ and ‘language use’ in language testing research. They define ‘language use’ as ‘the creation or interpretation of intended meanings in discourse by an individual’ or ‘the dynamic and interactive negotiation of intended meanings between two or more individuals in a particular situation’ (pp.61-62). Language knowledge, however, is ‘thought of as a domain of information in memory that is available for use by the metacognitive strategies in creating and interpreting discourse in language use’ (p.67). Hence, implicit and explicit knowledge belong to the language-knowledge domain, while language proficiency is within the language-use domain. Exploring the relationship between language knowledge and language proficiency can be helpful for understanding what tests measure.

The distinction between implicit and explicit knowledge is widely acknowledged in various fields such as language education, SLA, applied linguistics, and psychology (N. Ellis, 2008) and it is central in cognitive psychology, as Bialystok (1981) indicates. Neurolinguistic evidence also shows that the two types of knowledge are distinct and stored in different areas of the brain. Based on the distinction between the two types of knowledge, many researchers have turned their attention to the interface between them (Hulstijn, 2002; Krashen, 1981; Paradis, 1994; Sharwood Smith, 1981; DeKeyser, 1998; Bialystok, 1981; R. Ellis, 2005), and a number of empirical studies have investigated this issue (Green & Hecht, 1992; DeKeyser, 1995; Macrory & Stone, 2000; Hu, 2002). However, very few studies have examined the relationship between implicit/explicit L2 knowledge and language proficiency (R. Ellis’s (2009) study being an exception). His study tried to validate five measures of implicit and explicit L2 knowledge. He also discussed the relationship between implicit/explicit L2
knowledge and general L2 proficiency of English in learners in an English-speaking context. According to the results of his study, R. Ellis (2009) proposed that language proficiency can be conceptualised as involving two distinct types of knowledge - implicit and explicit grammatical knowledge – and that measures of these two types of knowledge can predict scores on other language proficiency tests.

Nevertheless, his study did not provide totally convincing empirical evidence for viewing language proficiency in terms of implicit and explicit L2 knowledge (Elder & Ellis, 2009). So this area needs further research, which is one of the focuses of the current study. Furthermore, upon reviewing studies of second language learning, many factors can be found to contribute to learners’ L2 learning, such as individual learning factors. However, almost no studies have investigated the relationship between these factors and learners’ implicit and explicit knowledge.

Accordingly, the current study is motivated by both a theoretical consideration (the relationship between implicit/explicit L2 knowledge and general L2 proficiency) and a practical need to investigate Chinese advanced-level English learners in a Chinese context. It is also motivated by a practical concern for testing in a foreign language context the instruments of implicit and explicit knowledge proposed in R. Ellis (2009). In addition, this study attempts to identify the relationship between these learners’ individual difference factors and their implicit/explicit knowledge.

It is hoped that the study can inform both SLA and language testing research. The test battery used in R. Ellis’s study, which afforded relatively separate measures of implicit and explicit knowledge, will serve as the basis for investigating the foreign language learners’ two types of knowledge in this study.

1.3 The purposes of the research

This study is a correlational, cross-sectional study. There are three main aims of the research. The first and principal purpose is to investigate the relationship between foreign language learners’ implicit/explicit knowledge of an L2 and their general L2 proficiency in a Chinese context, namely to investigate to what extent the distinction between implicit and explicit knowledge can model L2 learners’ language proficiency in a foreign language context.
Second, it is intended to examine whether the four tests (i.e., the Elicited Imitation Test, Timed Grammaticality Judgement Test, Untimed Grammaticality Judgement Test and Metalinguistic Knowledge Test) proposed in R. Ellis (2009) can also provide separate measures of implicit and explicit L2 knowledge in a foreign language context. In this way it is hoped to provide empirical evidence for the separation of the two types of knowledge. The last aim is to identify the relationships between the learners’ individual difference factors and their implicit and explicit knowledge, since almost no empirical research has addressed this issue.

1.4 Participants and research questions
A total of 192 full time university English majors were randomly chosen to participate in this study. 100 of them were first year students and 92 of them were third year students. They were in different classes in a major university in Beijing, China. Drawing on the literature, six research questions were addressed.

1. What is the extent of Chinese first year university students’ (a) implicit and (b) explicit knowledge of English?
2. What is the relationship between Chinese first year university students’ (a) implicit and b) explicit knowledge of English and their general English proficiency?
3. What factors can account for differences in Chinese first year university students’ (a) implicit and (b) explicit knowledge of English?
4. What is the extent of Chinese third year university students’ (a) implicit and (b) explicit knowledge of English?
5. What is the relationship between Chinese third year university students’ (a) implicit and (b) explicit knowledge and their general English proficiency?
6. What factors can account for differences in Chinese third year university students’ (a) implicit and (b) explicit knowledge of English?

1.5 Overview of the chapters
This thesis consists of seven chapters. Chapter 1 (the current chapter) is a general introduction which discusses the significance and aims of the present study. Chapter 2 deals with the key conceptual issues involved in this study (i.e., the nature of the implicit/explicit distinction). Chapter 3 reviews previous empirical studies related to the present study. Chapter 4 describes
the methodology for the study including a brief description of the pilot study. Chapter 5 presents and discusses the results for the first year students using both quantitative and qualitative analyses. Chapter 6 presents and discusses the results for the third year students also using both quantitative and qualitative analyses. Finally, Chapter 7 summarises the study, compares the first and third year students’ results, discusses its limitations, draws some conclusions and makes several suggestions for future study.
CHAPTER TWO
CONCEPTUAL ISSUES

2.1 Introduction
This thesis reports a study that investigated the extent of first and third year Chinese university English majors’ implicit and explicit linguistic knowledge, the differences in terms of their knowledge systems, the relationship between the two groups of students’ general language proficiency and implicit/explicit knowledge (i.e., whether language proficiency can be conceptualised in terms of these two types of knowledge), and the role of individual difference factors (i.e., language analytic ability, language learning motivation, language anxiety, learner beliefs) in learners’ knowledge system.

There is no doubt that the ultimate, most highly prized goal of language learning is spontaneous and unreflecting language use (Sharwood Smith, 1980). Children’s acquisition of their first language (L1) results in full mastery of their L1. However, ‘learners of an L2 – even after many years of exposure–differ widely in level of attainment’ (Hustijn, 2005, p.129). Therefore, the central issue in SLA research is how exactly L2 learners achieve mastery of a second language. Among the many explanations that have been proposed, one can find explanations that involve the notions of implicit/explicit learning (i.e., the process of learning) and implicit/explicit knowledge (i.e., the end-products of learning). The distinction and relationship between implicit and explicit knowledge are of particular interest and great importance for SLA research and language pedagogy (N. Ellis, 1994, 2008). As N. Ellis (1994) stated, ‘some things we just come able to do’ and ‘we have little insight into the nature of the processing involved—we learn to do them implicitly like swallows learn to fly’, whereas ‘other of our abilities depend on knowing how to do them’ and ‘we learn these abilities explicitly like aircraft designers learn aerodynamics’ (p.1). Sánchez et al. (2010) also pointed out that ‘the concepts of explicit and implicit (knowledge) are at the core of SLA studies’ (p.103).

Moreover, psychological factors have been shown to influence language achievement. However, their relationship to implicit and explicit knowledge still remains unexplored. Hence, the current study is intended to focus on several relationships: (1) the relationship
between implicit/explicit knowledge and language proficiency to see whether language proficiency can be conceptualised in terms of these two types of knowledge; (2) the relationships between several psychological factors (i.e., language analytic ability, language learning motivation, language anxiety, learner beliefs) and implicit/explicit knowledge to investigate the potential roles of these ID factors in the two types of knowledge.

Given that several relationships need investigating and many concepts are involved in the current study, it is important to clarify them first and thus this chapter deals with the issues regarding these key concepts. It begins with the role of consciousness in L2 learning which is considered important to SLA and unavoidable in any discussion of implicit and explicit knowledge (Schmidt, 1990, 1994, 1995). Then it deals with implicit and explicit learning. It moves on to investigating L2 learners’ knowledge systems as implicit and explicit knowledge by defining the two types of knowledge and examining their disassociation by reviewing the neurological evidence. After that, this chapter considers a number of psycholinguistic perspectives of L2 proficiency with a view to examining proficiency in terms of implicit and explicit knowledge. Then several psychological factors (i.e., language analytic ability, motivation, learner beliefs and language anxiety) which are deemed to have an impact on language knowledge are defined and their roles in language learning are reviewed.

2.2 Consciousness in L2 learning

The role of consciousness is of great importance in discussing the distinction between ‘implicit’ and ‘explicit’ learning, and current debate in SLA research is also all centred on its role in L2 development (Robinson, 1996). Krashen (1981) distinguished ‘acquisition’ and ‘learning’. According to his opinion, ‘acquisition’ is a subconscious process, while ‘learning’ is a conscious process. He also claimed that conscious knowledge cannot become unconscious linguistic knowledge. However, he failed to provide adequate definitions of what he meant by ‘subconscious’ and ‘conscious’ and ‘provided no way of independently determining whether a given process involves acquisition or learning’ (McLaughlin, 1987, p.21). Some other researchers suggested abandoning the issue of consciousness in a theory of language acquisition (McLaughlin, Rossman & Mcleod, 1983), arguing that ‘consciousness’ is too ambiguous to be of any use (McLaughlin, 1990). In contrast to McLaughlin’s point of view, Schmidt (1990, 1994, 2001) considered that consciousness is an essential construct if it is carefully deconstructed and defined. He proposed four senses of consciousness. Schmidt’s
theory of consciousness has had an enormous influence on SLA theories and research and has reinstated consciousness as central for understanding the nature of L2 learning.

(1) Consciousness as intentionality
With respect to consciousness as intentionality, Schmidt (1994) defined incidental learning as learning without intent to learn or the learning of one thing (e.g., grammar) when the learner’s primary objective is to do something else (e.g., communicate) (p.16), while intentional learning refers to ‘learning according to a deliberate plan’ (Schmidt, 1990, p134). He argued that both incidental and intentional learning involve conscious attention to features in the input. According to Schmidt (1994), a key issue is whether or not these two types of learning result in different types of linguistic knowledge.

(2) Consciousness as attention
Tomlin and Villa (1994) were the first to distinguish three components of attention (i.e., alertness, orientation and detection). Schmidt (1994) also distinguished ‘alertness (related to the intention to learn), an overall, general readiness to deal with incoming stimuli; orientation, a specific aligning of attention on a stimulus; and detection (focal attention), the process which selects or engages a particular specific bit of information’ (p.17). There is a disagreement on the key question ‘whether or not detection or focal attention necessarily entails conscious registration of the contents of focal attention, for example, not only hearing a grammatical marker, but ‘noticing’ it and whether such noticing is necessary for learning’ (p.17). Tomlin and Villa (1994) argued that detection does not entail conscious registration, whereas Schmidt (1990, 1993) has argued ‘noticing is the necessary and sufficient condition for the conversion of input to intake for learning’ (Schmidt, 1994, p.17). He also hypothesised ‘more noticing leads to more learning’ (Schmidt, 1994, pp. 18).

(3) Consciousness as awareness
‘Awareness’ is the most frequently used term in the discussions of the ‘implicit’ and ‘explicit’ distinction. Schmidt (1994) distinguished awareness in terms of two levels (or types): awareness as noticing and metalinguistic awareness. Awareness as noticing is considered primary. It involves perception rather than analysis, which is considered a lower level of awareness (Schmidt, 1994). However, the issue of ‘learning without awareness’ discussed in applied linguistics concerns metalinguistic awareness, which is considered a higher level of awareness including ‘the ability to know about one’s self (self-consciousness) and to reason
about the contents of primary consciousness’ (Schmidt, 1994, p.18). This level of awareness does not stop at the level of perception but involves analysis.

Schmidt (1994) suggested three distinctions needed to be considered, namely implicit learning should be distinguished from explicit learning, implicit/explicit knowledge should be distinguished from implicit/explicit learning, and implicit/explicit learning should be distinguished from implicit/explicit instruction. The following quotations from his 1994 article addressed these distinctions:

“Explicit learning” and “implicit learning” are widely used in psychology to distinguish learning on the basis of awareness at the point of learning and learning without such awareness and these terms can be usefully applied to discussion in applied linguistics. This requires that on-line learner awareness in the process of learning be assessed before claims of implicit learning are advanced (p.20).

Implicit and explicit learning and implicit and explicit knowledge are related but distinct concepts that need to be separated. The first set refers to the processes of learning, the second to the end-products of learning (or sometimes to knowledge that is innate and not learned at all) (p.20).

Explicit learning also needs to be distinguished from explicit instruction, e.g. telling subjects the rules in experimental studies or teaching them about a language in classroom settings. One hopes that there is a relationship between what is taught and what is learned, but it is possible for learners to form conscious hypotheses about the target language without being told the rules or forming hypotheses that are different from the teacher’s version of a rule, as well as for learners to be taught a rule but not to understand it or be able to make any use of it in the process of learning (p.20).

(4) Consciousness as control
According to Schmidt (1994), the fourth sense of consciousness is control. Schmidt admitted that control and attention are the same from a theoretical perspective, but he chose to separate them because they can be distinguished in terms of output processing and input processing. He discussed control in terms of two aspects: skill and knowledge. ‘In psychology, skill development is often discussed in terms of procedural knowledge, knowledge of how to do
things, as opposed to declarative knowledge, knowledge of facts’ (Schmidt, 1994, p.21). According to Schmidt (1992), control is closely related to fluency in second language learning and to automaticity in psychology. ‘Spontaneous, fluent language performance is unconscious only in the sense that it is accomplished without the conscious retrieval of explicit knowledge that may have been used as an aid to production in earlier, novice stages of development’ (Schmidt, 1994, p.21).

2.3 Implicit and explicit language learning

As mentioned earlier, Schmidt (1994) suggested a distinction between implicit/explicit learning and implicit/explicit knowledge. The concept of implicit and explicit learning refers to the process of learning, whereas the resulting knowledge refers to the end-products of learning (Schmidt, 1994). Those two types of learning figure strongly in cognitive psychology. Shanks (2003) has defined implicit learning as ‘learning which takes place incidentally, in the absence of deliberate hypothesis-testing strategies, and which yields a knowledge base that is inaccessible to consciousness’ (p.11). DeKeyser (1994) considers explicit and implicit learning as learning with and without awareness, respectively. Schmidt (1994) also distinguished the types of learning in terms of awareness. He pointed out ‘in psychology the contrast between explicit learning and implicit learning is usually seen as a contrast between learning on the basis of awareness (explicit learning) as opposed to implicit learning, learning without awareness’ (Schmidt, 1994, p.4). However, there is a query regarding whether totally implicit learning of L2 is possible, that is ‘whether any learning is without some degree of awareness’ (R. Ellis, 2009, p.7). Schmidt’s (1994, 2001) view of distinguishing two types of awareness became important for explaining the issue of learning with and without awareness. As mentioned above, he distinguished two types of awareness: at the level of noticing which involves perception, and at the level of metalinguistic awareness (i.e., conscious awareness) which involves analysis. Therefore, learning without any metalinguistic awareness has been recognised as an acceptable definition of implicit learning. Defining explicit learning is easier. It is ‘a conscious, deliberative process of concept formation and concept linking ’ (Hustijn, 2002, p.206). It is ‘a conscious process and is generally intentional as well’ (R. Ellis, 1994, p.1). In contrast to implicit language learning then, explicit language learning involves metalinguistic awareness.
2.4 Implicit and explicit linguistic knowledge

Implicit and explicit learning needs to be distinguished from implicit and explicit knowledge, which are the end-products of learning. The questions such as ‘What are the two types of knowledge’, ‘Are they distinct’, ‘Are they measurable’ and ‘How can we measure them’ remained to be fully answered. The following parts will review the pertinent literature concerning these issues.

2.4.1 Definition of implicit and explicit linguistic knowledge

In the neurolinguistic, psycholinguistic and SLA literature, there have been a number of terms referring to implicit and explicit knowledge, e.g., unanalysed and analysed knowledge (Bialystok, 1978); unconscious and conscious knowledge (Schmidt, 1990); acquired and learnt knowledge (Krashen, 1981); procedural and declarative knowledge (Paradis, 1994; DeKeyser, 1998); tacit and explicit knowledge (Reber, 1989); implicit linguistic competence and explicit metalinguistic knowledge (Roehr, 2008). In this thesis, the terms of implicit and explicit knowledge are used in order to avoid confusion. This part is intended to clarify the definition and characteristics of implicit and explicit knowledge, respectively.

2.4.1.1 Implicit linguistic knowledge

Generally, implicit linguistic knowledge refers to knowledge of language, which is ‘an intuitive feeling for what is correct and acceptable’ (Bialystok, 1981, cited in Sharwood Smith, 1981, p.159). Implicit knowledge is also the knowledge underlying communicative ability, since it is used in spontaneous comprehension or production. R. Ellis (2009) identified the following characteristics of implicit knowledge:

(1) Implicit knowledge refers to intuitive awareness of linguistic norms.
(2) Implicit knowledge is procedural, which means it is highly automated.
(3) Implicit knowledge is variable but systematic. L2 learners’ procedural rules may or may not be target-like. In other words, some part of L2 learners’ implicit knowledge may or may not conform to native speakers’ rules.
(4) Implicit knowledge is available through automatic processing.
(5) Default L2 production relies on implicit knowledge, which implies that implicit knowledge is a kind of fully internalised knowledge. In this respect it contrasts with explicit knowledge that functions like a ‘tool’ language, explicit for
‘mediating performance and achieving self-control in linguistically demanding situations’ (R. Ellis, 2009, p. 13)

(6) Implicit knowledge is not verifiable or reportable.
(7) Implicit knowledge can be fully acquired only within a critical period (usually at around 5 years old). However, this hypothesis is still debatable.

R. Ellis (1994) distinguished two kinds of implicit linguistic knowledge: formulaic and rule-based knowledge. As their names imply, formulaic knowledge refers to knowledge of the internalised expressions like ‘how are you’ and ‘nice to meet you’, while rule-based knowledge refers to knowledge of the internalised rules like the rules of 3rd person’s’ and plural’s’.

2.4.1.2 Explicit linguistic knowledge

In contrast to implicit knowledge, explicit knowledge refers to knowledge about language, which can be broken down into analytical knowledge and metalanguage (R. Ellis, 1997, p. 110). Analytical knowledge refers to knowledge about L2 items and structures of which the learner has metalinguistic awareness (R. Ellis, 2008). It is assumed that analytical knowledge and metalinguistic knowledge refer to the same phenomenon in the current study. However, metalanguage is the language used to analyse or describe a language (Richards, Platt & Weber, 1985), which can entail technical terminology (e.g., ‘the most typical semantic role of a subject is agentive’) or semi-technical terminology (e.g., ‘the subject typically tells us who does an action’). According to R. Ellis (2008), metalanguage ‘must be learnt through instruction or observation’ (p. 144). R. Ellis (2009) characterised explicit knowledge as follows:

(1) Explicit knowledge is conscious (i.e., it involves cognizing why a sentence is ungrammatical).
(2) Explicit knowledge is declarative, which means the encyclopaedic knowledge of facts about language.
(3) Explicit knowledge is generally accessible only through controlled processing.
(4) Explicit knowledge is verbalisable. However, verbalising a rule need not involve the use of metalanguage.
(5) Any language task that a learner finds difficult may naturally result in an
attempt to exploit explicit knowledge (i.e., it is typically accessed when there is planning difficulty).

(6) Explicit knowledge is learnable and can be learnt at any age.
(7) L2 learners’ declarative rules are often imprecise and inaccurate.

R. Ellis (2004) provided the following general definition of explicit knowledge:

Explicit L2 knowledge is the declarative and often anomalous knowledge of the phonological, lexical, grammatical, pragmatic, sociocritical features of an L2 together with the metalanguage for labelling this knowledge. It is held consciously and is learnable and verbalizable. It is typically accessed through controlled processing when L2 learners experience some kind of linguistic difficulty in the use of the L2. Learners vary in the breadth and depth of their L2 explicit knowledge (pp.244-245).

In a word, explicit knowledge is accessible to consciousness and is declarative, whereas implicit knowledge is intuitive and procedural. Explicit knowledge needs controlled effort and thus is typically used in tasks that allow for careful planning and monitoring. It is developed through formal instruction. Explicit knowledge can be reported while implicit knowledge needs on-line planning and is beyond people’s awareness (R. Ellis, 2004). Hulstijn (2002) argued that in fluent speakers, L2 knowledge is mostly implicit.

Neither explicit nor implicit language knowledge is restricted to grammar; both can potentially refer to pronunciation, vocabulary, pragmatics and sociocritical features. However, grammar appears to be the most amenable to conscious reflection and manipulation (R. Ellis, 2004). Thus, the study reported in this thesis focuses on the grammatical aspect of both types of knowledge.

2.4.2 Distinction between implicit and explicit linguistic knowledge: neurolinguistic evidence

Various fields such as language education, SLA, applied linguistics, and psychology have discussed the distinction between implicit and explicit linguistic knowledge. Evidence for the distinction between the two types of knowledge can be found in neurolinguistic studies. For example, research that has investigated the storage and different functions of implicit and explicit knowledge in the brain supports the disassociation of implicit/ explicit memory, and
implicit/explicit knowledge. The distinction between the two types of knowledge is assumed in this study. In support of this, the relevant neuropsychological and neurobiological literature will be briefly considered.

2.4.2.1 Neuroanatomical, neurofunctional and neuroimaging evidence: Ullman’s declarative and procedural model

Language is deemed to hinge on a memorised ‘mental lexicon’ and a computational ‘mental grammar’ (Chomsky, 1965, 1995; de Saussure, 1959). The declarative/procedural model which was developed by Ullman (2001, 2004) indicated that procedural memory or implicit knowledge serves as the mental grammar, while declarative memory or explicit knowledge houses the mental lexicon. Neuroanatomically, procedural and declarative memories are stored in different areas of the brain. ‘The mental lexicon of memorised word-specific knowledge depends on the largely temporal-lobe substrates of declarative memory, which underlies the storage and use of knowledge of facts and events’, while ‘the mental grammar, which subserves the rule-governed combination of lexical items into complex representations, depends on a distinct neural system. This system, which is composed of a network of specific frontal, basal-ganglia, parietal and cerebella structures, underlies procedural memory’ (Ullman, 2004, p. 231). More specifically, declarative memory depends on medial temporal lobe structures: ‘the hippocampal region (the dentate gyrus, the subicular complex, and the hippocampus itself), entorhinal cortex, periphinal cortex’, whereas the procedural memory system is ‘rooted in frontal/basal-ganglia circuits, with a likely role for portions of parietal cortex, superior temporal cortex and the cerebellus’ (Ullman, 2004, p.235,238).

Neuroimaging studies provide evidence for the separation of implicit and explicit knowledge. Basically, neuroimaging ‘involves the use of a technique for identifying which parts of the brain are activated when learners are asked to perform a language task’ (R.Ellis, 2008, p.738). Ullman (2004) briefly overviewed hemodynamic (PET, fMRI) and electrophysiological evidence from normal processing, finding that activation in one area of declarative memory (e.g., temporal/temporal-parietal regions) is strongly related to ‘the representation and processing of both non-linguistic conceptual-semantic knowledge and lexical knowledge’ and activation in the area of procedural memory has been elicited by ‘tasks designed to probe syntactic processing, in both receptive and expressive language’ (pp.249-250). Paradis (2004) reported 28 neuroimaging studies which showed that automatic processing does not require the use of the anterior cingulate which is required for conscious control.
More recently, Tolentino and Tokowicz (2011) have synthesised a number of neuroimaging studies conducted from 2005 to 2010 aiming to examine whether the similarity between the first (L1) and second language (L2) influences the morphosyntactic processing of the L2. Two different imaging methods—functional magnetic resonance imaging (fMRI) and event-related potential (ERP)—were utilised in the studies they reviewed. The results of these studies suggested that differences exist in L2 processing of morphosyntactic features relative to L1 processing or L2 native speakers’ processing of their native language when the morphosyntactic features are unique to the L2 or dissimilar in the L1 and L2. Tolentino and Tokowicz concluded that almost all fMRI studies found ‘increased activation mainly in left inferior frontal gyrus and superior and middle temporal areas during the processing of morphosyntactic features that are unique to the L2 or dissimilar in the L1 and L2’ (Tolentino & Tokowicz, 2011, p.118). The fMRI and ERP findings can be interpreted as a further support for the distinction between implicit and explicit knowledge, namely the location in the brain which houses L2 learners’ explicit knowledge (e.g., left inferior frontal gyrus) is likely to be activated during their L2 processing when the morphosyntactic features in the L2 are dissimilar to those in their L1 or those features are unique to the L2.

2.4.2.2 Evidence from neurological impairment

Neurological impairment has also provided evidence for the functional differentiation of the implicit and explicit memory systems (R. Ellis, 2008). On the one hand, patients with Parkinson’s Disease whose implicit memory system is damaged have problems in grammatical processing, but they do not have problems in lexical processing. On the other hand, patients with Alzheimer’s disease and Williams Syndrome whose explicit memory is damaged have difficulty in lexical processing rather than grammatical processing. Paradis (1994) provided further empirical evidence from studies of aphasic and amnesic patients showing the dissociation of implicit and explicit memory systems. Aphasia, in his opinion, results from the damage of the neural sites which subserve implicit memory. Consequently, aphasic people are susceptible to losing their ability to acquire a language and to losing language that has been automated as well. However, people may not lose their explicit knowledge which is subserved by explicit memory (Paradis, 2009). In contrast, amnesia is due to the fact that the cognitive neural sites that ‘sustains all conscious memories, including metalinguistic knowledge’ (Paradis, 2009, p.172) are neurologically damaged. However, ‘implicit linguistic competence remains available in amnesia’ (Paradis, 2009, p.172). In his study, he found that the brain-damaged anterograde amnesic patients, who lost their explicit
memory, could still maintain their implicit memory.

Hence, the fact that damage to one system does not lead to loss of functions associated with the other system strongly supports the disassociation of implicit and explicit memory systems and also constitutes evidence for the distinction between implicit and explicit knowledge. As R. E(2009) pointed out, ‘the impairment in one type of knowledge can occur independently of impairment in the other’ (p.32). Although the neuroscientific research is not thought to ‘provide a conclusive answer to the debate surrounding the interface position’ (R. Ellis, 2008, p.755) (which will be reviewed next), it offers relatively strong evidence for the dissociation of implicit/explicit memory and the distinction between implicit/explicit knowledge.

N. Ellis (2008) concluded as follows regarding the distinction of the two types of learning, memory systems and knowledge:

We know that implicit and explicit learning are distinct processes, that humans have separate implicit and explicit memory systems, that there are different types of knowledge of and about language, that these are stored in different areas of the brain, and that different educational experiences generate different types of knowledge (p.119).

2.4.3 Relationship between implicit and explicit L2 knowledge: interface positions
It is commonly claimed that implicit and explicit knowledge are distinct as the evidence reviewed above shows. However, central to the debate regarding implicit and explicit L2 knowledge is the question of whether there is an interface between the two, namely the possibility of one knowledge type becoming the other, or more specifically, ‘whether the declarative knowledge that results from explicit learning processes can be turned into a form of procedural knowledge that is accessible in the same way as implicitly acquired knowledge’ (DeKeyser, 2003, p.328). Three positions, namely the non-interface, the strong-interface and the weak-interface positions provide different answers to this question.

2.4.3.1 Non-interface position
The non-interface position claims that there is an absolute distinction between implicit and explicit knowledge and thus there is no possibility of one knowledge type converting directly into the other. Krashen (1981) espoused this position by making a distinction between ‘acquisition’ and ‘learning’. Explicit knowledge, according to Krashen, is only useful and
available as a monitor of performance, namely it allows L2 learners to construct a Monitor which can check output to ensure that it is correct (Krashen, 1981). Zobl (1995) held the same view. He thought that explicit knowledge played no role in acquisition (i.e., the development of implicit knowledge), which ‘comes about simply through carrying out more successful computations on intake data’ that are ‘arrived at by deducing unknowns from available representations in the course of processing an input string’ (Zobl, 1995, p.5). Therefore, it is believed that implicit knowledge is not influenced by explicit knowledge. A non-interface position intends to gain support from neurological evidence that indicates that the two types of knowledge reside in neuroanatomically distinct memory systems---declarative memory (sometimes referred to as explicit memory) and procedural memory (sometimes referred to as implicit memory) (e.g., Paradis, 1994) (see previous discussion of this evidence).

2.4.3.2 Strong interface position

In contrast to the non-interface position, the strong interface position states that although there is a distinction between the two types of knowledge, there can be a conversion of learned knowledge (explicit) to acquired knowledge (implicit). It claims that L2 knowledge commences in explicit form and is then transformed into implicit form through communicative practice (DeKeyser, 1998) and it also acknowledges ‘the possibility of the transfer of implicit knowledge to explicit knowledge through the process of conscious reflection on and analysis of output generated by means of implicit knowledge’ (Milasi & Pishghadam, 2007, p.4). In Bialystok’s (1978) model of second language learning, knowledge is divided into three kinds: other knowledge, explicit knowledge, and implicit knowledge. The model shows that linguistic information leads first to explicit knowledge, and then becomes implicit knowledge after continuous practice and use. In the meantime, when an L2 learner needs to report an explicit rule, implicit knowledge can be drawn on to formulate explicit knowledge. Dekeyser (2003) articulated the strong-interface position as follows:

Even though implicitly acquired knowledge tends to remain implicit, and explicitly acquired knowledge tends to remain explicit, explicitly learned knowledge can become implicit in the sense that learners can lose awareness of its structure over time, and learners can become aware of the structure of implicit knowledge when attempting to access it, for example for applying it to a new context or for conveying it verbally to somebody else (p.315).
2.4.3.3 Weak interface position

The third position concerning the interface hypothesis is an in-between position, which is referred to as the weak-interface position supported by N. Ellis (2005) and R. Ellis (2009). The proponents of this position proposed that it is possible for explicit knowledge to convert into implicit knowledge, but they posit conditions on when and how this can happen. There are three perspectives within this position.

The first perspective draws on Pienemann’s ‘Learnability/Teachability’ hypothesis, which claims ‘learners can benefit from classroom instruction only when they are psycholinguistically ready for it’ (Kumaravadivelu, 2006, p.77). The learnability of a structure constrains the effectiveness of teaching. Pienemann(1989) claimed ‘instruction can only promote language acquisition if the interlanguage is close to the point when the structure to be taught is acquired in the natural setting’ (p.60), and therefore ‘teaching is ineffectual (i.e., impossible) since L2 acquisition can only be promoted when the learner is ready to acquire the given items in the nature context’ (Pienemann,1989, p.61). The ‘Learnability/Teachability’ hypothesis concerns the relationship between implicit and explicit knowledge as it acknowledges the possibility of explicit knowledge becoming implicit but only when ‘the learner is developmentally ready to acquire the linguistic form’ (R. Ellis, 2009, p.21). The second perspective claims that the two kinds of knowledge are related and learning can indirectly facilitate acquisition, because the learned knowledge can help to make the hypothesis testing process more efficient and help learners acquire rules more rapidly (R. Ellis, 1997, 2001). N. Ellis (1994) also pointed out that teaching ‘declarative rules can have “top-down” influences on perception’ in that it can make features perceptually more salient and thus enables the learners to ‘notice the gap’ between the observed input and their output basing on their existing interlanguage system (p.16). Noticing is crucial for subsequent learning (Schmidt, 1994). Researchers adopting this perspective believed that implicit and explicit learning processes work together in L2 acquisition. However, they also acknowledged that conversion will occur only when the learner is developmentally ready as referred to in the discussion of the first perspective and only for rules that are developmentally constrained. Developmentally constrained rules referred to those acquired in a definite sequence, where simpler rules are acquired before more complex ones (R. Ellis, 1994). The third perspective is triggered by the second perspective which emphasised that learners’ output derived from explicit knowledge which can act as ‘auto-input’ triggering their implicit learning mechanisms (Schmidt & Frota,1986; Sharwood Smith, 1981).
A number of empirical studies have examined the relationship between L2 learners’ implicit and explicit knowledge (Green & Hecht, 1992; Macrory & Stone, 2000; Hu, 2002). Nevertheless, according to R. Ellis (2005), none of the studies investigated whether the two types of knowledge can convert into each other or to what degree the two knowledge systems interact. Hence, the interface debate calls for clear empirical evidence. However, the lack of valid instruments for measuring implicit and explicit knowledge has prevented an empirical test of the interface positions (R. Ellis, 2005).

2.5 Psycholinguistic perspectives of general language proficiency in SLA

In practice, language proficiency can be determined in various ways including: self-ratings (Oxford & Nyikos, 1989), language achievement tests (Lett & O’Mara, 1990; Phillips, 1991), entrance and placement examinations (Mullins, 1992) and language course grades (Mullins, 1992). However, it is difficult to define language proficiency theoretically since there is no agreement among researchers and practitioners. Oller and Damico (1991) claimed that the nature and specification of the elements of language proficiency have not been determined and there continues to be debate among academicians and practitioners about the definition. Understanding language proficiency in terms of linguistic knowledge (i.e., psycholinguistic modelling of language proficiency in terms of implicit and explicit knowledge) would provide an insight and be helpful to bridge SLA theories and language testing practice. R. Ellis (2005) pointed out ‘there is an obvious need in both SLA and language testing to construct convincing models of L2 proficiency and, taking these models as a starting point, to develop instruments capable of providing reliable and valid measurements of L2 knowledge’ (p.168). The perspective of conceptualising general language proficiency in terms of the two types of linguistic knowledge (i.e., implicit and explicit knowledge) garnered considerable attention and discussion in R. Ellis’s (2004, 2005, 2006, 2009) work, which can also be traced to Cummins’s (1981, 1984, 2008) hypothesis of language proficiency based on the distinction between ‘basic interpersonal and communicative skills’ (BICS) and ‘cognitive / academic language ability’ (CALP). Although the focus of the review is on Cummins’ and R. Ellis’s models of proficiency, discussion of Oller’s (1979) hypothesis regarding this construct is considered first because it contrasts with the two models mentioned above.
Oller (1979) proposed the Unitary Competence Hypothesis (UCH), which claimed that language proficiency is comprised of a single underlying construct, which he termed global language proficiency. He based this claim on a considerable amount of data showing strong correlations between performance on cloze tests of reading, standardised reading tests, listening comprehension and measures of oral verbal ability (e.g., vocabulary measures). According to Oller, each of the four different language skills manifested holistic language ability, and accordingly it was possible to predict UCH from any one of these skills or by a single proficiency test (Oller, 1979; Oller & Kahn, 1981). For example, a high proficiency in listening comprehension would indicate proficiency in all the other language skills. However, the UCH and Oller’s research have been criticised by other applied linguists. As Cummins (1979, 1981) pointed out, not all aspects of language use or performance can be incorporated into one dimension of global language proficiency. Alderson (1981) also suggested ‘we must give testees a fair chance by giving them a variety of language tests, simply because one might be wrong: there might be no Best Test, or it might not have the one we chose to give, or there might not be one general proficiency factor, there may be several’ (p.190).

Cummins (1980, 2000) conceptualised general language proficiency as consisting of two distinct components: ‘basic interpersonal and communicative skills’ (BICS) and ‘cognitive/academic language ability’ (CALP). According to Cummins (2008) ‘BICS refers to conversational fluency in a language while CALP refers to students’ ability to understand and express, in both oral and written modes, concepts and ideas that are relevant to success in school’ (p.72). ‘BICS’ is ‘the manifestation of language proficiency in everyday communicative contexts’, whereas ‘CALP’ is ‘the manipulation of language in decontextualised academic situations’ (Cummins, 1984, p120). The distinction was intended to ‘draw educators’ attention to the timelines and challenges that second language learners encounter as they attempt to catch up to their peers in academic aspects of the school language’ (Cummins, 2008, p.71). He pointed out the very different time periods typically required by immigrant children to acquire conversational fluency in their second language (e.g., conversations with their friends and informal interactions) as compared to grade-appropriate academic proficiency in that language (e.g., discussion of the content in the classroom) (Cummins, 1984). Cummins (1981, 2008) observed that although immigrant children’s (i.e., those children who immigrated to Canada where English is one of the official languages) conversational fluency developed rapidly, they still needed 5-7 years to approach grade norms in academic aspects of English, indicating that there should be different general
proficiency factors rather than one. Cummins’s view of modelling general proficiency based on the BICS/CALP distinction can be interpreted as involving implicit and explicit knowledge. As indicated before, basic interpersonal and communicative skills are manifestations of communicative ability. It was also mentioned earlier in this chapter that implicit knowledge is the knowledge underlying communicative ability and it is required for spontaneous comprehension or production. Accordingly, learners who have reached conversational fluency reveal their basic interpersonal and communicative skills, which are more likely to involve learners’ implicit knowledge. Learners tend to draw on their implicit knowledge when they conduct everyday communication for which online processing is required. Therefore, learners are not consciously aware of grammar to monitor their production while communicating with others outside the classroom such as friends. However, cognitive/academic language ability tends to involve learners’ implicit and explicit knowledge because it involves learners’ ability to ‘understand and express, in both oral and written modes, concepts and ideas’ (Cummins, 2008, p.72), in which both online processing (i.e., oral aspect) and offline processing (i.e., written aspect) are engaged.

Cummins’s model of language proficiency based on the BICS/CALP distinction provides an insight into understanding the nature of general language proficiency in terms of implicit and explicit knowledge. R. Ellis proposed directly that general language proficiency can be conceptualised in terms of the two types of knowledge. R. Ellis (2009) proposed a model of language proficiency based on the implicit/explicit distinction. His model claimed that language proficiency is best conceptualised as consisting of two distinct types of knowledge - implicit and explicit knowledge – and that measures of these two types of grammatical knowledge can predict scores on language proficiency tests. This model is meaningful for both SLA and language testing in that it can help researchers or practitioners develop instruments capable of providing reliable and valid measurements of L2 knowledge and language proficiency. R. Ellis and his co-associates’ studies, which attempted to demonstrate this, will be reviewed in detail in the following chapter.
2.6 Psychological factors and learners’ implicit/explicit knowledge

It is undeniable that ‘some individuals are more successful in learning a second language than other individuals’ (Gass & Selinker, 2001, p. 329). Individual differences (IDs), which are defined as ‘enduring personal characteristics that are assumed to apply to everybody and on which people differ by degree’ (Dörnyei, 2005, p.4), account for different levels of attainment in SLA. As Dörnyei (2005) emphasised ‘no other phenomena investigated within SLA have come even close to this level of impact’ (p.2). In recent years, individual differences research has shifted from predicting which learners would be successful to explaining why some learners succeed more than others (R. Ellis, 2008).

Language proficiency is claimed to involve implicit and explicit knowledge. Both experimental and neuropsychological evidence provided earlier support for the claim that implicit and explicit knowledge are distinct. Therefore, the relationships between the IDs, which are thought to be closely related to language proficiency, and the two types of knowledge need exploring. This section is intended to clarify the conceptual issues relating to several individual difference variables investigated in the present study. Four individual difference factors are considered, namely (1) language analytic ability, (2) language learning motivation, (3) foreign language anxiety and (4) language learner beliefs, all of which affect behaviour and influence both the process and product of learning (Dörnyei, 2005; R. Ellis, 2008).

2.6.1 Language analytic ability

Language analytic ability is considered an important aspect of language aptitude. Carroll (1981) proposed the influential four-component model of language aptitude, namely phonetic coding ability, grammatical sensitivity, rote-learning ability, and inductive learning ability. However, Carroll’s model of language aptitude was updated in the wake of empirical studies conducted in the 1980s (Skehan, 1986, 1989), which led to the distinction between analysis-oriented and mainly memory-oriented learner types. Skehan (1989) suggested that the components of grammatical sensitivity and inductive language learning ability be subsumed under a single label—language analytic ability. Skehan proposed a three-component model of aptitude, comprised of phonetic coding ability, language-analytic ability, and memory ability. He defined language analytic ability as ‘the capacity to infer rules of language and make linguistic generalizations and extrapolations’ (Skehan, 1998, p.207). This definition is
believed ‘sufficiently general to cover both the implicit analysis of naturalistic input by children acquiring their mother tongue and the explicit inference of grammatical rules from a small structured data set on an aptitude test’ (Ranta, 2002, p.161).

A great deal of experimental evidence lends support to the role of language-analytic ability in language learning (Skehan, 1986; Harley & Hart, 1997; DeKeyser, 2000; Ranta, 2002; Sheen, 2007; Trofimovich, Ammar & Gatbonton, 2007). The findings of experimental studies focusing on the relationship between language-analytic ability and language proficiency suggest that language analytic ability, as the capacity to infer underlying rules from input and make generalisations applicable to novel but similar learning situations, is important for the development of L2 knowledge (Skehan, 1986; Harley & Hart, 1997, 2002). Krashen (1981) also claimed that aptitude tests will only correlate with what he called ‘learning’, not with ‘acquisition’, indicating that language analytic ability may relate only to explicit knowledge. However, a relationship between language analytic ability and measures derived from L1 development tests and L2 speaking/listening tasks has also been found (Skehan, 1990), suggesting that language analytic ability may also involve implicit knowledge. Accordingly, this study attempts to explore the role of language analytic ability in L2 learners’ implicit and explicit grammatical knowledge directly. If there is a positive relationship between language analytic ability and implicit/explicit knowledge, then it may be pedagogically helpful for language teachers and researchers. For instance, teachers could vary the types of activities to ensure that they cater to learners with a range of language analytic ability. Relevant studies investigating the relationship between language analytic ability and tasks involving implicit and explicit knowledge will be reviewed in the next chapter.

2.6.2 Language learning motivation

There are differences in the way practitioners and researchers have conceptualised ‘motivation’. Keller (1984) considered ‘interest’ as one of the main components of motivation. Crooks and Schmidt (1991) claimed that language learning motivation has both external and internal aspects. Gardner and MacIntyre (1993) refer to motivation as the effort which language learners put into realising a goal and their satisfaction with the outcome of their effort. R. Ellis (1994) defined motivation as ‘the effort which learners put into learning a second language as a result of need or desire to learn it’ (p.715). According to Dörnyei (1998) motivation is ‘a process whereby a certain amount of instigation force arises, initiates action, and persists as long as no other force comes into play to weaken it and thereby terminate
action or until the planned outcome has been reached’ (p.118). Nevertheless, although there are differences in conceptualising motivation, some common points can be found. Williams and Burden (1999) concluded that a learner who has motivation should manifest: (1) a clear goal for learning a language, (2) effort to realise the goal and (3) maintenance of the effort.

Gardner and Lambert’s (1972) integrative/instrumental model of motivation has been very influential. A number of studies were conducted based on Gardner’s classical model or its subsequent development (Gardner, Day & MacIntyre, 1992; Gardner, Tremblay & Masgoret, 1997; Tremblay & Gardner, 1995; Shi, 2000; Wen, 2001; Wu, Liu & Jeffrey, 1993; Qing & Wen, 2002). However, Gardner’s model was not considered well-suited to explain motivation in specific contexts such as China, which has a strong cultural and educational tradition and huge numbers of English learners (Gao et al., 2003). Zheng (2010) also pointed out that Chinese learners are influenced by Confucian culture and possess ‘remarkably different orientations in their cognitive learning’ (p7). Thereby there is a clear need to explore specific L2 learners’ language learning motivation by taking into account the specific context.

Gao and her colleagues (2003) accordingly conducted a nationwide survey among a large number of Chinese students adopting a bottom-up (inductive) method to explore particular English learning motivation types in Chinese university students. The participants were 2,278 undergraduates from 30 Chinese universities in different regions. In their study, seven micro-level types of motivation were identified: (1) Intrinsic interest. This refers to appreciation or fondness for the target language and certain aspects of its culture; (2) Immediate achievement. This motivation is typically associated with obtaining high scores in exams, e.g., for university entrance or graduation; (3) Learning situation. This factor indicates the influence of the learning environment such as the quality of teaching, teaching materials, teachers, and affiliation with the learning groups; (4) Going abroad. This motivation is related to going abroad for various purposes, such as ‘finding better education or job opportunities’, ‘experiencing English-speaking cultures’, and ‘immigration’; (5) Social Responsibility. Chinese students have a desire to repay their parents and motherland. It is a Confucian tradition to combine ‘harmonizing the family’ and ‘putting the country in order’, emphasizing individuals’ responsibility to fulfil social expectations. This motivation type is not found in the existing literature, and might be particular to Chinese or Asian contexts; (6) Individual development. This factor concerns interest in increasing one’s own ability and social status in future development is manifested in different ways, which could be as specific as ‘finding a good job’ or as general as acquiring ‘a sense of achievement’; (7) Information medium. The
role of English as an instrument for obtaining information and learning other academic subjects is highlighted here (Gao et al., 2003). Their study provides ‘a comprehensive picture of the motivation types of Chinese university undergraduates’ (Zheng, 2010, p.25) and may have some implications for other Asian contexts.

The powerful impact of motivation on achievement has been widely recognised for a long time. As R. Ellis (2008) noted ‘no single individual difference factor has received as much attention as motivation’ (p.677), because ‘it provides the primary impetus to initiate L2 learning and later the driving force to sustain the long and often tedious learning process’ (Dörnyei, 2005,p.65). Dörnyei (2001) also wrote, ‘The emerging body of research studies established motivation as a principal determinant of second language acquisition’ (P.43). Although the important roles of motivation and its sub-types in language proficiency in various studies have been widely recognised (Gardner &Lambert 1972; Gardner, Tremblay & Masgoret, 1997; Gardner, 1985, 2001), there has been no study investigating motivation relative to implicit and explicit knowledge. It can be assumed that motivation or at least some type(s) of motivation plays an important role in the development of implicit or explicit knowledge given that both types of knowledge contribute to language proficiency. Gao et al.’s seven micro-types of motivation are used in the current study in order to investigate which specific types are implicated in Chinese learners’ implicit and explicit grammatical knowledge.

2.6.3 Foreign language anxiety
Anxiety in foreign language learning is one of the topics which has attracted researchers’ attention (Kim, 2001). MacIntyre and Gardner (1991) indicated ‘anxiety is one of the best predictors of success in the second language’ (p.96). It ‘poses several potential problems for the student of a foreign language because it can interfere with the acquisition, retention and production of the new language’ (MacIntyre & Gardner, 1991, p.86). Horwitz, Horwitz and Cope (1991) conceptualised foreign language anxiety as a ‘distinct complex of self-perceptions, beliefs, feelings, and behaviours related to classroom language learning arising from the uniqueness of the language learning process’ (p.31). MacIntyre (1998) defined language anxiety as ‘worry and negative emotional reaction aroused when learning or using a second language’ (p.27). According to Kim (2001), foreign language anxiety is:

a complex of self-perceptions, subjective beliefs, and uneasy feelings that
accompanies adverse emotional reactions and cognitive interference characteristic of maladjustment at intrapersonal and interpersonal levels, which arises from the sense that one cannot have control over the unique situation where formal language learning takes place, or where the current proficiency level cannot meet one's expectation and perceived environment demands (p. 25).

Many language learners have been observed to feel more nervous and apprehensive in the foreign language class than in any other class (Campbell & Ortiz, 1991; MacIntyre & Gardner, 1989). Language learning anxiety has a detrimental influence on language learning (Horwitz, Horwitz, & Cope, 1986). Speaking and listening activities are the most obvious cause of language anxiety in the foreign language classroom (Horwitz, Horwitz, & Cope, 1986; von Worde, 2003; Young, 1986). Yan and Horwitz (2008) noted in their study that most language learners often commented on their anxiety relating to listening and speaking performance:

(In listening classes) I feel anxious and I can't reply. I am anxious, very anxious. The more anxious I feel the more confused I am. Sometimes the stuff you couldn't understand in class, you take it back and listen to it in the dorm, and you could understand! It's just like this. I am scared, anxious, and then I can't hear clearly; neither can I say anything. (p. 160)

Phillips (1992) found that foreign language learners who were highly anxious tended to get lower examination grades in an oral examination than their peers who were less anxious. In Chen's (2002) study of the relationship between language anxiety and language proficiency in Taiwanese college learners of English in southern Taiwan, she found that oral-oriented activities were the most foreign language anxiety-provoking activities in the foreign language classroom. In Yan and Horwitz's (2008) study, some language learners believed that language anxiety can affect their speaking performance in a language class and make them feel frustrated, incapable, and even angry. For example, one language learner with high communication anxiety reported: ‘it seems that I had this kind of feeling (anxiety) before - that is, in class when the teacher suddenly asked you (to speak) …’ (Yan & Horwitz, 2008, p. 160). According to Horwitz, Horwitz, and Cope (1986), language learners who are highly anxious are afraid to speak in the foreign language classroom and ‘feel a deep self-consciousness when asked to risk revealing themselves by speaking the foreign language’ (p. 25).
In contrast to speaking and listening, reading and writing are less affected by anxiety in the foreign language classroom (Kim, 2001). According to MacIntyre, Noels, Clement (1997), it can be embarrassing to interrupt a conversation if learners do not understand what other people say; however, reading ‘allows for repetition and clarification with minimal risk of embarrassment’ (pp. 279-280) since it is quite private and individual. As R. Ellis (2008) observed ‘when anxiety does arise relating to the use of the L2, it seems to be restricted mainly to speaking and listening, reflecting learners’ apprehension at having to communicate spontaneously in the L2 ’ (p.692). It can be inferred that there is more likely to be a negative relationship between language anxiety and implicit knowledge since learners tend to draw on their implicit knowledge in listening and speaking, where online processing and intuitive awareness are implicated. In contrast, language anxiety may play less of a role in the case of explicit knowledge when this is measured by means of offline tests. Poza’s (2005) study showed that language anxiety may also have a negative relationship with tasks involving time pressure. In his study he pointed out ‘students experienced a reduction of their level of anxiety due to the elimination of the time pressure in the classroom and opportunity to edit their contributions’ (p.ii). Chang (2011) also indicated that ‘allowing adequate time for oral responses and discussions’ might ‘reduce language anxiety in the classroom and develop more effective language learning outcomes’ (p.150). Accordingly, a negative correlation between language anxiety and implicit knowledge is predicted in the current study, but not between language anxiety and measures of explicit knowledge.

2.6.4 Learner beliefs about foreign language learning

Researchers find it difficult to define beliefs due to their paradoxical, changing and dynamic nature (Dewey,1983; Pajares, 1992; Izard & Smith 1982). ‘Belief’ is different from ‘attitude’. According to Dörnyei (2005), attitudes are ‘more deeply embedded in our minds and can be rooted back in our past or in the influence of the modelling example of some significant person around us’ (p.214), whereas beliefs ‘have a stronger factual support’ and are defined as ‘mental constructions of experience’ (Sigel, 1985, p.351).

Defining beliefs in the foreign language learning field is also very difficult since learner beliefs are different from other variables of IDs in that they are ‘neither an ability nor a trait-like propensity for language learning’ (R. Ellis, 2008, p.698). Learner beliefs have both cognitive and social features (Gardner et al., 1983; Gardner, 1985, 1988; Gardner et al., 1999). They are often referred to as learner representations (Holec, 1987), learners’ philosophy of
language learning (Abraham & Vann, 1987), metacognitive knowledge (Wenden, 1986, 1987) or the culture of learning languages (Barcelos, 1995). Tanaka (2004), who reported a study looking at correlations including learner beliefs and language proficiency in a study-abroad context, followed the definition of beliefs adopted in social psychology, namely ‘beliefs are regarded as the associations or linkages that people establish between an object (e.g., English) and various attributes (e.g., difficult, an important language, should be learned by everyone)’ (p.7). Tanaka (2004) classified learner beliefs into three broad categories based on several empirical studies (e.g., Horwitz, 1987; Park, 1995; Wenden, 1986, 1987): (1) beliefs about analytic learning, (2) beliefs about experiential learning and (3) beliefs relating to affective states. Beliefs about analytic learning ‘emphasise the explicit study of the target language as a linguistic and communicative system’ (Tanaka, 2004, p.28), while beliefs about experiential learning ‘emphasise the role of exposure to and use of the language itself as means of promoting this process’ (Tudor, 2001, p.86). Affective states involve ‘the learner’s evaluation of the self as a language learner, including aptitude, self-efficacy, confidence, and motivation’ (Tanaka, 2004, p.28).

The role of learner beliefs in foreign language learning outcomes is important because they affect learners’ expectations of and commitment to their foreign language learning (Horwitz, 1988). The results of three large-scale American studies investigating language learner beliefs pointed to a theoretical supposition that learners’ negative beliefs towards learning negatively affect language learning achievement (Horwitz, 1988; Kern, 1995; Mantle-Bromley, 1995). Tanaka (2004) reported a negative relationship between beliefs regarding affective states and listening ability in one group of learners. However, he admitted that this result contradicted the previous finding that positive feelings about self as a language learner (e.g., confidence, self-efficacy) are related to positive learning outcomes. He attributed the negative relationship to the learners’ over-confidence and unrealistic beliefs about their ability to learn during a study abroad period. Tanaka’s finding is compatible with the claim that learner beliefs concerning affective states are related to implicit knowledge since listening involves spontaneous comprehension and thus requires implicit knowledge. It can also be assumed that there is a possible relationship between learner beliefs about analytic learning and explicit knowledge, as both constructs implicate metalinguistic analysis. Learners who have positive beliefs about analytic learning are likely to emphasise the importance of learning the language system explicitly and will consequently develop a higher level of explicit knowledge compared with those learners who attribute less importance to analytic learning.
2.7 Summary

This chapter has attempted to examine the concepts investigated in the current study by explicating the role of consciousness in L2 learning, implicit/explicit learning, implicit/explicit knowledge, psycholinguistic models of general language proficiency and four psychological factors (i.e., language analytic ability, language learning motivation, and language anxiety and learner beliefs). In addition, the neurological evidence for the distinction between implicit and explicit knowledge has been reviewed. The potential roles of these psychological factors in implicit and explicit knowledge have also been discussed.

The main points that emerge from this review of the key constructs can be summarised as follows:

- The role of consciousness in distinguishing implicit and explicit knowledge is best understood in terms of Schmidt’s framework: (1) consciousness as intentionality; (2) consciousness as attention; (3) consciousness as awareness; and (4) consciousness control. Therefore, implicit knowledge involves intuitive awareness, whereas explicit knowledge implicates metalinguistic awareness.

- Implicit knowledge refers to knowledge of language underlying communicative ability, whereas explicit knowledge is knowledge about language which is typically accessed through controlled processing when L2 learners experience some kind of linguistic difficulty in the use of the L2, as demonstrated by the evidence from neuroanatomical, neurofunctional and neuroimaging studies.

- Central to the debate regarding these two types of knowledge is whether there is an interface between them, namely the possibility of one knowledge type transforming into the other. Three positions (i.e., non-interface, strong-interface and weak-interface) provide different answers to this question. Krashen (1981) is the main advocate of non-interface position, which claims that there is an absolute distinction between implicit and explicit knowledge and thus there is no possibility for one knowledge type to convert directly into the other. In contrast, the strong interface position states that although there is a distinction between the two types of knowledge, there can be a conversion of learned knowledge (explicit) into acquired knowledge (implicit). Two leading figures for this point of view were Bialystok (1978) and DeKeyser (1998, 2003). The weak-interface position supported by N. Ellis (2005) and R. Ellis (2009). This position draws on Pienemann’s
‘Learnability/Teachability’ hypothesis and also the findings concerning sequence of acquisition in naturalistic acquisition studies. It claims that it is possible for explicit knowledge to convert into implicit knowledge, but there are conditions that govern when this can happen,

• Proficiency can be conceptualised in terms of explicit and implicit knowledge, both of which are involved in actual language use. Cummins’s (1981, 1984, 2008) distinction between ‘basic interpersonal and communicative skills ’ (BICS) and ‘cognitive /academic language ability’ (CALP) is analogous to the implicit/ explicit distinction. Cummins’ (2008) distinguishes these two types of proficiency as follows: ‘BICS refers to conversational fluency in a language while CALP refers to students’ ability to understand and express, in both oral and written modes, concepts and ideas that are relevant to success in school’ (p.72). Cummins’s model of proficiency suggests that different types of language use draw on different types of proficiency and knowledge systems. Cummins’s model of language proficiency based on the BICS/CALP distinction provides an insight to understand the nature of general language proficiency in terms of implicit and explicit knowledge. R. Ellis’s (2009) model of language proficiency based on the implicit/explicit knowledge distinction similarly claims that different types of language use draw on in different ways on the two types of knowledge. A psycholinguistic perspective on language proficiency can help to bridge the gap between SLA theories and language testing practice.

• Individual differences (i.e., in language analytic ability, language learning motivation, foreign language anxiety and beliefs about language learning) account for different levels of attainment in SLA.

• Language analytic ability is ‘the capacity to infer rules of language and make linguistic generalizations and extrapolations ’ (Skehan, 1998, p.207). The available research suggests that language analytic ability may relate to both explicit knowledge (e.g., Hart & Harley, 1997, 2002) and implicit knowledge (Skehan, 1989, 1990).

• A learner who has motivation should manifest: (1) a clear goal for learning a language, (2) effort to realise the goal and (3) maintenance of the effort. Gao and her fellow colleagues (2003) identified seven micro-types of motivation in Chinese university students: intrinsic interest, immediate achievement, learning situation, going abroad, social responsibility, individual development and information medium.
Motivation is likely to be related to the development of both implicit and explicit knowledge.

- Howitz, Howitz and Cope (1991) conceptualised foreign language anxiety as a ‘distinct complex of self-perceptions, beliefs, feelings, and behaviours related to classroom language learning arising from the uniqueness of the language learning process’ (p.31). Given that research has shown that language anxiety arises in oral communication, it is proposed that it will be implicated more strongly in the development and use of implicit knowledge.

- Tanaka (2004) classified learner beliefs into three broad categories, namely beliefs about analytic learning, beliefs about experiential learning and beliefs relating to affective states. It has been suggested beliefs about affective states will correlate with learners’ implicit knowledge and beliefs about analytic learning with and explicit knowledge.

The following chapter will examine the empirical research that has investigated L2 implicit and explicit knowledge.
CHAPTER THREE
LITERATURE REVIEW

3.1 Introduction
While the previous chapter tried to provide a clear picture of the key concepts investigated in the present study, this chapter will review a number of empirical studies either directly or indirectly concerning the two major relationships on which the present study focuses, namely the relationship between implicit/explicit knowledge and general language proficiency, together with the relationship between the individual learner factors (i.e., language analytic ability, and language learning motivation, foreign language anxiety and learner beliefs about language learning) and implicit/explicit knowledge. This chapter begins with the studies measuring implicit and explicit L2 knowledge.

3.2 Studies measuring implicit and explicit L2 knowledge
The lack of validated instruments for implicit and explicit knowledge has prevented empirical testing of the interface positions (R. Ellis, 2005). Several studies have set out to investigate explicit knowledge (Bialystok, 1979; Sorace, 1985; Masny, 1987; Green & Hecht, 1992; Alderson et al., 1997; Han & Ellis, 1998; Elder et al., 1999; Newman & White, 1999; Clapham, 2001; Hu, 2002; Butler, 2002). However, very few studies have as yet treated explicit knowledge as their main focus (R. Ellis, 2004). The same situation has also occurred with implicit knowledge. According to Erlam (2006), ‘a key issue in the field of second language acquisition has been the difficulty of specifying accurate measures’ of this concept (p.464). Han and Ellis (1998) fired the first shot by conducting an empirical study to explore ways of measuring both implicit and explicit L2 knowledge. R. Ellis (2005) then conducted a psychometric study aiming to establish operational definitions of the two types of knowledge, and also to provide relatively independent measures of them. Subsequently, R. Ellis and his associates conducted a series of studies to validate individual measures as measures of implicit and explicit knowledge respectively in a second language context. Later, Bowles (2011) conducted a study to validate R. Ellis’s proposed measures of the two types of knowledge in a different context.
3.2.1 Study 1: Han and Ellis’s (1998) study

The aims of this study were to explore ways of measuring implicit and explicit L2 knowledge and to examine the relationship between the measures of the two types of knowledge and measures of general language proficiency. This section only reviews the part concerning the first aim of the study.

Participants were 48 adult English learners enrolled in the two summer sessions of an American university intensive English language programme in the U.S.A. They were from Asia, South America, Europe and the Middle East. 25 of them were from Korea and Thailand. In this study, only one grammatical structure ‘verb complements’ was investigated. The reason given for focusing on ‘verb complements’ is that there is no clear rule to guide learning of it, so this area is thought to be a difficult area of grammar.

Han and Ellis (1998) employed three instruments to elicit learners’ implicit and explicit knowledge. They were: (1) Timed Grammaticality Judgment Test (TGJT), (2) Oral Production Test (OPT) and (3) Interview including the Delayed GJT and Metalingual Comments. The OPT was administered individually to each subject. In this test, each subject was given pictures with written cues to elicit their oral responses containing verb complements. The subjects were allocated 6 seconds for producing a sentence for each picture. Then the TGJT was administered to the participants. It was a computer-delivered test with a time constraint. Each sentence appeared separately on the screen for 3.5 seconds. Learners were required to tell whether the sentence was grammatical, ungrammatical or they were not sure. This test was administered twice. There was a one-week gap between the administrations of the TGJT 1 and TGJT 2. The interviews were conducted later on. First, the subjects were asked to complete a GJT which had the same content as the TGJT but without any time limit. After each student had made a Judgment, they were asked questions concerning the Judgments and on what they based it. The interview was used to develop a Metalingual Comments measure. Altogether, scores for five measures of L2 knowledge were obtained in the study: (1) TGJT 1, (2) TGJT 2, (3) OPT, (4) Delayed GJT, (5) Metalingual Comments.

The Principal Component analysis revealed a distinct two-factor solution. The Delayed GJT and Metalingual Comments loaded on one factor, while the OPT and TGJT 1 loaded on the other factor. The results suggested that the measures provided relatively separate measures of
implicit and explicit knowledge, which provided further support for distinguishing implicit and explicit L2 knowledge. However, the TGJT 2 was found to load on both factors, which indicated that it did not clearly distinguish between implicit and explicit knowledge. Han and Ellis (1998) suggested that the TGJT 2 tapped both types of knowledge. They speculated ‘familiarity with the test content and procedure allowed the subjects to access a greater mix of strategies, drawing on both types of knowledge’ (p.17).

3.2.2 Study 2: R. Ellis’s (2005, 2009) study
This study built on Han and Ellis’s (1998) exploratory study. The aims of R. Ellis’s (2005) study were to develop a battery of tests that would provide relatively separate measures of implicit/explicit knowledge and to establish the construct validity and reliability of those tests. The research question that this study was intended to answer was ‘to what extent is it possible to develop tests that provide separate measures of implicit and explicit L2 knowledge?’ (R. Ellis, 2005, p.153). The participants were 111 students comprising 20 native English speakers and 91 L2 English learners. The native English speakers were either undergraduate or graduate students in a university in New Zealand or were former students of the university. The L2 English learners were of mixed language proficiency. Among them, 21 were enrolled in low-level courses in the university’s English center, 30 were taking more advanced courses in ESOL as part of an undergraduate degree programme, while the remaining 44 were relatively advanced with an overall mean of 6.24 out of 9.0 in IELTS. On average, they had been learning English for 10 years. They had spent an average of 1.9 years living in an English-speaking country. The function of those 20 native English speakers was to help demonstrate the construct validity and reliability of the measures used in this study. The prediction was that the native speakers would outscore the L2 learners in all tests especially the tests which were more likely to elicit implicit knowledge.

Following R. Ellis (2004) and also drawing on insights gleaned from previous studies, R. Ellis (2005, 2009) proposed seven criteria for operationalising implicit and explicit knowledge which were as follows:

(1) Degree of awareness (i.e. the extent to which learners are aware of their own linguistic knowledge). This clearly represents a continuum, but it can be measured by asking learners to report retrospectively whether they made use of ‘feel’ or ‘rule ’ in responding to a task.
(2) Time available (i.e. whether learners are pressured to perform a task ‘on-line’ or whether they have an opportunity to plan their response carefully before making it). Operationally, this involves distinguishing tasks that are demanding on learners’ short-term memories and those that lie comfortably within their L2 processing capacity.

(3) Focus of Attention (i.e. whether the task prioritizes fluency or accuracy). Fluency entails a primary focus on message creation in order to convey information or attitudes, as in an information or opinion gap task. Accuracy entails a primary focus on form, as in a traditional grammar exercise.

(4) Systematicity (i.e. whether learners are consistent or variable in their response to a task). It is predicted that learners will be more consistent in a task that taps their implicit knowledge than in a task that elicits explicit knowledge.

(5) Certainty (i.e. how certain learners are that the linguistic forms they have produced conform to target language norms). Given that learners’ explicit knowledge has been shown to be often anomalous, some learners are likely to express more confidence in their responses to a task if they have drawn on their implicit knowledge. However, other learners may place considerable confidence in their explicit rules. Thus, this criterion of explicit knowledge needs to be treated with circumspection.

(6) Metalanguage (i.e. learner’ knowledge of metalingual terms will be related to their explicit (analysed) knowledge, but not to their implicit knowledge).

(7) Learnability (i.e. learners who began learning the L2 as a child are more likely to display high levels of implicit knowledge, while those who began as adolescents or adults, especially if they were reliant on instruction, are more likely to display high levels of explicit knowledge) (R. Ellis, 2009, pp.38-39).

According to these criteria, a battery of tests was designed to measure learners’ implicit and explicit L2 grammatical knowledge of 17 English grammatical structures (e.g., verb complements, yes/no questions etc.). They were: (1) Elicited Oral Imitation Test (EIT), (2) Oral Narrative Test (ONT), (3) Timed Grammaticality Judgment Test (TGJT), (4) Untimed Grammaticality Judgment Test (UGJT), and (5) Metalinguistic Knowledge Test (MKT). The EIT consisted of 34 belief statements involving both grammatical and ungrammatical sentences containing the 17 target structures (one grammatical and one ungrammatical sentence per structure). The participants needed to indicate whether they agreed, disagreed
with or were not sure about the content of each statement and they were required to repeat the sentence in correct English immediately after. In the ONT, a story containing a number of the target structures was employed. The participants were required to read the story twice and then to retell the story orally within 3 minutes. The TGJT and UGJT had the same content comprising 68 sentences, evenly divided between grammatical and ungrammatical. The participants were required to judge the grammaticality of each sentence (i.e., grammatical or ungrammatical). The only difference between the two tests was time limit (i.e., the TGJT had a time limit between each sentence, while the UGJT did not have any time limit). The MKT consisted of two parts. R. Ellis (2005) described the two parts as follows:

The first part presented participants with 17 ungrammatical sentences (one sentence per target structure) and required them to select the rule that best explained each error out of four choices provided. The second part consisted of two sections. In section 1, the participants were asked to read a short text and then to find examples of 21 specific grammatical features from the text (e.g., preposition and finite verb). In section 2, they were asked to identify the named grammatical parts in a set of sentences (p.157).

Table 1 shows the design features of the five tests.

Table 1 Design features of the tests in the test battery

<table>
<thead>
<tr>
<th>Criterion</th>
<th>EIT</th>
<th>ONT</th>
<th>TGJT</th>
<th>UGJT</th>
<th>MKT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Awareness</td>
<td>Feel</td>
<td>Feel</td>
<td>Feel</td>
<td>Rule</td>
<td>Rule</td>
</tr>
<tr>
<td>Time Available</td>
<td>Pressured</td>
<td>Pressured</td>
<td>Pressured</td>
<td>Unpressured</td>
<td>Unpressured</td>
</tr>
<tr>
<td>Focus of Attention</td>
<td>Meaning</td>
<td>Meaning</td>
<td>Form</td>
<td>Form</td>
<td>Form</td>
</tr>
<tr>
<td>Utility of knowledge of metalanguage</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

(Note. This table is adapted according to the material in R. Ellis, 2009, p.47)

It was predicted that the five tests would provide relatively separate measures of implicit and explicit knowledge according to the four criteria shown above. The EIT and ONT were predicted to measure implicit knowledge in that the test-takers would rely predominantly on feel and would perform under time pressure. They would have no way to access their
metalanguage in these two tests. In contrast, the MKT was predicted to measure explicit knowledge because it was unpressured and would direct the test-takers’ attention to form. Therefore, it would require the use of metalinguistic knowledge. Both GJTs required test-takers to focus attention primarily on form. However, the TGJT was predicted to measure primarily implicit knowledge, whereas the UGJT was predicted to measure primarily explicit knowledge. The TGJT was pressured and encouraged the use of ‘feel’. There was little opportunity to access metalinguistic knowledge in this test. In contrast, the UGJT was not pressured and it encouraged test-takers to use ‘rules’. It was likely to involve metalinguistic knowledge.

Accordingly, the EIT, ONT and TGJT were designed to measure students’ implicit knowledge, and the UGJT and MKT their explicit knowledge. A series of statistical analyses showed that (1) all tests were reliable. Four of them had alphas greater than .80 and the interrater reliability of the ONT was .85; (2) The native speakers outscored the L2 learners on all tests except the MKT; (3) All tests were significantly intercorrelated, and (4) The grammatical and ungrammatical sentences in the UGJT behaved differently. The ungrammatical sentences correlated more strongly with the MKT; (5) The Confirmatory Factor Analysis (CFA) showed that the EIT, ONT and TGJT loaded on one factor, while the ungrammatical items of the UGJT and the MKT loaded on a different factor. These two factors were labelled implicit and explicit knowledge respectively. The two-factor solution supported the claim that these tests provided relatively separate measures of implicit and explicit L2 knowledge.

The results of the analyses also provided evidence for the validity of the tests.
7. Degree of awareness. As predicted, ‘rule’ was found to correlate more strongly with the UGJT ungrammatical items and the MKT, which were more likely to elicit explicit knowledge than with the scores on the other three tests.
8. Time availability. As predicted, pressured and unpressured tests loaded on different factors according to the Confirmatory Factor Analysis.
9. Focus of attention. It was hypothesised that the two tests (i.e., the EIT and ONT) designed to direct learners’ attention to meaning would load heavily on the same factor, but the TGJT which required a focus on form would load less heavily on this factor (R. Ellis, 2009). The result echoed this hypothesis, however, it was admitted ‘this hypothesis cannot be properly tested in this study as the focus and time-pressure
variables were confounded in the design of the tests’ (R. Ellis, 2009, p.55).

10. Utility of metalinguistic knowledge. The scores on the MKT were more strongly correlated with the scores on the UGJT and UGJT UG than with the scores on the EIT and ONT, indicating that the tests of explicit knowledge encouraged greater use of metalinguistic knowledge than the tests of implicit knowledge. (R. Ellis, 2009, pp. 53-58).

R. Ellis and his associates also reported studies designed to validate the separate tests. These are considered below.

3.2.2.1 Validating study 1: validating the EIT as a measure of implicit knowledge (Erlam, 2006, 2009)

The main assumptions for the EIT as a measure of implicit knowledge were: (1) it should be reconstructive in nature, namely learners should process the stimulus (e.g., focus on meaning) rather than repeat verbatim, which can provide evidence that ‘it is part of the learner’s internal grammar or interlanguage system’ (Erlam, 2009, p.66). Erlam noted that ‘if the participants in this study were processing stimuli presented to them, rather than repeating verbatim what they heard, they would be correcting ungrammatical structures as well as repeating grammatical structures correctly’(Erlam, 2009, p.74), namely there should be a strong positive relationship between participants’ ability to repeat grammatical sentences correctly and their ability to correct the ungrammatical sentences; (2) there should be a relationship between participants’ performance on the EIT and performance on other ‘time-pressured’ tests of L2 language use (i.e., other measures of implicit knowledge). Two research questions were formulated accordingly: (1) Is there a positive relationship between participants’ ability to repeat grammatical structures correctly and their ability to correct ungrammatical structures in the Oral EI Test? (2) Is there a relationship between participants’ performance on the Oral EI Test and performance on other ‘time-pressured’ tests of L2 language use? (p. 74).

The results pointed to the EIT constituting a valid measure of implicit knowledge: (1) the EIT was reconstructive because the participants’ ability to repeat grammatically correct items was found to have a strong positive correlation with their ability to correct ungrammatical items. Also, students focused on meaning first and then correction happened when the learners repeated the ungrammatical sentence. (2) there was a significant positive correlation between
the overall scores on the EIT and the other measures of ‘time-pressured’ L2 use such as the ONT (Erlam, 2009, pp.88-91). In addition, the fact that native speakers on this test outperformed L2 learners (i.e., 97% versus 61% of grammatical items correctly repeated and 91% versus 35% of ungrammatical items correctly repeated) also provided further support for this test as a measure of implicit knowledge because native speakers of an L2 were deemed to have higher implicit knowledge than L2 learners.

3.2.2.2 Validating study 2: validating the timed and untimed grammaticality Judgment tests as measures of implicit and explicit knowledge respectively (Loewen, 2009)

Loewen (2009) began this study with a question ‘what do GJTs measure?’ because the debate about what a GJT actually measures is still ongoing in SLA research. The literature shows that GJTs can ‘provide important information about L2 learners’ linguistic ability’ and ‘the nature of learners’ knowledge, whether implicit or explicit, can affect their Judgments about the grammaticality of a sentence’ (Loewen, 2009, p.95). Therefore, two types of GJTs, one time-pressured (TGJT) and the other untimed-pressured (UGJT), were employed in this study. The main assumptions for the timed and untimed GJTs as measures of implicit and explicit knowledge respectively were:

(1) Response times. According to Bialystok (1979), learners may be more likely to rely on implicit knowledge in a GJT with a time limit, while they may access their explicit knowledge if they are given unlimited time to respond. Also, lower scores on the TGJT than the UGJT suggests that the learners may have drawn on implicit knowledge when there is time limit and on explicit knowledge when they are under no time pressure.

(2) Task stimulus. Hedgcock (1993) proposed that different cognitive processes may be involved when learners judge grammatical and ungrammatical items (Loewen, 2009). Learners may be more likely to make use of explicit knowledge while judging the ungrammatical items (R. Ellis, 1991) and their implicit knowledge while judging the grammatical ones.

(3) L1 speakers of an L2 and L2 learners’ different performances on the GJTs. L1 speakers should be more accurate and faster in their Judgments than L2 learners on the test measuring implicit knowledge given their greater implicit knowledge than L2 learners.
Four research questions were proposed accordingly. They were: (1) Is there a difference between L1 and L2 speakers’ performance on the GJTs in terms of (a) accuracy? (b) response time? (2) What is the relationship between L2 learners’ performance on timed and untimed GJTs in terms of (a) accuracy? (b) response time? (3) What effect does task stimulus (grammatical versus ungrammatical) have on L2 speakers’ performance on a GJT in terms of (a) accuracy? (b) response time? (4) Is there a relationship between L2 learners’ performance (both accuracy and response time) on an Untimed GJT and (a) the certainty of their Judgments? (b) their self-reported use of rules in making Judgments? (Loewen, 2009, p. 100).

The statistical analyses showed the following results:

(1) L1 speakers outperformed L2 learners on both the TGJT and UGJT (i.e., L1 speakers: 80% on TGJT, 96.4% on UGJT; L2 learners: 54.7% on TGJT, 83.6% on UGJT). In addition, both L1 speakers and L2 learners performed more poorly on the ungrammatical section of the TGJT (i.e., L1 speakers: 68.9% on ungrammatical items, 9.8% on grammatical items; L2 learners: 33.4% on ungrammatical items, 76.1% on grammatical items), indicating that the task stimulus (i.e., grammatical or ungrammatical) affected performance on a GJT.

(2) L2 learners were more accurate on the UGJT than on the TGJT (83.6% for the UGJT and 54.7% for TGJT), indicating that time pressure influenced the type of knowledge they might have drawn on.

(3) L2 learners were found to judge the grammatical items more accurately than the ungrammatical items, indicating that the task stimulus affected the type of knowledge they might have drawn on.

(4) L2 learners’ response times for the grammatical and ungrammatical items on the TGJT were almost equal, however, those on the UGJT differed by almost one second (TGJT G and UG: 2.39 and 2.37 seconds; UGJT G and UG: 7.98 and 7.01 seconds), indicating that the participants responded more quickly to the ungrammatical items than to the grammatical ones on the whole. Furthermore, the results of the repeated measures ANOVA showed that both time pressure and task stimulus affected the response times, i.e., the participants were significantly faster on the timed test and responded more quickly to the ungrammatical items than to the grammatical ones.

These results supported the construct validity of those two types of GJTs: (1) L1 speakers’
and L2 learners’ different performances on the TGJT and UGJT, and also their performance on the grammatical and ungrammatical items of the GJTs spoke to the construct validity of the GJTs; (2) features of GJTs (i.e, time pressure and task stimuli) can be manipulated to predispose L2 learners to exploit different types of knowledge. L2 learners tended to draw on implicit knowledge in the TGJT because the time pressure of this test did not allow them to draw on their explicit knowledge (Loewen, 2009, p.109). In contrast, the UGJT, in particular the ungrammatical items, was more likely to have elicited their explicit knowledge as shown in their much higher scores on this test and reported rule use when judging the ungrammatical items.

Nevertheless, Loewen (2009) also admitted that the two GJTs did not purely test either implicit or explicit linguistic knowledge and ‘further investigation into the design and construct validity of GJTs is still warranted’ (p.111).

3.2.2.3 Validating study 3: validating a test of metalinguistic knowledge (Elder, 2009)

The major aim of this study was to validate the Metalinguistic Knowledge Test as a measure of explicit knowledge. The test consists of two parts. Part 1, according to Elder (2009), ‘focuses on learners’ knowledge of the rules of the target language’, while Part 2 requires students to ‘match items from a list of grammatical terms to their corresponding exemplars in an English sentence’ (pp.117-118).

Elder (2009) proposed 9 validation hypotheses regarding the features of metalinguistic knowledge in terms of the type of knowledge (i.e., implicit or explicit), awareness, metalanguage, learnability and accessibility. The construct validity of the MKT as a measure of explicit knowledge rather than that of implicit knowledge was demonstrated by the fact that most of the hypotheses proposed in this study were sustained through the analyses. Table 2 summarises the 9 hypotheses and the results concerning them. It can be noted that the majority of the hypotheses were or at least partially sustained by the results, but two of them were exceptions--Hypotheses 4 and 6. It was expected in Hypothesis 4 that scores on the MKT Part1 and Part 2 would not be significantly correlated because these two parts measured different aspects of metalinguistic knowledge. Elder hypothesised that ‘a learner can have explicit knowledge of target language rules without having command of the technical language that is often used by teachers and textbook writers to communicate such rules to language learners ’ (Elder, 2009, p.134). However, a moderate relationship between the two
parts was found in her study. She also suggested developing a constructed-response version of the MKT, ‘which requires learners to supply their own rules, rather than selecting from options provided’ (p.134). Hypothesis 6 was also not sustained. Exposure to formal instruction was hypothesised to have a positive relationship with performance on the MKT, but no relationship was found. Elder (2009) however attributed this result to the ‘dubious reliability of self-reports regarding the nature of L2 instruction’, namely the participants ‘may either have lacked understanding of our nomenclature for the different instructional methods and/or have lacked insight into the nature of their L2 instruction’ (p.134).
<table>
<thead>
<tr>
<th>Aspects of hypothesis</th>
<th>Grounds for hypothesis</th>
<th>Hypothesis</th>
<th>Sustained?</th>
<th>Analyses/Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of knowledge</td>
<td>As a kind of explicit knowledge, metalinguistic knowledge is rule-based and declarative in nature.</td>
<td>(1) A stronger correlation between the scores of the Metalinguistic Knowledge Test (MKT) and the scores of the other measures of explicit knowledge (e.g., the UGJT) than with the measures of implicit knowledge (i.e., the EIT, TGJT). (2) A significant relationship between self-reported rule use in the UGJT and the MKT Part 1</td>
<td>Yes</td>
<td>(1) Confirmatory Factor Analysis: the indicators showed that a model that couples metalinguistic knowledge with other explicit knowledge measures and distinguishes it from those eliciting implicit knowledge achieves an acceptable fit. (2) Correlation analysis: a weak but significant correlation was found (r= .173, p≤ .027)</td>
</tr>
<tr>
<td>Awareness</td>
<td>The application of explicit knowledge is deliberate and conscious.</td>
<td>(3) A significant relationship between self-reported grammatical knowledge and (whole and part) scores on the MKT. Not the case for the measures of implicit knowledge.</td>
<td>Yes</td>
<td>(3) Correlation analysis: positive relationships were found between self-assessed grammatical knowledge and the MKT Part1 / UGJT (r=.311 and .363, p≤ .001). Nonsignificant correlations were found with implicit knowledge measures.</td>
</tr>
<tr>
<td>Metalanguage</td>
<td>It is argued that knowing</td>
<td>(4) No significant relationship</td>
<td>No</td>
<td>(4) Correlation analysis: a moderate relationship was found between the two</td>
</tr>
</tbody>
</table>
| **Learnability** | Learnability is often learnt through formal instruction rather than through exposure and native speakers may learn grammatical rules of their mother tongue through classrooms. | (5) A positive relationship between amounts of formal English study and the scores on the MKT.  
(6) A relationship between exposure to formal (grammar-based rather than communicative) instruction and the scores on the MKT.  
(7) A smaller difference between the native speakers and non-native speakers’ performance on the MKT than for the implicit knowledge tests. | Yes, partially | (5) Correlation analysis: no significant relationship was found between years of English study and the MKT and MKT Part 1, but a weak relationship was found between it and the MKT Part 2 ($r=.223$, $p\leq .05$).  
(6) Correlation analysis: all correlations were nonsignificant.  
(7) ANOVA analysis: native speaker participants outperformed all the non-native speaker groups on all measures except the MKT. |
| Accessibility | Time pressure constrains the accessibility of metalinguistic knowledge | (8) No relationship between scores on the MKT and accuracy of performance on the ONT. | Yes | (8) Correlation analysis: nonsignificant relationship was found between the MKT Part 1 and accuracy of performance on the ONT.  
(9) Correlation analysis: reading in all |
(9) A stronger relationship between the MKT and reading and writing tasks on standardised tests (i.e., IELTS, DELNA and TOEFL) than between the MKT and the speaking and listening tasks.

three proficiency tests correlated most closely with MKT scores. The correlations with Listening scores were weaker relative to Reading, but not markedly different in strength from those obtained for Writing. The correlation between IELTS speaking and the MKT was weaker than that for Reading and Writing.

(Note. This table was adapted according to the results and table in Elder, 2009)
3.2.3 Study 3: validating the battery of tests in R. Ellis (2005, 2009) as measures of implicit and explicit knowledge in a different language (Bowles, 2011)

The purpose of this study was to validate the use of the test battery in R. Ellis (2005, 2009) in a different language (i.e., Spanish learned in America) and with different populations of learners (i.e., L2 learners and heritage language learners of Spanish). The instruments used in this study were the same as the battery of tests used in R. Ellis (2005), namely the EIT, ONT, TGJT, UGJT and MKT. The target structures were different from those in R. Ellis (2005) due to the fact that R. Ellis (2005) tested L2 learners of English while the language focus of this study was Spanish. Following R. Ellis’s (2005) guidelines for selecting target structures, 17 Spanish structures were chosen. There were 30 participants divided into three equal groups. Group 1 consisted of 10 native Spanish speakers (NSs) who had immigrated to America as adults, while group 2 contained 10 L2 Spanish learners who had been raised in monolingual English-speaking households and studied in intermediate-level Spanish language classes at a university. Group 3 comprised 10 heritage language (HL) learners of Spanish, who were raised in bilingual English-Spanish households and had used Spanish throughout childhood.

She proposed the following hypotheses to determine whether the tests provided relatively separate measures of different types of linguistic knowledge: (1) the L2 learners of Spanish should score higher on tests of explicit knowledge as they had had a lot of formal instruction, while the HL learners who had had less than 2 years of formal classroom instruction in Spanish should score higher on tests of implicit knowledge; (2) the NSs who had completed at least second school in Spanish were expected to perform near ceiling on the ELT, ONT, TGJT and UGJT, but they were not expected to perform near ceiling on the MKT because it assessed grammatical terminology and metalinguistic rules that NSs were unlikely to have learned; (3) the NSs were expected to manifest a larger percentage of variation on the MKT than on the other four tests (Bowles, 2011). Based on these hypotheses, two research questions were raised: (1) Do scores on the battery of five tests load on two factors, as in R. Ellis (2005)? (2) Does a comparison of HL and L2 learners’ test scores provide construct validity evidence for the tests (i.e., do L2 learners score higher on tests of explicit knowledge, whereas HL learners score lower on those measures because they had learned Spanish naturalistically).

The statistical analyses showed the following results: (1) the NSs scored near ceiling (92% or higher) on all measures and their scores on all tests except the MKT were higher than those
of both the L2 and HL learners, as predicted; (2) the NSs manifested very little variance on all measures except the metalinguistic knowledge test (SD=15.8), as anticipated; (3) the HL learners, as hypothesized, outscored the L2 learners on all measures except for the MKT, in which they scored less than 50% and the L2 learners’ scores were at nearly the same as the NSs (M=72.4% for L2 learners and 77.1% for NSs); (4) the tests designed to measure implicit knowledge (i.e., EIT, ONT and TGJT) were highly intercorrelated with correlation coefficients of .60 or higher; however the tests designed to tap into explicit knowledge (i.e., UGJT and MKT) were correlated with each other only weakly and negatively with a coefficient of .14; (5) a Confirmatory Factory analysis showed that those five tests loaded on two different factors as hypothesized. The EIT, ONT and TGJT loaded on one factor, while the UGJT and MKT loaded on the other factor; (6) all participants’ scores on the UGJT were higher than on the TGJT, indicating that time pressure significantly affected accuracy for all three groups (i.e., NNS, L2 learners and HL learners) (Bowles, 2011). The above findings of this study therefore provided support for the construct validity of the test battery in R. Ellis (2005), in a different language and with different populations of learners. They supported the content validity of the battery of the tests because they appeared to distinguish between ‘the L2 learners who should have higher explicit knowledge, and the HL learners, who should have minimal explicit knowledge’ (Bowles, 2011, p.262).

This study brings the field of SLA research one step closer to having a series of reliable and valid measures available to administer to learners to measure their implicit and explicit linguistic knowledge’ (Bowles, 2011, p.262).

To resolve the interface-noninterface debate, there is a need for reliable and valid instruments to measure implicit and explicit knowledge. R. Ellis and his associates (2005, 2006) attempted to design, refine and validate tests for the two constructs. Bowles’s (2011) study conducted in a different language provided further support for the tests developed in R. Ellis (2005). However, these tests do not provide pure measures of implicit and explicit knowledge. Rather by making use of the criteria for operationalising the two types of knowledge, some tests are considered more likely to measure explicit L2 knowledge, while others are more likely to measure implicit L2 knowledge. Four of the measures will be used in the present study to measure implicit and explicit L2 grammatical knowledge. Given that the present study was conducted in a different context (i.e., English learned in China) and with another large pool of learners (i.e., Chinese university English majors), the issues of reliability and
construct validity of the tests will be the major concerns in this study. A summary of all the above-mentioned studies is provided in Table 3 below.

### Table 3 Summary of the studies measuring implicit and explicit grammatical knowledge

<table>
<thead>
<tr>
<th>Study</th>
<th>Aims</th>
<th>Aspect Studied</th>
<th>Language</th>
<th>Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Han &amp; Ellis (1998)</td>
<td>To develop separate measures of implicit and explicit knowledge</td>
<td>syntactic</td>
<td>English</td>
<td>TGJT, OPT and Interview including Delayed GJT and Metalingual Comments EIT, ONT, TGJT, UGJT and MKT</td>
</tr>
<tr>
<td>R. Ellis (2005, 2009)</td>
<td>To design reliable and valid measures of implicit and explicit knowledge</td>
<td>morphosyntactic</td>
<td>English</td>
<td>EIT</td>
</tr>
<tr>
<td>Erlam (2006, 2009)</td>
<td>To validate EIT as a measure of implicit knowledge</td>
<td>morphosyntactic</td>
<td>English</td>
<td>TGJT and UGJT</td>
</tr>
<tr>
<td>Loewen (2009)</td>
<td>To validate GJT as measures of implicit and explicit knowledge, respectively</td>
<td>morphosyntactic</td>
<td>English</td>
<td>TGJT and UGJT</td>
</tr>
<tr>
<td>Elder (2009)</td>
<td>To validate a test of metalinguistic knowledge as a measure of explicit knowledge</td>
<td>morphosyntactic</td>
<td>English</td>
<td>MKT</td>
</tr>
<tr>
<td>Bowles (2011)</td>
<td>To validate the battery of tests in R. Ellis (2005)</td>
<td>morphosyntactic</td>
<td>Spanish</td>
<td>EIT, ONT, TGJT, UGJT and MKT</td>
</tr>
</tbody>
</table>
3.3 Studies investigating the relationship of implicit/explicit knowledge to general language proficiency

Very few empirical studies have investigated the relationship between implicit/explicit knowledge and general L2 proficiency. Elder’s (2009) study was reviewed earlier in Section 3.2.2.3 and thus will not be repeated here, but the results concerning the relationship between general L2 proficiency and metalinguistic knowledge should be noted. The L2 learners’ overall scores on the MKT test were found to correlate significantly with their overall IELTS scores (r=.523) and computer-based TOEFL scores (r=.613), indicating that learners’ metalinguistic knowledge measured by the same test as in the current study (i.e., the MKT) had a positive relationship with learners’ general language proficiency. However, the major focus of her study was on validating the MKT as a test of explicit knowledge. Therefore, two other studies whose main purpose was to examine the relationships between implicit/explicit knowledge and general L2 proficiency will be described in detail in this part, i.e., Han & Ellis (1998) and Elder & Ellis (2009).

3.3.1 Han and Ellis’s (1998) study

Here I will consider the second aim of Han and Ellis’s (1998) study—the relationship between implicit/explicit knowledge and general language proficiency.

Scores of two proficiency tests—TOEFL and SLEP (Secondary Level Proficiency Test) were obtained in this study. The TOEFL test contained three sections: (1) Listening Comprehension, (2) Structure and Written Expression, and (3) Vocabulary and Reading Comprehension, whereas the SLEP test contained two sections: Listening Comprehension and Reading Comprehension. Only the scores of the OPT, TGJT 1, Delayed GJT and Metalingual Comments were used in the analyses. The TGJT 2 was excluded because it loaded on both factors and thus did not clearly distinguish between implicit and explicit knowledge.

Pearson Product Moment correlations were conducted to identify the relationship between the measures of implicit/explicit knowledge and two measures of language proficiency. The SLEP test was found to be moderately correlated with the OPT, TGJT 1 and Delayed GJT (r=.47, .49 and .43), indicating that it appeared to tap both implicit and explicit knowledge. However, scores on the TOEFL correlated only moderately with the Delayed GJT (r=.49),
indicating that it appeared to tap primarily explicit knowledge. The results of the analyses indicated that generally, language proficiency could be conceptualised as consisting of two distinct types of knowledge—implicit and explicit knowledge. This finding lent support to Bialystok’s (1982) claim that language proficiency is made up of unanalysed and analysed knowledge. It was interesting to find that Metalingual Comments were not significantly related to either measure of general language proficiency, suggesting that metalinguistic knowledge does not play a significant role in general language proficiency, while analysed explicit knowledge does.

3.3.2 Elder and Ellis’s (2009) study
The aim of this study was to explore the extent to which implicit and explicit knowledge predict proficiency scores. There were two sub-studies in this study. The first examined the relationship between measures of the two types of knowledge and the measure of language proficiency (TOEFL), while the second explored whether or not implicit and explicit knowledge of the 17 grammatical structures were related to another language proficiency test (IELTS) and could predict scores on it.

Sub-study 1 was intended to answer four research questions; (1) whether or not expert judges could classify standardised proficiency tests using the implicit/explicit knowledge distinction; (2) the relationship between the performance on tests designed to measure L2 implicit/explicit knowledge respectively and scores derived from standardised proficiency tests, and (3) whether these relationships provided support for the judges’ classifications. There were 5 expert judges and 111 students who were enrolled either in presessional English classes or in tertiary academic courses in New Zealand. Most of the 111 students were from China and 96 of them had been living in an English-speaking country for 1 year or so. The same 17 grammatical structures as in R. Ellis (2005) were investigated.

Instruments used in this sub-study comprised a rating scale for the expert judges, three tests measuring implicit/explicit knowledge and two language proficiency tests. There were three criteria given to the expert judges to help them classify the proficiency test tasks in terms of implicit and explicit knowledge—(1) Degree of awareness, (2) Time availability and (3) Focus of attention. The three tests measuring implicit and explicit knowledge were: (1) Timed Grammaticality Judgment Test (TGJT), (2) Untimed Grammaticality Judgment Test (UGJT) and (3) Metalinguistic Knowledge Test (MKT). The two proficiency tests were the
Computer-based TOEFL (TOEFL CBT) and the pilot version of the internet-based TOEFL (TOEFL iBT). The TOEFL CBT consisted of three sections: Listening Comprehension, Structure of Written Expression and Reading Comprehension, while the trial TOEFL iBT had Reading, Listening, Speaking and Writing sections.

The 5 experts were familiarised with the rating scale and the constructs of implicit and explicit knowledge. Then they took the tests. After that, they undertook the rating task. The 111 students took part in both the pilot version of the internet-based TOEFL (TOEFL iBT) and the computer-based TOEFL (TOEFL CBT). They were asked to take the three implicit/explicit knowledge tests the next day.

The results suggested that the expert judges were able to classify test tasks according to the degree of implicit or explicit knowledge that they perceived to be elicited through performance. Their classifications lent support to a model of language proficiency based on the implicit/explicit knowledge distinction.

The learner scores on all the tests were analysed by running a Principal Components analysis with Varimax rotation and a forced two-factor solution. All parts of the TOEFL CBT and the TOEFL iBT (i.e., Writing, Reading and Listening on the CBT/iBT, and the CBT Structure and iBT Speaking) loaded strongly on Component 1 (.66 or higher), while very weak loadings (.24 or lower) were found between these parts on Component 2. This indicated that the relationship between language proficiency as measured by the TOEFL tests and implicit knowledge was extremely weak, while the relationship between explicit knowledge and language proficiency was quite strong. One explanation for the stronger role played by explicit knowledge in predicting language proficiency is that the tests used in the study did not elicit ‘unanalysed automated language’ (Elder & Ellis, 2009, p.178) and ‘language tests encourage a focus on display that invites self-monitoring at the expense of more spontaneous language performance’ (Elder & Ellis, 2009, p.179). Given these results, it was admitted that the relationship between implicit knowledge and language proficiency is far from conclusive. Thus it was suggested that the EIT, which was not used in the study and has been shown to be the best measure of implicit knowledge should be used in future research. The results also showed that the expert judges’ classification of implicit/explicit knowledge in language proficiency tests did not reflect the knowledge that the test-takers actually drew on.
Sub-study 2 was intended to answer two questions: (1) to what extent implicit/explicit knowledge of specific grammatical features was related to general L2 proficiency and (2) to what extent implicit and explicit knowledge of specific grammatical structures predicted general L2 proficiency. Participants were 50 learners in foundation courses or in courses in private language schools in New Zealand. 34 of them were from China and the rest were from Asian and European countries. The same 17 grammatical structures used in Sub-study 1 were tested in this sub-study.

The participants were required to finish four tests—(1) Elicited Imitation Test (EIT), (2) TGJT, (3) UGJT and (4) MKT. Their Scores from the IELTS language proficiency test were obtained. The relationship between the two types of knowledge and language proficiency was examined by looking at the relationship between each of the 17 grammatical structures and the scores for the individual skills in IELTS.

A series of Correlation and Multiple Regression analyses were conducted. The results showed that the measures of implicit and explicit knowledge were both found to be correlated significantly with IELTS scores. The implicit scores for some grammatical structures (e.g., ‘comparative’, ‘unreal conditionals’ and ‘since/for’) were strongly related to the IELTS scores, whereas the explicit scores for the same features were only weakly related. However, the explicit scores for some other grammatical structures (e.g., ‘indefinite article’, ‘regular past tense’ and ‘relative clauses’) were strongly related to the IELTS scores, but the implicit scores for these structures were only weakly related. For some grammatical features (e.g., ‘embedded questions’ and ‘adverb placement’), both the implicit and explicit scores were found correlated with the IELTS scores, whereas for some other grammatical structures (e.g., ‘possessive s’ and ‘yes/no question’), neither kind of knowledge was found to correlate with the written IELTS scores. It was also found that implicit knowledge of the ‘comparative’ and explicit knowledge of the ‘relative clause’ were best predictors of IELTS scores. To conclude, the key finding was that ‘the implicit and explicit measures of the same structure were not both related to proficiency’ ‘in other words, the extent to which the variance in the individual structure scores matched the variance in the proficiency scores depended to a considerable extent on the type of knowledge being measured’ (p.190). Elder and Ellis (2009) admitted that it is very difficult to explain such results, but they suggested looking for differences in the patterns of correlations involving speaking and writing. The results showed that ‘implicit
knowledge of the grammatical features was more strongly related to the oral IELTS than to the written IELTS, while the reverse was the case for explicit knowledge’ (p.191).

Generally, it could be concluded from this sub-study that measures of both implicit and explicit knowledge predicted IELTS Total scores. Implicit knowledge was a significant predictor of both Speaking and Writing, while explicit knowledge predicted both Listening and Reading. However, as R. Ellis (2009) pointed out ‘written language allows for more controlled processing (a feature of explicit knowledge)’ (p.190), which does not accord with the results. R. Ellis (2009) explained the results from the perspective of the receptive and productive distinction, namely ‘the particular measures of implicit and explicit knowledge are differentially important for input and output processing’ (p.190). He gave an example of relative clauses and pointed out that although learners can avoid using them in oral and written output, they cannot avoid having to process them in oral and written input. These two sub-studies are summarised in Table 4.

However, although the findings of both studies lent support to R. Ellis’s (2009) psycholinguistic model of language proficiency, they afforded only limited empirical support for viewing language proficiency in terms of implicit and explicit L2 knowledge. So this area needs further research.
<table>
<thead>
<tr>
<th>Study</th>
<th>Aim</th>
<th>Participants</th>
<th>Measures</th>
<th>Results</th>
</tr>
</thead>
</table>
| Han & Ellis (1998)    | Relationship between implicit/explicit knowledge and general language proficiency | 48 adult learners of English in the U.S.A          | (1)Timed GJT  (2) OPT  (3) Interview including Delayed GJT and Metalingual Comments  (4)TOEFL  (5) SLEP | (1) Analysed explicit knowledge plays an important role in general language proficiency.  
(2) Metalinguistic language plays an insignificant role in general language proficiency. |
| Elder & Ellis (2009)  | (1) Relationship between implicit/explicit knowledge and general language proficiency  
(2) Whether implicit/explicit knowledge can predict general language proficiency and to what extent. | 161(111 pre-sessional classes and 50 learners in foundation courses) | (1)Timed GJT  (2)Untimed GJT  (3)MKT  (4) Elicited Imitation Test  (5)TOEFL (CBT and iBT)  (6)IELTS | (1) Strong relationship between explicit knowledge and language proficiency was found.  
(2) Both implicit and explicit knowledge correlated with IELTS scores.  
(3) The extent to which the variance in the individual structure scores matched the variance in the proficiency scores depended on the type of knowledge being measured.  
(4) Implicit knowledge is a better predictor of speaking and writing, while explicit knowledge is a better predictor of listening and reading. |
3.4 Studies looking at individual difference factors in terms of implicit and explicit knowledge

The present study aims to fill the gap by examining the relationship between four individual difference variables (i.e., language analytic ability, motivation, learner beliefs and anxiety) and implicit/explicit knowledge. Very few empirical studies have focused on this relationship directly. However, there have been studies in which the language proficiency measures used could be examined in terms of whether they were likely to have measured implicit or explicit knowledge. Therefore, these studies will be reviewed in the following sections.

3.4.1 Studies of the relationship between language analytic ability and proficiency measures likely to tap implicit/explicit knowledge

Many empirical studies have established that language aptitude is a strong predictor of language proficiency and achievement (Gardner, 1980; Carroll, 1981; Ehrman & Oxford, 1995). More recently, researchers have emphasized the need to examine the relationship between specific abilities and language proficiency. In particular, the relationship between language analytic ability and language proficiency has attracted a number of researchers’ attention (Harley & Hart, 1997; Harley & Hart, 2002; Carroll, 1962; Horwitz, 1987; Skehan, 1989, 1990; Ranta, 2002; Roehr, 2006).

Skehan (1990) conducted a study investigating the relationship between foreign language aptitude and both first language development and foreign language achievement. The participants were the children who had participated in the Bristol L1 (English) development study (Wells, 1981, 1985). The Elementary Modern Language Aptitude Test (EMLAT)-Matching Words and the York Language Aptitude Test were employed to measure the participants’ grammatical sensitivity ability and inductive language learning ability respectively. It has been argued in Skehan (1989) that grammatical sensitivity and inductive language learning ability can be collapsed into ‘language analytic ability’ therefore this concept could be examined through these two measures. The EMLA-Matching Words required the participants to find the word (from five possibilities) in a second sentence which served the same grammatical function as a particular word in a first sentence, while the York Language Aptitude Test required the participants to produce forms in an unknown language (Swedish) based on their analysis of the forms presented. Since Skehan’s (1990) study was based on the Bristol L1 development study, data from the 125 participants’ L1 language
development were used. The participants’ L2 (i.e., both German and French) proficiency was measured using the National Foundation for Educational Research/Assessment of Performance Unit (NFER/APU) tests, which contained four parts—Speaking, Listening, Reading and Writing.

The results of the correlation analyses showed that the two measures of language analytic ability correlated significantly with almost all measures of first language development at a moderate level (coefficients ranged from .26 to .45) and correlated significantly with all four parts of the L2 proficiency tests at a higher level (all the four coefficients were quite close ranging from .66 to .74). These findings are suggestive of a potentially positive relationship between language analytic ability and both implicit and explicit knowledge, in that the learners were likely to have drawn on their implicit knowledge in the case of the L1 measures and in the L2 speaking/listening tests where a high degree of awareness was not involved but online processing was engaged. In contrast, it can be surmised that the learners may have accessed their explicit knowledge in the L2 reading and writing tasks where offline processing was involved.

Harley and Hart (1997) compared grade 11 students who had begun French immersion in grade 1 (thought to be early immersion or early start) and those who had begun French immersion in grade 7 (considered to be late immersion or late start) in terms of their language analytic ability and language proficiency. The Language Analysis subtest of the Pimsleur Language Aptitude Battery (PLAB) was employed to measure both groups’ language analytic ability. In this test, the participants were given a small corpus of language data in an unknown language together with English words. They were asked to select the correct way of expressing in the new language according to the English words provided. The scores on a variety of L2 proficiency measures were collected. These included an individual oral task, a yes/no vocabulary recognition knowledge test, a listening comprehension test, and a cloze test/written production task. The detailed information about these tests is as follows:

(1) The individual oral task consisted of two parts: (a) an elicited imitation task, in which the participants were asked to listen to a tape-recorded broadcast in French advertising the evening programmes for the day and then repeat them sentence by sentence; (b) a
description, where four cartoon strips were shown to the participants. The participants were asked to describe what was happening in each one.

(2) The vocabulary recognition test consisted of a list of 66 French words interspersed with 34 pseudo-words that conformed to the phonological and orthographic conventions of French. The participants were scored according to whether they identified the pseudo-words.

(3) The listening comprehension test consisted of five tape-recorded excerpts on topics ranging from sports to industrial pollution. The participants were required to complete the multiple-choice comprehension questions after listening to each excerpt.

(4) The cloze test and written production task contained a passage with 25 blanks and one open-ended question. The cloze test measured both reading comprehension and grammatical knowledge. The participants were given 15 minutes to fill in the blanks and then 5 minutes to write down their response to the open-ended question. On the open-ended question the participants’ answers were scored for content (i.e., the ideas the students were able to express) and written accuracy (i.e., linguistic accuracy).

The results of the study can be summarised as follows: (1) For the early start group, the language analysis test was found to correlate significantly with listening comprehension \((r=0.48)\) and it was one of the predictors of listening; (2) For the late start group, language analysis was found to correlate significantly with the cloze test \((r=0.41)\), and with written task accuracy \((r=0.44)\). Moreover, it was the only predictor of the scores on these two measures.

If we look at the correlations and the language proficiency measures closely, we may find that these results are indicative of positive relationships between language analytic ability and both implicit and explicit knowledge for the following reasons:

(1) The listening comprehension task required the students to listen to each excerpt and comprehend it at the same time, which might have directed the participants’ primary focus on meaning. The participants had also been pressured to perform this task and online processing might have been involved. Thus, the learners might have accessed their implicit knowledge while doing this task. The positive correlation between the scores on the language analysis test and those of the listening comprehension task in the early start group suggests a potentially positive relationship between language analytic ability and implicit knowledge.
(2) Given that it is quite possible for learners to meet difficulties while doing a cloze test (i.e., they need to think about why this word or grammatical feature is suitable), they are more likely to draw on their explicit knowledge. Hence, the positive relationship between the language analysis score and the cloze test in the late start group suggests a positive relationship between language analytic ability and explicit knowledge.

(3) As already mentioned earlier in this chapter, accuracy entails a primary focus on form. In a written task, learners tend to think about grammatical features very carefully and access their explicit knowledge in order to be more accurate. Accordingly, the positive relationship between the language analysis scores and written task accuracy in the late start group may indicate a positive relationship between language analytic ability and explicit knowledge.

Harley and Hart (2002) conducted a follow-up study investigating the impact of language analytic ability among Canadian high school students in a natural environment. The participants were 27 secondary school students of French as a second language, each of whom was staying with a French-speaking family in Quebec, Canada for three months. The participants’ language analytic ability was measured by the Language Analysis subtest of PLAB, while their L2 proficiency was measured by a variety of tasks including vocabulary recognition, listening comprehension, oral sentence repetition and cloze/written production. The tests were different in content from those used in the previous immersion study (Harley & Hart, 1997), but were of the same form and were designed to assess the same dimensions of proficiency in French. Pearson correlation analyses were carried out to investigate the relationships between language analytic ability and language proficiency variables. The results showed that language analytic ability correlated significantly with the cloze test ($r=.39$) and the oral sentence repetition task ($r=.61$). Such findings suggest possible relationships between language analytic ability and both implicit and explicit knowledge. The test-takers may have accessed their explicit knowledge in the cloze test as explained above and their implicit knowledge while doing the oral sentence repetition task, which is likely to have encouraged online processing, the use of short-term memory and a primary focus on meaning.

As a result of reviewing all of the above studies, it would appear that although language analytic ability is generally assumed to correlate with explicit knowledge given that they both
involve linguistic analysis, it is also related to the learners’ implicit knowledge (Skehan, 1990; Hart & Harley, 1997, 2002). All the studies are summarised in Table 5 below.
Table 5 Language analytic ability and implicit/explicit knowledge

<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Instrument</th>
<th>Language</th>
<th>Possible relationship with implicit/explicit knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skehan (1990)</td>
<td>L2 learners of French and German</td>
<td>(1) EMLA, Matching Words; York Language Aptitude Test</td>
<td>French and German</td>
<td>Language analytic ability correlates with measures likely to have tapped both implicit and explicit knowledge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) L1 (English) proficiency test</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) L2 proficiency tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harley &amp; Hart (2002)</td>
<td>27 L1 English secondary school students of L2 French</td>
<td>The same as above</td>
<td>French</td>
<td>Language analytic ability correlates with measures likely to have tapped both implicit and explicit knowledge</td>
</tr>
<tr>
<td>Harley &amp; Hart (1997)</td>
<td>11 L2 learners of French</td>
<td>(1) PLAB subtest</td>
<td>French</td>
<td>Language analytic ability correlates with measures likely to have tapped both implicit and explicit knowledge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Language proficiency tests including cloze/writing, oral repetition, listening.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.4.2 Relevant studies for the relationship between motivation and language proficiency measures likely to tap implicit/explicit knowledge

‘Motivation represents one of the most appealing, yet complex, variables used to explain individual differences in language learning’ (MacIntyre et al., 2001, p. 462). The past few years have witnessed numerous studies investigating the relation between motivation and language achievement in a second language (e.g., Gardner & Lambert, 1959; Gardner & Santos, 1970; Clement & Gardner, 2001). Even though it has been difficult to find any empirical study that has been directly concerned with the relationship between language learning motivation and implicit/explicit knowledge, it can be surmised that motivation is related to both implicit and explicit knowledge. As previously mentioned in Chapter 2, a learner with language learning motivation should manifest a clear goal for learning a language, effort to realise the goal and maintenance of the effort, suggesting that students who are more motivated would automatically put more effort to get in touch with the target language including communicating with the target language community, learning its culture and also linguistic system (e.g., grammatical system, etc.) than their less motivated peers. Therefore, more motivated learners can be assumed to have greater implicit and explicit knowledge than those with less motivation, given that communicating more with the target language community would lead to greater gains of implicit knowledge, whereas increased attention to the linguistic system would help them extend their explicit knowledge. Hernandez’s (2008, 2010) and Fazel & Ahmadi’s (2011) studies have provided some evidence for this hypothesis.

Hernandez (2008) found a significant correlation between language learning motivation and oral proficiency in his study. The participants were 130 university students who were L1 English speakers of L2 Spanish, whose motivation was measured by a 14-item motivation index consisting of three subscales: (a) 9 items measuring integrative motivation (e.g., I want to communicate with native speakers of Spanish), (b) 3 items measuring instrumental motivation (e.g., I want to use Spanish when I travel to a Spanish-speaking region), and (c) 2 items measuring foreign language requirement (e.g., I need to study a foreign language as a requirement for my major). The participants were required to indicate the extent to which different reasons for studying Spanish were important to them in the 4-point Likert-type scale. Their oral proficiency was assessed by a simulated oral proficiency interview (SOPI), which
contextualised all tasks to ensure that they appeared as authentic as possible. The SOPI consisted of two sections—(1) a warm-up section in which the students were required to answer questions in a simulated conversation with a native Spanish speaker, and (2) 7 speaking tasks which required the students to respond to 7 performance-based tasks.

The result of the multiple regression analysis showed that integrative motivation ($\beta = .333$, $t = 3.782$, $p < .001$) was found to be the single significant predictor of the SOPI scores. Neither instrumental motivation nor foreign language requirement was found to be a significant predictor. However, a possible explanation for the stronger role of integrative motivation may be because this subscale contained more items. The significant relationship found between integrative motivation and the SOPI scores may indicate a relationship between integrative motivation and implicit knowledge if we examine the SOPI carefully. As previously mentioned, this test contextualised all tasks to ensure that they appeared as authentic as possible; it required the students to answer questions in a simulated conversation with a native Spanish speaker and to respond to several performance-based tasks, which are likely to have resulted in a primary focus on message creation. Therefore, the participants were likely to have accessed their implicit knowledge in this task since they did not have any reason or time to access their explicit knowledge.

The findings of Hernandez’s later study in 2010 demonstrated a positive relationship between language learning motivation and oral proficiency. The participants were 20 L1 English speaking undergraduates of L2 Spanish who attended a one semester study abroad program in Spain (SA group) and 24 L1 English speaking undergraduates of L2 Spanish who had enrolled in at least one upper-division Spanish course at the home institution (AH group). Both groups of students were required to complete a Motivation Index adapted from Ely (1986) and Gardner (1985) which contained two subscales: (a) a 9-item Integrative Motivation scale (e.g., ‘Spanish is an important language’) and (b) a 4-item Instrumental Motivation scale (e.g., ‘I want to use Spanish when I travel to a Spanish-speaking region’). Their oral proficiency was again measured by the SOPI with more speaking tasks than the previous study (i.e., 15 speaking tasks which required the students to respond to 15 performance-based tasks). In order to investigate the participants’ gains in oral proficiency, all the participants took this test as a pre-test and a post-test at the
beginning and at the end of the semester respectively. The repeated measures ANOVA and the multiple regression analyses showed the following results; (1) Integrative motivation ($\beta=.667$, $t=3.660$, $p=.002$) was identified as a significant predictor of the amount of interaction with the target language culture in both groups, indicating that students with higher integrative motivation interacted more with the target language culture than students with lower integrative motivation. (2) The extent of the SA students’ interaction with the target language culture was a significant predictor of their speaking improvement ($R^2=5.48$, $F(1,18) 516.64$, $p=.001$). (3) The SA group made greater gains on the SOPI than the AH group after the one-semester treatment period.

Although no direct statistical analysis was conducted to examine the relationship between motivation and the SOPI scores in this study, it still can be inferred from the findings that there is a relationship between language learning motivation, particularly integrative motivation, and oral proficiency given the fact that motivation predicted the amount of interaction with the target language culture, which was a significant predictor of oral proficiency gains. As Hernandez (2010) himself concluded ‘student motivation and interaction were identified as important factors in the development of speaking proficiency’ (p.650). Accordingly, the positive relationship between motivation and the oral proficiency measure suggests a potentially positive relationship between motivation and implicit knowledge, as the SOPI is a contextualised test which may predominantly draw students’ attention to conveying information rather than focusing on linguistic correctness.

Language learning motivation may also correlate positively with explicit knowledge as can be inferred from the findings of Fazel and Ahmadi’s (2011) study. Fazel and Ahmadi (2011) found a relationship between motivation and IELTS writing proficiency in a sample of 196 Iranian IELTS candidates who had taken the IELTS test in Iran (academic module). The participants’ instrumental and integrative motivations were measured by the 6 items (i.e., items 9-16) of the 20-item motivation questionnaire designed by Laine (1987). The IELTS Writing consisted of two tasks and took 60 minutes. Task 1 required the candidates to write at least 150 words concerning a diagram or table and to present the information in their own words, whereas Task 2 required the candidates to write at least 250 words to present a solution to a problem, present and justify an opinion, compare and contrast evidence and opinions, etc. The results of the Pearson
Correlation analyses showed that both instrumental and integrative motivation correlated positively with the candidates’ writing scores (r=0.298** and .329** respectively). The finding of her study suggests a possible relationship between motivation and explicit knowledge given that grammatical accuracy was one important criterion.

As a result of reviewing Hernandez’s and Fazel’s studies, it can be inferred that language motivation may play a role in both implicit and explicit knowledge. Learners with higher positive motivation, especially greater interest in learning a language, are likely to develop both greater implicit and explicit knowledge of the language.

### Table 6 Language learning motivation and implicit/explicit knowledge

<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Instrument</th>
<th>Language</th>
<th>Possible relationship with implicit/explicit knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hernandez (2008)</td>
<td>133 L1 learners of L2 Spanish</td>
<td>(1) Motivation Index (2) Simulated Oral Proficiency Interview (SOPI)</td>
<td>Spanish</td>
<td>Language learning motivation is related to implicit knowledge.</td>
</tr>
<tr>
<td>Hernandez (2010)</td>
<td>44 L1 learners of L2 Spanish</td>
<td>(1) Motivation Index (2) Simulated Oral Proficiency Interview (SOPI)</td>
<td>Spanish</td>
<td>Language learning motivation is related to implicit knowledge.</td>
</tr>
<tr>
<td>Fazel &amp; Ahmadi (2011)</td>
<td>196 Iranian IELTS candidates</td>
<td>(1) Motivation questionnaire (2) IELTS Writing</td>
<td>English</td>
<td>Language learning motivation is related to explicit knowledge.</td>
</tr>
</tbody>
</table>

### 3.4.3 Relevant studies concerning the relationship between language anxiety and language proficiency measures likely to tap implicit/explicit knowledge

As mentioned earlier in Chapter 2, language anxiety is more likely to correlate negatively with scores derived from speaking and time-pressured tasks, where learners are more likely to draw on their implicit knowledge. In addition, it can be hypothesised that language anxiety may also be related to explicit knowledge given that language anxiety and motivation were found to
correlate negatively with each other in many studies (Gardner, 1985; Hao et al., 2004; Liu & Huang, 2011). In other words, students who are more anxious tend to be less motivated and thus automatically put in less effort to study the target language including learning its linguistic system (e.g., grammatical rules, etc.) which may lead to less explicit knowledge. Thus, language anxiety may also have a potentially negative relationship with explicit knowledge. The empirical studies which employed the FLCAS and found a relationship between language anxiety and speaking/time-pressured tasks will now be reviewed.

Phillips (1992) reported a study that examined the effects of students’ anxiety on performance on an oral test of French. Participants were 44 students who were enrolled in two third-semester French classes at Southwestern University in America. The participants’ language anxiety was investigated by the FLCAS. Their oral proficiency was examined in two ways: (1) Free talk on a given cultural topic randomly selected from readings in the two chapters (e.g., ‘Pourriez-vous me parler un peu de la France? La géographie? La agriculture? L’industrie?’); (2) Role-play. Students were given a randomly assigned cue sheet with directions in English providing the framework for a situation (e.g., ‘You will play the role of an older brother/sister. Ask your sister about her French class’). Each situation was designed to elicit a target structure studied in the chapters (e.g., passé composé). Their oral production was audio-recorded. Pearson correlations were computed to investigate the relationship between the participants’ scores on the FLCAS and their oral exam grades. A moderate negative correlation was found between the scores on these two measures ($r=.40$, $p<.01$), ‘i.e., students who expressed more foreign language anxiety tended to receive lower exam grades than their less anxious classmates’ (Phillips, 1992, p.18). This finding suggests a relationship between language anxiety and implicit knowledge given that the oral proficiency measures (free talk and role play) used in this study were likely to have involved students’ online processing.

Poza (2005) conducted a study investigating the effects of asynchronous computer voice conferencing on learners’ anxiety when speaking a foreign language among 35 students enrolled in two sections of college-level Intermediate Spanish 2 (Spanish 204). The FLCAS was adopted as the measure of the students’ foreign language anxiety. Poza (2005) found ‘a number of students experienced a reduction in their level of anxiety due to the elimination of the time
pressure of the classroom and opportunity to edit their contributions’ (p. ii), which suggested that
the learners tended to be more anxious in tasks with higher time pressure. This finding suggests
that foreign language anxiety may be related to implicit knowledge given that learners tend to
access their implicit knowledge in a timed task, as time pressure has been claimed to be one of
the design features to operationalise implicit knowledge. Students who lack implicit knowledge
may be more anxious in a high time-pressured task.

Evidence for a negative relationship between language anxiety and explicit knowledge comes
investigated the influence of language anxiety on English reading and writing tasks among 68
native Hebrew speaking students aged 12 to 13. An adapted version of the FLCAS consisted of
13 questions (selected from the 33 questions in the original FLCAS questionnaire) was
administered to the subjects to measure their language anxiety. Their reading achievement was
tested by a 320-word text, followed by 10 true/false questions to test comprehension. Then they
were asked to write about 15 lines describing the events in the text from one of the participants’
perspective. Their writing achievement was scored according to the use of difficult words,
writing fluency, grammar (e.g., use of tenses), and general interest in the text (e.g, ability to
interest the reader).

There were significant moderate negative correlations between language anxiety and the scores
on the two measures, reading comprehension (r=-.25) and writing achievement (r=-.35). This
suggests a relationship between language anxiety and explicit knowledge. Generally, reading and
writing tasks do not usually require learners’ spontaneous response but careful thinking
compared to listening and speaking tasks. Thus, these two tasks used in this study may have
resulted in learners engaging in offline processing and accessing their explicit knowledge. In
addition, the students were required to pay attention to grammatical accuracy in the writing task,
so they may again have accessed their explicit knowledge.

Wu (2011) also identified a general trend of less foreign language anxiety in relation to higher
reading performance in her 91 first year college students in a private university in Southern
Taiwan who were studying English as a foreign language. The FLCAS was used as a measure to
investigate the participants’ foreign language anxiety. Their reading comprehension was measured by two multiple-choice reading comprehension tests. Each test consisted of a dialogue passage of around 300 words extracted from the textbook used in the reading classes. In each test, the participants were required to answer 20 multiple-choice questions based on the passage within 30 minutes. Their scores on the two tests were averaged to provide a general measure of reading comprehension. Wu (2011) found an inverse relationship between language anxiety and reading scores (i.e. the students with low anxiety achieved higher comprehension scores). The nature of a reading task requires careful thinking and thus was more likely to have tapped the students’ offline processing and explicit knowledge.

Taken together, these studies suggest a negative relationship between foreign language anxiety and both implicit and explicit knowledge. Therefore, I also hypothesise that I will find a negative relationship between foreign language anxiety and both types of knowledge. The four studies are summarised in Table 7 as follows.

<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Instrument</th>
<th>Language</th>
<th>Possible relationship with implicit/explicit knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phillips(1992)</td>
<td>44 L1 English speakers of L2 French</td>
<td>(1) FLCAS (2)Free talk on given topics and role play</td>
<td>French and English</td>
<td>Foreign language anxiety is related to implicit knowledge.</td>
</tr>
<tr>
<td>Poza (2005)</td>
<td>35 L1 English speakers of L2 Spanish</td>
<td>(1)FLCAS (2)Asynchronous computer voice conferencing technologies</td>
<td>Spanish</td>
<td>Foreign language anxiety is related to implicit knowledge.</td>
</tr>
<tr>
<td>Argaman &amp; Abu-Rabia (2002)</td>
<td>68 L1 Hebrew speakers of L2 English</td>
<td>(1)FLCAS (2)Reading comprehension test (3) Writing task</td>
<td>English</td>
<td>Foreign language anxiety is related to explicit knowledge.</td>
</tr>
<tr>
<td>Wu (2011)</td>
<td>91 L1 Chinese speakers of L2 English</td>
<td>(1) FLCAS (2)Two reading tasks</td>
<td>English</td>
<td>Foreign language anxiety is related to explicit knowledge.</td>
</tr>
</tbody>
</table>
3.4.4 Relevant studies regarding the relationship between learner beliefs and language proficiency measures likely to tap implicit/explicit knowledge

Very few empirical studies have investigated the relationship between learner beliefs about language learning and implicit/explicit knowledge. However, Tanaka & Ellis’ (2003) and Tanaka’s (2004) studies are suggestive of a relationship between learner beliefs and implicit knowledge.

Tanaka and Ellis (2003) investigated the relationship between learner beliefs about language learning and language proficiency in a sample of 166 Japanese university students at two different times (i.e., Time 1 prior to studying abroad and Time 2 after studying abroad in the U.S.), 15 weeks apart. A 27-item beliefs questionnaire (see Chapter 2) was employed to identify the participants’ beliefs. A paper-based version of the TOEFL was administered to test the participants’ overall English proficiency. This consisted of three sections; Section 1 (Listening) tests understanding of short conversations and talks, Section 2 (Grammar and Written Expression) measures students’ ability to recognise correct grammar, Section 3 (Reading) contains a test of reading comprehension and includes questions about the meanings of specific lexical items and phrases. Three aspects of learner beliefs were identified in their study, i.e., (a) Beliefs about Analytic Ability, (b) Beliefs about Experiential Learning, and (c) Beliefs regarding Self-Efficacy and Confidence. The Pearson Correlation analyses showed that learners beliefs about analytic ability were negatively correlated with their TOEFL Listening scores (r=.17) before they studied abroad, but the correlation was quite weak. This relationship was suggestive of a potentially negative relationship between beliefs about analytic learning and implicit knowledge as anticipated, given that the measures of listening may have tapped the learners’ implicit knowledge. As mentioned previously, the TOEFL Listening tested the students’ understanding of short conversations and talks, in which the students might have been pressured to perform online and where there was no reason for metalinguistic awareness or reflection to occur. Thus, they might have accessed their implicit knowledge in this test. However, no other significant relationships were found either between learner beliefs about experiential learning and proficiency or between beliefs regarding self-efficacy/confidence and proficiency either prior to or subsequent to study-abroad.
Tanaka (2004) also reported a longitudinal study that investigated the relationship between learners’ beliefs and English language proficiency over a period of 12 weeks. The participants were 132 Japanese students, who were divided into two groups based on their learning environment. One group consisted of 63 Japanese students who studied English in language schools in New Zealand (NZ group), while the other group was composed of 69 Japanese university students who studied in formal English classes in their home country (JP group). Five instruments were employed including a beliefs questionnaire (it was developed following the classification mentioned in Chapter 2), a proficiency test (consisting of listening comprehension and grammar), an oral narrative task (designed to measure oral proficiency in terms of accuracy, fluency and complexity), an interview and a diary. The former three instruments were used to collect data from all the participants and were administered twice to both groups. Only beliefs regarding affective states (e.g., confidence and self-efficacy) were found to be negatively correlated with listening ability in the NZ group, which was contrary to expectations, as confidence and self-efficacy were expected to relate positively to listening ability. Tanaka (2004) admitted that such a negative relationship might be due to the NZ group’s over-confidence and unrealistic beliefs about their ability to learn during their study abroad. This study, therefore, does not provide any evidence of a relationship between beliefs and implicit knowledge.

It was anticipated that the students who had stronger beliefs about experiential approaches to learning and who were more confident would have more implicit knowledge given that they would be more willing to communicate with the target language community. It was also assumed that the participants who emphasised the importance of analytic learning approaches (e.g., learning grammar) would have more explicit knowledge given that they both involve linguistic analysis. From Tanaka’s two studies, it would seem that there is a negative relationship between beliefs about analytic ability and implicit knowledge, (i.e., the students who emphasised the importance of analytic approaches to learning tended to have less implicit knowledge). The relationships between beliefs about experiential learning/affective states (confidence and self-efficacy) and implicit/explicit knowledge were either weak or non-significant. These findings raise the question ‘Why were learner beliefs variables either weakly or not at all correlated with the language proficiency measures in these two studies?’. Several reasons are worth considering.
One possible explanation is that learner beliefs are context-specific and will vary from context to context even within the same person. As Tanaka and Ellis (2003) suggested, ‘learners’ belief systems are not homogeneous’ and ‘learners can hold beliefs that appear to be contradictory’ (p.78). Thus, ‘it is difficult to find “general” patterns’ of learner beliefs (Tanaka, 2004, p.291). Another possible explanation is that although the students reinforced their beliefs about the importance of analytic or experiential approaches, they had not had acted on these approaches in reality as expected. Therefore, there was no effect on the participants’ language proficiency. In other words, the relationship between beliefs and L2 proficiency may only be weak.

3.5 Summary
The main points that emerge from the review of the empirical studies can be summarised as follows:

- A battery of five tests (i.e., EIT, ONT, TGJT, UGJT and MKT) were designed to provide separate measures of implicit and explicit grammatical knowledge in R. Ellis (2009) according to the design features of the tests, i.e., degree of awareness, time availability, focus of attention and utility of knowledge of metalanguage. The EIT, ONT, TGJT were found to be more likely to elicit implicit knowledge, while the UGJT ungrammatical items and MKT tended to elicit explicit knowledge.

- Three validating studies (Erlam, 2006; Loewen, 2009; Elder, 2009) were separately conducted to validate each test either as a measure of implicit knowledge or as a measure of explicit knowledge. Their findings showed that (1) the EIT serves as a measure of implicit knowledge due to its reconstructive nature; (2) the TGJT and UGJT tended to measure different types of knowledge. Learners tended to draw on their implicit knowledge in the TGJT, but drew on explicit knowledge in the UGJT particularly when judging the ungrammatical items due to the difference of time pressure, and (3) the MKT was a measure of explicit knowledge. Bowles (2011) conducted a study to validate the use of the test battery in R. Ellis (2005) in a different language and with a different population of learners. The results of her study provided further support for the claim that the battery of tests served as relatively separate measures of implicit and explicit knowledge.
In terms of the relationship between language proficiency and implicit/explicit knowledge, the results of Han and Ellis’s (1998) study suggested that metalinguistic knowledge might play an insignificant role in general language proficiency, while analysed explicit knowledge plays a more significant role. The results of Elder and Ellis’s (2009) study showed that both implicit and explicit knowledge predicted general language proficiency as measured by IELTS. Implicit knowledge was a significant predictor of both Speaking and Writing parts, while explicit knowledge predicted both Listening and Reading parts.

It has been difficult to find empirical studies which were directly concerned with the relationships between individual difference factors and implicit/explicit knowledge. However, there have been studies that have investigated the relationship between individual difference factors and measures that may have tapped implicit or explicit knowledge (e.g., Skehan, 1990; Harley & Hart, 1997). It can be inferred from the studies reviewed earlier that (1) language analytic ability correlates with both implicit and explicit knowledge (Skehan, 1989, 1990; Harley & Hart, 1997, 2002); (2) language learning motivation correlates with both implicit and explicit knowledge (Hernandez, 2008, 2010; Fazel & Ahmadi, 2011); (3) language anxiety is more likely to correlate with both implicit and explicit knowledge (Phillips, 1992; Poza, 2005; Argaman & Abu-Rabia, 2002; Wu, 2011).

Tanaka’s (2003, 2004) two studies may suggest a negative relationship between learner beliefs about analytic ability and implicit knowledge. However, the relationships between the other two learner beliefs variables (i.e., beliefs about experiential learning and regarding affective states) and implicit/ explicit knowledge have not been demonstrated (Tanaka & Ellis, 2003; Tanaka, 2004).
CHAPTER FOUR
METHODOLOGY

4.1 Introduction
This chapter presents the methodology used in the study including the methods, instruments and materials. I first briefly describe the pilot study and report the main problems encountered. I then present the research questions, followed by a detailed description of the research design and methodology, including the participants, setting, instruments, data collection and data analysis procedures.

4.2 Pilot study
The pilot study was conducted as a precursor to the main study with one major purpose: to pilot the instruments in order to establish the reliability, validity, and feasibility of the materials and instruments used to elicit data. This part is intended to describe the methods, instruments and data collection procedures in the pilot study. The results of the pilot study are shown in Appendix T.

4.2.1 Research site and participants
The study was conducted at a university in Guangzhou, Canton Province. The data collection took place outside of class time and I did not interrupt regular classes. I borrowed a quiet teacher’s office in order to administer the Elicited Imitation Test (EIT) to the participants face to face and one by one. I also applied for the use of 1 computer lab and 1 classroom at the university in order to administer the computer-delivered tests, i.e., Timed Grammaticality Judgment Test (TGJT), Untimed Grammaticality Judgment Test (UGJT), and Metalinguistic Knowledge Test (MKT).

A total of 55 university English majors were randomly chosen to participate in this study. However, four of them did not finish all the tests. Thus, finally 51 students’ data were collected and analysed. They were all first year students who had just entered university for one month or so. They were all from Canton Province, which means they all took the same university entrance
examination to register for the university. The students were told that the tests would be conducted for the purpose of research and they were assured that the information collected would not affect their course grades. They participated in the tests out of their own free choice. They signed a consent form (see Appendices C and D for both the English and Chinese versions) and were assured of the right to quit the project at any time.

4.2.2 Instrumentation

4.2.2.1 Instruments for examining implicit/explicit knowledge and individual differences

The same four tests as those used in R. Ellis (2005, 2009) were used to measure the participants’ implicit and explicit grammatical knowledge. The target structures of the measures were the same 17 grammatical structures as those used in R. Ellis’s (2005, 2009) study, which will be described in detail later in this chapter. The tests for measuring implicit knowledge consisted of an elicited imitation test and a timed grammaticality Judgment test. The former had a primary focus of attention on meaning while the latter was conducted under time-pressure. The tests for measuring explicit knowledge consisted of an untimed grammaticality Judgment test and a metalinguistic knowledge test, each with a primary focus on form and were self-paced.

Three questionnaires and a language analytic ability test were employed to investigate the participants’ individual difference variables, including language learning motivation, language anxiety, learner beliefs and language analytic ability. The participants were also required to fill out a bio-data questionnaire with their general information such as name, grade, age and length of time spent in learning English.

All the instruments will be described in detail later in this chapter, because they were the same as those used in the main study. The one which was different was the language proficiency test used to test the first year students’ language proficiency.

4.2.2.2 Instruments for examining general language proficiency

China’s National Matriculation Examination is an academic university entrance examination held annually in the mainland of the People's Republic of China. It is a prerequisite for entering the undergraduate level of almost all higher education institutions. Most students take the exam
in June, their last year of senior high school. China’s National Matriculation English Test (NMET) is one test of this examination, which measures examinees’ English listening, reading and writing abilities. Speaking is not compulsory for all the students. Students who participate in the speaking test do so voluntarily or because they want to major in English. The speaking test is organised by the provinces and municipalities themselves. Examinees are expected to have the ability to properly use basic grammatical knowledge with a vocabulary of 3500 words, and no less than a vocabulary of 2000 words (2009 English Examination Syllabus). Nowadays, approximately 18 provinces have started to set their own examination papers, with the result that people from different provinces take different examination papers for entering university.

As mentioned above, all the participants in the current study were from Canton Province, which indicates that they took the same matriculation English test. Therefore, their scores for the English Examination Paper (Canton Province, 2009) were collected. This paper consists of four parts: Listening (Section 1 Listening Comprehension and Section 2 Listening for Information), Use of English (Section 1 Cloze Test and Section 2 Grammar Use), Reading Comprehension (Section 1 Reading Comprehension and Section 2 Information Matching), and Writing (Section 1 Writing of an Interview and Section 2 Reading & Writing). The entire paper was handed out to each student. The students were required to do the listening part first as the recordings were played for all students at the same time. It lasted for 20 minutes. Then they continued with the rest of the paper and could choose themselves which part to do first and which part second. There was a time limit of 120 minutes and a total score of 150 for the entire paper. A mark of 90 represents a ‘pass’ grade. Only the total scores were collected for the study because there was no way to access their scores for each part.

4.2.2.3 Data collection procedures
The data collection lasted about 1 month, beginning from the middle of November in 2009 and concluding in the middle of December that year. There were four classes of English majors in Grade 1 with 27 students in each class on average. The students in these four classes had similar English test scores, but their majors were slightly different with two classes of Business English majors and two majoring in English Literature and Linguistics. The detailed procedures for the data collection were as follows:
All the students from two classes were first given information about my research two days before I administered all the instruments. They completed the ethics permission form at the same time.

The participants first gathered in a classroom and were required to finish the bio-data questionnaire, Questionnaire 1 (beliefs), Questionnaire 2 (motivation) and Questionnaire 3 (language anxiety). Questionnaires 1, 2 and 3 were 5-point Likert-scale questionnaires without any time limit. It was observed that most of them finished all the questionnaires within 30 minutes. The language analytic ability test was given out after they had finished the questionnaires. They were observed to take around 25 minutes on average to finish this test.

I checked their course timetables the next day. I used 1 hour to arrange a time for each student to go to the teacher’s office one by one to do the EIT. I asked their class monitors for help to notify the students. I administered this test two days later. In the test, explanation and the training session were given first to ensure each student understood what to do. Then s/he began the test. Each student’s imitations were tape-recorded. Each session lasted around 20 minutes. I used 2 full days to administer this test.

About 1 week later, one class of students gathered in a computer lab to do the computer-delivered tests—the TGJT, UGJT, and MKT. The rest of the students gathered the next day in another computer lab to do the same tests. The reason for dividing students into different days was that it was easier to explain and monitor their progress when they were in one lab. The tests were administered in the following order: (a) TGJT, (b) UGJT, and (c) MKT.

All the tests included a number of training examples for participants to practise. For all three computerised tests, the instructions were given first and one or two examples were shown. The participants began with the TGJT and a complete training section for this test was given first. From this the participants saw that each sentence stayed on the screen for a limited time and then disappeared, so they knew they needed to judge if the grammar of each sentence was correct or not by pressing the button quickly (‘Shift’ for incorrect, ‘Enter’ for correct). After ensuring they had completed all the examples and they did not have any problems, they began the test. Students who finished the TGJT continued with
the UGJT. This test had the same content as the TGJT but without a time limit. The participants finished the UGJT at different speeds. When the students had finished the UGJT they continued with the untimed metalinguistic test which had two sections. All the tests were completed in a single session lasting approximately three hours.

(5) Semi-structured interviews consisting of two sections, 23 questions (i.e., relating to learning experiences and individual differences) were piloted on two students. These two students were chosen according to their performance in the EIT, with one scoring the highest in the EIT and the other one scoring the lowest.

4.2.2.4 Analyses of the results (see Appendix T for tables)

The data were analysed by running a series of the Statistical Program for Social Sciences (SPSS) (Version 18) programmes. The computer-delivered UGJT was excluded in all analyses due to technical problems encountered in this test (see details in 4.2.3 point (3)) and the scores of this test were considered invalid. Therefore, scores for the three measures of L2 knowledge (i.e., the EIT, TGJT, MKT), four measures of individual differences (i.e., language analytic ability test, Questions 1, 2, 3), and one measure of language proficiency (i.e., the NMET) were analysed.

Descriptive Statistics were computed in order to demonstrate the means and standard deviations of the measures. The reliability of the tests was also examined. To investigate whether the three tests of L2 knowledge provided separate measures of different types of knowledge, an Exploratory Factor Analysis with the method of Principal Components and a forced two-factor solution was performed. The EIT and MKT were found to load on Factor 1, and the TGJT on Factor 2. Then a Pearson Correlation Analysis was carried out between the measures of L2 knowledge and the measure of general L2 proficiency (NMET). The scores on the EIT (both grammatical/ungrammatical items) correlated significantly with the NMET score (r=.546, .551 and .348). The scores for the MKT Part 1 were found to have a moderate relationship with the NMET score (r=.324). However, no clear relationship was found between the TGJT and the NMET scores. In terms of the correlations between the measures of the IDs and L2 knowledge, the Pearson Correlation Analysis showed that only one strong negative relationship was found between anxiety and the score on the EIT. No other significant relationships were found between other IDs and the scores on the EIT, TGJT and MKT. Then a Pearson Correlation Analysis was
conducted to explore the relationship between the sub-types of learner beliefs and motivation and measures of L2 knowledge. The results showed that none of the sub-types of learner beliefs were related to any measure of L2 knowledge. Three sub-types of motivation (i.e., Intrinsic Interest, Immediate Achievement, and Information Medium) were found to be strongly or moderately correlated with measures from the EIT and MKT.

4.2.3 Issues encountered in the pilot study and proposed changes for the main study
Several problems were encountered in the pilot study and thus several changes were subsequently made for the main study. They are summarised as follows:

(1) The sample size in the pilot study was relatively small--only 51 first year students were involved and third year students were not included at all. Hence, a larger sample size of students (i.e., 192) took part in the main study in order to answer the six research questions this study addressed.

(2) Several problems with the instruments used to measure implicit and explicit knowledge were found according to the results of the pilot study (see Appendix T). The reliability of the EIT as a whole was acceptable, while that of the separate grammatical and ungrammatical items of this test was low. Unfamiliarity with this test may be one of the reasons and thus students may have employed different strategies when they did different parts of the test. Hence, more detailed explanation and more practice would be given to the students to help them become more familiar with the test format in the main study.

(3) In the UGJT, the participants were required to select ‘correct’ if they thought the statement was grammatical and ‘incorrect’ for the ungrammatical ones. In their answer sheets, ‘1’ would have shown up if their Judgment was correct, while 0 would have shown up if their Judgment was incorrect. However, for many students (N=17), no matter which button they pressed, ‘0’ showed up in their answer sheets. Therefore, it was decided that a pencil-and-paper version of the UGJT would be delivered in the main study to avoid such problems.

(4) The MKT Part 2 Section 1 asked the students to find the proper words in a given passage according to 20 grammatical terms. However, no corresponding word under ‘possessive adjective’ was in the passage. This may have caused some unnecessary distraction to the
students. Therefore, this grammatical feature was excluded in the main study. In addition, it was found that some students could not handle computers very well when they did a test involving several buttons on the keyboard like the MKT, which contained multiple choice items and words identification. The participants had to type in a number of letters and words, which was difficult for many of them (typos may have affected their scores) and also made the test last much longer than estimated (2 hours and a half). Therefore, it was decided that the MKT would be administered using a pencil-and-paper version instead of the computer-delivered version to avoid such problems.

(5) As a supplement to the quantitative data, a semi-structured interview was conducted to provide further insight about the students’ responses to the tests. After piloting the interview with two students, the interview protocol for two parts (i.e., learning experiences and individual differences) was revised. In the main study, the interview questions particularly focused on three aspects of individual differences, i.e., language learning motivation, foreign language anxiety and learner beliefs.

(6) The 51 first year students in the pilot study were all from Canton Province. They all took the same National Matriculation English Test. However, the first year students in the main study came from different parts of China and did not take the same paper of the NMET. Therefore, a standardised English proficiency test (i.e., the Oxford Placement Test) was administered to the first year students in the main study.

4.3 Research questions

A review of the literature presented in the previous chapters indicates that there has been relatively little empirical research investigating the relationship between implicit/explicit knowledge and general L2 proficiency, and the factors which may contribute to differences in learning implicit and explicit knowledge in an EFL context. Drawing on the literature review, the following research questions were formulated:

1. What is the extent of Chinese first year university students’ (a) implicit and (b) explicit knowledge of English?

2. What is the relationship between Chinese first year university students’ (a) implicit and (b) explicit knowledge of English and their general English proficiency?
3. What factors can account for differences in Chinese first year university students’ (a) implicit and (b) explicit knowledge of English?

4. What is the extent of Chinese third year university students’ (a) implicit and (b) explicit knowledge of English?

5. What is the relationship between Chinese third year university students’ (a) implicit and (b) explicit knowledge and their general English proficiency?

6. What factors can account for differences in Chinese third year university students’ (a) implicit and (b) explicit knowledge of English?

4.4 Research site and participants

The study was conducted at a key university in Beijing. The host university has been recognised as a member of the ‘Project 211’¹ and ‘Project 985’² by the Ministry of Education of the People’s Republic of China. In mainland China, admission to a particular university is dependent on the students’ scores on the National Matriculation Examination. The lowest entrance mark for the key universities is around 40 scores higher than that for the non-key universities. The English department in the host university offers two English programs—English courses for English majors and those for non-English majors (e.g., Mathematics, Computer Studies). There are two orientations for the English major—English Literature and Linguistics (ELL), and English Translation (ET). Students have the same courses in their first two years such as listening, speaking, writing, and phonetics. After two years, they start their own specialised courses. The ELL students take literature and linguistics courses, while the translation courses are for the ET students. There are usually four classes (two classes of ELL students and two of ET students) in each grade with 24 students in each class on average.

All eight classes of students in Grade 1 and Grade 3 totalling 194 participated in this study. However, two students did not finish all the tests. Thus, finally 192 students’ data were collected and analysed. 100 of them were first year students and 92 of them were third year students. The third year students were in the latter half of their third year, while the first year students had entered the university one month or so previously. They were from different places throughout China, which meant their exposure to English varied. The majority of the participants were female. Their ages ranged from 18 to 2.
The reason for choosing both first and third year students was that they represented lower-grade and higher-grade students respectively. This was to enable the relationship between implicit/explicit knowledge of English and general English proficiency from a range of university English majors to be examined. The Oxford Placement Test was administered to the first year students as a measure of their language proficiency, while the third year students took the Test for English Majors, Grade 4 (TEM4) in April at the end of their second year at university.

The students were told the tests were to be conducted for the purpose of research. They were assured the information collected would not affect their course grades. No one was forced to participate in the study. They signed a consent form (see Appendices C and D for both the English and Chinese versions) and were assured of the right to quit the project at any time. The data collection took place outside of class time and I did not interrupt regular classes. I also applied for the use of two computer labs and two classrooms at the university in order to administer the computer-delivered and paper-and-pencil tests and questionnaires.

4.5 Instrumentation
As mentioned above, four of the tests as those used in R. Ellis (2005, 2009) were used to measure the participants’ implicit and explicit grammatical knowledge. The Oral Production Test was excluded because it would have been very time consuming to administer and data-analyse this test. The target structures of the measures were the same 17 grammatical structures as those used in R. Ellis’s (2005, 2009) study. The Oxford Placement Test as a standardised proficiency test was used to measure the first year students’ general language proficiency, while the third year students’ scores on the TEM4 were collected as their language proficiency scores. In addition, three questionnaires and a language analytic ability test were employed to investigate the participants’ individual difference variables, namely language learning motivation, language anxiety, learner beliefs and language analytic ability. These instruments are described in detail in the following sections.
4.5.1 Target structures
The study investigated the same 17 grammatical structures as those used in R. Ellis (2005, 2009). The choice of the grammatical structures proposed by R. Ellis (2005, 2009) was based on several considerations.

First, an attempt was made to select grammatical structures universally problematic to L2 learners. The second consideration was developmental properties, that is, the structures selected were representative of both early and late acquisition of L2 grammar. This was based on the results of morpheme studies which suggest a universal order of acquisition for L2 learners (see R. Ellis, 2008). Third, the structures selected were introduced across different levels of instruction, i.e., elementary, lower intermediate, intermediate, and advanced levels. Morphological structures with fewer alternations (e.g., indefinite articles) were usually introduced prior to those with more alternations (e.g., modal verbs), and the teaching of morphological structures on the whole was more likely to happen before that of syntactic structures (e.g., embedded questions). Although this aspect was considered in accordance with the textbooks used in the New Zealand context, it was also true for the Chinese context as reflected in the syllabi for primary, junior high, senior high schools and for English majors at universities. For example, indefinite articles (i.e., with fewer alternations, only ‘a’ and ‘an’) are introduced before regular past tense (i.e., with more alternations including ‘+ed’, ‘+d’, ‘-y+ied’ etc.) in primary schools. Relative clauses (i.e., a more complex syntactical feature) are introduced much later (in senior high school or university) than regular past tense (in primary or junior high schools). The last consideration was grammatical type, that is, the structures included both morphological and syntactical features. Table 8 below lists the 17 grammatical structures with examples of learner errors when they figure in the syllabi for Chinese students.
Table 8: Experimental grammatical structures

<table>
<thead>
<tr>
<th>Structure</th>
<th>Example of Learner Error</th>
<th>Acquisition</th>
<th>Pedagogical Introduction</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verb complements</td>
<td>Liao says he wants <em>buying</em> a new car.</td>
<td>Early</td>
<td>Junior high school</td>
<td>Syntactical</td>
</tr>
<tr>
<td>Regular past tense</td>
<td>Martin <em>complete</em> his assignment yesterday.</td>
<td>Intermediate</td>
<td>Primary/junior high schools</td>
<td>Morphological</td>
</tr>
<tr>
<td>Question tags</td>
<td>We will leave tomorrow, <em>isn’t it?</em></td>
<td>Late</td>
<td>Senior high school / university</td>
<td>Syntactical</td>
</tr>
<tr>
<td>Yes/no questions</td>
<td>Did Keiko <em>completed</em> her homework?</td>
<td>Intermediate</td>
<td>Primary / junior high schools</td>
<td>Morphological</td>
</tr>
<tr>
<td>Modal verbs</td>
<td>I must <em>to</em> brush my teeth now.</td>
<td>Early</td>
<td>Various Levels</td>
<td>Morphological</td>
</tr>
<tr>
<td>Unreal conditions</td>
<td>If he had been richer, she <em>will</em> marry him.</td>
<td>Late</td>
<td>Senior high / university</td>
<td>Syntactical</td>
</tr>
<tr>
<td><em>Since</em> and <em>for</em></td>
<td>He <em>has been living</em> in New Zealand <em>since</em> three years.</td>
<td>Intermediate</td>
<td>Junior high school</td>
<td>Syntactical</td>
</tr>
<tr>
<td>Indefinite articles</td>
<td>They had <em>the</em> very good time at the party</td>
<td>Late</td>
<td>Primary school</td>
<td>Morphological</td>
</tr>
<tr>
<td>Ergative verbs</td>
<td>Between 1990 and 2000 the population of New Zealand <em>was increased.</em></td>
<td>Late</td>
<td>Various levels</td>
<td>Syntactical</td>
</tr>
<tr>
<td>Possessive -s</td>
<td>Liao is still living in his rich <em>uncle</em> house.</td>
<td>Late</td>
<td>Primary / junior high schools</td>
<td>Morphological</td>
</tr>
<tr>
<td>Plural -s</td>
<td>Martin sold a few old <em>coin</em> to a shop.</td>
<td>Early</td>
<td>Various levels</td>
<td>Morphological</td>
</tr>
<tr>
<td>3rd person -s</td>
<td>Hiroshi <em>live</em> with his friend Koji.</td>
<td>Late</td>
<td>Primary/ junior high schools</td>
<td>Morphological</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Relative clauses</td>
<td>The boat that my father bought <em>it</em> has sunk.</td>
<td>Late</td>
<td>Senior high/ university</td>
<td>Syntactical</td>
</tr>
<tr>
<td>Embedded questions</td>
<td>Tom wanted to know what <em>had I done</em></td>
<td>Late</td>
<td>Senior high school</td>
<td>Syntactical</td>
</tr>
<tr>
<td>Dative alternation</td>
<td>The teacher explained <em>John the answer</em>.</td>
<td>Late</td>
<td>No clear focus at any level</td>
<td>Syntactical</td>
</tr>
<tr>
<td>Comparatives</td>
<td>The building is <em>more bigger</em> than your house.</td>
<td>Late</td>
<td>Junior high/ senior high schools</td>
<td>Syntactical</td>
</tr>
<tr>
<td>Adverb placement</td>
<td>She writes <em>very well</em> English.</td>
<td>Late</td>
<td>Primary /junior high schools</td>
<td>Syntactical</td>
</tr>
</tbody>
</table>


4.5.2 Tests of implicit and explicit knowledge

A test battery (hereinafter it is referred to as Test battery 1, since another battery was used to explore factors contributing to students’ implicit and explicit L2 knowledge) which consists of four different tests, was administered to the test takers in order to investigate their implicit and explicit grammatical knowledge. As mentioned above, two tests were devised to measure students’ implicit L2 grammatical knowledge, and the other two tests were designed to measure their explicit L2 grammatical knowledge. The four tests are described in detail as follows:

a. Elicited Oral Imitation Test (EIT)

This test consists of a set of belief statements (involving both grammatical and ungrammatical sentences containing the target structures). There were 68 statements in the original version of this test. This number was subsequently reduced to 34 (one grammatical and one ungrammatical sentence per structure, see Appendix N) in order to shorten the time it took to administer the test. The sentences were presented orally to the test-takers through a computer. The participants were first required to indicate their choice on paper, to express whether they agreed with, disagreed
with or were not sure about the truth value of each statement. Examples of the belief statements for 3rd person’s’ are as follows:

A good teacher makes lessons interesting and cares about students. (Grammatical)
Everyone loves comic books and read them. (Ungrammatical)

This is intended to focus learners’ attention on meaning first. The test-takers were then asked to repeat the sentences orally in correct English. Their responses were audio recorded. The responses were then analysed by identifying obligatory occasions for the use of the target structures. The test takers’ failure to imitate a sentence at all or to reproduce it in a form in which they did not create an obligatory context for the target structure of a sentence was coded as ‘avoidance’. Each imitated sentence was allocated a score of either 1 (the target structure is correctly supplied) or 0 (the target structure is either avoided or attempted but incorrectly supplied). Scores were expressed as percentage correct (see Appendix Q). The sentences in this test of R. Ellis’s (2006) study were changed and re-taped in order to make this test suitable for Chinese students. An example for ‘Comparatives’ is shown below:

Original statement: New Zealand is greener and more beautiful than other countries.
New statement: Chinese people are nicer and more polite than other people.

The participants’ scores for the entire test and also separate scores for the grammatical and ungrammatical items were calculated and collected.

b. Timed Grammaticality Judgment Test (TGJT)
This is a computer-delivered test consisting of 68 sentences (see Appendix O), evenly divided between grammatical and ungrammatical. The sentences, which are different from those in the imitation test, were presented in written form on the computer screen. Thus, there were four sentences to be judged for each of the 17 grammatical structures. Examples of sentences for modals are as follows:

I must to brush my teeth now. (Ungrammatical)
I can to speak French very well. (Ungrammatical)
I must finish my homework tonight. (Grammatical)
I can cook Chinese food very well. (Grammatical)

The test-takers were required to indicate whether each sentence was grammatical or ungrammatical by pressing response buttons within a fixed time limit. The time limit for each sentence was established by timing the native speakers’ performance on the sentences in a pilot study, calculating an average response time for each sentence and then adding an additional 20% of the time taken for each sentence to allow for the slower processing speed of L2 learners. The time allowed for judging the individual sentences ranged from 1.8 to 6.24 seconds. Each item was scored dichotomously as correct/incorrect with items not responded to at all scored as incorrect. A percentage accuracy score was calculated. The participants’ scores for the entire test and also separate scores for the grammatical and ungrammatical items were calculated.

c. Untimed Grammaticality Judgment Test (UGJT)
This paper-based test had the same content as the TGJT. The sentences were presented in written form. The test-takers were required to (1) indicate whether each sentence is grammatical or ungrammatical, (2) indicate the degree of certainty of their Judgment (as proposed by Sorace, 1996) by writing in a score on a scale marked from 0% to 100% and (3) to self-report whether they used ‘rule’ or ‘feel’ for each sentence. This test provided three separate measures: an overall percentage Judgment accuracy score based on the participants’ dichotomous responses and separate scores for the grammatical/ungrammatical items, a percentage certainty score and a percentage score based on the participants’ reported use of ‘rule’ in judging each item.

It should be noted that R. Ellis’s (2009) study employed a computer-delivered version of this test, which prevented the participants revising their answers after they had finished judging each sentence. In contrast, the paper version allowed the test-takers to revise their answers at any time during the test. In addition, the computerised version of this test could record the time taken to judge each sentence, while the paper version could not do so. However, the different ways of administering this test were unlikely to have affected the type of knowledge that the participants would have accessed, because with no time limit the students were still able to access their
explicit knowledge. The participants’ scores for the entire test and also separate scores for the grammatical and ungrammatical items were calculated.

d. Metalinguistic Knowledge Test (MKT)
This is an adaptation of an earlier metalanguage test devised by Alderson, Steel and Clapham (1997). It consisted of an untimed computerised multiple-choice test in two parts. Part 1 presented the test-takers with 17 ungrammatical sentences (see Appendix P) based on the 17 structures (see Table 1). It required them to select the rule that best explained each error out of four choices provided, as in this example:

Hiroshi wants visiting the United States this year.
   a. ‘Visiting’ should be written in the base form.
   b. The verb following ‘want’ must be an infinitive.
   c. We cannot have two verbs together in a sentence.
   d. It should be ‘visit’ because the event is in the future.

Part 2 comprised two sections (see Appendix P). In Section 1, the students were required to find out the corresponding item for each grammatical feature from a given passage. For example, ‘the’ was the corresponding item for the grammatical feature ‘definite article’. Section 2 contained four sentences. The participants needed to find the item corresponding to the grammatical feature in each sentence, as in this example:

Poor little Joe stood out in the snow. (Subject)

Scores of those three parts were counted separately. In Part 1, a percentage score was calculated. The two sections of Part 2 were added up and a percentage score was calculated. The participants’ scores for the entire test and also separate scores for the Part 1 and Part 2 were collected.

4.5.3 Tests of L2 Proficiency
As already described, China’s national matriculation English test was used as the instrument to examine the participants’ general language proficiency in the pilot study because all 51 students
were from Canton. They took the same examination paper. However, the 100 first year students participating in the main study came from different provinces throughout China and they had taken different matriculation English examination papers, indicating that it was not possible to compare their English proficiency as they would have taken different proficiency tests. Thus, a standardised proficiency test—the Oxford Placement Test (OPT) was administered to the first year students to measure their general English proficiency. This test was chosen for the following two considerations: (1) it is a standardised proficiency test, and (2) it is more manageable than other standardised proficiency tests (e.g., IELTS and TOEFL) because it has fewer parts (two parts) and is much quicker to administer (1 hour) compared to IELTS (four parts, around 3 hours) and TOEFL (four parts, around 4 hours).

The TEM was used to examine the third year students’ language proficiency because all the third year English majors took this test which enabled me to compare their language proficiency within this group.

4.5.3.1 Oxford Placement Test (see Appendix R)
The Oxford Placement Test (OPT) is a standardised test used to assess learners’ English proficiency. Tanaka (2004) described this test as follows:

The OPT was originally developed for language teachers and school administrators as a means of grading and placing students into appropriate classes at all levels from elementary to post-advanced. Allan (1992) reported that a number of pilot tests were conducted to determine the test items and to establish inter-test reliability and concurrent validity between the OPT and other comprehensive proficiency tests, such as the IELTS over a five-year period on multi-level samples of students involving over 40 different nationalities. The OPT scores show a high level of consistency in discriminating learners’ proficiency levels and a high level of correlation with scores on other proficiency tests, such as the IELTS (pp. 91-92).

The OPT comprised two sections—a Listening Test and a Grammar Test, each consisting of 100 items. It took 60 minutes to complete the two sections (10 minutes for the Listening part and 50 minutes for the Grammar part). The total score was 200 (100 for each section and 1 for each
The Listening Test required the students to choose a correct answer from two possibilities in each item immediately after listening to the item. Both choices were grammatically possible and equally meaningful. Two examples for this part are given as follows:

39. Are you going to Penny’s/ Benny’s tonight?
4. Do you think we could have two minibuses/ too many buses for the summer courses?

Thus, the correct choice depended on knowledge of both the sound and writing systems of English. Each sentence was read only once at normal speaking speed. The participants did not have time to reflect very carefully. The Grammar Test was a written multiple-choice test of the grammatical structure of English. In this section, the students were asked to choose the correct answer from the three possibilities in each sentence. Two examples are:

4. In England people are always talking about a weather / the weather / weather.
7. Places near the Equator have a warm / the warm / warm weather even in the cold season.

The scores for the entire paper and also those for the two parts were collected. Percentage accuracy scores were calculated.

4.5.3.2 Test for English Majors, Grade 4 (TEM4, see Appendix R)
The Test for English Majors, Grade 4 (TEM4) is an English proficiency test, which is taken by university English majors at the end of their second year in China. Examinees are expected to have an intermediate ability of English in listening, reading and writing with a vocabulary of 5000-6000 words and a reading speed of 180 words per minute. It also examines students’ mastery of grammatical structures and vocabulary. It is compulsory for English majors in almost all Chinese universities and colleges. There are six parts in the examination paper. Part I is a 15-minute dictation, in which students are required to write down a passage after it is read four times. Part II is a 120-minute listening comprehension test, which requires students to choose the right answers to thirty multiple-choice questions according to conversations, passages and
newscasts they hear. Part III is a 15-minute cloze test, which has 20 blanks and requires students to choose the best word or phrase for each blank. Part IV is Grammar & Vocabulary, which consists of thirty sentences and students are required to choose one word or phrase that best completes each sentence. Part V is a 25-minute reading comprehension test. There are four passages followed by questions or unfinished statements. Students are required to choose the best answer for each question or unfinished statement. The last part is a writing test, which comprises two sections—Composition Writing (which requires students to write a composition of about 200 words) and Note-writing (which requires students to write a note of 50-60 words).

Since there was no way for me to access the participants’ sub-scores for each part, only their scores for the entire paper were collected.

4.5.4 Instruments for investigating individual differences
It is undeniable that ‘some individuals are more successful in learning a second language than other individuals’ (Gass & Selinker, 2001, p.329). Individual differences (IDs), which are defined as ‘enduring personal characteristics that are assumed to apply to everybody and on which people differ by degree’ (Dörnyei, 2005, p.4), account for different levels of attainment in SLA. Therefore, this study investigated the students’ language analytic ability, motivation, learner beliefs and language anxiety in order to explore what factors could account for differences in the learners’ implicit and explicit knowledge. The reason for choosing these four factors is that their impact on learners’ L2 acquisition has gained empirical support from a number of studies (e.g., Skehan, 1989; Gardner, Day & MacIntyre, 1992; Horwitz, Horwitz & Cope, 1986; Gardner et al., 1999). A battery of questionnaires (Battery 2) which contain the Language Analytic Ability test, Bio-data Questionnaire, Questionnaire 1 (Beliefs Questionnaire), Questionnaire 2 (Motivation Questionnaire) and Questionnaire 3 (Foreign Language Classroom Anxiety Scale) were employed. A semi-structured interview was also conducted. The instruments are described below.

4.5.4.1 Language Analytic Ability test (see Appendix E)
Language analytic ability is considered an important aspect of language aptitude, which involves both grammatical sensitivity and inductive language learning ability according to Skehan (1989).
The 14-item language analytic test used in Schmitt et al.’s (2004) study was adopted in this study (see Appendix E). This ‘contains a number of tasks based on an artificial language’ (Schmitt et al., 2004, p. 59).

In this test, some English words or phrases were given in an imaginary language along with their English translation. 14 short and simple English sentences were included. Each was followed by four possible translations into the imaginary language. This test required the students to try and work out which of the four options was the correct translation of each sentence according to the given examples. There was no time limit for the participants to do this test. Here is an example:

kau dog pasau meud bo Our dog is chasing the cat.
meu cat kau meud bi The dog was chasing the cat.

Instruction:
Choose the correct translation of the sentence according to the given information.
The dog is chasing the cat.

a. kau meud bi b. kau meud bo
c. meud kau bi d. meud kau bo
(Answer: b)

Each correct answer was scored ‘1’ or ‘0’ which was allocated for any wrong choice or missing item. A percentage accuracy score was calculated.

4.5.4.2 Questionnaires
Questionnaires, according to Dornyei (2003), ‘can yield three types of data about the respondent: factual, behavioural, and attitudinal.’ (p.8) Therefore, questionnaires were used in order to answer research questions 3 and 6 concerning the factors that potentially influence students’ implicit and explicit knowledge.
A biodata questionnaire (see Appendices F and G) was conducted first aiming for information about the participants’ age, gender, grade and former experiences of learning English in detail.

Questionnaire 1 (see Appendices H and I), which is the beliefs questionnaire, contains the 27 closed questions used in Tanaka’s (2004) study. The open question used in his questionnaire ‘What do you think are the important factors or ways of learning English well?’ was not used in the current study since there were follow-up interviews regarding learner beliefs. The participants were required to circle the response 1 (strongly disagree), 2 (disagree), 3 (neutral, namely neither agree nor disagree), 4 (agree), or 5 (strongly agree) that indicated to what extent they agreed or disagreed with the statement. The questionnaire investigates three general areas of beliefs: (1) analytic learning; (2) experiential learning; and (3) affective states (Tanaka, 2004, pp.90-91). According to Tanaka (2004), analytic learning ‘emphasizes the explicit study of the target language as a linguistic system’, while experiential learning ‘emphasizes the importance of learning by using the target language for communicative purposes in authentic situations’ (p.90). The third area, affective states, concerns ‘learners’ affective responses to language learning’ (Tanaka, 2004, p.91). The validity of the questionnaire was examined in Tanaka’s study. It showed that the questionnaire was a valid instrument for investigating learner beliefs in both the Asian context (i.e., Japan) and the English speaking context (i.e., New Zealand).

However, the context of the current study was slightly different from that of Tanaka’s (2004) study, therefore two factor analyses were carried out in order to examine whether the same items would fall under the three beliefs categories that Tanaka (2004) proposed. A total score for the entire questionnaire was 135. A percentage score was calculated based on their choice. The items which had positive loadings of .40 or higher were used to calculate the participants’ scores for the sub-types of beliefs in order to best explore the relationship between a particular type of belief (e.g., beliefs about experiential learning) and implicit/explicit knowledge. The tables of the two factor analyses are attached in the Appendix U. According to the loadings, items 4, 7, 8, 11, 13, 17, 18, 20 and 25 were concerned with the first year students’ beliefs about analytic learning, while items 1, 3, 9, 10, 19, 21, 22 and 24 investigated their beliefs about experiential learning. Items 6, 15, 23 and 26 fell under the category of the affective states. For the third year students, items 4, 5, 7, 8, 17, 18, 25 investigated their beliefs about analytic learning, while items 1,
9, 10, 12, 19, 21, 22 and 24 concerned their beliefs about experiential learning. Three items—6, 16 and 23 concerned the third year students’ affective states.

Questionnaire 2 (see Appendices J and K) is the motivation questionnaire. Gao et al.’s (2003) motivation questionnaire with 30 items was adopted in the current study. Gardner and Lambert’s (1972) integrative/instrumental model of motivation has been very influential. However, their model was not considered well-suited to explain motivation in specific contexts like China, which has a strong cultural and educational tradition. Therefore, Gao et al. (2003) conducted a nationwide survey among a large number of Chinese university students to explore particular English learning motivation types in the Chinese context. Based on the results of an Exploratory Factor Analysis, Gao et al. (2003) identified seven factors affecting Chinese college students’ learning English (i.e., seven sub-types of motivation): (1) intrinsic interest (Items 1, 18, 19, 20, 21 and 23), (2) immediate achievement (Items 2, 3, 4, 6, 11), (3) learning situation (Items 5, 7, 8, 9 and 10), (4) going abroad (Items 26, 27 and 28), (5) social responsibility (Items 22, 24 and 25), (6) individual development (Items 13, 14, 16, 29 and 30) and (7) information medium (Items 15 and 17). Item 12 loaded on three factors (i.e., on Factors 2, 4 and 6). The original version of this questionnaire was in Chinese. Hence, the backwards translation method was used to translate the Chinese questionnaire into English in order to ensure the consistency of the message conveyed with the original one. The Chinese version was used in this study. Both the Chinese and English versions are attached. Similar to the beliefs questionnaire, the participants were required to choose the response 1 to 5 according to whether they agreed or disagreed with the statement. The total score of the entire questionnaire was 15. A percentage score was calculated. Their scores for the motivation sub-types were also collected and calculated as percentages in order to investigate the relationship between specific types of motivation (e.g., intrinsic interest) and implicit/explicit knowledge.

Questionnaire 3 (see Appendices L and M), which is the anxiety questionnaire, adopted the items used in Horwitz, Horwitz and Cope’s Foreign Language Classroom Anxiety Scale (FLCAS). This scale has been administered in a number of separate studies and the validity of it as a measure of language anxiety was established. It consisted of 33 items aiming to investigate students’ language anxiety from three aspects: (1) communication apprehension, (2) test anxiety
and (3) fear of negative evaluation (Horwitz in Horwitz, 1991, p.30). 15 items were devised relating to communication apprehension because ‘the construct of communication apprehension is quite relevant to the conceptualization of foreign language anxiety’ (McCroskey in Horwitz, 1991, p.30). As demonstrated by Horwitz (1991), characteristics such as ‘difficulty in speaking in groups or in public’ or difficulty ‘in listening to or learning a spoken message’ are ‘manifestations of communication apprehension’ (p.30). Items 4,5,6,11,14,15,17,18, 24, 25, 27,29,30,31 and 32 fall under this category. Test anxiety, as its name implies, refers to the ‘apprehension over academic evaluation’ (MacIntyre & Gardner in Horwitz, 1991, p. 42). Items 8, 10 and 21 relate to test anxiety. Items 1,2,3,7,9,12,13,16,19,20,22,23,28 and 33 are devised to examine fear of negative evaluation. As with the two questionnaires above, the participants were required to choose the response 1 to 5 to indicate the extent to which they agreed or disagreed with the statement. The total score of the entire paper was 165. A percentage score was calculated. Only the total score of this questionnaire was calculated because the current study was interested in the relationship between general foreign language anxiety and implicit/explicit knowledge rather than a particular type of anxiety (e.g., test anxiety) and these two types of knowledge.

4.5.4.3 Interview (see Appendix S for the interview guide)
As Richards (2009) observed, ‘interviews can provide important insights into people’s experiences, beliefs, perceptions, and motivations’ (p.196). In the current study, the questionnaires investigating beliefs, motivation, and anxiety consisted of the Likert scale items and all of them were closed questions. Thus, follow-up semi-structured interviews were conducted to provide further insight into the relationship between these individual difference factors and implicit/explicit knowledge. Selected students (around 5 to 6 from each group) with highest and lowest scores on different types of knowledge (see Chapters 5 and 6) were asked to participate in the individual, semi-structured interviews one and a half month later after I finished the quantitative analyses of the tests. 11 questions (see Appendix S) were formulated in order to complement the information obtained from the questionnaires. These questions focus on three topics; learner beliefs, language learning motivation and foreign language anxiety. Part A consisting of five questions concerns learners’ beliefs about language learning including their confidence in speaking English and their opinions on vocabulary/grammar learning. Three
questions are included in Part B, which concerns learners’ language learning motivation such as ‘What made you choose English as your major’. Part C comprises three questions regarding to what extent and in what situations learners experience foreign language anxiety. Examples of the questions are as follows:

**Lear beliefs:** Do you think there is a chance that your English conversation will be like a native speaker someday?

**Motivation:** What made you choose English as your major?

**Language anxiety:** Which aspect(s) of the English class worry you the most, why and how?

4.6 Data collection procedures

There are four classes in each of Grade 3 and in Grade 1 with 25 students in each class on average. I began my data collection with the third year students, which started at the beginning of April 2010 and finished at the end of May that year. The data collection of the first year students began in the middle of October 2010 and ran to the middle of December 2010. Each of the two phases lasted for about two months. In terms of the third year students, the period was chosen for two reasons. One was that the third year students had a lot of classes in their third year and this period was neither just at the beginning of the new term (during which time the students were required to adapt to the new term) nor at the end of the term (during which time the students wanted to relax). The other consideration was that this period was not very close to the mid-term exam, so the students were not very busy preparing for their exams. Choosing the period for collecting the first year students’ data also involved two considerations. One was that the first year students usually enrolled at the university in the middle of September. During the first two weeks, students were required to attend a series of induction lectures in order to become familiar with university life. So it was not very suitable to involve them in the research immediately when they entered university. The other consideration was due to a seven-day holiday starting from the beginning of October because the first of October is China’s National Day. Hence, the data collection of the first year students began after the National Day holiday when they had already had several classes at university. The detailed procedures for the data collection are as follows:
(1) All the students from the four classes of both grades were first given information about my research at the end of March and September respectively. They completed the ethics permission form at the same time.

(2) Test battery 1 was completed by the third year students from the beginning of April to the middle of May, while it was administered to the first year students from the middle of October to the end of November. I checked their timetables and picked out different days when students did not have classes or at least not full-day classes so that they had time to do the tests.

(3) The Elicited Oral Imitation Test was administered first on 6 different days for the first year students and 5 different days for the third year students. This test was originally conducted face to face and one by one in R. Ellis (2006, 2009). However, in order to shorten the time it took to administer this test in the current study (since a large number of participants and measures were involved), two approaches were adopted; the majority of the participants took this test in the language laboratory with two students doing this test each time. I also administered this test face to face and one by one to 20 students (10 first and 10 third year students). The results of the two Independent Samples T-Tests showed that the two groups’ scores were not statistically different (t(98)=-.317, p=.752 for the first year students and t(90)=-.493, p=.642 for the third year students), indicating the difference in the data collection procedures had not affected their scores in this test.

The steps in administering this test were as follows:

a. The answer sheets for the beliefs questionnaire which asked whether they agreed or disagreed with each statement they heard were handed out before they began the test.

b. A training section was given first in order to familiarise everyone with the entire test.

c. Each statement was played once with intervals between every two sentences (around 8 seconds) to allow the student to tick the beliefs answer sheet and repeat immediately after he/she finished ticking.

d. S/he was required to repeat the sentence s/he heard in correct English. All of the imitations were recorded.

(4) One or two days after they had finished this test, about 50 of the students gathered in a computer lab to take the computer-delivered TGJT (the number was decided according to
the seats that the lab had). The rest of the students gathered the next day in another computer lab to do the same test. The reason for dividing students into different days was that it was easier to explain and monitor their progress when they were in one computer lab. The pencil-and-paper UGJT and the MKT were then conducted after they finished the TGJT. The tests were administered in the following order: (1) TGJT; (2) UGJT; (3) MKT.

All the tests included a number of training examples for participants to practise. For all three tests, the instructions were given first and one or two examples of each test were shown. The participants began with the TGJT and completed a training section for this test. From this the participants saw that each sentence stayed on the screen for a limited time and then disappeared, so they knew they needed to judge if the grammar of each sentence was correct or not by pressing the button quickly (‘Shift’ for incorrect, ‘Enter’ for correct). After ensuring they had completed all the examples and they did not have any problems, they began the test. Students who finished the TGJT continued with the UGJT. This test had the same content as the TGJT but without a time limit. First they were required to write their names and practise the examples. The participants finished the UGJT in different speeds. When the students had finished the UGJT, they continued with the untimed Metalinguistic Test which had two sections. All the tests were completed in a single session lasting approximately two and a half hours.

(5) Battery 2 was conducted 7 days after Test battery 1 in the following order:

- Bio-data questionnaire
- Language Analytic Ability Test
- Questionnaire 1
- Questionnaire 2
- Questionnaire 3

The background questionnaire was handed out before the Language Analytic Ability Test. The Language Analytic Ability Test was then conducted with pencil and paper. The participants did this test in different periods after they finished their lessons. I carefully explained what they were to do. This test did not have a time limit. Most of the students completed it within 20 minutes. One or two days later, questionnaires were completed in different periods within one day with 50 students in one classroom each time. Again, the
reason for this was because I could more easily monitor the entire process with a class size of 50 students. 15 minutes were assumed for completion of each questionnaire. The majority of the students finished all the questionnaires within 30 minutes.

(6) Semi-structured interviews for the first year students were carried out around one and a half months later after I had analysed the test results measuring implicit and explicit grammatical knowledge. Five students were interviewed. They were selected according to the scores they obtained in the tests devised to measure implicit and explicit knowledge. I checked the timetables of their courses and conducted the interviews individually in two separate days in a small quiet classroom. Each interview was recorded and lasted for about 20 minutes. Table 9 shows the five interviewees chosen for the interview. The results of the factor analyses showed that two factors were extracted from the tests. Therefore, Xiao A and Xiao B were chosen because they obtained the highest scores on Factors 1 and 2, respectively. Xiao E got the lowest scores on both factors. Then Xiao C and Xiao D who obtained the second lowest scores on Factors 1 and 2, respectively, were also chosen to participate in the interviews.

Table 9 Five interviewees

<table>
<thead>
<tr>
<th>Score/Factor</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest</td>
<td>Xiao A</td>
<td>Xiao B</td>
</tr>
<tr>
<td>Second Lowest</td>
<td>Xiao C</td>
<td>Xiao D</td>
</tr>
<tr>
<td>Lowest</td>
<td></td>
<td>Xiao E</td>
</tr>
</tbody>
</table>

(7) Semi-structured interviews for the third year students were conducted around one and a half months later after I analysed the test results. Six students were selected to participate in the interview according to the scores they obtained in the tests of linguistic knowledge. I checked the timetables of their courses and conducted the interviews individually in two separate days in a small quiet classroom. Each interview was recorded and lasted for about 20 minutes. Table 10 shows the six interviewees chosen for the interview. The results of the factor analysis showed that there were three factors extracted from the tests. Accordingly, Xiao F, G and H were chosen because they separately obtained the highest
scores on Factors 1, 2 and 3, while Xiao I, J and K got the lowest scores on these three factors separately.

**Table 10 Six interviewees**

<table>
<thead>
<tr>
<th>Score/Factor</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest</td>
<td>Xiao F</td>
<td>Xiao G</td>
<td>Xiao H</td>
</tr>
<tr>
<td>Lowest</td>
<td>Xiao I</td>
<td>Xiao J</td>
<td>Xiao K</td>
</tr>
</tbody>
</table>

(8) The 92 third year students took their TEM4 in April the year before and received their scores in September that year. I collected the TEM 4 scores from the education administrator who got the scores from the College English Teaching Steering Committee. The 100 first year students were gathered in a large classroom to take the Oxford Placement Test 10 days after they finished Battery 2. The time limit for this test was 60 minutes. I monitored the entire testing process.

4.7 Methods of analysis

The methods of analysis used in this study were mainly quantitative. Qualitative analyses were also undertaken to help answer research questions 3 and 6.

4.7.1 Quantitative analyses

Quantitative analyses of the data collected by Test Battery 1, Battery 2 and the proficiency tests serve to answer the six research questions. The quantitative analyses involve several statistical procedures as described below:

RQs 1 and 4: What is the extent of Chinese first/third year university students’ (a) implicit and (b) explicit knowledge of English? Descriptive Statistics were calculated for the tests in Test Battery 1 to examine the standard deviations, ranges and means. Pearson Product Moment Correlation Analyses, an Exploratory Factor Analysis and a Confirmatory Factor Analysis were carried out to establish whether the tests provided relatively separate measures of implicit and explicit knowledge.
RQs 2 and 5: What is the relationship between Chinese first/third year university students’ (a) implicit and (b) explicit knowledge of English and their general English proficiency? Pearson Product Moment Correlation Analyses and a Multiple Regression Analysis were used to identify the relationship between the measures of implicit/explicit knowledge and L2 proficiency.

RQs 3 and 6: What factors can account for differences in Chinese first/third year university students’ (a) implicit and (b) explicit knowledge of English? Pearson Product Moment Correlation and Multiple Regression Analyses were computed to identify the relationship between the measures of implicit/explicit knowledge and beliefs, motivation, anxiety and language analytic ability scores. In addition, the relationships between the sub-types of beliefs/motivation and implicit/explicit knowledge were also explored by carrying out a series of Pearson Product Moment Correlations and Multiple Regression Analyses.

4.7.2 Qualitative analysis
Qualitative analysis was only used to complement quantitative methods and to help answer research questions 3 and 6: (3) What factors can account for differences in Chinese first year university students’ (a) implicit and (b) explicit knowledge of English? (6) What factors can account for differences in Chinese third year university students’ (a) implicit and (b) explicit knowledge of English?

The data obtained by the interview were analysed by following the inductive process of coding for themes, looking for patterns and making interpretations (Ellis & Barkhuizen, 2005). All the interviews were conducted in Chinese. I first transcribed and translated all the data collected from the semi-structured interviews (see Appendix W for a sample of the transcripts). Then I read the transcripts several times and noted down in the margin the topics covered. Then all words, phrases, complete sentences, utterances and extended discourses which expressed learners’ beliefs, motivation and anxiety were utilised to look for patterns. The following coding schemes were used to identify the first and third year interviewees’ similarities and differences in terms of these three individual difference variables.
### Coding scheme for the first year students

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Factor 1 (Highest score)</th>
<th>Factor 2 (Highest score)</th>
<th>Factor 1 (Second lowest score)</th>
<th>Factor 2 (Second lowest score)</th>
<th>Factor 1 &amp; Factor 2 (Lowest score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similarities</td>
<td>Beliefs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Motivation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differences</td>
<td>Beliefs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Motivation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Coding scheme for the third year students

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Factor 1 (Highest score)</th>
<th>Factor 2 (Highest score)</th>
<th>Factor 3 (Highest score)</th>
<th>Factor 1 (Lowest score)</th>
<th>Factor 2 (Lowest score)</th>
<th>Factor 3 (Lowest score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similarities</td>
<td>Beliefs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Motivation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differences</td>
<td>Beliefs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Motivation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Finally, I selected the information which provided supportive or complementary information to the quantitative data analyses to help answer the two research questions mentioned above. The results are reported in the next two chapters. The interview data were presented in quotes with all names of the learners being pseudonyms to ensure confidentiality and to protect the participants’
anonymity. The similarities and differences in terms of the three variables emerged from their own stories, not from the researcher’s pre-determined categories. Table 11 below summarises the main methods of the analyses employed in this study.
Table 11 Summary of the main analysis methods

<table>
<thead>
<tr>
<th>Test Battery 1</th>
<th>Year 1</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(EIT,TGJT,UGJT,MKT)</td>
<td>(1) Descriptive Statistics for means, ranges and SDs of each test, and measures of implicit and explicit knowledge</td>
<td>(1) Descriptive Statistics for means, ranges and SDs of each test, and measures of implicit and explicit knowledge</td>
</tr>
<tr>
<td></td>
<td>(2) Exploratory Factor Analysis for factors extracted from the four tests</td>
<td>(2) Exploratory Factor Analysis for factors extracted from the four tests</td>
</tr>
<tr>
<td></td>
<td>(3) Confirmatory Factor Analysis for testing R. Ellis’s (2009) model of implicit and explicit knowledge</td>
<td>(3) Confirmatory Factor Analysis for testing R. Ellis’s (2009) model of implicit and explicit knowledge</td>
</tr>
<tr>
<td></td>
<td>(4) Reliability Analysis for each test</td>
<td>(4) Reliability Analysis for each test</td>
</tr>
<tr>
<td></td>
<td>(5) Hypotheses testing the construct validity of each test</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Battery 2</th>
<th>Year 1</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Questionnaires 1, 2, 3 &amp; sub-types of Questionnaires 1 and 2)</td>
<td>(1) Descriptive Statistics for means and SDs of each questionnaire and their sub-questionnaires</td>
<td>(1) Descriptive Statistics for means and SDs of each questionnaire and their sub-questionnaires</td>
</tr>
<tr>
<td></td>
<td>(2) Pearson Correlation, Multiple Regression Analyses and interviews for the relationship between implicit/explicit knowledge and IDs (including their sub-types)</td>
<td>(2) Pearson Correlation, Multiple Regression Analyses and interviews for the relationship between implicit and explicit knowledge, and IDs (including their sub-types)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proficiency test</th>
<th>Year 1</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(OPT &amp; TEM 4)</td>
<td>(1) Pearson Correlation and Multiple Regression Analyses for the relationship between measures of implicit/explicit knowledge and language proficiency test (OPT)</td>
<td>(1) Pearson Correlation and Multiple Regression Analyses for the relationship between measures of implicit and explicit knowledge, and language proficiency test (TEM 4)</td>
</tr>
</tbody>
</table>
Notes

1. ‘Project 211’ is concerned with supporting around 100 key universities in Mainland China in order to take on the challenges of the 21st century.

2. ‘Project 985’ is concerned with selecting around 30 universities from the university members of the ‘Project 211’ to support them to become world-famous universities. The members of ‘Project 985’ have gained greater financial and governmental support than those non-members.
CHAPTER FIVE
RESULTS AND DISCUSSIONS FOR THE FIRST YEAR STUDENTS

5.1 Introduction
This chapter reports the results of the quantitative analyses of the data collected from the first year students. This part of the results will help answer the following three research questions concerning the first year students:

1. What is the extent of Chinese first year university students’ (a) implicit and (b) explicit knowledge of English?
2. What is the relationship between Chinese first year university students’ (a) implicit and (b) explicit knowledge of English and their general English proficiency?
3. What factors can account for differences in Chinese first year university students’ (a) implicit and (b) explicit knowledge of English?

The Statistical Program for Social Sciences (Version 19) and AMOS (Version 19) were used to analyse the data. This chapter begins by examining the reliability and the construct validity of the four tests used to measure participants’ implicit and explicit knowledge. It then moves on to exploring the relationships between implicit/explicit knowledge and general language proficiency. It ends by investigating what factors (i.e., psychological factors) account for the differences in the participants’ implicit and explicit knowledge.

5.2 Testing implicit and explicit knowledge
In order to answer research question 1 regarding to what extent Chinese first year students have implicit and explicit knowledge, it is important to examine whether the four tests designed to provide relatively separate measures of implicit and explicit knowledge are reliable and valid for the first year English majors.

5.2.1 Reliability of the testing instruments
Reliability concerns the consistency of the measure. Reliability analysis is always employed to examine the properties of measurement scales and the items that make them up. Cronbach’s Alpha (α) is the most commonly used method to provide estimates of the internal
consistency, based on the average inter-item correlation. The results of the reliability analyses using the Statistical Program for Social Sciences (Version 19) are shown in Table 12. According to DeVellis (1991), values ranging from .65 to .70 indicate an acceptable level of reliability, while Cronbach’s alpha values ranging from .70 to .80 indicate a fairly good level of reliability and thus very good consistency. As can be seen in this table, all alphas for the four tests were satisfactory (all are above .70). The Cronbach’s alpha values for the sub-measures varied between .83 for the TGJT grammatical items and .43 for the MKT Part 1.

Table 12 Reliability values of the tests and the sub-measures (n=100)

<table>
<thead>
<tr>
<th>Test/Sub-measures</th>
<th>Reliability(α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT</td>
<td>.76</td>
</tr>
<tr>
<td>TGJT</td>
<td>.70</td>
</tr>
<tr>
<td>UGJT</td>
<td>.72</td>
</tr>
<tr>
<td>MKT</td>
<td>.76</td>
</tr>
<tr>
<td>EIT G</td>
<td>.69</td>
</tr>
<tr>
<td>EIT UG</td>
<td>.49</td>
</tr>
<tr>
<td>TGJT G</td>
<td>.83</td>
</tr>
<tr>
<td>TGJT UG</td>
<td>.63</td>
</tr>
<tr>
<td>UGJT G</td>
<td>.70</td>
</tr>
<tr>
<td>UGJT UG</td>
<td>.72</td>
</tr>
<tr>
<td>MKT (Part 1)</td>
<td>.43</td>
</tr>
<tr>
<td>MKT(Part 2)</td>
<td>.73</td>
</tr>
</tbody>
</table>

EIT : Elicited Imitation Test.
EIT G : Elicitated Imitation Test grammatical items
EIT UG : Elicitated Imitation Test ungrammatical items
TGJT : Timed Grammaticality Judgment Test
TGJT G : Timed Grammaticality Judgment Test grammatical items
TGJT UG : Timed Grammaticality Judgment Test ungrammatical items
UGJT : Untimed Grammaticality Judgment Test
UGJT G : Untimed Grammaticality Judgment Test grammatical items
UGJT UG : Untimed Grammaticality Judgment Test ungrammatical items
MKT : Metalinguistic Knowledge Test

5.2.2 Construct validity of the testing instruments
This part aims to present the results of a series of analyses to investigate the construct validity of the testing instruments. It begins with the descriptive statistics of all the measures. It then moves on to the correlation analyses of the testing instruments. This part ends up with the
factor analyses, including an Exploratory Factor Analysis (EFA) and two Confirmatory Factory Analyses (CFAs).

5.2.2.1 Descriptive statistics for all the measures
Table 13 and Figure 1 show the results. Table 13 presents the descriptive statistics of all measures including the sub-measures. From Table 13 and Figure 1, it can be seen that the participants achieved the highest scores on the ungrammatical items of the UGJT (M=.87), followed by the grammatical items of this test (M=.85), then the grammatical items of the TGJT (M=.69), the MKT Part 1 (M=.61), the grammatical items of the EIT (M=.55) and the MKT Part 2 (M=.52). The participants scored lowest on the ungrammatical items of the EIT (M=.32) and on the ungrammatical items of the TGJT (M=.33). In terms of the total test scores, the participants obtained the highest scores on the UGJT (M=.86), followed by the MKT (M=.56), then the TGJT (M=.51). They achieved the lowest scores on the EIT (M=.44). The distribution of the scores for each measure is reflected in the standard deviation. The SDs of the EIT G, TGJT G, TGJT UG and MKT Part 2 were much higher than those of the other measures indicating that there were greater differences among the participants in those three measures than in the other measures.

<table>
<thead>
<tr>
<th>Tests</th>
<th>Items</th>
<th>Mean</th>
<th>Max.</th>
<th>Min.</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT</td>
<td>34</td>
<td>.44</td>
<td>.77</td>
<td>.02</td>
<td>.12</td>
</tr>
<tr>
<td>TGJT</td>
<td>68</td>
<td>.51</td>
<td>.78</td>
<td>.24</td>
<td>.10</td>
</tr>
<tr>
<td>UGJT</td>
<td>68</td>
<td>.86</td>
<td>.99</td>
<td>.65</td>
<td>.08</td>
</tr>
<tr>
<td>MKT</td>
<td>40</td>
<td>.56</td>
<td>.84</td>
<td>.33</td>
<td>.12</td>
</tr>
<tr>
<td>EIT G</td>
<td>17</td>
<td>.55</td>
<td>.96</td>
<td>.05</td>
<td>.16</td>
</tr>
<tr>
<td>EIT UG</td>
<td>17</td>
<td>.32</td>
<td>.68</td>
<td>.00</td>
<td>.11</td>
</tr>
<tr>
<td>TGJT G</td>
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<td>.69</td>
<td>.97</td>
<td>.00</td>
<td>.18</td>
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<tr>
<td>TGJT UG</td>
<td>34</td>
<td>.33</td>
<td>.68</td>
<td>.09</td>
<td>.12</td>
</tr>
<tr>
<td>UGJT G</td>
<td>34</td>
<td>.85</td>
<td>1.00</td>
<td>.50</td>
<td>.10</td>
</tr>
<tr>
<td>UGJT UG</td>
<td>34</td>
<td>.87</td>
<td>1.00</td>
<td>.56</td>
<td>.10</td>
</tr>
<tr>
<td>MKT Part 1</td>
<td>17</td>
<td>.61</td>
<td>.94</td>
<td>.24</td>
<td>.13</td>
</tr>
<tr>
<td>MKT Part 2</td>
<td>23</td>
<td>.52</td>
<td>.83</td>
<td>.00</td>
<td>.15</td>
</tr>
</tbody>
</table>

EIT : Elicited Imitation Test.
EIT G : Elicitated Imitation Test grammatical items
EIT UG : Elicitated Imitation Test ungrammatical items
TGJT : Timed Grammaticality Judgment Test
TGJT G : Timed Grammaticality Judgment Test grammatical items
TGJT UG : Timed Grammaticality Judgment Test ungrammatical items
UGJT : Untimed Grammaticality Judgment Test
UGJT G : Untimed Grammaticality Judgment Test grammatical items
UGJT UG : Untimed Grammaticality Judgment Test ungrammatical items
MKT : Metalinguistic Knowledge Test

Figure 1 Mean scores of the sub-measures

5.2.2.2 Response time and the reported use of rules on the grammatical and ungrammatical items in the GJT's

This part is intended to report the descriptive statistics and two paired samples t-tests of the participants’ use of time and rules while judging grammatical and ungrammatical items in the GJT's. Table 14 shows the results. The participants’ response time was measured and expressed in seconds, while the reported use of rules was calculated and expressed as a percentage. The table shows that the students took longer to judge the grammatical items of the TGJT than the ungrammatical ones (M=2.44 and M=2.38). They reported using rules more often while judging the ungrammatical items in the UGJT than judging the grammatical ones (M=.84 and M=.75). Two subsequent Paired-samples t-tests were conducted to examine whether the participants’ Judgment times in the TGJT, and their rule use in the UGJT were statistically different. The table indicates that there was a statistically significant difference between the participants’ Judgment times for the grammatical and ungrammatical items in the TGJT (t[99]=4.024,p<.05). This table also reveals that the participants’ use of rules
while judging the grammatical and ungrammatical items of the UGJT was also statistically significant ($t[99]=-6.048, p=.000<.05$).

### Table 14 Comparison of timing and rule using on grammatical and ungrammatical items--Paired Samples Statistics (n=100)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Max</th>
<th>Min</th>
<th>SD</th>
<th>SEM</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time Use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TGJTG</td>
<td>2.44</td>
<td>3.18</td>
<td>1.73</td>
<td>.34</td>
<td>.034</td>
<td>4.024</td>
<td>99</td>
<td>.000</td>
</tr>
<tr>
<td>TGJT UG</td>
<td>2.38</td>
<td>2.80</td>
<td>1.86</td>
<td>.23</td>
<td>.023</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rule Use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UGJT G</td>
<td>.75</td>
<td>1.00</td>
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<td>.23</td>
<td>.023</td>
<td>-.6.048</td>
<td>99</td>
<td>.000</td>
</tr>
<tr>
<td>UGJT UG</td>
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<td>1.00</td>
<td>.00</td>
<td>.17</td>
<td>.017</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TGJT : Timed Grammaticality Judgment Test
TGJT G : Timed Grammaticality Judgment Test grammatical items
TGJT UG : Timed Grammaticality Judgment Test ungrammatical items
UGJT : Untimed Grammaticality Judgment Test
UGJT G : Untimed Grammaticality Judgment Test grammatical items
UGJT UG : Untimed Grammaticality Judgment Test ungrammatical items

Figures 2 and 3 respectively display the differences in the participants’ time and rule use while judging the grammatical and ungrammatical items of the GJTs. In Figure 2, the vertical axis represents the participants’ response time for the grammatical and ungrammatical items in the TGJT. Similarly, the vertical axis in Figure 3 stands for the percentage of the participants’ reported rule use while judging the grammatical and ungrammatical items of the UGJT.
5.2.2.3 Correlation analyses of the testing instruments

This part presents the results of the correlation analyses as the first step to examining the construct validity of the testing instruments. The reason for doing so is to set up a basis for the later factor analyses, as it is proposed that ‘factor analyses are performed by examining the pattern of correlations (or covariances) between the observed measures’ (DeCoster, 1998, p1). It seems that ‘measures that are highly correlated are likely influenced by the same factors’ (DeCoster, 1998, p.1). Pearson Product correlations were carried out. Tables 15 and 16 show the correlations among the four tests and among their sub-measures respectively. Table 4 shows that all measures were significantly intercorrelated varying between $r=0.288$ to $r=0.523$. According to Cohen (1988, 2003), a correlation coefficient ranging from .10 to .29 is thought to represent a weak or small correlation; a correlation coefficient ranging from .30 to .49 is considered a moderate correlation; and a correlation coefficient of .50 or larger is thought to represent a strong or large correlation. Hence, among all the correlations, the EIT and the MKT correlated most strongly with the UGJT ($r=0.523$ and $r=0.505$). The TGJT correlated most strongly with the EIT ($r=0.359$).

Table 16 shows that many sub-measures were weakly or moderately intercorrelated. As in R. Ellis’s (2005) study, no significant relationship was found between the grammatical and ungrammatical items of the UGJT. The grammatical and the ungrammatical items of the TGJT did not correlate, either. The grammatical items of the GJTs were more strongly correlated with both grammatical and ungrammatical items of the EIT, while the ungrammatical items of the UGJT were correlated more strongly with the MKT Part 1. However, there was no significant relationship between the UGJT ungrammatical items and
the MKT Part 2. The grammatical items and ungrammatical items of the EIT were strongly correlated with each other ($r=.622$). In terms of the MKT Part 1 and Part 2, they were found to be correlated moderately with each other.

**Table 15 Correlations among the four tests**

<table>
<thead>
<tr>
<th></th>
<th>EIT</th>
<th>TGJT</th>
<th>UGJT</th>
<th>MKT</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT</td>
<td>---</td>
<td>.359**</td>
<td>.523**</td>
<td>.410**</td>
</tr>
<tr>
<td>TGJT</td>
<td>---</td>
<td>---</td>
<td>.343**</td>
<td>.288**</td>
</tr>
<tr>
<td>UGJT</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>.505**</td>
</tr>
</tbody>
</table>

**p<.01

EIT : Elicited Imitation Test.
TGJT : Timed Grammaticality Judgment Test
UGJT : Untimed Grammaticality Judgment Test
MKT : Metalinguistic Knowledge Test
Table 16 Correlations among sub-measures of the tests

<table>
<thead>
<tr>
<th></th>
<th>EIT G</th>
<th>EIT UG</th>
<th>TGJT G</th>
<th>TGJT UG</th>
<th>UGJT G</th>
<th>UGJT UG</th>
<th>MKT(Part1)</th>
<th>MKT(Part2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT G</td>
<td>---</td>
<td>.622**</td>
<td>.212*</td>
<td>.110</td>
<td>.429**</td>
<td>.225*</td>
<td>.411**</td>
<td>.185</td>
</tr>
<tr>
<td>EIT UG</td>
<td>---</td>
<td>.276**</td>
<td>.109</td>
<td>.392**</td>
<td>.305**</td>
<td>.354**</td>
<td>.374**</td>
<td></td>
</tr>
<tr>
<td>TGJT G</td>
<td>---</td>
<td>-.128</td>
<td>.320**</td>
<td>-.015</td>
<td>.122</td>
<td>.123</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TGJT UG</td>
<td>---</td>
<td>.122</td>
<td>.198*</td>
<td>.237*</td>
<td>.250*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UGJT G</td>
<td>---</td>
<td></td>
<td>.116</td>
<td>.386**</td>
<td>.325**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UGJT UG</td>
<td>---</td>
<td></td>
<td></td>
<td>.410**</td>
<td>.083</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MKT (Part1)</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.424**</td>
<td></td>
</tr>
</tbody>
</table>

** p<.01 *p<.05

EIT : Elicited Imitation Test.
EIT G : Elicitated Imitation Test grammatical items
EIT UG : Elicitated Imitation Test ungrammatical items
TGJT : Timed Grammaticality Judgment Test
TGJT G : Timed Grammaticality Judgment Test grammatical items
TGJT UG : Timed Grammaticality Judgment Test ungrammatical items
UGJT : Untimed Grammaticality Judgment Test
UGJT G : Untimed Grammaticality Judgment Test grammatical items
UGJT UG : Untimed Grammaticality Judgment Test ungrammatical items
MKT : Metalinguistic Knowledge Test
5.2.2.4 Factor analyses of the testing instruments

‘Many researchers acknowledge the prominent role that factor analysis can play in efforts to establish construct validity’ (Roberts, 1999, p.2). According to Albright and Park (2009), factor analysis ‘is a statistical method used to find a small set of unobserved variables (also called latent variables, or factors) which can account for the covariance among a larger set of observed variables (also called manifest variables)’ (p.2).

5.2.2.4.1 Exploratory factor analysis of the sub-measures

Exploratory factor analysis serves the purpose of identifying the underlying or latent factors or constructs among the observed variables (Fabrigar et al., 1999) and it is data driven rather than theory driven (Sass & Schmitt, 2010). To consider the suitability of the EFA, several principles should be taken into account: (1) variables are intercorrelated; (2) Bartlett’s Test of Sphericity is significant; (3) Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) is greater than .50 (Fabrigar et al., 1999). Turning to the data in this study, the correlation analyses showed that the variables were intercorrelated. Also, Bartlett’s test of sphericity was significant (Sig. = .000) and KMO was greater than .50 (KMO = .681). Therefore, an exploratory factor analysis is appropriate for the data in the current study. The extraction method of Principal Axis Factoring (PAF) and the rotation method of Promax were selected to conduct this exploratory factor analysis. The reason for choosing PAF rather than Principal Component (PC) is that the goal of the EFA here was to ‘characterize patterns of covariation among observed variables’ (Widman, 1993, p.308) rather than simple data reduction. According to several researchers in the area of psychology or behaviour (e.g., Widman, 1993; Fabrigar et al., 1999), PAF which ‘accounts for correlations among variables’ is more suitable than PC, which emphasises data reduction and aims to ‘account for variance in variables’ (Fabrigar et al., 1999, p.275). Moreover, PAF is considered to provide a clearer pattern than PC. As aforementioned, the grammatical and ungrammatical items of the GJTs seemed to work differently and thus only the sub-measures were taken into consideration in this analysis.

Table 17 shows the results of the EFA and Figure 4 demonstrates the scree plot. Table 6 indicates that two factors were extracted without requesting a fixed-factor solution. As recommended by Kaiser (1974), a minimum eigenvalue of 1.0 was used as the criterion for identifying factors. A minimum loading of .40 was used as a criterion for identifying good performing items (Stevens, 2009). The eigenvalues of these two factors were both greater than 1. The EIT grammatical and ungrammatical items, the TGJT grammatical items and the
UGJT grammatical items loaded on Factor 1, while the TGJT ungrammatical items, the
UGJT ungrammatical items and the MKT (Part 1) loaded on Factor 2. Turning to the Scree
plot, although eight factors are revealed in Figure 4, it clearly shows that the line connecting
these eight factors went down sharply from the third factor, which indicated that the first two
factors could account for the majority of the variance.

Table 17 Exploratory factor analysis matrix for sub-measures without a fixed-factor
solution

<table>
<thead>
<tr>
<th>Component</th>
<th>Eigenvalues</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.910</td>
<td>36.381</td>
<td>36.381</td>
</tr>
<tr>
<td>2</td>
<td>1.309</td>
<td>16.357</td>
<td>52.738</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT G</td>
<td>.624</td>
<td>.109</td>
</tr>
<tr>
<td>EIT UG</td>
<td>.671</td>
<td>.124</td>
</tr>
<tr>
<td>TGJT G</td>
<td>.650</td>
<td>-.358</td>
</tr>
<tr>
<td>TGJT UG</td>
<td>-.241</td>
<td>.578</td>
</tr>
<tr>
<td>UGJT G</td>
<td>.582</td>
<td>.062</td>
</tr>
<tr>
<td>UGJT UG</td>
<td>.029</td>
<td>.488</td>
</tr>
<tr>
<td>MKT (Part 1)</td>
<td>.164</td>
<td>.632</td>
</tr>
<tr>
<td>MKT (Part 2)</td>
<td>.200</td>
<td>.356</td>
</tr>
</tbody>
</table>

Extraction Method: Principal axis factoring
Rotation Method: Promax with Kaiser Normalization
a. Rotation converged in 3 iterations
5.2.2.4.2 Confirmatory factor analysis of the testing instruments

5.2.2.4.2.1 CFA testing R. Ellis’s model of implicit and explicit knowledge

Confirmatory factor analysis (CFA) is often conducted when researchers have ‘an understanding of the constructs that underlie the data’ (Roberts, 1999, p.3). In contrast to EFA, CFA is theory or hypothesis driven rather than data driven. CFA allows researchers to test the hypothesis and the researchers can use their ‘knowledge of the theory, empirical research, or both’ to postulate ‘the relationship pattern a priori’ and then test ‘the hypothesis statistically’ (Suhr, 2005, p.1). Two CFAs were conducted here. One was conducted to test R. Ellis’s (2005, 2006, 2009) model¹. The other one was conducted based on the results gained from the correlation analyses and the EFA administered above.

In R. Ellis’s model, the maximum likelihood (ML) method was employed to estimate the model fitting of this sample (n=100). Figure 5 and Table 18 respectively report some important model fit indices. Chi-square ($\chi^2$) is the most common method of evaluating goodness-of-fit. A low $\chi^2$ value, indicating nonsignificance, would point to a good fit, while a significant $\chi^2$ value ($p<.05$) indicates the model is statistically unlikely to occur. This model had a non-significant $\chi^2$ value which indicated that it was acceptable. It should be further noted that a normed fit index value (NFI) of greater than .90 indicates a good model fit and that greater than .95 indicates a superior fit. Root mean square error of approximation (RMSEA) has also been regarded as one of the most informative criteria for evaluating model fit because it takes into account the error of approximation in the population (Byrne, 2001). It has been advised that values less than .05 indicate a good fit for the model, values as high
as .08 are considered an acceptable model fit, values ranging from .08 to .10 are considered a mediocre model fit, and those greater than .10 indicate a poor model fit (Byrne, 2001). Table 18 shows that the NFI was greater than .95 and RMSEA was less than .05 indicating this model fits the data in this study. The results of this CFA provide further support for the construct validity of the testing instruments. In R. Ellis’s model, the EIT and TGJT were thought to be the best measures of implicit knowledge, while the ungrammatical items in the UGJT and the MKT were considered the best measures of explicit knowledge. The results of the CFA indicated that R. Ellis’s model distinguishing measures of implicit and explicit knowledge worked quite well for the sample in the present study as well.

**Figure 5 CFA testing R. Ellis’s model**

![Diagram of CFA testing R. Ellis's model](image)

**Table 18 Summary of model fit**

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$ (p)</th>
<th>NFI</th>
<th>RMSEA</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit/explicit</td>
<td>.963(.326)</td>
<td>.979</td>
<td>.000</td>
<td>1</td>
</tr>
</tbody>
</table>

NFI=normed fit index; RMSEA=root mean square error of approximation

5.2.2.4.2.2 CFA testing an alternative model

Although the above CFA indicated that R. Ellis’s model of implicit and explicit knowledge worked quite well for the sample in the present study, it is still important to test an alternative
model by taking into account the results of the correlation analyses and the EFA. The results of those two analyses rendered the following hints and motivated me to test this alternative model: (1) the grammatical and ungrammatical items in the EIT were strongly correlated with each other and they loaded on the same factor in the EFA; (2) the grammatical and ungrammatical items in the TGJT and UGJT worked differently or measured different constructs; (3) MKT Part 2 loaded on both factors but loaded weakly on Factor 1 (r=.200) and moderately on Factor 2 (r=.356), while MKT Part 1 loaded strongly on Factor 2 (r=.632). Hint (1) implies that the grammatical and ungrammatical items of the EIT functioned in the same way and the EIT could be used as a whole in the following analysis. Hint (2) provided further support for the claim that grammatical and ungrammatical sentences in the GJTs worked differently as has been pointed out in many research and empirical studies (Gass, 1983; Hedgcock, 1993; Juffs, 2001; Ellis, 2005; Ellis & Loewen, 2007; Loewen, 2009). Finally, Hint (3) echoed R. Ellis’s initial intention when they designed MKT Part 1 and Part 2. These two parts were actually designed to measure different aspects of metalinguistic knowledge. In their study, Part 1 was designed to ‘measure knowledge of grammar rules’, while Part 2 was more likely to measure ‘the ability to match metalinguistic terms with exemplars of those terms in the context of a sentence’ (Elder, 2009, p.126).

Figure 6 and Table 19 show the results of the CFA. As mentioned above, values of the RMSEA less than .05 indicate a good fit for the model, values as high as .08 are considered an acceptable model fit, values ranging from .08 to .10 are considered a mediocre model fit, and those greater than .10 indicate a poor model fit (Byrne, 2001). Chen et al. (2008) also found that when the degrees of freedom are small and the sample size is not large (n≤100), a .05 cut-off value of the RMSEA sometimes tends to over-reject true population models. The $\chi^2$ and RMSEA values indicated that this model had an acceptable fit; however, the value for the NFI was lower than .90 indicating that this model did not work well for my sample. Therefore, R. Ellis’s model will be adopted to provide measures of implicit and explicit knowledge in the present study.
Table 19 Summary of model fit

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>NFI</th>
<th>RMSEA</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit/explicit</td>
<td>1.336(p=.220)</td>
<td>.888</td>
<td>.057</td>
<td>8</td>
</tr>
</tbody>
</table>

NFI=normed fit index; RMSEA=root mean square error of approximation

5.2.3 Implicit and explicit L2 knowledge

5.2.3.1 Descriptive statistics of measures concerning implicit and explicit knowledge

This part presents the descriptive statistics for the measures of implicit and explicit knowledge, including means and standard deviations of the percentage accuracy scores in order to answer research question 1. A reliability analysis was also conducted. As mentioned earlier, the EIT and TGJT were found to be the best measures of implicit knowledge, while the UGJT ungrammatical items and MKT were considered to be the best measures of explicit knowledge in this sample. Therefore, the two best measures of implicit knowledge were integrated into a single measure of implicit knowledge in order to provide a clearer picture of the students’ implicit knowledge. Similarly, the two best measures of explicit knowledge were conflated into one. Table 20 shows the results. It can be seen that the Cronbach’s alpha values were both satisfactory as $\alpha=.79$ for the measure of implicit knowledge and $\alpha=.80$ for...
the measure of explicit knowledge. The participants got much lower scores for implicit knowledge (M=.53) than they did for explicit knowledge (M=.71). Not much difference was found between the standard deviations of both measures (SD=.10 and .09 respectively).

Table 20 Descriptive statistics and reliability of the measures for implicit and explicit knowledge

<table>
<thead>
<tr>
<th>Implicit</th>
<th>Explicit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items</td>
<td>Mean</td>
</tr>
<tr>
<td>Year 1</td>
<td>102</td>
</tr>
</tbody>
</table>

5.2.3.2 Participants’ implicit and explicit knowledge

A Paired-samples T-test was then conducted to see whether there was a statistically significant difference between the participants’ scores for implicit and explicit knowledge. The results are presented below in Table 21 and Figure 7. There was a significant difference in the participants’ implicit and explicit knowledge (t[99]= -17.453, p=.000<.05). Figure 7 shows this difference visually. The horizontal axis stands for the number of the students. The vertical axis stands for the means of the measures of implicit and explicit knowledge. The blue line represents the students’ implicit knowledge, while their scores for explicit knowledge are represented by the red line. By and large, their scores on the measure of explicit knowledge were higher than those on the measure of implicit knowledge.

Table 21 Paired-samples T-test of first-year students’ implicit and explicit knowledge

<table>
<thead>
<tr>
<th></th>
<th>SEM</th>
<th>t</th>
<th>df</th>
<th>Sig.(2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit&amp;Explicit*Year 1</td>
<td>.010</td>
<td>-17.453</td>
<td>99</td>
<td>.000</td>
</tr>
</tbody>
</table>

SEM=Std. Error Mean
5.2.4 Summary of the main findings

This section reported the results of the various statistical analyses concerning implicit and explicit knowledge. The main findings can be summarised as follows:

1. The reliability analyses showed that all reliability alphas for the four tests (i.e., EIT, TGJT, UGJT and MKT) were satisfactory. In terms of the sub-measures, all alphas were satisfactory except those for the EIT UG and the MKT (Part1).

2. The results of the correlation analyses, EFA and CFA showed that R.Ellis’s (2005, 2006, 2009) model of implicit and explicit knowledge fits this part of the sample in this study as well, namely the EIT and TGJT were the best measures of implicit knowledge, and the UGJT UG and MKT were the best measures of explicit knowledge.

3. The correlation analyses and EFA also showed that the grammatical and ungrammatical items in the GJTs worked differently to some extent. The participants used more time to judge the grammatical items than the ungrammatical items in the TGJT. They also used rules more often while judging ungrammatical items than judging grammatical items in the UGJT. Different processes may be involved when the students judged the grammatical and ungrammatical items. This will be discussed later.

4. The results of the descriptive analysis showed that the participants achieved higher explicit knowledge scores than implicit knowledge scores.
5.3 Examining the relationship between implicit/explicit knowledge and general language proficiency

The first year students’ language proficiency was measured by the Oxford Placement Test (OPT). As mentioned in Chapter 4, this test contains two parts—Listening and Grammar. The percentage accuracy scores were calculated. In order to answer research question 2 regarding the relationship between Chinese university freshmen’s implicit/explicit knowledge of English and their general English proficiency, a Pearson Product correlation analysis and three multiple regression analyses were carried out. Tables 22, 23, 24 and 25 show the results.

5.3.1 Correlations between implicit/explicit knowledge of English and general English proficiency

As mentioned earlier, a correlation coefficient ranging from .10 to .29 is thought to represent a weak or small correlation; a correlation coefficient ranging from .30 to .49 is considered a moderate correlation; and a correlation coefficient of .50 or larger is thought to represent a strong or large correlation (Cohen, 1988 and 2003). Therefore, from Table 22 below, it can be seen that general English proficiency correlated significantly with both implicit and explicit knowledge (r=.443 and r= .450), with both relationships moderate (r< .49). Implicit knowledge was found to be correlated significantly with the OPT Listening as expected since listening can be expected to draw more heavily on implicit knowledge, but no significant relationship was found between explicit knowledge of English and listening proficiency. Explicit knowledge was found to be correlated strongly with the OPT Grammar (r=.542>.50), while the relationship with implicit knowledge was only moderate (r=.425<.49). Compared with Han & Ellis (1998) and Elder & Ellis’s (2009) results, similarities and differences could be found although the language proficiency tests used in their studies and in the present study were different. Generally, similar to their results, both implicit and explicit knowledge were found to be correlated with general language proficiency and a stronger relationship was found between explicit knowledge and general English proficiency. However, in this study explicit knowledge was found to be nonsignificantly related to the OPT Listening, which differs from Elder and Ellis’s (2009) study. In their study, explicit knowledge was found to be a predictor of IELTS Listening.
Table 22 Correlation matrix

<table>
<thead>
<tr>
<th></th>
<th>General Proficiency (OPT)</th>
<th>Listening (OPT)</th>
<th>Grammar (OPT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit</td>
<td>.443**</td>
<td>.315**</td>
<td>.425**</td>
</tr>
<tr>
<td>Explicit</td>
<td>.450**</td>
<td>.185</td>
<td>.542**</td>
</tr>
</tbody>
</table>

**p<.01

OPT: Oxford Placement Test

5.3.2 Multiple regression analyses for implicit/explicit knowledge and language proficiency

On the basis of the results from the correlation analysis, three stepwise multiple regression analyses were carried out to further examine the relationships between implicit/explicit knowledge of English and general English proficiency, the OPT Grammar and the OPT Listening by investigating whether the students’ scores on implicit and explicit knowledge of English predicted their scores on English proficiency, the OPT Grammar and the OPT Listening.

For the first multiple regression analysis, English proficiency was considered as the dependent variable, while implicit and explicit knowledge of English were the independent variables. Table 12 shows the results. Clearly, the scores on explicit and implicit knowledge predicted the scores for general English proficiency (F=18.688, p=.000<.05). The value for the multiple R was .527. R Square (R2) indicates the proportion of the variance in the dependent variable which is accounted for by the model. However, it ‘tends to somewhat over-estimate the success of the model when applied to the real world, so an Adjusted R Square value is calculated which takes into account the number of variables in the model and the number of observations (participants) our model is based on’ (Brace, Kemp & Snelgar, 2006,p.209). Accordingly, it can be seen from Table 23 that implicit and explicit knowledge accounted for 26.3% of the variance in the English proficiency scores in this sample. This table also shows the respective beta values of implicit and explicit knowledge. ‘Beta value is a measure of how strongly each predictor variable influences the dependent variable’ and ‘the higher the beta value the greater the impact of the predictor variable on the dependent variable’ (Brace, Kemp & Snelgar, 2006,p. 208). Hence, in this sample, explicit knowledge was a slightly better predictor of English proficiency (Beta=.317, p=.001).
Table 23 Multiple regression analysis of knowledge of English and general English proficiency

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta</th>
<th>t</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicit</td>
<td>.317</td>
<td>3.311</td>
<td>.001</td>
</tr>
<tr>
<td>Implicit</td>
<td>.305</td>
<td>3.181</td>
<td>.002</td>
</tr>
<tr>
<td>R=.527</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²=.278</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F=18.688</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Method: Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100)
Predictors: Explicit knowledge, Implicit knowledge
Dependent Variable: General English proficiency

Table 24 presents the results of the second multiple regression analysis. The OPT Grammar was the dependent variable, while implicit and explicit knowledge of English were the independent variables. Table 24 indicates that the scores for both explicit and implicit knowledge predicted the scores for English grammatical proficiency (F=24.739, p=.000<.05). The value for the multiple R when predicting English grammatical proficiency from implicit and explicit knowledge was .581. The Adjusted R² indicates that the model of implicit and explicit knowledge accounted for 33.8% of the variance in the scores on English grammar in this sample. This table indicates that explicit knowledge was a better predictor of grammatical proficiency (Beta=.441, p=.000<.05).

Table 24 Multiple regression analysis of knowledge of English to the OPT Grammar

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta</th>
<th>t</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicit</td>
<td>.441</td>
<td>4.802</td>
<td>.000</td>
</tr>
<tr>
<td>Implicit</td>
<td>.232</td>
<td>2.530</td>
<td>.013</td>
</tr>
<tr>
<td>R=.581</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²=.338</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F=24.739</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Method: Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100)
Predictors: Explicit knowledge, Implicit knowledge
Dependent Variable: General English proficiency

Table 25 presents the results of the third multiple regression analysis. The OPT Listening was the dependent variable, while implicit and explicit knowledge of English were the independent variables. Table 25 reveals that only the implicit knowledge scores predicted the scores for English listening proficiency (F=1.796, p=.001<.05). The value for the multiple R
when predicting English listening proficiency from implicit knowledge was .315. The Adjusted R² indicates that the model of implicit knowledge accounted for 9% of the variance in the scores on English listening in this sample.

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta</th>
<th>t</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit</td>
<td>.315</td>
<td>13.478</td>
<td>.001</td>
</tr>
<tr>
<td>R=.315</td>
<td>R²=.099</td>
<td>Adjusted</td>
<td>F=1.796</td>
</tr>
<tr>
<td></td>
<td>R²=.090</td>
<td>Sig.=.001</td>
<td></td>
</tr>
</tbody>
</table>

Note. Method: Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100)

Figure 8 (a-c) shows the corresponding scatter plot tests of the three multiple regression models for general English proficiency, the OPT Grammar and the OPT Listening respectively. According to Allen and Bennett (2008), ‘the Normal P-P (Probability) Plot of Regression Standardized Residuals can be used to assess the assumption of normally distributed residuals. If the points cluster reasonably tightly along the diagonal line (as they do here), the residuals are normally distributed. Substantial deviations from the diagonal may be cause[d] for concern.’ (p. 183). The assumption of error (as residuals) being normally distributed is an important assumption. The probability values on the coefficients and coefficient confidence intervals are based on this assumption. From Figure 8(a-c), it can be seen that the residuals were normally distributed.

**Figure 8-a Normal P-P plot of regression standardized residual (Proficiency)**
5.3.3 Summary of the main findings

This section reported the results of the Pearson’s correlation analyses and multiple regression analyses regarding the relationship between implicit/explicit knowledge and general language proficiency. The main findings can be summarised as follows:

1. The results of the correlation analysis showed that both implicit and explicit knowledge correlated significantly with general English proficiency (i.e., the OPT). The Stepwise multiple regression analysis showed that explicit knowledge together with implicit knowledge predicted the scores of general English proficiency.

2. Implicit and explicit knowledge were also found to correlate significantly with the OPT Grammar. The scores of implicit and explicit knowledge predicted the scores of the
OPT Grammar. Explicit knowledge was the better predictor of OPT Grammar shown in the stepwise multiple regression analysis.

3. Implicit knowledge was found to have a moderate positive relationship with OPT Listening, while no significant relationship was found between explicit knowledge and OPT Listening. According to the results of the stepwise multiple regression analysis, only implicit knowledge was found to predict the OPT Listening.

5.4 Exploring the individual difference factors contributing to the difference in implicit and explicit knowledge of English

This part presents the results of a series of statistical analyses designed to answer research question 3 concerning what factors can account for differences in the Chinese first year university students’ (a) implicit and (b) explicit knowledge of English. As mentioned in Chapter 2, four individual difference variables (i.e., learner beliefs, language learning motivation, foreign language anxiety and language analytic ability) were considered in this study.

5.4.1 Descriptive statistics and reliability of the individual measures

Three questionnaires and a language analytic ability test were conducted to investigate the four individual difference variables. All questionnaires were translated into Chinese to ensure the participants could understand each statement without any misunderstanding. As stated in Chapters 2 and 3, learner beliefs were divided into three sub-types (i.e., beliefs about analytic learning, beliefs about experiential learning and affective states) and language learning motivation was divided into seven sub-types (i.e., intrinsic interest, immediate achievement, learning situation, going abroad, social responsibility, individual development and information medium). Therefore, this section presents the results for these sub-types as well. Table 26 shows the means, standard deviations, ranges and reliability of the different measures. As can be seen in this table, the Cronbach’s alpha values varied between .77 for the learner beliefs questionnaire and .70 for the language analysis test indicating the alpha scores of all questionnaires and the language analysis test were satisfactory as they were greater than .7. In terms of the sub-measures, the table indicates that the alphas varied between .84 for Learning Situation (M3) to .38 for Affective States (B3). The reliability of all the measures was satisfactory except for Affective States (B3, α=.38) and Information Medium (M7, α=.45).
Table 26 Descriptive statistics and reliability of all questionnaires and language analysis test (B refers to Learner Beliefs, M refers to Motivation) (n=100)

<table>
<thead>
<tr>
<th>Measures</th>
<th>Items</th>
<th>Mean</th>
<th>Max.</th>
<th>Min.</th>
<th>SD</th>
<th>Reliability (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beliefs</td>
<td>27</td>
<td>.72</td>
<td>.93</td>
<td>.55</td>
<td>.07</td>
<td>.77</td>
</tr>
<tr>
<td>Motivation</td>
<td>30</td>
<td>.65</td>
<td>.83</td>
<td>.41</td>
<td>.07</td>
<td>.75</td>
</tr>
<tr>
<td>Anxiety</td>
<td>33</td>
<td>.57</td>
<td>.75</td>
<td>.39</td>
<td>.07</td>
<td>.74</td>
</tr>
<tr>
<td>Analytic ability</td>
<td>14</td>
<td>.75</td>
<td>.93</td>
<td>.21</td>
<td>.18</td>
<td>.70</td>
</tr>
<tr>
<td>Sub-types of beliefs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analytic Learning(B1)</td>
<td>9</td>
<td>.70</td>
<td>.93</td>
<td>.42</td>
<td>.10</td>
<td>.65</td>
</tr>
<tr>
<td>Experiential Learning (B2)</td>
<td>8</td>
<td>.78</td>
<td>1.00</td>
<td>.50</td>
<td>.10</td>
<td>.78</td>
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<tr>
<td>Affective States(B3)</td>
<td>4</td>
<td>.72</td>
<td>1.00</td>
<td>.35</td>
<td>.12</td>
<td>.38</td>
</tr>
<tr>
<td>Sub-types of motivation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrinsic Interest (M1)</td>
<td>6</td>
<td>.72</td>
<td>1.00</td>
<td>.20</td>
<td>.16</td>
<td>.81</td>
</tr>
<tr>
<td>Immediate Achievement (M2)</td>
<td>5</td>
<td>.55</td>
<td>.84</td>
<td>.20</td>
<td>.16</td>
<td>.67</td>
</tr>
<tr>
<td>Learning Situation(M3)</td>
<td>5</td>
<td>.50</td>
<td>.88</td>
<td>.20</td>
<td>.17</td>
<td>.84</td>
</tr>
<tr>
<td>Going Abroad(M4)</td>
<td>3</td>
<td>.62</td>
<td>1.00</td>
<td>.20</td>
<td>.15</td>
<td>.72</td>
</tr>
<tr>
<td>Social Responsibility(M5)</td>
<td>3</td>
<td>.72</td>
<td>1.00</td>
<td>.20</td>
<td>.16</td>
<td>.70</td>
</tr>
<tr>
<td>Individual Development(M6)</td>
<td>5</td>
<td>.81</td>
<td>1.00</td>
<td>.20</td>
<td>.14</td>
<td>.80</td>
</tr>
<tr>
<td>Information Medium(M7)</td>
<td>2</td>
<td>.61</td>
<td>1.00</td>
<td>.30</td>
<td>.15</td>
<td>.45</td>
</tr>
</tbody>
</table>

5.4.2 Correlation and multiple regression analyses

5.4.2.1 Analyses for implicit/explicit knowledge

A Pearson Product correlation analysis and two subsequent stepwise multiple regression analyses were carried out to explore the relationship between the four individual variables and implicit/explicit knowledge of English. Table 27 and Table 28(a-b) respectively show the results of these analyses. Three significant correlations were found between the IDs and implicit/explicit knowledge of English in this sample. Foreign language anxiety and language analytic ability were found to correlate significantly with implicit knowledge of English. Foreign language anxiety was found to have a moderate negative relationship with implicit knowledge, while language analytic ability had a weak positive relationship with it. Only learner beliefs about language learning were found to have a significant positive relationship with explicit knowledge. However, the correlation coefficient was quite weak (r=.274).
The results of the multiple regression analyses are shown in Table 28 (a-b). From Table 28-a, it can be seen that although no significant relationship was found between language motivation and implicit knowledge in the correlation analysis, it was included as a predictor of implicit knowledge in the multiple regression analysis. Therefore, foreign language anxiety and language analytic ability together with language learning motivation significantly predicted the scores for implicit knowledge (\(F=7.392, \ p=.000<.05\)) indicating that in this sample of first year English majors, students who had higher foreign language anxiety, lower language analytic ability and lower motivation tended to have less implicit knowledge than these learners who had lower foreign language anxiety, higher language analytic ability and higher motivation. However, this model only accounted for 18.8% of the variance in implicit knowledge. As mentioned earlier, the ‘beta value is a measure of how strongly each predictor variable influences the dependent variable’ and ‘the higher the beta value the greater the impact of the predictor variable on the dependent variable’ (Brace, Kemp & Snelgar, 2006, p. 208). Thus language anxiety was found to be the best predictor of implicit knowledge with a beta of .354.

Turning to explicit knowledge, learner beliefs about language learning was found to be the only predictor of explicit knowledge of English (\(F=7.972, \ p=.006<.05\)). Table 28-b shows the results. However, this model only accounted for 6.5% of the variance in explicit knowledge scores. Figure 9 (a-b) shows the corresponding scatter plot tests of the two multiple regression models concerning the involvement of IDs in implicit and explicit knowledge. As mentioned earlier, this kind of plot shows visually whether the residuals are normally distributed. From Figure 9 (a-b), it can be seen that the residuals were normally distributed.

<table>
<thead>
<tr>
<th></th>
<th>Implicit</th>
<th>Explicit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner Beliefs</td>
<td>.152</td>
<td>.274**</td>
</tr>
<tr>
<td>Motivation</td>
<td>.104</td>
<td>-.043</td>
</tr>
<tr>
<td>Language Anxiety</td>
<td>-.306**</td>
<td>-.166</td>
</tr>
<tr>
<td>Language Analytic Ability</td>
<td>.231*</td>
<td>.148</td>
</tr>
</tbody>
</table>

** p<.01 *p<.05
Table 28-a Stepwise multiple regression of IDs to implicit knowledge

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta</th>
<th>t</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language Anxiety</td>
<td>-.354</td>
<td>-3.747</td>
<td>.000</td>
</tr>
<tr>
<td>Analytic Ability</td>
<td>.251</td>
<td>2.717</td>
<td>.008</td>
</tr>
<tr>
<td>Motivation</td>
<td>.206</td>
<td>2.169</td>
<td>.033</td>
</tr>
<tr>
<td>R=.433</td>
<td>R²=.188</td>
<td>Adjusted R²=.162</td>
<td>F=7.392 Sig.=.000</td>
</tr>
</tbody>
</table>

Table 28-b Stepwise multiple regression of IDs to explicit knowledge

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta</th>
<th>t</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner Beliefs</td>
<td>.274</td>
<td>2.824</td>
<td>.006</td>
</tr>
<tr>
<td>R=.274</td>
<td>R²=.075</td>
<td>Adjusted R²=.066</td>
<td>F=7.972 Sig.=.006</td>
</tr>
</tbody>
</table>

Figure 9-a Normal P-P plot of regression standardized residual (Implicit Knowledge)

Figure 9-b Normal P-P plot of regression standardized residual (Explicit Knowledge)
5.4.2.2 Analyses involving ID sub-types and implicit/explicit knowledge

Learner beliefs were divided into three sub-types (i.e., beliefs about analytic learning, beliefs about experiential learning and affective states) and language learning motivation was divided into seven sub-types (i.e., intrinsic interest, immediate achievement, learning situation, going abroad, social responsibility, individual development and information medium). This section is intended to examine the relationships between these sub-types of learner beliefs/ language learning motivation and implicit/explicit knowledge. Table 29 and Table 30(a-b) show the results. From Table 29, only three significant relationships were found between the sub-types and implicit knowledge of English. Learner beliefs about experiential learning and beliefs regarding affective states (e.g., confidence and self-efficacy) were found to be correlated positively with implicit knowledge ($r= .197$ and $.313$) indicating either weak or moderate relationships. Also, ‘intrinsic interest’ was found to have a positive relationship with implicit knowledge. However, the relationship was also relatively weak ($r=.292$). More significant relationships were found between the sub-types and explicit knowledge of English. Two weak positive relationships were found between beliefs about analytic learning/ experiential learning and explicit knowledge ($r=.238$ and $.261$). Three sub-types of language learning motivation were related to explicit knowledge. They were: ‘immediate achievement’, ‘learning situation’ and ‘information medium’. ‘Immediate achievement’ and ‘learning situation’ were found to be negatively related with explicit knowledge ($r=-.198$ and -.220), while ‘information medium’ had a positive relationship with explicit knowledge ($r=.206$). However, all these relationships were relatively weak. Table 30-a reveals that learner beliefs regarding affective states and ‘intrinsic interest’ were found to be predictors of the scores for implicit knowledge ($F=9.115$, $p=.000<.05$). However, Table 30-b shows that beliefs about experiential learning together with motivation concerning going abroad and information medium were predictors of the scores for explicit knowledge ($F=6.662$, $p=.000<.05$). Figure 10 (a-b) shows the corresponding scatter plot tests of the two multiple regression models concerning the sub-types of the IDs for implicit and explicit knowledge. It can be seen from this figure that the residuals were normally distributed.

The results indicated that the students who had stronger beliefs about themselves (e.g., confidence or self-efficacy) and who had stronger intrinsic interest in learning English tended to have higher levels of implicit knowledge than their peers who lacked such beliefs and motivation. In contrast, the students who had stronger beliefs about experiential learning (e.g., they allocated more importance to learning by using the target language for communicative
purposes), who had weaker motivation regarding going abroad (e.g., for further study) and who had stronger motivation for using English as an instrument to get information tended to have higher levels of explicit knowledge than their peers who did not have such beliefs and motivation. It should also be noted that although beliefs about analytic learning did not appear to be one of the predictors of explicit knowledge, it had positive relationship with it, which may indicate that students who allocated more importance to the explicit study of the target language as a linguistic and communicative system tended to have higher levels of explicit knowledge than their peers who did not have such beliefs.

Table 29 Correlations between ID sub-measures and implicit/explicit knowledge

<table>
<thead>
<tr>
<th>Sub-types of beliefs</th>
<th>Implicit</th>
<th>Explicit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytic Learning(B1)</td>
<td>-.014</td>
<td>.238*</td>
</tr>
<tr>
<td>Experiential Learning (B2)</td>
<td>.197*</td>
<td>.261**</td>
</tr>
<tr>
<td>Affective States(B3)</td>
<td>.313**</td>
<td>.178</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sub-types of motivation</th>
<th>Implicit</th>
<th>Explicit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic Interest (M1)</td>
<td>.292**</td>
<td>.147</td>
</tr>
<tr>
<td>Immediate Achievement(M2)</td>
<td>-.187</td>
<td>-.198*</td>
</tr>
<tr>
<td>Learning Situation(M3)</td>
<td>-.151</td>
<td>-.220*</td>
</tr>
<tr>
<td>Going Abroad(M4)</td>
<td>.092</td>
<td>-.185</td>
</tr>
<tr>
<td>Social Responsibility(M5)</td>
<td>.152</td>
<td>.173</td>
</tr>
<tr>
<td>Individual Development(M6)</td>
<td>.084</td>
<td>.115</td>
</tr>
<tr>
<td>Information Medium(M7)</td>
<td>.097</td>
<td>.206*</td>
</tr>
</tbody>
</table>

** p<.01 *p<.05

Table 30-a Stepwise multiple regression for IDs and implicit knowledge

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta</th>
<th>t</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective States(B3)</td>
<td>.274</td>
<td>2.902</td>
<td>.005</td>
</tr>
<tr>
<td>Intrinsic Interest (M1)</td>
<td>.248</td>
<td>2.629</td>
<td>.010</td>
</tr>
<tr>
<td>R=.398</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²=.158</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R²=.141</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F=9.115 Sig.=.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 30-b Stepwise multiple regression for IDs and explicit knowledge

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta</th>
<th>t</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiential Learning (B2)</td>
<td>.251</td>
<td>2.603</td>
<td>.011</td>
</tr>
<tr>
<td>Going Abroad (M4)</td>
<td>-.307</td>
<td>-3.110</td>
<td>.002</td>
</tr>
<tr>
<td>Information Medium (M7)</td>
<td>.242</td>
<td>2.410</td>
<td>.018</td>
</tr>
</tbody>
</table>

R=.415 \( R^2= .172 \) \(\text{Adjusted } R^2= .146 \) \( F=6.662 \) Sig.=.000

Figure 10-a Normal P-P plot of regression standardized residual (Implicit Knowledge)

![Normal P-P plot of regression standardized residual (Implicit Knowledge)](image)

Figure 10-b Normal P-P plot of regression standardized residual (Explicit Knowledge)

![Normal P-P plot of regression standardized residual (Explicit Knowledge)](image)

5.4.3 Summary of the main findings

This section reported the results of the Pearson correlation and multiple regression analyses to explore what individual difference variables contributed to the participants’ differences in implicit and explicit knowledge. The main findings can be summarised as follows:
1. The results of the correlation analyses regarding the IDs and implicit/explicit knowledge showed that language anxiety (negatively) and language analytic ability (positively) were found to correlate significantly with implicit knowledge, while learner beliefs about language learning correlated significantly with explicit knowledge. However, the relationships were either weak or moderate.

2. The results of the correlation analyses concerning the sub-types of the IDs and implicit/explicit knowledge revealed that the learner beliefs about affective states and the intrinsic interest were found to correlate moderately and positively with implicit knowledge, while one type of learner beliefs (i.e., analytic ability) and three types of motivation (i.e., immediate achievement, learning situation and information medium) were found to correlate significantly with explicit knowledge. ‘Immediate achievement’ and ‘learning situation’ were found to correlate negatively with explicit knowledge.

3. The results of the multiple regression analyses showed that language anxiety and language analytic ability together with language learning motivation predicted implicit knowledge, while only learner beliefs about language learning predicted explicit knowledge. Language anxiety was found to be the best predictor (negative) of implicit knowledge.

4. Turning to the sub-types of the IDs, beliefs about affective states and ‘intrinsic interest’ predicted implicit knowledge, while beliefs about experiential learning and motivation of going abroad/ information medium predicted explicit knowledge. Motivation of going abroad was related negatively to explicit knowledge. It should also be noted that beliefs about analytic learning had a positive relationship with explicit knowledge.

5.5 Discussion

5.5.1 Introduction
This part offers interpretations of the findings regarding the extent of the first year students’ implicit and explicit knowledge of English. It then moves on to a discussion of the relationship between these two types of knowledge and English proficiency. It concludes with a discussion of the individual difference variables which can help explain the differences in the students’ implicit and explicit knowledge.
The same four tests as in R. Ellis (2005, 2006, 2009) were employed in this study—the EIT, the TGJT, the UGJT and the MKT for measuring the first year English majors’ implicit and explicit knowledge of English. It did not include the Oral Narrative Production Test which was used in R. Ellis’s study as a measure of implicit knowledge for practical reasons. I was the only investigator for this study and it involved a large number of tests for measuring L2 knowledge, L2 proficiency and individual difference variables. The Oral Narrative Production Test was excluded because it would have been very time consuming to administer and data-analyse this test.

Sections 5.5.2 and 5.5.3 discuss the reliability and the validity of the measures for implicit and explicit knowledge respectively. Section 5.5.4 discusses the extent of the Chinese university first year English majors’ implicit and explicit knowledge of English. Section 5.5.5 discusses the findings relating to the relationship between these two types of knowledge and their English proficiency, while Section 5.5.6 provides a discussion of the individual difference variables which are related to the students’ implicit and explicit knowledge.

5.5.2 Reliability of the measures

Although the overall reliability values of the tests were very satisfactory, the values for some sub-parts were relatively low ranging from .43 for the MKT Part 1 to .49 for the EIT ungrammatical items. There are several possible reasons for the low reliability values of these two parts. One of the reasons might be the fact of there being fewer items in the tests (Yang, 1992; Bachman, 2004). The two parts both had 17 items, the same as those of the EIT grammatical items but only accounted for half of the items in other sub-parts. Another reason might be the low population variance of the test scores (Yang, 1992; Bachman, 2004). Compared with the EIT grammatical items, these two parts (i.e., EIT ungrammatical and MKT Part 1) had a smaller population variance of the test scores, as reflected in the standard deviations (see Table 13 in this chapter). Guessing might be also one of the reasons contributing to the low reliability of the MKT Part 1 since this part presented test-takers with 17 ungrammatical sentences and required them to select the rule that best explained each error out of four choices provided. This type of multiple-choice test gave the students a 25% chance of getting the right answer and thus guessing might have played a very important role when the participants did not understand a particular item in this test.
Compared with the reliability measures in R. Ellis’s (2009) study, this study obtained lower Cronbach’s alpha values. Table 31 shows the comparison of the figures in R. Ellis(2009) and the present study. The lower Cronbach values for the four tests can be probably explained by the fact that the participants in this study were more homogeneous in terms of English proficiency compared with those in R. Ellis’s study. The participants in their study had mixed proficiency. Cronbach’s alpha is a function of the population variance of the test scores (Bachman, 2004; Brown, 2005). According to the formula, the larger the variance of the test scores, the higher the value of Cronbach’s alpha. The lower alpha values in this study can be explained by the more uniform population variance of the test scores as evident in the smaller standard deviations.

<table>
<thead>
<tr>
<th>R. Ellis (2009)</th>
<th>Present Study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cronbach’s Alpha (α)</strong></td>
<td><strong>SD</strong></td>
</tr>
<tr>
<td>EIT</td>
<td>.88</td>
</tr>
<tr>
<td>TGJT</td>
<td>.81</td>
</tr>
<tr>
<td>UGJT</td>
<td>.83</td>
</tr>
<tr>
<td>MKT</td>
<td>.90</td>
</tr>
</tbody>
</table>

Source: R. Ellis (2009, p.49)

5.5.3 Validity of the measures
This part discusses the validity of each measure first and then moves on to a discussion of the construct validity of the measures in terms of implicit and explicit knowledge. R. Ellis (2005, 2009) suggested several design features for operationalising implicit/explicit knowledge and designed several tests as measures of implicit/explicit knowledge accordingly. Later, Erlam (2006, 2009), Loewen (2009) and Elder (2009) conducted studies to validate each test as a measure of implicit and explicit knowledge respectively. The present study also provides following evidence for the validity of these tests.

5.5.3.1 Validity of the EIT
Erlam (2006, 2009) conducted a validating study of the Elicited Imitation Test as a measure of implicit knowledge. She validated this test in two ways: (1) comparing the performance of
English speakers and L2 learners of English on this test, and (2) examining the reconstructive nature of this test. The underlying idea of comparing the performance of native English speakers and L2 learners was to see whether they outperformed L2 learners in the test because native English speakers can be expected to have greater implicit knowledge than L2 learners and thus should perform much better in this test. Erlam (2006, 2009) reported the native English speakers performed much better than L2 learners in the EIT, which provided evidence for the validity of this test as a measure of implicit knowledge. In terms of the reconstructive nature of this test, it is assumed that this test ‘requires a primary focus on meaning rather than on form and it would include some delay between the presentation and repetition of the stimulus’ (Erlam, 2009, p.72). The results of Erlam’s (2006, 2009) study suggested that the EIT was reconstructive. The study reported in this thesis did not involve native speakers of English. However, when comparing the performance of the L2 English learners in the present study to that of the native English speakers in Erlam’s study, it could be seen that the former had much lower scores on the EIT (both grammatical/ungrammatical items) than the latter, suggesting that this test provides a valid measure of implicit knowledge.

In addition, the participants focused on meaning first and also were required to correct the ungrammatical sentences without being told they were ungrammatical, which is also indicative of the ‘reconstructive’ nature of the EIT. Table 32 below shows the scores of the native English speakers in Erlam’s (2006, 2009) study and those of the L2 learners in the present study.

**Table 32 Comparison of the performances**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT G</td>
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<td>.55</td>
</tr>
<tr>
<td>EIG UG</td>
<td>.91</td>
<td>.32</td>
</tr>
<tr>
<td>EIT Total</td>
<td>.94</td>
<td>.44</td>
</tr>
</tbody>
</table>

However, it might be argued that memorisation played a role in the EIT because the participants got lower scores for the ungrammatical items than for the grammatical ones, which suggests this test was not ‘reconstructive’. Several participants in the present study (around 15) were informally asked in Chinese to retrospect whether or not they memorised each sentence in the EIT and their comments suggested that they found memorisation very difficult when they did the test:
This comment suggested that this participant did have problems with memorisation when she did this test and thus supports the ‘reconstructive’ feature of this test. One possible explanation for why the participants got lower marks on the ungrammatical items than on the grammatical ones is that ‘priming’ may have played a role. Foreign language learners’ interlanguage is variable. They sometimes produce grammatical sentences correctly and sometimes incorrectly. If they receive a sentence with the correct form, that may prime the production of the correct form. However, if they receive a sentence with the incorrect form, that may prime production of the incorrect form unless they base their response on knowledge of the correct form. In other words, the correct forms provided them more opportunities to produce sentences correctly than the incorrect forms.

In addition, the participants in the present study had lower scores in this test (M=0.44) compared with the participants in R. Ellis’s (2009) study (M=0.51). This also points to the validity of this test as a measure of implicit knowledge because the participants in this study were expected to perform worse in this test. The participants reported in their biodata questionnaires that they had no experience of staying in an English-speaking country. They had little experience of communicating with native English speakers in English and the instruction they received before entering university was mainly classroom, form-based and exam-directed. However, many of the participants in R. Ellis’s (2009) study had been staying in an English speaking country (i.e., New Zealand) for almost two years; they had had more exposure to English use compared to the participants in this study.

5.5.3.2 Validity of the GJTs
Loewen (2009) compared the native English speakers and L2 English learners in terms of their performances on the TGJT and UGJT in order to examine the validity of these two tests
as respective measures of implicit and explicit knowledge. He also made a comparison between the two groups’ use of time on the TJGT. He concluded that the native English speakers ‘were more accurate and faster in their Judgments, given their implicit knowledge of their L1’ (Loewen, 2009, p.108). The present study did not involve native English speaker participants; however, when comparing the performance of the L2 English learners to that of the native English speakers in Loewen’s study, it can be seen that the former obtained notably lower scores in all the implicit measures. However, there was little difference in their scores on the measures of explicit knowledge (i.e., the UGJT, UGJT G, UGJT UG). The native speakers were also found to be faster than the L2 learners in their Judgments (M=2.20s and 2.41s). These findings can be interpreted as demonstrating the construct validity of the GJTs because ‘participants with arguably high levels of implicit knowledge (e.g., the L1 speakers) did significantly better on the test that was hypothesized to favour the use of implicit knowledge’ (Loewen, 2009, p.109). Table 33 below shows the performances of the native English speakers in Loewen’s (2009) study and those of the L2 learners in the present study.

### Table 33 Comparison of the performances

<table>
<thead>
<tr>
<th></th>
<th>Loewen (2009)</th>
<th>Present study</th>
</tr>
</thead>
<tbody>
<tr>
<td>TGJT G</td>
<td>.91</td>
<td>.69</td>
</tr>
<tr>
<td>TGJT UG</td>
<td>.69</td>
<td>.33</td>
</tr>
<tr>
<td>TGJT Total</td>
<td>.80</td>
<td>.51</td>
</tr>
<tr>
<td>UGJT G</td>
<td>.98</td>
<td>.85</td>
</tr>
<tr>
<td>UGJT UG</td>
<td>.95</td>
<td>.87</td>
</tr>
<tr>
<td>UGJT Total</td>
<td>.96</td>
<td>.86</td>
</tr>
<tr>
<td>Time Use on the TGJT</td>
<td>2.20(seconds)</td>
<td>2.41(seconds)</td>
</tr>
</tbody>
</table>

In addition, the participants’ better performance on the UGJT than on the TGJT provides further evidence for the validity of the two GJTs for this study. The TGJT was hypothesised to favour participants with higher levels of implicit knowledge, while the UGJT encouraged the use of explicit knowledge. The TGJT is a speeded test with time pressure on each sentence. Arguably, the time pressure of the TGJT made it difficult for learners to draw on their explicit knowledge and they may have lacked the implicit knowledge needed for this test. The UGJT, on the other hand, is an unspeeded test without any time limit on each sentence and thus allowed the participants to draw on their explicit knowledge. Therefore, it
would be expected that L2 learners, particularly those with extensive amounts of classroom, form-based and exam-directed instruction such as those in the present study, would perform better on the test that favours the use of explicit knowledge. The participants’ much lower scores on the TGJT (M=.51) than on the UGJT (M=.86) can be explained in this way.

In Loewen’s (2009) validating study, it was found that the participants performed significantly better on the grammatical items of the TGJT (M=.259 and M=.113), but their performance on the grammatical and ungrammatical items of the UGJT hardly differed (M=.284 and M=.277). This study reported almost the same result (i.e., the first year English majors achieved much higher scores on the grammatical items (M=.69) than on the ungrammatical ones (M=.33) in the TJGT), but their performance on the grammatical and ungrammatical items of the UGJT hardly differed (M=.85 and M=.87). A possible explanation for the results of both studies can be found in the three steps that learners may undergo when completing a GJT (R. Ellis, 2004): (1) Semantic processing (i.e., understanding the meaning of the sentence), (2) Noticing (i.e., searching to establish if something is formally incorrect in the sentence) and (3) Reflecting (i.e., considering what is incorrect about the sentence and, possibly, why it is incorrect). L2 learners must process semantically in order to understand each sentence first. Then learners need to notice if there are any ungrammatical elements. Learners may stop searching and make their judgment at this point or they may continue to search until they are sure there is nothing ungrammatical. However, if learners detect ungrammaticality, they may reflect in order to determine what is incorrect in the sentence. In the UGJT, the participants had plenty of time to go through all three steps for both grammatical and ungrammatical items. Hence, we would not expect to see large differences in their Judgments of the grammatical and ungrammatical sentences. However, in the TJGT, the learners did not have unlimited time and thus they might have had time for only steps 1 and 2, which would allow them to judge a grammatical sentence. However, it was unlikely that they had time step 3 to reflect on what was incorrect (which would have required more time). Thus, no time to reflect may have reduced their ability to judge the ungrammatical sentence correctly, as Loewen (2009) found. The difference in the scores for the grammatical and ungrammatical items of the GJT s also indicates the importance of time pressure, which is one of the most important design features in tests of implicit knowledge, thus providing further support for the validity of the TGJT and UGJT as separate measures of implicit and explicit knowledge.
In Loewen’s (2009) study, the participants’ response times for the grammatical and ungrammatical items of the TGJT did not differ considerably. The participants were found to take slightly longer to judge the grammatical items (M=2.39s and M=2.37s). However, in this study, the results showed that there was a significant difference between the participants’ response times for the grammatical and ungrammatical items. As in Loewen’s (2009) study, learners were also found to take longer to judge the grammatical items than the ungrammatical ones. Loewen (2009) provided a possible explanation for this. He suggested that double checking the sentence would make learners take longer. As Loewen (2009) noted, ‘if a sentence was grammatical, the learners had to read the entire sentence and then perhaps check through it again to see if they might have missed an ungrammatical element’ (p.110).

Similar to ‘time’ in the TJGT, ‘rule’ played a very important role in the UGJT since this test, particularly the ungrammatical items, may have led learners to draw on their analysed, rule-based explicit knowledge. Therefore, the fact that the participants self-reported the use of rules while doing this test again lends support to the validity of this test as a measure of explicit knowledge. The results also showed that there was a significant difference in the use of rule with grammatical and ungrammatical items, which provides support for the claim that the ungrammatical items constitute a better measure of explicit knowledge, because ‘sentences that learners judged to be ungrammatical or that they are not sure about often invoked attempts to make use of declarative knowledge’ (R. Ellis, 1991, p.178). In other words, the learners were more likely to apply their explicit knowledge when they encountered an error in an ungrammatical sentence. The stronger relation between the use of rule and the scores for the ungrammatical items than with the grammatical items in the UGJT provides further support for this claim. Table 34 shows the correlations.

<table>
<thead>
<tr>
<th></th>
<th>UGJT G</th>
<th>UGJT UG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rule</td>
<td>.239*</td>
<td>.425**</td>
</tr>
</tbody>
</table>

5.5.3.3 Validity of the MKT

Elder (2009) considered metalinguistic knowledge to be ‘analytical rather than intuitive in nature, in the sense that it involves explicit declarative facts (whether rules or fragments of information) that a person knows about language’ (p.114). She further suggests that the analytical nature of metalinguistic knowledge can be revealed through its close relationship
with language analytic ability. Elder (2009) examined the validity of the MKT as a measure of explicit knowledge by computing the correlations between (1) the UGJT UG and the MKT, (2) self-reported use of rule and the MKT Part 1, (3) the MKT Part 1 and MKT Part 2, (4) years of formal instruction and the MKT, and (5) number of years of formal instruction and the MKT. She hypothesised accordingly that if the MKT was a measure of explicit knowledge then: (1) the UGJT UG should correlate with the MKT; (2) there should be a relationship between self-reported use of rule and the MKT Part 1; (3) the MKT Part 1 and MKT Part 2 should not correlate with each other; (4) years of formal instruction should correlate with the MKT, and (5) number of years of formal instruction should correlate with the MKT.

Based on Elder’s (2009) results and hypotheses, the validation hypotheses relating to the above correlations for the current study were formulated as follows: Hypothesis 1, a significant correlation between language analytic ability and the MKT is expected because metalinguistic knowledge is ‘analytical rather than intuitive in nature’ (Elder, 2009, p.114); Hypothesis 2, the MKT should load on the same factor as the UGJT UG; Hypothesis 3, a significant relationship between self-reported use of rule and the MKT Part 1 is expected as metalinguistic knowledge is a kind of explicit knowledge that is rule-based (Elder, 2009); Hypothesis 4, a significant relationship between the MKT Part 1 and MKT Part 2 is expected because although Part 1 ‘was designed to measure knowledge of grammar rules’, it still required learners’ understanding of metalinguistic terminology. ‘Part 2 was designed exclusively to measure understanding of metalinguistic terminology’ (Elder, 2009, p.119); Hypothesis 5, an association between years of formal instruction and the MKT, and an association between exposure to formal instruction and the MKT are expected due to the fact that metalinguistic knowledge ‘as explicit knowledge, unlike implicit knowledge, is often learned via formal instruction rather than through exposure’ (Elder, 2009,p.120); Hypothesis 6, no significant relationship between the OPT Listening and the MKT is expected because listening is performed under time pressure and it needs online processing, which provides little opportunity for explicit knowledge to come into play (Elder, 2009).

Table 35 summarises the relationships found in the current study in comparison to those in Elder’s (2009) study. Each hypothesis is discussed below.
5.5.3.3.1 Validation hypothesis 1: there should be a significant relationship between language analytic ability and the MKT

‘Metalinguistic awareness can be said to involve implicit rather than explicit knowledge’ (Elder, 2009, p.114). Metalinguistic knowledge, on the other hand, deals with ‘a particular area to do with the attributes of language’ (Elder, 2009, p. 113) . It is analytical in nature. Metalinguistic knowledge can be said to involve explicit rather than implicit knowledge. A significant relationship between language analytic ability and metalinguistic knowledge is expected because of the analytical nature of metalinguistic knowledge. Roehr (2006), for example, reported a close relationship between language analytic ability and metalinguistic knowledge. The results of this study also showed that the participants’ scores in the language analytic ability test correlated significantly with their scores in the MKT, providing evidence for the MKT as a measure of explicit knowledge.

5.5.3.3.2 Validation Hypothesis 2: the MKT should load on the same factor as the UGJT UG (CFA)

As mentioned above, metalinguistic knowledge is different from implicit knowledge in nature, because it is ‘analytical’ rather than ‘intuitive’. Therefore, the MKT should load on the same factor as the other measure of explicit knowledge -- UGJT UG. The confirmatory factor analysis testing R. Ellis’s (2009) model provides support for this hypothesis. Two different factors (which have been labelled explicit and implicit knowledge respectively) were generated by the CFA. The MKT was found to load on the same factor as the ungrammatical sentences in the UGJT, thus supporting the validity of the MKT as a measure of explicit knowledge. Both the MKT and the UGJT UG allowed the learners to access their declarative knowledge of rules.

5.5.3.3.3 Validation Hypothesis 3: there should be a significant relationship between self-reported use of rule and the MKT Part1

Metalinguistic knowledge measures rule-based, analysed knowledge (Elder, 2009) and thus a significant relationship between self-reported use of rule in the UGJT and the MKT particularly the MKT Part 1(which was designed to measure knowledge of grammar rules rather than understanding of metalinguistic terminology) is expected. Elder’s (2009) findings did not support this hypothesis convincingly. Although the correlation coefficient was statistically significant as expected, it was very weak (r=.173*). However, the results of the
current study showed a stronger correlation between self-reported use of rule and performance on the MKT Part 1 (r=.356**).

It should be noted that the stronger correlation obtained in the current study than in Elder’s study can be explained from the different populations investigated in the two studies. The participants in the current study were more homogeneous (i.e., all the participants had been studying English in the foreign language context for a long time) than those in Elder’s study (i.e., her participants had mixed English proficiency and their learning environment was more English-rich than in this study). Also, the sample in the current study scored higher in the MKT Part 1 (M=.61) than that in Elder’s study (M=.56) indicating that the participants in the current study were better equipped with rules.

5.5.3.3.4 Validation hypothesis 4: there would be a significant relationship between MKT Part 1 and Part 2

Elder (2009) explained that the two parts of the MKT were designed to measure different aspects of metalinguistic knowledge. The MKT Part 1 was designed to measure ‘knowledge of grammar rules’, while the MKT Part 2 was designed to measure ‘understanding of metalinguistic terminology’ (p.126). Therefore, she did not expect a significant relationship between these two parts. However, there are grounds for believing that there would be such a relationship. Both the MKT Part 1 and the MKT Part 2 contained metalinguistic terminology. In the MKT Part 1, the students required some knowledge of metalinguistic terminology in order to understand each choice in the multiple choice questions. Accordingly, it is reasonable to expect positive correlation between these two parts. The results of both Elder’s (2009) study (r=.553**) and the present study (r=.424**) supported this prediction.

5.5.3.3.5 Validation hypothesis 5: metalinguistic knowledge depends on instruction

Elder (2009) proposed that metalinguistic knowledge can be instructed and learnt. Therefore, a correlation should be found between the number of years of formal learning or the type of foreign language instruction and the MKT. However, Elder (2009) found nonsignificant relationships between the two variables and the MKT. This study also did not find any significant relationships between lengths of formal learning or the type of foreign language instruction and either part of the MKT. Elder (2009) suggested that we be wary of discounting evidence that does not support the validation prediction. Such results may be due
to ‘the dubious reliability of self-reports regarding the nature of instruction’ (Elder, 2009, p.134) and the length of formal English learning.

5.5.3.3.6 Validation Hypothesis 6: there should be no significant relationship between the Oxford Placement Test Listening and the MKT

Elder’s (2009) reported results for three different proficiency tests—International English Language Testing System (IELTS), Diagnostic English Language Needs Assessment (DELNA) and computer-based TOEFL (CBT). All these three tests contained Listening, Reading and Writing. IELTS contained Speaking as well. Elder (2009) hypothesised that scores on the MKT would relate more strongly to reading and writing tasks on the standardised tests than to speaking and listening tasks. Her results partially confirmed this hypothesis, namely reading in all these three tests had a stronger relationship with the MKT than speaking and listening, but writing was not found to consistently have a stronger relationship with the MKT than the listening and speaking parts in the three tests. The form of the proficiency test used in the present study does not allow a comparison of the relationships between listening/speaking/reading/writing and the MKT because this test only had two parts, namely Listening and Grammar. Thus, in order to find evidence for the validity of the MKT as a measure of explicit knowledge, a nonsignificant relationship between the OPT Listening and the MKT was predicted since the OPT Listening used in this study is a time-pressured test, which is more likely to elicit the participants’ implicit knowledge. Table 24 shows that the relationship between the OPT Listening and the MKT was not statistically significant, providing further support for the validity of the MKT as a measure of explicit rather than implicit knowledge.
<table>
<thead>
<tr>
<th></th>
<th>Elder’s (2009) Study</th>
<th>Present Study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MKT(Total)</td>
<td>MKT (Part1)</td>
</tr>
<tr>
<td>Language analytic ability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of Rule</td>
<td>.100</td>
<td>.173*</td>
</tr>
<tr>
<td>Year of Formal Instruction</td>
<td>.182</td>
<td>.086</td>
</tr>
<tr>
<td>Number of years of Formal Instruction</td>
<td>-.144</td>
<td>-.046</td>
</tr>
<tr>
<td>Proficiency test (Listening)</td>
<td>.436** (IELTS Listening)</td>
<td>.473** (IELTS Listening)</td>
</tr>
<tr>
<td></td>
<td>(.166 (DELNA Listening)</td>
<td>(.253 (DELNA Listening)</td>
</tr>
</tbody>
</table>

*p<.01 ** p<.05
5.5.3.4 Construct validity of the measures of implicit and explicit knowledge

The construct validity of the measures of implicit and explicit knowledge will be discussed in terms of: (1) the results of the statistical analyses reported previously, (2) R. Ellis’s (2005, 2006, 2009) seven criteria for operationalising the constructs of these two types of knowledge, and (3) a comparison of the participants’ scores in R. Ellis’s study and the current study.

5.5.3.4.1 Construct validity based on the results of the statistical analyses

The results of the correlation analyses, the EFA and the CFA reported earlier in this chapter provide evidence for the construct validity of R. Ellis’s (2005, 2006, 2009) model of implicit and explicit knowledge for the first year students investigated in the present study. The results of the correlation analyses reported in Tables 15 and 16 demonstrated that all four tests and sub-measures were intercorrelated. However, the results of the subsequent EFA reported in Table 17 showed that the different measures loaded on two separate factors, indicating the tests are, in fact, measuring two different constructs as predicted. Two CFAs were performed to examine whether the tests could be understood in terms of the distinction between implicit and explicit knowledge advanced by R. Ellis (2009). The results of both CFAs reported in Figures 5 and 6, Tables 18 and 19 demonstrated that the tests could be understood in terms of implicit and explicit knowledge.

5.5.3.4.2 Construct validity examined in terms of R. Ellis’s seven criteria for operationalising the constructs of implicit and explicit knowledge

Construct validity can also be discussed in terms of R. Ellis’s seven criteria for operationalizing the constructs of implicit and explicit knowledge, namely ‘degree of awareness’, ‘time availability’, ‘focus of attention’, ‘systematicity’, ‘certainty’, ‘utility of knowledge of metalanguage’ and ‘learnability’ (R. Ellis, 2009, p.40). Empirical evidence for four of them can be found in this study (i.e., ‘degree of awareness’, ‘time availability’, ‘focus of attention’ and ‘utility of knowledge of metalanguage’).

In terms of ‘degree of awareness’, it was anticipated that the learners’ self-reported use of rule would be related significantly to the scores in the tests of explicit knowledge but not to the scores in the tests of implicit knowledge since the tests of explicit knowledge would encourage the conscious use of ‘rule’, while the tests of implicit knowledge would favour ‘feel’ (R. Ellis, 2009). Table 36 below shows that the participants’ reported use of rule correlated significantly with the UGJT UG and the MKT (especially with the Rule section--
MKT Part1 of this test), but there was no significant relationship between reported rule use and both parts of the TGJT and the EIT G. Only the EIT UG was found to correlate very weakly with the participants’ reported use of rule. One possibility for this weak relationship is that the participants may have attempted to correct the errors in the EIT UG by resorting to rules.

Table 36 Correlations between use of rule and the test measures

<table>
<thead>
<tr>
<th></th>
<th>EITG</th>
<th>EIT UG</th>
<th>TGJT G</th>
<th>TGJT UG</th>
<th>UGJT G</th>
<th>UGJT UG</th>
<th>MKT (Total)</th>
<th>MKT (Part1)</th>
<th>MKT (Part 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rule</td>
<td>.180</td>
<td>.214*</td>
<td>.142</td>
<td>.002</td>
<td>.239*</td>
<td>.425**</td>
<td>.281**</td>
<td>.356**</td>
<td>.126</td>
</tr>
</tbody>
</table>

**p<.01

Turning to ‘time availability’, it was hypothesised that learners’ performance on the tests of implicit knowledge would be weaker than on the tests of explicit knowledge because the tests of implicit knowledge were time-pressured, and also because the participants in the present study were expected to have only limited implicit knowledge given the form-based and exam-directed instruction they had received. Table 13 in this chapter shows that the participants scored lower on the tests of implicit knowledge (M=.44 and .51 respectively) than on the tests measuring explicit knowledge (M=.87 and .56 respectively), which provides support for the construct validity of the four tests as measures of the two types of knowledge².

Concerning ‘focus of attention’, it was predicted that the tests that required learners to focus on meaning would elicit implicit knowledge, while the tests that encouraged learners to focus on form would elicit explicit knowledge. One test was designed to direct students’ focus on meaning—the EIT. The other three tests were designed to direct students’ attention to form—the TGJT, UGJT and MKT (but the TGJT was time-pressured and thus was more likely to elicit implicit knowledge). The results of the CFA reported in Table 18 demonstrated that the EIT and the TGJT loaded on one factor, while the UGJT UG and MKT loaded on the other factor. However, the prediction regarding focus of attention cannot be properly tested in the present study as ‘the focus and time-pressure variables were confounded in the design of the [TGJT] test’ (R. Ellis, 2009, p.55).

‘Utility of knowledge metalanguage’ can be investigated by examining whether the MKT correlated more strongly with the UGJT as a measure of explicit knowledge or with the other
two tests designed to elicit implicit knowledge. The results of the correlation analysis reported in Table 15 show that the MKT correlated more strongly with the UGJT than with the other two tests, which further supports the construct validity of the four tests.

5.5.3.4.3 Comparison of the scores in R. Ellis’s study and the current study

Further evidence for the construct validity of the four tests can be found through comparing the participants’ scores in the current study with those in R. Ellis’s study. As mentioned above, the participants in this study had no experience of staying in an English-speaking country; they did not have much experience of communicating with native English speakers in English, and the instruction they received before entering to university were mainly form-based and exam-directed. However, many of the participants in R. Ellis’s (2009) study had been staying in an English speaking country (i.e., New Zealand) for up to two years; they had more exposure to language use compared with the participants in this study. English for many of them was a tool for communicating and their instruction was more likely to be meaning based. Thus, the participants in this study were predicted to have less implicit knowledge but more explicit knowledge than the participants in R. Ellis’s study. This prediction is supported by the comparison of scores shown in Table 37. The participants in the present study had lower scores on the measures of implicit knowledge than the participants in R. Ellis’s study, but obtained higher scores on the measures of explicit knowledge.

<table>
<thead>
<tr>
<th>Table 37 Comparison of the means</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R. Ellis (2009)</strong></td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>EIT</td>
</tr>
<tr>
<td>TGJT</td>
</tr>
<tr>
<td>UGJT UG</td>
</tr>
<tr>
<td>MKT</td>
</tr>
</tbody>
</table>

All in all, the construct validity of the tests as measures of implicit and explicit knowledge has received empirical support from the analyses of the scores obtained from the first year students involved in this study. That is, the EIT and the TGJT served as measures of implicit knowledge, and the UGJT UG and the MKT as measures of explicit knowledge.
5.5.4 Chinese first year university students’ implicit and explicit knowledge of English
To investigate the extent of the Chinese first year university students’ implicit and explicit knowledge of English, the two ‘best’ measures of implicit knowledge (i.e., EIT and TGJT) were combined into a single measure of implicit knowledge. Similarly, the two ‘best’ measures of explicit knowledge (i.e., UGJT UG and MKT) were combined into one. The results of the descriptive analysis and the paired-samples t-test for the first year students’ implicit and explicit knowledge shown in Tables 20 and 21 indicated that their implicit and explicit knowledge of English were significantly different. They obtained much higher scores on the measure of explicit knowledge than on that of implicit knowledge (M= .71 and .53 respectively). In other words, the first year English majors in the present study seemed to have much greater explicit knowledge of English than implicit knowledge. Such results were anticipated and reflected the nature of the different populations as previously explained.

5.5.5 First year students’ implicit/explicit knowledge and language proficiency
The second research question concerns the extent to which L2 knowledge can account for (or predict) L2 proficiency. As mentioned earlier in this chapter, the first year students’ language proficiency was measured by the Oxford Placement Test (OPT), which consists of two parts—Listening and Grammar. Their implicit knowledge was measured by the EIT and the TGJT, while their explicit knowledge was measured by the UGJT UG and MKT. The present study focused on their implicit and explicit morphosyntactic knowledge only. Therefore, it is reasonable to hypothesise that the two types of knowledge would correlate significantly with language proficiency, particularly with the grammar scores. The results of the correlation analysis reported in Table 22 confirmed this hypothesis although the correlations were only of moderate size.

Before comparing the results of this study with those of Elder and Ellis’s (2009) study, it should be noted that the two studies differed in some respects: (1) Slightly different tests were used to measure implicit knowledge. Elder and Ellis (2009) only employed one test—TGJT to measure implicit knowledge, while this study used two tests to measure this construct—EIT and TGJT; (2) Implicit and explicit knowledge scores were calculated in different ways. Elder and Ellis (2009) conducted all the analyses (e.g., correlation analyses) using individual test scores rather than combining them into single measures of implicit and explicit knowledge. This study calculated total scores for each type of knowledge (i.e., the scores of the EIT and TGJT were combined as a measure of implicit knowledge, while the
scores of the UGJT UG and MKT were combined as a measure of explicit knowledge); (3) Different proficiency tests were employed. They used the computer-based TOEFL (CBT) and the pilot version of the internet-based TOEFL (iBT) (both of which contained listening, speaking, writing and reading parts), while this study employed the OPT (which only consisted of listening and grammar parts); (4) Different types of statistical analyses were used. Elder and Ellis’s (2009) study conducted a Principal Component analysis with Varimax rotation and a forced two-factor solution for all the test components including the tests of implicit/explicit knowledge and L2 proficiency (TOEFL) while this study employed a Principal Axis Factoring Analysis with Promax rotation without requesting a fixed factor solution and two multiple regression analyses. However, the results of the two studies are still comparable since the measures of implicit and explicit knowledge were similar.

Generally, as in Elder and Ellis’s (2009) study, the students’ explicit knowledge of English was found to play a stronger role than their implicit knowledge in their general English proficiency as shown by the results of the multiple regression analyses reported in Table 23. It would seem that the standardised proficiency test used in the current study does not elicit unanalysed automated language knowledge. This may be because ‘language tests encourage a focus on display that invites self-monitoring at the expense of more spontaneous language performance’ (Elder, 2009, p.179). In other words, ‘language proficiency in all its facets is not well measured by language tests’ such as the one used for this investigation (Elder, 2009, p.179).

Implicit and explicit knowledge were also found to correlate significantly with the OPT Grammar as anticipated since all the tests focused on L2 morphosyntactic structures. The result of the multiple regression analysis reported in Table 23 showed that both implicit and explicit knowledge predicted the scores of the OPT Grammar but explicit knowledge was the better predictor. The stronger role played by explicit knowledge in predicting the OPT Grammar can be explained by the students’ limited opportunities for exposure of English other than in formal classrooms.

Elder and Ellis (2009) reported a different result from this study regarding the relationship between L2 knowledge and listening. In their study, the measures of explicit knowledge were found to be a better predictor of Listening in both the TOEFL CBT and the iBT. However, the results of this study showed that only implicit knowledge scores correlated significantly
with the OPT Listening. There are a number of possible explanations for the different results. One is that there was a difference in time pressure in the tests used in the two studies. The TOEFL CBT Listening contained three parts. In the first two parts, the test-takers heard short conversations between two people. Each conversation was followed by a question. The conversations and questions were repeated once only. Test-takers indicated their answers to the questions by selecting from multiple-choice options. In the third part, they heard a number of short texts of around 100 words in length. Each text was heard once only and was followed by a question, again requiring a multiple-choice response. The TOEFL iBT Listening was made up of a number of monologic lecture-type passages and mini-conversations with between five and six questions per text. The texts were longer than on the TOEFL CBT. There were opportunities for testees to take notes while listening and, in some cases, parts of the listening tests were replayed. In the current study, the OPT Listening was used for the investigation. It contained 100 sentences with two word or phrase choices. It required students to tick the correct word. There was almost no interval between sentences, which meant that students did not have time to reflect and they needed to tick what they heard very quickly otherwise they would miss the next sentence. The more intensive time pressure of the OPT Listening compared with the TOEFL CBT and iBT may explain why it correlated with the implicit knowledge score.

Another possible factor that may explain the different results lies in the EIT which is considered a strong measure of implicit knowledge. The EIT requires the students to listen to a statement, tick a belief statement first (focusing on meaning) and then to repeat the statement in correct English. This type of test involves students’ listening ability and online processing. Elder and Ellis’s (2009) study did not use this test to measure implicit knowledge. Therefore, it is not so surprising to find a significant correlation between implicit knowledge score and the OPT Listening score in the current study, but only a very weak relationship between implicit knowledge and the TOEFL tests scores in Elder’s (2009) study. These two factors not only explain the different results reported in the two studies, but also provide explanations for why only implicit knowledge was found to correlate significantly with the OPT Listening in the current study.

5.5.6 Factors affecting the first year students’ implicit and explicit knowledge of English
Alderson et al. (1997) suggested that ‘the differences among learners in the success they enjoy in foreign language learning are commonly attributed to factors in the environment and
to differences among individuals’ (p.97). Thus one can reasonably hypothesise that these
factors may also contribute to learners’ implicit and explicit knowledge. This part is intended
to discuss the findings regarding the third research question, which asks what factors (i.e.,
individual difference variables) contribute to the difference in participants’ implicit and
exPLICIT knowledge of English.

5.5.6.1 Reliability of the individual variable measures
Before discussing the findings for the third research question, I would like to discuss the
reliability of the individual variable measures. Table 25 showed that all reliability values of
the measures including the sub-measures were reliable except that for ‘affective states’ (B3,
α=.38) and ‘information medium’ (M7,α=.45). Such results may be accounted for partially by
the small number of items in the two parts, as reliability indices are sensitive to the number of
items, for example (Yang, 1992). There are only two items in the ‘information medium’ and
four items in the ‘affective states’. However, compared with some other sub-measures of
language learning motivation which had less than four items (e.g., going abroad and social
responsibility), the ‘affective states’ has a relatively lower alpha. In Tanaka (2004), relatively
low alphas for the three subscales of learner beliefs, which ranged from .34 to .65 at Time 1,
were also reported. Tanaka and Ellis (2003) argued that the beliefs measures ‘should be seen
in the context of measures of reliability obtained for learner belief questionnaires in other
studies’ (p.78). They compared the alpha values of belief measures in several studies (Yang,
1992; Sakui & Gaies, 1999) and concluded that the alpha values of belief measures are
consistently low (usually ranging from .70 to .30). Tanaka and Ellis (2003) suggested this
may be because the ‘learners’ belief systems are not homogeneous’ and ‘learners can hold
beliefs that appear to be contradictory’ (p.78).

5.5.6.2 Individual difference variables and implicit/explicit knowledge
As mentioned earlier in Chapter 3, no empirical study has been conducted directly to explore
what factors might affect L2 learners’ implicit and explicit knowledge. However, several
studies have provided hints that language analytic ability might play a role in the
development of metalinguistic knowledge (i.e., Alderson et al., 1997; Ranta, 2002; Roehr,
2006, 2008). These studies indicate that metalinguistic knowledge shares many characteristics
with language analytic ability (Roehr, 2008; Ranta, 2002). Many studies, however, have been
conducted to investigate the relationships between other individual differences (i.e.,
motivation, language anxiety and learner beliefs) and general language proficiency,
indicating that one can reasonably also expect the relationships between those variables and implicit/explicit knowledge given that language proficiency is made up of implicit and explicit knowledge.

5.5.6.2.1 Language analytic ability and implicit/explicit knowledge

Krashen (1981) claims that aptitude tests will only correlate with what he called ‘learning’, not with ‘acquisition’. Research has suggested that language analytic ability as one important element of language aptitude might play a role in the development of metalinguistic knowledge. Roehr’s (2006, 2009) research revealed a close relationship between metalinguistic knowledge and language analytic ability as measured by tests traditionally used to assess components of language learning aptitude. However, several empirical studies have also found that there is only a relationship between language analytic ability and communicative tasks such as interpreting and conversation (e.g., Skehan, 1982). Thus, relationships between language analytic ability and both implicit and explicit knowledge can be expected. A stronger relationship between language analytic ability and explicit knowledge is expected since they are both analytical in nature. Table 26 was indicative of a significant but weak association between language analytic ability and implicit knowledge contrary to Krashen’s claim. Also, the result of the multiple regression showed that language analytic ability was one of the predictors for the scores on the measure of implicit knowledge. Such a result also provides evidence that language analytic ability is related to the kind of knowledge that is primary in communication. However, a nonsignificant relationship between language analytic ability and explicit knowledge was found in the current study which was different from what was expected and also different from the results of Roehr and Ganem-Gutierrez’s (2009) study.

To examine the relationship between language analytic ability and explicit L2 knowledge more closely, correlation analyses were conducted with the separate measures of explicit knowledge (i.e., the UGJT UG and MKT). The results showed that the MKT correlated significantly but weakly with language analytic ability (see Table 38 shows the results). The finding suggests that language analytic ability was related to the learners’ metalinguistic knowledge.
Table 38 Correlation analyses between separate measures of explicit knowledge and language analytic ability

<table>
<thead>
<tr>
<th>Language analytic ability</th>
<th>MKT (Total)</th>
<th>UGJT UG</th>
<th>Rule Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.202*</td>
<td>-.020</td>
<td>.017</td>
</tr>
</tbody>
</table>

*p<.05

5.5.6.2.2 Language anxiety and implicit/explicit knowledge

It has been noted that ‘when anxiety does arise relating to the use of the L2, it seems to be restricted mainly to speaking and listening, reflecting learners’ apprehension at having to communicate spontaneously in the L2 ’(R. Ellis, 2008, p.692). Research has shown that language anxiety is related negatively to oral proficiency (see Chapter 3). Poza’s (2005) study showed that ‘students experienced a reduction of their level of anxiety due to the elimination of the time pressure of the classroom and opportunity to edit their contributions’ (p.ii). All the above mentioned points suggest that language anxiety should have a negative relationship with implicit knowledge rather than explicit knowledge because the EIT involved learners’ listening and speaking abilities and both tests of implicit knowledge involved online processing. The results of this study showed that language anxiety was the best predictor of implicit knowledge as expected.

Semi-structured interviews were conducted to provide further insight to the relationship between language anxiety and implicit/explicit knowledge. Five students participated in the interviews, which were conducted in Chinese (see Chapter 4). The interview data provided further support for the negative relationship between language anxiety and implicit knowledge.

Xiao A, who got the highest scores on implicit knowledge, said that he was not anxious and he enjoyed English lessons especially when teachers mentioned some things he did not know before. However, students with high explicit knowledge and low implicit/explicit knowledge expressed different degrees of language anxiety. Their anxiety mainly came from listening, speaking and communicating in English. Xiao B, who got the highest scores on explicit knowledge, said that she was a little worried about the English medium instruction. She said:

我上大学前，老师门们在英语课堂上都是以讲语法为主的。而且中文也会经常使用
Xiao C, who got the second lowest scores in implicit knowledge, expressed her fear about understanding the teachers in class. She said:

我非常害怕在我毫无准备的情况下被叫起来回答问题，因为我很怕在我同学面前犯很多错误。

(I’m quite worried about understanding my teachers in class when they speak English and I’m quite afraid to be called on to answer unprepared questions in English since I’m afraid to make a lot of mistakes in front of my classmates.)

5.5.6.2.3 Language learning motivation and implicit/explicit knowledge

Language learning motivation has been found to be one of the factors most strongly associated with language achievement. Many empirical studies have shown that ‘integrative motivation’ is a more powerful predictor than other individual difference variables for language achievement (Clement, Smythe & Gardner, 1978; Ramage, 1990). ‘Successful’ learners can be expected to have more implicit knowledge because linguistic competence is viewed as ‘consisting primarily of implicit L2 knowledge’ (R. Ellis, 2009, p.11). Thus, a relationship between language learning motivation particularly ‘intrinsic interest’ and implicit knowledge is expected. The prediction gained support from the results of the multiple regression and correlation analyses reported in Tables 27-a, 28 and 30-a. Motivation particularly ‘intrinsic interest’ was found to be one of the predictors of implicit knowledge. Tables 29 and 30-b also showed that ‘going abroad’ was a negative predictor of explicit knowledge. One possible reason for the result may be that students who were more motivated by the prospect of going abroad may be more active in interacting with their teachers and peers to prepare themselves for travelling overseas rather than paying attention to explicit grammar rules compared with the students who were less motivated in this aspect.
The interviews suggested that there was a relationship between language learning motivation and both types of knowledge. It was also found that one student (Xiao A) with high implicit knowledge was intrinsically interested in learning English. Xiao A, who got the highest score in implicit knowledge, said that he liked English and he really wanted to learn about English culture. Although in the results of the quantitative analyses, only ‘intrinsic interest’ was found to correlate with implicit knowledge, other types of motivation were evident in the interview data. For example, the students with low implicit and explicit knowledge were easily influenced by their relatives or other factors. Xiao E, who had the lowest scores in both implicit and explicit knowledge, said:

我实际上是想学经济专业，但是我父母很想让我学英语。他们说英语很有用，可以帮助我找到一个好工作。最终我妥协了，选择英语作为我的专业。我并不喜欢英语，哎！！！

(I actually wanted to study economy, but my parents wanted me to study English. They said English is very useful for me to find a job in the future. So finally I compromised and chose English as my major. I don’t quite like English, sigh!!)

5.5.6.2.4 Language learner beliefs and implicit/explicit knowledge
Tanaka (2004) divided learner beliefs into three categories—beliefs about language analytic learning, beliefs about experiential learning and beliefs regarding affective states. He found a relationship between beliefs regarding affective states and listening ability in one group of learners. Language proficiency is claimed to consist of implicit and explicit knowledge in this study. Accordingly, although there have been no empirical studies concerning the relationship between learner beliefs and the two types of knowledge, it is reasonable to predict that learner beliefs would correlate with both implicit and explicit knowledge. Beliefs about analytic learning can be expected to be related to explicit knowledge (which is analytical in nature), while beliefs about experiential learning and beliefs regarding affective states are more likely to correlate with implicit knowledge. The predictions were partially supported by the results shown in Tables 26, 27-b and 28. Generally, learners’ beliefs about analytic learning and experiential learning were found to be positively related to explicit knowledge as shown in Tables 26, 27-b and 28, indicating that learners who had stronger beliefs about their English learning particularly analytic learning (e.g., grammar and vocabulary) and experiential learning (e.g., learning through communication), were more
likely to have higher levels of explicit knowledge than their counterparts who had weaker beliefs about analytic and experiential learning. The participants’ beliefs regarding affective states were found to have a positive effect on implicit knowledge, indicating that learners who were more confident and more self-efficacious in learning English tended to have greater implicit knowledge than their peers who lacked confidence and self-efficacy in learning English.

The interviews also showed that learner beliefs were related to both implicit and explicit knowledge. The interviewees with different levels of implicit and explicit knowledge held different kinds of beliefs. As predicted, the interviews also showed that beliefs regarding affective states were more strongly related to implicit knowledge, while beliefs about analytic learning were more strongly related to explicit knowledge. However, the relationships between beliefs about experiential learning and the two types of knowledge were not clear because all five students tended to emphasise experiential learning. Xiao A, who achieved the highest scores in implicit knowledge, was very confident about himself. He believed that English was not very hard to master. He believed that he would speak English like a native English speaker someday in the future. Xiao C and Xiao E, who got low scores in implicit knowledge, thought English was difficult to learn and it was really just a remote dream for them to speak English like a native English speaker. Xiao C even said:

\[
\text{如果我能说得比现在更流利些我都会很高兴了。}
\]

\[(\text{If I can speak English much more fluently than now, I think I 'll be very happy for That.})\]

In terms of the beliefs about analytic learning, Xiao B, who achieved the highest scores in explicit knowledge, emphasised the importance of grammar learning and was very confident about her grammar. Xiao D, who achieved the second lowest scores in explicit knowledge, emphasised the importance of grammar learning as well, but she said she was very bad at grammar, and that was why she could not learn English very well.
5.5.6.3 Summary

The three research questions that this study addressed concerned the extent of the first year students’ implicit and explicit knowledge, the relationship between their two types of knowledge and English proficiency, and what factors (i.e., individual differences factors) may contribute to their different implicit and explicit knowledge of English. These questions were mainly investigated quantitatively.

As mentioned in the chapter, the present study used the same four tests of implicit and explicit knowledge as those used in R. Ellis’s study, but was conducted with a different population of learners (i.e., university English majors in China). The result of the current study endorses R. Ellis’s finding that the battery of tests can serve as relatively separate measures of implicit and explicit knowledge and thus provides more empirical evidence for the distinction of these two types of knowledge.

It was found that the first year English majors in the current study had greater explicit knowledge of English than their implicit knowledge as expected, given their historical learning experiences. Similar to Elder and Ellis’s (2009) result, the findings of the current study revealed that the students’ general English proficiency measured by the OPT related to both their implicit and explicit knowledge but that explicit knowledge was found to play a stronger role in the students’ general English proficiency and their grammatical proficiency. In contrast to Elder and Ellis’s study, their implicit knowledge was found to play a stronger role than explicit knowledge in their listening proficiency. All the individual difference factors involved in this study were found to correlate with either implicit or explicit knowledge or both to some extent, indicating that individual difference factors had played a role in differentiating learners’ levels of implicit and explicit knowledge.

Although the present study has several limitations such as the exclusion of the Oral Narrative Production Test as a measure of implicit knowledge (limitations are discussed in detail in Chapter 8), the findings are meaningful for both SLA theories and language testing practice. They have taken the research regarding (1) measuring implicit and explicit knowledge, (2) conceptualising language proficiency in terms of implicit and explicit knowledge, and (3) seeking answers from individual difference factors for different levels of implicit and explicit knowledge a step further.
Notes

1. However, R. Ellis’s (2005, 2006, 2009) model could not be tested fully, because the Oral Narrative Production Test was not included in the current study.

2. However, another possibility for the lower scores obtained on the measures of implicit knowledge (particularly on the EIT) than on those of explicit knowledge might be the different scoring methods for these tests. The EIT was scored using Obligatory Occasion Analysis (i.e., supplying the correct form in a context requiring the use of the form). In contrast, the MKT or the UGJT were essentially scored in terms of ‘right’ or ‘wrong’.
CHAPTER SIX
RESULTS AND DISCUSSIONS FOR THE THIRD YEAR STUDENTS

6.1 Introduction
This chapter gives the results of the quantitative and qualitative analyses of the data collected from the third year students. This part of the results will help answer the following three research questions concerning the third year students:

4. What is the extent of Chinese third year university students’ (a) implicit and (b) explicit knowledge of English?
5. What is the relationship between Chinese third year university students’ (a) implicit and (b) explicit knowledge of English and their general English proficiency?
6. What factors can account for differences in Chinese third year university students’ (a) implicit and (b) explicit knowledge of English?

The Statistical Program for Social Sciences (Version 19) and AMOS (Version 19) were used to analyse the data. This chapter is divided into three separate parts. It begins with the first part consisting of the results of the quantitative analyses concerning the four tests (i.e., the Elicited Imitation Test, the Timed Grammaticality Judgment Test, the Untimed Grammaticality Judgment Test and the Metalinguistic Knowledge Test) including their sub-measures and a detailed discussion of what these tests actually measured for the sample in the current study. This chapter then moves on to consider the relationship between the participants’ knowledge of English and their general English proficiency. It ends by investigating what factors (i.e., psychological factors) account for the differences in the participants’ knowledge of English.

6.2 Testing instruments of implicit and explicit knowledge
This part presents the quantitative results concerning the four tests (i.e., the EIT, TGJT, UGJT and MKT) and their sub-measures including the reliability, descriptive statistics, correlations and factor analyses in order to identify how these measures functioned for the third year students. It also reports the comparisons of the third year students’ time use on the TGJT and their use of rule on the UGJT to investigate to what extent there were differences in these two variables.
6.2.1 Reliability of the testing instruments

In order to answer research question 4 regarding to what extent Chinese third year students have implicit and explicit knowledge, it is important to examine whether the four tests designed to provide relatively separate measures of implicit and explicit knowledge are reliable for the third year English majors.

As mentioned in Chapter 5, reliability concerns the consistency of the measures and Cronbach’s alpha (α) is the most commonly used method to provide estimates of internal consistency. The results of the reliability analyses using the Statistical Program for Social Sciences (Version 19) are shown in Table 39. The alphas for the TGJT and UGJT were satisfactory (they are above .70). However, the alphas for the EIT and MKT although acceptable were relatively low (α=.57 and .61 respectively). The Cronbach’s alpha values for the sub-measures varied between .85 for the TGJT grammatical items and .45 for the EIT UG.

Table 39 Reliability values of the tests and the sub-measures (n=92)

<table>
<thead>
<tr>
<th>Test/Sub-measures</th>
<th>Reliability (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT</td>
<td>.57</td>
</tr>
<tr>
<td>TGJT</td>
<td>.78</td>
</tr>
<tr>
<td>UGJT</td>
<td>.73</td>
</tr>
<tr>
<td>MKT</td>
<td>.61</td>
</tr>
<tr>
<td>EIT G</td>
<td>.56</td>
</tr>
<tr>
<td>EIT UG</td>
<td>.45</td>
</tr>
<tr>
<td>TGJT G</td>
<td>.85</td>
</tr>
<tr>
<td>TGJT UG</td>
<td>.79</td>
</tr>
<tr>
<td>UGJT G</td>
<td>.53</td>
</tr>
<tr>
<td>UGJT UG</td>
<td>.77</td>
</tr>
<tr>
<td>MKT (Part 1)</td>
<td>.49</td>
</tr>
<tr>
<td>MKT (Part 2)</td>
<td>.56</td>
</tr>
</tbody>
</table>

EIT: Elicited Imitation Test.
EIT G: Elicited Imitation Test grammatical items
EIT UG: Elicited Imitation Test ungrammatical items
TGJT: Timed Grammaticality Judgment Test
TGJT G: Timed Grammaticality Judgment Test grammatical items
TGJT UG: Timed Grammaticality Judgment Test ungrammatical items
UGJT: Untimed Grammaticality Judgment Test
UGJT G: Untimed Grammaticality Judgment Test grammatical items
UGJT UG: Untimed Grammaticality Judgment Test ungrammatical items
MKT : Metalinguistic Knowledge Test

6.2.2 Descriptive statistics for all the measures

Table 40 and Figure 11 show the descriptive statistics for all the measures including the sub-measures. From Table 40 and Figure 11, it can be seen that the participants achieved the highest scores on the grammatical items of the UGJT (M=.92), followed by the ungrammatical items of this test (M=.87), then the grammatical items of the TGJT (M=.78), the grammatical items of the EIT (M=.55), the MKT Part 2 (M=.69) and finally the MKT Part 1 (M=.67). They scored very low on the ungrammatical items of the EIT (M=.44) and on the ungrammatical items of the TGJT (M=.43). In terms of the total test scores, the third year students obtained the highest scores on the UGJT (M=.89), followed by the MKT (M=.68), then the TGJT (M=.61). They achieved the lowest scores on the EIT (M=.57). The distribution of the scores for each measure is reflected in the standard deviations. The SDs of the TGJT G and MKT Part 1 were relatively higher than those of other measures, indicating that there were greater differences among the participants in these two measures than in the other measures.

Table 40 Descriptive statistics of the tests and their sub-measures (n=92)

<table>
<thead>
<tr>
<th>Tests</th>
<th>Items</th>
<th>Mean</th>
<th>Max.</th>
<th>Min.</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT</td>
<td>34</td>
<td>.57</td>
<td>.77</td>
<td>.32</td>
<td>.08</td>
</tr>
<tr>
<td>TGJT</td>
<td>68</td>
<td>.61</td>
<td>.91</td>
<td>.34</td>
<td>.11</td>
</tr>
<tr>
<td>UGJT</td>
<td>68</td>
<td>.89</td>
<td>.99</td>
<td>.60</td>
<td>.07</td>
</tr>
<tr>
<td>MKT</td>
<td>40</td>
<td>.68</td>
<td>.83</td>
<td>.40</td>
<td>.09</td>
</tr>
<tr>
<td>EIT G</td>
<td>17</td>
<td>.70</td>
<td>.96</td>
<td>.36</td>
<td>.12</td>
</tr>
<tr>
<td>EIT UG</td>
<td>17</td>
<td>.44</td>
<td>.59</td>
<td>.14</td>
<td>.08</td>
</tr>
<tr>
<td>TGJT G</td>
<td>34</td>
<td>.78</td>
<td>.97</td>
<td>.00</td>
<td>.16</td>
</tr>
<tr>
<td>TGJT UG</td>
<td>34</td>
<td>.43</td>
<td>.85</td>
<td>.09</td>
<td>.17</td>
</tr>
<tr>
<td>UGJT G</td>
<td>34</td>
<td>.92</td>
<td>1.00</td>
<td>.71</td>
<td>.07</td>
</tr>
<tr>
<td>UGJT UG</td>
<td>34</td>
<td>.87</td>
<td>1.00</td>
<td>.44</td>
<td>.11</td>
</tr>
<tr>
<td>MKT Part 1</td>
<td>17</td>
<td>.67</td>
<td>.88</td>
<td>.12</td>
<td>.13</td>
</tr>
<tr>
<td>MKT Part 2</td>
<td>23</td>
<td>.69</td>
<td>.87</td>
<td>.41</td>
<td>.11</td>
</tr>
</tbody>
</table>

EIT : Elicited Imitation Test.
EIT G : Elicited Imitation Test grammatical items
EIT UG : Elicited Imitation Test ungrammatical items
TGJT : Timed Grammaticality Judgment Test
TGJT G : Timed Grammaticality Judgment Test grammatical items
TGJT UG : Timed Grammaticality Judgment Test ungrammatical items
UGJT : Untimed Grammaticality Judgment Test
UGJT G : Untimed Grammaticality Judgment Test grammatical items
UGJT UG : Untimed Grammaticality Judgment Test ungrammatical items
MKT : Metalinguistic Knowledge Test

Figure 11 Mean scores of the sub-measures

6.2.3 The third year students’ linguistic knowledge structure

This section presents the results of the correlation analyses, exploratory factor analysis and confirmatory factor analyses of the testing instruments in order to clarify the third year students’ linguistic knowledge structure.

6.2.3.1 Correlation analyses

This part presents the results of the Pearson Product correlation analyses as the first step to examine the third year students’ linguistic knowledge structure and also to set up a basis for the later factor analyses. Tables 41 and 42 show the correlations among the four tests and among their sub-measures respectively. Table 41 shows that all measures were significantly intercorrelated varying between $r=0.209$ to $r=0.377$. According to Cohen (1988, 2003), a correlation coefficient ranging from .10 to .29 is thought to represent a weak or small correlation, a correlation coefficient ranging from .30 to .49 is considered a moderate correlation, and a correlation coefficient of .50 or larger is thought to represent a strong or large correlation. Hence, all the relationships were either weak or moderate. The EIT and the MKT correlated more strongly with the UGJT ($r=0.278$ and $r=0.377$). The TJGT correlated
most strongly with the UGJT ($r=.341$). Table 42 shows that many sub-measures were weakly or moderately intercorrelated. As in R. Ellis’s (2005) study, no significant relationship was found between the grammatical and ungrammatical items of the UGJT. The grammatical and ungrammatical items of the TGJT did not correlate, either. The ungrammatical items of both GJTs correlated more strongly with the MKT Part 1. No significant relationship was found between the UGJT ungrammatical items and the MKT Part 2. The grammatical and ungrammatical items of the EIT were moderately correlated with each other ($r=.334$), which suggested that they functioned in the same way. The MKT Part 1 and Part 2 were found to correlate weakly with each other.

**Table 41 Correlations among the four tests**

<table>
<thead>
<tr>
<th></th>
<th>EIT</th>
<th>TGJT</th>
<th>UGJT</th>
<th>MKT</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT</td>
<td>---</td>
<td>.209*</td>
<td>.278**</td>
<td>.233*</td>
</tr>
<tr>
<td>TGJT</td>
<td>---</td>
<td>---</td>
<td>.341**</td>
<td>.326**</td>
</tr>
<tr>
<td>UGJT</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>.377**</td>
</tr>
</tbody>
</table>

**p<.01

EIT : Elicited Imitation Test.

TGJT : Timed Grammaticality Judgment Test

UGJT : Untimed Grammaticality Judgment Test

MKT : Metalinguistic Knowledge Test
Table 42 Correlations among sub-measures of the tests

<table>
<thead>
<tr>
<th></th>
<th>EIT G</th>
<th>EIT UG</th>
<th>TGJT G</th>
<th>TGJT UG</th>
<th>UGJT G</th>
<th>UGJT UG</th>
<th>MKT (Part1)</th>
<th>MKT (Part2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT G</td>
<td>---</td>
<td>.334**</td>
<td>-.038</td>
<td>.287**</td>
<td>.048</td>
<td>.281**</td>
<td>.093</td>
<td>.205</td>
</tr>
<tr>
<td>EIT UG</td>
<td>---</td>
<td>.006</td>
<td>.197</td>
<td>.180</td>
<td>.124</td>
<td>.179</td>
<td>.101</td>
<td></td>
</tr>
<tr>
<td>TGJT G</td>
<td>---</td>
<td>---</td>
<td>-.122</td>
<td>.216*</td>
<td>-.129</td>
<td>.157</td>
<td>.010</td>
<td></td>
</tr>
<tr>
<td>TGJT UG</td>
<td>---</td>
<td>.140</td>
<td>.455**</td>
<td>.339**</td>
<td>.192</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UGJT G</td>
<td>---</td>
<td>---</td>
<td>.126</td>
<td>.347**</td>
<td>.176</td>
<td></td>
<td></td>
<td>.212*</td>
</tr>
<tr>
<td>UGJT UG</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MKT (Part1)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** p<.01  *p<.05

EIT : Elicited Imitation Test.
EIT G : Elicitated Imitation Test grammatical items
EIT UG : Elicitated Imitation Test ungrammatical items
TGJT : Timed Grammaticality Judgment Test
TGJT G : Timed Grammaticality Judgment Test grammatical items
TGJT UG : Timed Grammaticality Judgment Test ungrammatical items
UGJT : Untimed Grammaticality Judgment Test
UGJT G : Untimed Grammaticality Judgment Test grammatical items
UGJT UG : Untimed Grammaticality Judgment Test ungrammatical items
MKT : Metalinguistic Knowledge Test
6.2.3.2 Factor analyses of the testing instruments

This part presents the results of the exploratory factor analysis and confirmatory factor analyses as the second step to examining the third year students’ linguistic knowledge structure. According to Albright and Park (2009), factor analysis ‘is a statistical method used to find a small set of unobserved variables (also called latent variables, or factors) which can account for the covariance among a larger set of observed variables (also called manifest variables)’(p.2).

6.2.3.2.1 Exploratory factor analysis of the sub-measures (EFA)

Exploratory factor analysis was conducted first since it serves the purpose of identifying the underlying or latent factors or constructs among the observed variables (Fabrigar et al., 1999). As aforementioned, the grammatical and ungrammatical items of the GJT's seemed to work differently and thus only the sub-measures were taken into consideration in this analysis.

Table 43 shows the results of the EFA and Figure 12 demonstrates the scree plot. Table 43 shows that three factors were extracted without requesting a fixed-factor solution. As recommended by Kaiser (1974), a minimum eigenvalue of 1.0 was used as the criterion for identifying factors. A minimum loading of .40 was used as a criterion for identifying good performing items (Stevens, 2009). The eigenvalues of these three factors were all greater than 1. The observed variables which had a loading of .40 or higher were used for interpreting the factors, but the UGJT G was still taken into account since its loading on Factor 3 was almost equal to .4. Table 43 shows that the TGJT ungrammatical items, the UGJT ungrammatical items and the MKT (Part 1) loaded on Factor 1, while the EIT grammatical and ungrammatical items loaded on Factor 2. The third factor had two variables (i.e., TGJT G and UGJT G) loading on it. Turning to the Scree plot, although eight factors were revealed in Figure 12, it clearly showed that the line connecting these eight factors went down dramatically from the fourth factor, which indicated that the first three factors could account for the majority of the variance. It indicates that there were three types of linguistic knowledge existing among the third year students. They will temporarily be labelled as Type 1 knowledge (Factor 1), Type 2 knowledge (Factor2) and Type 3 knowledge (Factor 3).
Table 43 Exploratory factor analysis matrix for sub-measures without requesting a fixed-factor solution

<table>
<thead>
<tr>
<th>Component</th>
<th>Eigenvalues</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.299</td>
<td>28.734</td>
<td>36.381</td>
</tr>
<tr>
<td>2</td>
<td>1.303</td>
<td>16.293</td>
<td>45.027</td>
</tr>
<tr>
<td>3</td>
<td>1.039</td>
<td>12.991</td>
<td>58.018</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT G</td>
<td>.000</td>
<td>.755</td>
<td>-.042</td>
</tr>
<tr>
<td>EIT UG</td>
<td>.043</td>
<td>.425</td>
<td>.147</td>
</tr>
<tr>
<td>TGJT G</td>
<td>-.166</td>
<td>.026</td>
<td>.590</td>
</tr>
<tr>
<td>TGJT UG</td>
<td>.642</td>
<td>.077</td>
<td>-.109</td>
</tr>
<tr>
<td>UGJT G</td>
<td>.149</td>
<td>.086</td>
<td>.394</td>
</tr>
<tr>
<td>UGJT UG</td>
<td>.685</td>
<td>.007</td>
<td>-.145</td>
</tr>
<tr>
<td>MKT (Part1)</td>
<td>.575</td>
<td>-.101</td>
<td>.285</td>
</tr>
<tr>
<td>MKT (Part 2)</td>
<td>.225</td>
<td>.147</td>
<td>.121</td>
</tr>
</tbody>
</table>

Extraction Method: Principal axis factoring
Rotation Method: Promax with Kaiser Normalization
b. Rotation converged in 5 iterations
6.2.3.2.2 Confirmatory factor analyses of the measures (CFA)

As mentioned in Chapter 5, a CFA is often carried out when researchers have ‘an understanding of the constructs that underlie the data’ (Roberts, 1999, p.3). It is primarily theory or hypothesis driven rather than data driven. In the current study, a series of CFAs were conducted to test R. Ellis’s (2005, 2006, 2009) model of implicit and explicit knowledge¹, to examine Isemonger’s (2007) proposal² that the measures might best be interpreted in terms of production and decision, and to identify the relationships among the three types of knowledge found in the EFA.

6.2.3.2.2.1 Testing R. Ellis’s model of implicit and explicit knowledge

In R. Ellis’s model, the maximum likelihood (ML) method was employed to estimate the model fit for this sample (n=92). Figure 13 shows the path diagram of his model and Table 44 reports some important model fit indices. Chi-square ($\chi^2$) is the most common method of evaluating goodness-of-fit. A low $\chi^2$ value, indicating nonsignificance, would point to a good fit, while a significant $\chi^2$ value (p<.05) indicates the model is statistically unlikely to occur. This model had a non-significant $\chi^2$ value which indicated that it was acceptable. It should be further noted that a normed fit index value (NFI) of greater than .90 indicates a good model fit and that greater than .95 indicates a superior fit. Root mean square error of approximation (RMSEA) value has also been regarded as one of the most informative criteria in evaluating model fit, because it takes into account the error of approximation in the population (Byrne,
Values less than .05 indicate a good fit for the model, values as high as .08 are considered an acceptable model fit, values ranging from .08 to .10 are considered a mediocre model fit, and those greater than .10 indicate a poor model fit (Byrne, 2001). However, although all the figures pointed to it being a good model for the sample in the present study, the AMOS results showed that this solution was not admissible because the exogenous variables (i.e., explicit and implicit knowledge) had an estimated covariance matrix that was not positive definite (i.e., the correlation coefficient is 1.03 greater than 1, which can be seen from the following path diagram).

**Figure 13 CFA testing R. Ellis’s model**

![Path diagram](image)

**Table 44 Summary of model fit**

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>NFI</th>
<th>RMSEA</th>
<th>Df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit/explicit</td>
<td>.437(p=.509)</td>
<td>.987</td>
<td>.000</td>
<td>1</td>
</tr>
</tbody>
</table>

NFI=normed fit index; RMSEA=root mean square error of approximation
6.2.3.2.2 Examining Isemonger’s proposal

In response to R. Ellis’s model of implicit and explicit knowledge, Isemonger (2007) proposed a rival model that distinguished production and decision (i.e., the Elicited Imitation Test and Oral Narrative Production Task would load on one factor, while the Timed Grammaticality Judgment Test, Untimed Grammaticality Judgment Test and Metalinguistic Knowledge Test would load on the other factor). Isemonger stated the rationale for this proposal as follows:

The imitation and oral narrative variables constitute production, whereas the other variables all involve some kind of judgment of a stimulus. As such, they involve reflection and reaction. Although the time suppression is designed to suppress reflection in the timed GJT, it is arguable that it does not—especially because the time limit was the average time for a native speaker (NS) plus 20% (p.109).

Due to the fact that R. Ellis’s model of implicit and explicit knowledge did not work for the sample in the current study, a confirmatory factor analysis was therefore carried out to examine Isemonger’s proposal. The maximum likelihood (ML) method was again employed to estimate the model fit for this sample (n=92). Figure 14 shows the path diagram of the model and Table 45 reports some important indices mentioned above such as $\chi^2$ (including p value), NFI, RMSEA, df. From Table 45, it can be seen that this model did not work well for the sample in the current study because the NFI value was far less than .90 and the RMSEA value was barely acceptable.
6.2.3.2.3 Identifying the relationships among the three types of knowledge found in the EFA

As shown earlier, three factors were extracted in the EFA. The TGJT UG, UGJT UG and MKT (Part1) were found to measure Type 1 knowledge, the EIT (including grammatical and ungrammatical items) measured Type 2 knowledge, while the TGJT G and UGJT G measured Type 3 knowledge. Three separate confirmatory factor analyses were conducted in order to identify the relationships among the three types of knowledge, i.e., Type 1 and Type 2 knowledge, Type 1 and Type 3 knowledge, and Type 2 and Type 3 knowledge. Figures 5, 6 and 7 show the path diagrams of the three models and Tables 46 and 47 report the important

---

**Table 45 Summary of model fit**

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>NFI</th>
<th>RMSEA</th>
<th>Df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production/decision</td>
<td>1.340 (p=.181)</td>
<td>.782</td>
<td>.061</td>
<td>13</td>
</tr>
</tbody>
</table>

NFI=normed fit index; RMSEA=root mean square error of approximation
model fit indices. According to the standards of the important model fit indices, models of Type 1/Type 2 knowledge (see Figure 15) and Type 2/Type 3 knowledge (see Figure 17) worked for the sample in the current study, whereas the model of Type 1/Type 3 knowledge (see Figure 16) was unlikely to occur. However, although all the figures pointed to the model of Type2/Type 3 knowledge being a good model, the results of the AMOS showed that this solution was not admissible because the standardised regression coefficients of the EIT UG and UGJT G, which can be seen from the path diagram were greater than 1 (Beta=1.04 and 2.29 respectively) and variances were negative (see Figure 17). Therefore, only the model of Type 1/Type2 knowledge worked for the sample in the current study.

Figure 15 CFA examining Type 1 and Type 2 knowledge

Table 46 Summary of model fit

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>NFI</th>
<th>RMSEA</th>
<th>Df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1/Type 2</td>
<td>.786(p=.543)</td>
<td>.949</td>
<td>.000</td>
<td>4</td>
</tr>
</tbody>
</table>

NFI=normed fit index; RMSEA=root mean square error of approximation
Figure 16 CFA examining Type 1 and Type 3 knowledge

Figure 17 CFA examining Type 2 and Type 3 knowledge
Table 47 Summary of model fit

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>NFI</th>
<th>RMSEA</th>
<th>Df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2/Type 3</td>
<td>.161(p=.688)</td>
<td>.991</td>
<td>.000</td>
<td>1</td>
</tr>
</tbody>
</table>

6.2.4 Response time and the reported use of rules for the grammatical and ungrammatical items in the GJTs

This part reports the results of the descriptive statistics and two paired samples t-tests of the participants’ use of time and rules while judging grammatical and ungrammatical items in the GJTs. Table 48 shows the results. The participants’ response time was measured and expressed in seconds, while the reported use of rules was calculated and expressed as a percentage. Table 48 indicates that their Judgment times on the grammatical and ungrammatical items were effectively the same (M=2.20 and M=2.19). They reported using rules more often while judging the ungrammatical items in the UGJT than judging the grammatical ones (M=.83 and M=.78). Two subsequent Paired-samples T-tests were conducted to examine whether the participants’ Judgment times in the TGJT, and the their rule use in the UGJT differed significantly. Table 48 shows that there was no statistically significant difference between the participants’ Judgment times for the grammatical and ungrammatical items of the TGJT (t[91]=-.391,p=.697>.05). However, the participants’ use of rules while judging the grammatical and ungrammatical items of the UGJT were significantly different (t[91]=-2.959,p=.004<.05).

Table 48 Comparison of timing and rule using on grammatical and ungrammatical items--Paired Samples Statistics (n=92)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Max</th>
<th>Min</th>
<th>SD</th>
<th>SEM</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TimeUse TGJT</td>
<td>2.19</td>
<td>3.14</td>
<td>1.48</td>
<td>.30</td>
<td>.031</td>
<td>.391</td>
<td>91</td>
<td>.697</td>
</tr>
<tr>
<td>TGJT UG</td>
<td>2.20</td>
<td>2.66</td>
<td>1.61</td>
<td>.25</td>
<td>.026</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rule Use UGJT G</td>
<td>.78</td>
<td>1.00</td>
<td>.06</td>
<td>.22</td>
<td>.022</td>
<td>-2.959</td>
<td>91</td>
<td>.004</td>
</tr>
<tr>
<td>UGJT UG</td>
<td>.83</td>
<td>1.00</td>
<td>.18</td>
<td>.15</td>
<td>.015</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TGJT : Timed Grammaticality Judgment Test
TGJT G : Timed Grammaticality Judgment Test grammatical items
TGJT UG : Timed Grammaticality Judgment Test ungrammatical items
UGJT : Untimed Grammaticality Judgment Test
UGJT G : Untimed Grammaticality Judgment Test grammatical items
UGJT UG : Untimed Grammaticality Judgment Test ungrammatical items

Figures 18 and 19 respectively display the differences in the participants’ time use and rule use while judging grammatical and ungrammatical items of the GJTs. In Figure 8, the vertical axis represents the participants’ response time for the grammatical and ungrammatical items in the TGJT. Similarly, the vertical axis in Figure 9 stands for the percentage of the participants’ reported rule use while judging the grammatical and ungrammatical items of the UGJT.

6.2.5 Summary of the main findings
This section reported the results of the various statistical analyses concerning the testing instruments of the third year students’ linguistic knowledge. The main findings can be summarised as follows:

1. The reliability analyses showed that all reliability alphas for the four tests (i.e., EIT, TGJT, UGJT and MKT) were satisfactory. In terms of the sub-measures, all alphas were satisfactory except those for the EIT UG and the MKT (Part1).
2. The correlation analyses and EFA also showed that the grammatical and ungrammatical items in the GJTs were not correlated and they seemed to measure different constructs. It was also found that the EIT ungrammatical items do not
correlate significantly with any of the other measures except the EIT grammatical items.

3. The participants’ use of time on the grammatical and ungrammatical items in the TGJT hardly differed (M=2.19 and M=2.20).

4. They used rules more often while judging ungrammatical items than judging grammatical items in the UGJT (M=.83 and M=.78). Different processes may have been involved when the students judged the grammatical and ungrammatical items. This will be discussed later.

5. The results of the EFA showed that three factors were extracted, indicating three types of knowledge were found among the third year students. They were labelled Type 1, Type 2 and Type 3 knowledge. The results of the first two CFAs showed that neither R. Ellis’s (2005, 2006, 2009) two-factor model of implicit and explicit knowledge nor Isemonger’s (2007) two-factor proposal distinguishing production and decision could interpret the scores on the different tests.

6. The results of the three pairs of CFAs showed that only one model worked for the sample in the current study, namely the one constituting Factor 1 (TGJT UG, UGJT UG and MKT Part 1) and Factor 2 (EIT G and EIT UG).

6.2.6 Type 1, Type 2 and Type 3 linguistic knowledge
6.2.6.1 Descriptive statistics for the measures of Type 1, Type 2 and Type 3 linguistic knowledge
This part presents the descriptive statistics for the measures of the three types of linguistic knowledge, including the means and standard deviations in order to answer research question 4. A reliability analysis was also conducted. As mentioned earlier, the TGJT UG, UGJT UG and MKT (Part1) measured Type 1 knowledge, the EIT was found to measure Type 2 knowledge, while the TGJT G and UGJT G measured Type 3 knowledge. Therefore, the measures of Type 1 knowledge and the measures of Type 3 knowledge were averaged. Table 11 shows the results. It can be seen that the Cronbach’s alpha values were all acceptable (i.e., α=.85 for the measure of Type 1 knowledge, α=.58 for the measure of Type 2 knowledge and α=.82 for the measure of Type 3 knowledge). The participants got much lower scores for Type 2 knowledge (M=.57) than they did for Type 1 knowledge (M=.65). They got the
highest scores for Type 3 knowledge. There was little difference in the standard deviations of all these measures (SD=.10, .08 and .09 respectively).

**Table 49 Descriptive statistics and reliability of the measures for their knowledge of English (n=92)**

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Items</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>SD</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>85</td>
<td>.65</td>
<td>.34</td>
<td>.88</td>
<td>.10</td>
<td>.85</td>
</tr>
<tr>
<td>Type 2</td>
<td>34</td>
<td>.57</td>
<td>.32</td>
<td>.77</td>
<td>.08</td>
<td>.58</td>
</tr>
<tr>
<td>Type 3</td>
<td>68</td>
<td>.85</td>
<td>.49</td>
<td>.99</td>
<td>.09</td>
<td>.82</td>
</tr>
</tbody>
</table>

6.2.6.2 Correlations among the three types of knowledge

A Pearson correlation analysis was conducted among the three types of knowledge in order to identify the relationships among them. Table 50 shows the results. It can be seen from the table that Type 1 and Type 2 knowledge correlated significantly with each other, while there was no significant relationship between Type 3 knowledge and the other two types of knowledge.

**Table 50 Correlation analysis of the three types of knowledge**

<table>
<thead>
<tr>
<th></th>
<th>Type 1</th>
<th>Type 2</th>
<th>Type 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>.313**</td>
<td>.024</td>
<td></td>
</tr>
<tr>
<td>Type 2</td>
<td></td>
<td>.025</td>
<td></td>
</tr>
</tbody>
</table>

**p<.01

6.2.6.3 Differences among the three types of knowledge

Three Paired-samples t-tests were then conducted to see whether there were statistically significant differences between the participants’ scores for: (1) Type 1 and Type 2 knowledge, (2) Type 1 and Type 3 knowledge, and (3) Type 2 and Type 3 knowledge. The results are presented below in Table 51 and Figure 2. The participants’ scores for all these three types of knowledge were significantly different: (1) Type 1 and Type 2 (t[91]= -7.306, p=.000<.05); (2) Type 1 and Type 3 (t[91]= -13.573, p=.000<.05); (3) Type 2 and Type 3 (t[91]= -21.685, p=.000<.05). Figure 20 shows the differences graphically. The horizontal axis stands for the number of the students. The vertical axis stands for the means of the measures of these three types of knowledge. The blue line represents the students’ Type 1 knowledge; their scores for Type 2 knowledge are represented by the red line, while the green line stands for the students’ Type 3 knowledge. By and large, their scores on the measure of Type 3 knowledge were the
highest, followed by their Type 1 knowledge. They scored lowest in the tests of Type 2 knowledge.

Table 51 Paired-Samples T-Tests of third year students’ knowledge of English

<table>
<thead>
<tr>
<th>Knowledge Type*Year 3</th>
<th>SEM</th>
<th>t</th>
<th>df</th>
<th>Sig.(2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1&amp;Type 2</td>
<td>.009</td>
<td>7.306</td>
<td>91</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>.011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 1&amp;Type3</td>
<td>.011</td>
<td>-13.573</td>
<td>91</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>.010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 2 &amp;Type 3</td>
<td>.009</td>
<td>-21.685</td>
<td>91</td>
<td>000</td>
</tr>
<tr>
<td></td>
<td>.010</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SEM=Std. Error Mean

Figure 20 Participants’ differences in the three types of knowledge

6.2.7 Discussion of the three types of knowledge

This part focuses on discussing what the testing instruments actually measured in order to justify and describe the three types of knowledge found in the results. The reason for doing so is that the results of the current study differed from those of Ellis et al.’s study indicating that they could not be explained in terms of a simple distinction between implicit and explicit knowledge.
6.2.7.1 Reliability of the measures

Compared with the reliability of the measures in R. Ellis’s (2009) study, this study obtained overall lower Cronbach’s alpha values. Table 52 shows the comparison. Cronbach’s alpha is a function of the population variance of the test scores (Bachman, 2004; Brown, 2005). According to the formula, the larger the variance of the test scores, the higher the value of Cronbach’s alpha. The lower Cronbach values for the four tests in this study can probably be explained by the more uniform population variance of the test scores as evident in the relatively smaller standard deviations compared to those in R. Ellis’s study. Also, the participants in this study were more homogeneous in terms of their English proficiency compared to those in their study, which investigated a mixed population of ‘second’ as opposed to ‘foreign’ language learners.

Table 52 Comparison of the figures in R. Ellis (2009) and the present study

<table>
<thead>
<tr>
<th>R. Ellis (2009)</th>
<th>Present Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s Alpha (α)</td>
<td>SD</td>
</tr>
<tr>
<td>EIT</td>
<td>.88</td>
</tr>
<tr>
<td>TGJT</td>
<td>.81</td>
</tr>
<tr>
<td>UGJT</td>
<td>.83</td>
</tr>
<tr>
<td>MKT</td>
<td>.90</td>
</tr>
</tbody>
</table>

Source: R. Ellis(2009, p.49)

The reliability values for some sub-parts were relatively low, ranging from .49 for the MKT Part 1 to .45 for the EIT ungrammatical items. There are several possible reasons for the low reliability values of these two parts. One might be the smaller number of items in the tests (Yang, 1992; Bachman, 2004). The two parts both had 17 items, which was only half the number of the items in other sub-parts. Another reason might be the smaller population variance of the test scores (Yang, 1992; Bachman, 2004). Compared to the EIT grammatical items, the EIT ungrammatical items had a smaller variance, as reflected in the standard deviation (see Table 2 in this chapter). Guessing might have contributed to the low reliability for the MKT Part 1 since this part presented test-takers with 17 ungrammatical sentences and
required them to select the rule that best explained each error out of four choices provided. This type of multiple-choice test gave the students a 25% chance of getting the right answer and thus guessing might have played a major role when the participants did not know the meaning of a particular sentence in the test.

6.2.7.2 The structure of the third year students’ L2 knowledge
The results of the correlation and factor analyses suggest that the structure of the third year students’ L2 knowledge differs from that reported in R. Ellis et al.’s (2005) study, as shown by the different results for the correlation and factor analyses obtained in the two studies. R. Ellis identified two types of knowledge among their participants, whereas this study found three types. Table 53 compares the results for the two studies.

<table>
<thead>
<tr>
<th>R. Ellis (2009)</th>
<th>Present Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlational analyses</td>
<td>(1) The EIT G correlates with the UGJT UG and the TGJT UG.</td>
</tr>
<tr>
<td></td>
<td>(2) The EIT UG and the MKT Part 2 do not correlate with any other measures.</td>
</tr>
<tr>
<td></td>
<td>(3) The TGJT G and the UGJT G do not correlate significantly with the MKT Part 1.</td>
</tr>
<tr>
<td>(1) The UGJT G correlates strongly with the TGJT and the EIT.</td>
<td></td>
</tr>
<tr>
<td>(2) The UGJT UG correlates strongly with the MKT.</td>
<td></td>
</tr>
<tr>
<td>Factors extracted (EFA)</td>
<td>2</td>
</tr>
<tr>
<td>Knowledge structure (CFA)</td>
<td>3</td>
</tr>
<tr>
<td>Supported R. Ellis’s hypothesised model of two factors: implicit knowledge and explicit knowledge</td>
<td>Failed to support R. Ellis’s hypothesised model of two factors: implicit and explicit knowledge.</td>
</tr>
</tbody>
</table>

EIT G: Elicitated Imitation Test grammatical items
Two questions arise – (1) What explanation is there for the differences in the two studies? and (2) What is the structure of the third year students’ L2 knowledge and how can it be explained? To answer these question, I will undertake an analysis of the nature of the learner responses that the tests used in my study were designed to elicit (see Table 54). It should be noted, however, that my study did not include the Oral Narrative Task, which in many respects can be considered the best measure of implicit knowledge. This absence may partly explain the different patterns of the results.

Table 54 identifies four key characteristics of the battery of tests used in my study. I will consider the tests in terms of each characteristic and then use this analysis to propose what the three types of knowledge revealed by the factor analyses consist of.

1. Degree of consciousness – rule vs. feel.

The EIT and the TGJT were designed to elicit an intuitive response (i.e. the learners ‘feel’ for the correct use of the target features). In contrast, the UGJT and the MKT Part 1 were designed to elicit a metalinguistic response based on ‘rule’. However, none of the factor analyses supported this. The results for the various sub-parts of the tests suggest that in fact the tests did not elicit the responses expected. The EIT grammatical items correlated with both the ungrammatical items in the two Judgment tests suggesting that the learners may in fact have been accessing explicit rules to respond to the EIT grammatical items. The interviews with a number of the participants (around 10) support this conclusion. They were informally asked in Chinese to retrospect whether or not they had tried to access explicit rules when they responded to the EIT. One student said:

有些句子，我在明白了意思后，重复的时候就会尝试使用下语法去组织我
的句子。因为记忆句子然后再去逐字重复对我来说是非常难的事。但是
我不得不承认不是每次想用语法的时候都可以成功，因为可能会因为没有时间或者想不起某项语法而尝试失败。

(For some sentences, I tried to refer to explicit rules in order to organise my sentences to repeat them in correct English, because it was really difficult for me to memorise and repeat each sentence verbatim. However, I have to admit that I did not succeed in doing so every time. Sometimes because time was limited and sometimes because I forgot the rule.)

Another student also mentioned she tried to make use of explicit rules in the EIT. She said:

我总是不自觉地就想用语法来理解和组织我的句子，尤其是当我遇到很难懂不能听完就明白的句子的时候。

(I always wanted to make use of grammar rules to understand and to organise each sentence, especially when I was confronted with very difficult sentences which I could not understand immediately after I heard them.)

These comments suggested that although the test was designed to eliminate the possibility of the learners accessing their explicit knowledge in the EIT, in fact they tried to do so. It would seem that the EIT did not consistently elicit responses by ‘feel’.

2. Type of processing – offline vs. online
The tests were also designed to elicit different types of processing. The EIT and the TGJT (especially the grammatical sentences) were designed to elicit online processing (i.e. these tests required rapid responses from the learners). The UGJT and the MKT Part 1 were designed to elicit offline responses (i.e. there was no time restriction on the responses). Again, the results of the factor analyses (including the EFA and the CFAs) failed to show that this characteristic distinguished the learners’ responses to the tests. The grammatical sentence of the TGJT did not correlate with either the grammatical or the ungrammatical sentences of the EIT. The EIT and TGJT measures failed to load on the same factor in the EFA.
3. Response mode – production vs. decision
Isemonger (2007) proposed that the tests in R. Ellis’ study could be distinguished in terms of whether they elicited production (EIT) or a decision (TGJT, UGJT, MKT). Ellis and Loewen (2007) tested this model but found it was not supported with their data. This study also tested Isemonger’s proposal and also found that it could not account for the results of the tests. However, the EFA did show that the EIT G and EIT UG loaded on a separate factor, suggesting that the EIT was measuring a distinctive aspect of the learners’ L2 knowledge (i.e., production). Also, the CFA comparing the EITG and EIT UG with the TGJTUG, UGJTUG and MKT Part 1 produced a satisfactory solution, indicating that the EIT and the ungrammatical items in both judgment tests were measuring separate aspects of these learners’ L2 knowledge. In other words, there is evidence that the response mode might have been a factor. The difference between Type 1 and Type 2 knowledge can be characterised as the difference between ‘decision-making’ and ‘production’.

4. Focus of attention – meaning vs. form
The EIT was designed to focus learners’ attention on meaning whereas the other tests were intended to focus learners’ attention on form (i.e. they called for some kind of metalinguistic judgment). However, in the pattern of correlations shown in Table 3, the EFA and the CFAs all failed to indicate that the meaning versus form distinction distinguished their responses to the various tests. The EITG correlated with the ungrammatical items in both the grammaticality judgment tests. Also, the grammatical and the ungrammatical items in the judgment tests were clearly functioning differently in the tests designed to elicit a response according to form.

To sum up the results of this analysis, the online/offline distinction clearly did not influence test performance, while it remains uncertain whether both the EIT and the TGJT elicited ‘feel’ responses and whether the EIT elicited a ‘meaning’ as opposed to ‘form’ response as we have seen that some of the learners reported trying to produce correct sentences in this test. It would seem that the test results cannot be explained in terms of a simple distinction between explicit and implicit knowledge, therefore the structure of the third year’s L2 knowledge is different from the structure of the learners investigated in Ellis’ et al’s study. What then is the nature of the third year students’ L2 knowledge?
To explain the L2 knowledge structure of the third year students we need to consider the following:

1. These learners may have drawn substantially on their declarative (explicit) knowledge in the tests irrespective of whether they were designed to measure implicit knowledge.

2. The results suggest that in the EIT, the learners may have drawn on their declarative (explicit) knowledge for production. The requirement that they attend to the meaning of the sentences and that they then reproduce them in real time may have placed very considerable demands on their processing capacity – more so than in the other tests that only required them to attend to form and make a decision about grammaticality. It can be hypothesised, therefore, that the EIT tapped declarative knowledge that had become proceduralised (i.e., explicit knowledge that has been practised to the point where it can be accessed rapidly). It is noted that DeKeyser (2003) argued that proceduralised declarative knowledge is functionally equivalent to implicit knowledge and cannot be readily distinguished from it. It is nevertheless explicit in nature.

3. According to Hedgcock (1993), ‘Judgment tasks by their very nature engage learners in an activity that is highly effortful and therefore not necessarily apt to bring about behaviour which is essentially unmonitored’ (p.3). In other words, the learners may have drawn on explicit knowledge in the two GJTIs. However, as Bialystok (1986) pointed out, ungrammatical forms are more difficult for learners to identify or evaluate than grammatical forms. It is likely therefore that they will be more inclined to draw on their knowledge of explicit rules when judging the ungrammatical sentences than when judging the grammatical sentences (Bialystok, 1986; Martens, 1988; R. Ellis, 1991). In the case of the present study, this interpretation is supported by the fact that the learners reported using their rule-based knowledge to a greater extent with the ungrammatical sentences of the UGJT. It has also been observed that learners usually respond with greater certainty and accuracy to grammatical items than to ungrammatical items possibly because they rely more on ‘feel’. The EFA indicated that the grammatical and ungrammatical items in both tests loaded on different factors.
What the results seem to suggest is that the learners may have been drawing on their declarative knowledge of L2 English but in somewhat different ways. In the case of Type 2 knowledge (measured by the EIT) they may have been accessing their proceduralised declarative knowledge to engage in online production. In the case of Type 1 knowledge, the scores for the ungrammatical sentences in both GJTs and the MKT Part 1 loaded on the same factor. In the case of Type 3 knowledge the scores for the grammatical sentences in the two GJTs loaded on the same factor. A common factor to Type 1 and Type 3 knowledge is that they both involved decision-making rather than production. In other words, they required the learners to monitor the grammaticality of the sentences. However, it would seem that the learners differed in how they undertook this monitoring for the grammatical and ungrammatical sentences. In the case of the ungrammatical sentences they were likely to have consciously applied explicit rules. In the case of the grammatical sentences, however, they may not have needed to consciously apply rules and were able to determine a sentence as grammatical more by ‘feel’. If this explanation is correct, then the difference between Type 1 and Type 3 knowledge rests on whether the learners’ decisions about grammaticality were made consciously on the basis of their declarative knowledge or more intuitively.

Tentatively, therefore I would like to characterise the structure of the learners’ L2 knowledge in terms of (1) whether it was required for production (Type 2 knowledge) or decision making and (2) in the case of decision-making, whether it involved conscious rule application (Type 1 knowledge) or a more intuitive response based on their declarative knowledge (Type 3 knowledge). It is interesting to note that Type 1 and Type 2 knowledge are correlated (see Table 50) but Type 3 knowledge does not correlate with either of the other types. What Type 1 and Type 2 have in common is a conscious effort to apply rules.

The explanation for the differences in the knowledge structure of the students in this study and that reported in R. Ellis (2009) may lie in the environmental differences in the populations from which the samples of the two studies were drawn. In R. Ellis (2009), the learners were very mixed. Many had learned English formally before they came to New Zealand but they had also had opportunities to engage in communicative interactions which provided them with opportunities to develop their implicit knowledge (or perhaps to more fully proceduralise their explicit knowledge for production) as they had been resident on average 1.9 years in New Zealand. The third year Chinese had been studying English for
more than two years at university. The instruction they received at university consisted of a mixture of formal and communicative instruction and they had native English teachers for their speaking and culture courses. However, their exposure to English in the real world was very limited and it is likely that they had probably had few opportunities to engage in fluent production in the classroom. Thus, they were not able to develop implicit knowledge and had to rely instead on their rule-based knowledge. To a degree this had become proceduralised and was readily available for deciding whether a sentence was grammatical but was less easily accessed in online production. Oral production is problematic for them as reflected in the conspicuously lower scores they achieved on the EIT in comparison to the New Zealand learners. In terms of metalinguistic responses, however, they are quite comparable.
Table 54 An analysis of the characteristics of the different measures

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>EIT G</th>
<th>EIT UG</th>
<th>TGJT G</th>
<th>TGJT UG</th>
<th>UGJT G</th>
<th>UGJT UG</th>
<th>MKT Part 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of consciousness (Rule or Feel?)</td>
<td>Feel (?)</td>
<td>Feel (?)</td>
<td>Feel (?)</td>
<td>Feel (?)</td>
<td>Rule (?)</td>
<td>Rule</td>
<td>Rule</td>
</tr>
<tr>
<td>Processing</td>
<td>Online (?)</td>
<td>Online (?)</td>
<td>Online</td>
<td>Online (?)</td>
<td>Offline (?)</td>
<td>Offline</td>
<td>Offline</td>
</tr>
<tr>
<td>Response Mode</td>
<td>Production</td>
<td>Production</td>
<td>Decision</td>
<td>Decision</td>
<td>Decision</td>
<td>Decision</td>
<td>Decision</td>
</tr>
<tr>
<td>Focus of attention</td>
<td>Meaning (?)</td>
<td>Meaning (?)</td>
<td>Form</td>
<td>Form</td>
<td>Form</td>
<td>Form</td>
<td>Form</td>
</tr>
</tbody>
</table>
6.3 The relationship between the third year students’ L2 knowledge structure and their general language proficiency

The third year students’ language proficiency was measured by the Test for English Majors, Band 4 (TEM 4). As mentioned in Chapter 4, this test contains six parts—Dictation, Listening Comprehension, Cloze, Grammar& Vocabulary, Reading Comprehension and Writing. However as it was not possible to access the students’ scores on separate parts, only the overall score of this test was considered in this study. In order to answer research question 5 regarding the relationship between the third year students’ linguistic knowledge and their general L2 proficiency, a Pearson Product correlation analysis and a multiple regression analysis were carried out. Tables 56 and 57 show the results.

The descriptive statistics for the TEM 4 including the mean and the range were calculated first. The distribution of the scores of each measure is reflected in the standard deviation. Table 55 shows the result.

Table 55 Descriptive statistics of the language proficiency test (n=92)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEM4</td>
<td>.70</td>
<td>.51</td>
<td>.83</td>
<td>.07</td>
</tr>
</tbody>
</table>

Figure 21 shows the corresponding scatter plot of the multiple regression model for general English proficiency. As mentioned in the previous chapter, the assumption of error (as residuals) being normally distributed is an important assumption. The probability values on the coefficients and coefficient confidence intervals are based on this assumption. From Figure 21, it can be seen that the residuals were normally distributed.
From Table 56 below, it can be seen that general English proficiency correlated significantly with all three types of knowledge (r = .494, r = .445, and r = .212, with one relationship weak (Type 3 knowledge and general language proficiency) and with two moderate relationships (Type 1/Type 2 knowledge and general language proficiency).

**Table 56 Correlation matrix**

<table>
<thead>
<tr>
<th>Type</th>
<th>General Proficiency (TEM 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>.494**</td>
</tr>
<tr>
<td>Type 2</td>
<td>.445**</td>
</tr>
<tr>
<td>Type 3</td>
<td>.212*</td>
</tr>
</tbody>
</table>

**p<.01

TEM4 : Test for English Majors, Band 4

A Stepwise multiple regression analysis was carried out to further examine the relationships between the participants’ knowledge of English and general English proficiency. For this multiple regression analysis, English proficiency was considered as the dependent variable, while the three types of knowledge of English were the independent variables. Table 57 shows the results. It can be seen that the scores on all these three types of knowledge predicted the scores for general English proficiency (F=17.576, p = .000<.05). The value for the multiple R was .612. R Square (R2) indicates the proportion of the variance in the dependent variable which is accounted for by the model. However, as mentioned earlier, it ‘tends to somewhat over-estimate the success of the model when applied to the real world, so an Adjusted R Square value is calculated which takes into account the number of variables in the model and the number of observations (participants) our model is based on’ (Brace,
Kemp & Snelgar, 2006,p.209). Accordingly, it can be seen from Table 57 that the three types of knowledge accounted for 35.3% of the variance in the English proficiency scores in this sample. This table also shows the respective beta values of the three types of knowledge. Hence, in this sample, Type 1 knowledge was a slightly better predictor of English proficiency (Beta=.390, p=.000) than the other two types of knowledge.

Table 57 Multiple regression analysis of knowledge of English and general English proficiency

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta</th>
<th>t</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>.390</td>
<td>4.390</td>
<td>.000</td>
</tr>
<tr>
<td>Type 2</td>
<td>.317</td>
<td>3.576</td>
<td>.001</td>
</tr>
<tr>
<td>Type 3</td>
<td>.194</td>
<td>2.304</td>
<td>.024</td>
</tr>
<tr>
<td>R=.612</td>
<td>R²=.375</td>
<td>Adjusted</td>
<td>F=17.576</td>
</tr>
<tr>
<td></td>
<td>R²=.353</td>
<td>Sig.=.000</td>
<td></td>
</tr>
</tbody>
</table>

Note. Method: Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of- F-to-remove >= .100)

Predictors: Type 1, Type 2 and Type 3 knowledge

Dependent Variable: General English proficiency

The fifth research question of this study concerns the extent to which the students’ knowledge of English can account for (or predict) L2 proficiency measured by the TEM 4. It is reasonable to hypothesise that all three types of knowledge would correlate significantly with language proficiency and evidence for this can be found in the results of the correlation analysis reported in Table 56. It is noticeable, however, that the correlations involving Type 1 and Type 2 knowledge are stronger than that involving Type 3 knowledge. Also Type 1 knowledge figured as the strongest predictor of general proficiency as measured by the TEM. These results suggest that the learners were drawing to a considerable extent on their declarative knowledge when answering the questions in the TEM. The TEM does not include a speaking component so it was unlikely to have made substantial demands on the learners’ proceduralised declarative knowledge. By and large, this was a test that did not require automatic processing so the learners could rely on consciously applied rule-based knowledge and this is what the correlation and multiple regression analyses appear to show.
In a way, the results are not dissimilar to those reported in Elder and Ellis (2009). They reported that their measures of explicit knowledge correlated more strongly with proficiency (as measured by the TOEFL) than their measures of implicit knowledge. As Elder (2009) pointed out ‘language tests encourage a focus on display that invites self-monitoring at the expense of more spontaneous language performance’ (Elder, 2009, p.179). A ‘feel’ for grammaticality – which is what I have suggested Type 3 knowledge entails – may play a much less significant role in language proficiency as measured by a test like the TEM. It would have been interesting to investigate the relationship between the three types of knowledge and a more communicative test (e.g. one that included a speaking component) but this was not possible.

6.4 Exploring the individual difference factors contributing to the difference in the third year students’ knowledge of English

This part aims to present the results of a series of statistical analyses designed to answer research question 6 concerning what factors can account for differences in the Chinese third year university students’ knowledge of English. As mentioned in Chapter 2, four individual difference variables (i.e., learner beliefs, language learning motivation, foreign language anxiety and language analytic ability) were considered in this study.

Three questionnaires and a language analytic ability test were conducted to investigate the four individual difference variables. As stated in Chapter 2, learner beliefs were divided into three sub-types (i.e., beliefs about analytic learning, beliefs about experiential learning and affective states) and language learning motivation was divided into seven sub-types (i.e., intrinsic interest, immediate achievement, learning situation, going abroad, social responsibility, individual development and information medium). Table 20 shows the means, standard deviations, ranges and reliability of the different measures. Cronbach’s alpha values varied between .78 for foreign language anxiety and .53 for language analysis indicating the alpha scores were satisfactory although the alpha value of the language analysis test was low. In terms of the sub-measures, the alphas varied between .76 for ‘experiential learning’ (B2) to .42 for ‘affective states’ (B3). The reliability of all the measures was satisfactory except that for ‘affective states’ (B3, α=.42) and ‘information medium’ (M7, α=.53). Table 58 also shows that all reliability values of the measures including the sub-measures were acceptable.
except those for the language analytic ability test ($\alpha=.53$), ‘affective states’ (B3, $\alpha=.46$) and ‘information medium’ (M7, $\alpha=.53$).

Table 58 Descriptive statistics and reliability of all questionnaires and language analysis test (B refers to Learner Beliefs, M refers to Motivation) (n=92)

<table>
<thead>
<tr>
<th>Measures</th>
<th>Items</th>
<th>Mean</th>
<th>Max.</th>
<th>Min.</th>
<th>SD</th>
<th>Reliability ($\alpha$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beliefs</td>
<td>27</td>
<td>.73</td>
<td>.87</td>
<td>.48</td>
<td>.06</td>
<td>.68</td>
</tr>
<tr>
<td>Motivation</td>
<td>30</td>
<td>.67</td>
<td>.87</td>
<td>.55</td>
<td>.07</td>
<td>.73</td>
</tr>
<tr>
<td>Anxiety</td>
<td>33</td>
<td>.55</td>
<td>.77</td>
<td>.38</td>
<td>.07</td>
<td>.78</td>
</tr>
<tr>
<td>Analytic ability</td>
<td>14</td>
<td>.75</td>
<td>.93</td>
<td>.29</td>
<td>.15</td>
<td>.53</td>
</tr>
<tr>
<td><strong>Sub-types of beliefs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analytic Learning (B1)</td>
<td>7</td>
<td>.69</td>
<td>1.00</td>
<td>.43</td>
<td>.10</td>
<td>.61</td>
</tr>
<tr>
<td>Experiential Learning (B2)</td>
<td>8</td>
<td>.81</td>
<td>1.00</td>
<td>.35</td>
<td>.10</td>
<td>.76</td>
</tr>
<tr>
<td>Affective States (B3)</td>
<td>3</td>
<td>.70</td>
<td>.93</td>
<td>.40</td>
<td>.10</td>
<td>.42</td>
</tr>
<tr>
<td><strong>Sub-types of motivation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrinsic Interest (M1)</td>
<td>6</td>
<td>.70</td>
<td>1.00</td>
<td>.37</td>
<td>.15</td>
<td>.69</td>
</tr>
<tr>
<td>Immediate Achievement (M2)</td>
<td>5</td>
<td>.63</td>
<td>1.00</td>
<td>.28</td>
<td>.15</td>
<td>.61</td>
</tr>
<tr>
<td>Learning Situation (M3)</td>
<td>5</td>
<td>.62</td>
<td>1.00</td>
<td>.36</td>
<td>.14</td>
<td>.65</td>
</tr>
<tr>
<td>Going Abroad (M4)</td>
<td>3</td>
<td>.58</td>
<td>1.00</td>
<td>.20</td>
<td>.18</td>
<td>.72</td>
</tr>
<tr>
<td>Social Responsibility (M5)</td>
<td>3</td>
<td>.67</td>
<td>1.00</td>
<td>.33</td>
<td>.16</td>
<td>.58</td>
</tr>
<tr>
<td>Individual Development (M6)</td>
<td>5</td>
<td>.81</td>
<td>1.00</td>
<td>.28</td>
<td>.13</td>
<td>.73</td>
</tr>
<tr>
<td>Information Medium (M7)</td>
<td>2</td>
<td>.65</td>
<td>1.00</td>
<td>.20</td>
<td>.18</td>
<td>.53</td>
</tr>
</tbody>
</table>

A Pearson Product correlation analysis and three Stepwise multiple regression analyses were carried out to explore the relationships between the four individual variables and the three types of knowledge (see Table 59). Only two significant correlations were found between the IDs and Type 1 knowledge in this sample. Language learning motivation and foreign language anxiety were found to have weak relationships with the participants’ Type 1 knowledge. None of the correlations involving Type 2 and Type 3 knowledge were statistically significant.

The results of the multiple regression analyses (see Table 60) showed that only language learning motivation predicted Type 1 knowledge ($F=5.682, p=.019<.05$). However, this model
only accounted for 5.0% of the variance in Type 1 knowledge scores. Figure 22 shows that the residuals for this analysis were normally distributed. None of the ID variables predicted Type 2 or Type 3 knowledge.

Table 59 Correlations between IDs and knowledge of English

<table>
<thead>
<tr>
<th></th>
<th>Type 1</th>
<th>Type 2</th>
<th>Type 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner Beliefs</td>
<td>.135</td>
<td>.032</td>
<td>.019</td>
</tr>
<tr>
<td>Motivation</td>
<td>.246*</td>
<td>.003</td>
<td>.009</td>
</tr>
<tr>
<td>Language Anxiety</td>
<td>-.209*</td>
<td>-.012</td>
<td>.037</td>
</tr>
<tr>
<td>Language Analytic</td>
<td>.183</td>
<td>.058</td>
<td>.188</td>
</tr>
<tr>
<td>Ability</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** p<.01 *p<.05

Table 60 Stepwise multiple regression of IDs to Type 1 knowledge

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta</th>
<th>t</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>.244</td>
<td>2.384</td>
<td>.019</td>
</tr>
</tbody>
</table>

R=.244  R²=.059  Adjusted R²=.049  F=5.682 Sig.=.019

Figure 22 Normal P-P plot of regression standardized residual (Type 1 Knowledge)

Tables 61 and 62 show the results for the ID sub-types. Only three positive significant relationships were found between the ID sub-types and Type 1 knowledge. A weak positive relationship was found between beliefs about analytic learning and Type 1 knowledge (r=.216). Two sub-types of language learning motivation were positively related to Type 1 knowledge. They were: ‘intrinsic interest’ and ‘information medium’ (r=-.207 and r=-.214). However, the relationships were also weak. No relationships were found between any ID sub-types and Type 2 or Type 3 knowledge.

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Three subsequent multiple regression analyses were conducted to investigate which ID subtypes predicted the three types of knowledge. However, no subtypes were found to predict either Type 2 or Type 3 knowledge. Only learner beliefs about analytic learning was found to be the predictor of the scores for Type 1 knowledge \( (F=5.206, p=.025<.05) \), indicating that the students who had stronger beliefs about analytic ability (e.g., they allocated more importance to the explicit study of the target language as a linguistic and communicative system) tended to have higher levels of Type 1 knowledge. Figure 23 shows that the residuals were normally distributed.

Table 61 Correlations between ID sub-measures and the three types of knowledge

<table>
<thead>
<tr>
<th>Sub-types of beliefs</th>
<th>Type 1</th>
<th>Type 2</th>
<th>Type 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytic Learning (B1)</td>
<td>.216*</td>
<td>.024</td>
<td>.076</td>
</tr>
<tr>
<td>Experiential Learning (B2)</td>
<td>.017</td>
<td>-.046</td>
<td>.077</td>
</tr>
<tr>
<td>Affective States (B3)</td>
<td>.023</td>
<td>.135</td>
<td>.020</td>
</tr>
</tbody>
</table>

**Sub-types of motivation**

<table>
<thead>
<tr>
<th></th>
<th>Type 1</th>
<th>Type 2</th>
<th>Type 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic Interest (M1)</td>
<td>.207*</td>
<td>-.112</td>
<td>.023</td>
</tr>
<tr>
<td>Immediate Achievement (M2)</td>
<td>-.080</td>
<td>.077</td>
<td>-.074</td>
</tr>
<tr>
<td>Learning Situation (M3)</td>
<td>.046</td>
<td>.030</td>
<td>.034</td>
</tr>
<tr>
<td>Going Abroad (M4)</td>
<td>-.151</td>
<td>.191</td>
<td>.047</td>
</tr>
<tr>
<td>Social Responsibility (M5)</td>
<td>.203</td>
<td>.103</td>
<td>.032</td>
</tr>
<tr>
<td>Individual Development (M6)</td>
<td>.098</td>
<td>.087</td>
<td>.087</td>
</tr>
<tr>
<td>Information Medium (M7)</td>
<td>.214*</td>
<td>.001</td>
<td>.091</td>
</tr>
</tbody>
</table>

** p<.01 *p<.05

Table 62 Stepwise multiple regression for IDs and Type 1 knowledge

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta</th>
<th>t</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytic Learning (B1)</td>
<td>.216</td>
<td>2.098</td>
<td>.025</td>
</tr>
</tbody>
</table>

\( R=.216 \)  \( R^2=.047 \)  Adjusted \( R^2=.036 \)  \( F=4.402 \)  \( \text{Sig.}=.039 \)
By and large, the Cronbach’s alpha coefficients for the ID scores were acceptable. The low coefficients for the language ability test, ‘affective states’ and ‘information medium’ can be partially accounted for by the small number of items used to measure these variables (e.g., Yang, 1992). There are only 14 items in the language analytic ability test, fewer than most other tests (e.g., standardised tests, entrance tests). Moreover, there are only two items in the ‘information medium’ and five items in the ‘affective states’. Tanaka (2004) reported relatively low alphas for the three subscales of learner beliefs, ranging from .34 to .65. Tanaka and Ellis (2003) argued that the beliefs measures ‘should be seen in the context of measures of reliability obtained for learner belief questionnaires in other studies’ (p.78). They compared the Cronbach’s alpha values of belief measures in several studies (Yang, 1992; Sakui & Gaies, 1999) and found that the values of belief measures were consistently low (usually ranging from .70 to .30). They suggested this may be because the ‘learners’ belief systems are not homogeneous’ and ‘learners can hold beliefs that appear to be contradictory’ (p.78).

Alderson et al. (1997) pointed out that ‘the differences among learners in the success they enjoy in foreign language learning are commonly attributed to factors in the environment and to differences among individuals’ (p.97). The learning environment of the third year learners may not have differed greatly. But it is reasonable to have expected that individual differences in the learners’ beliefs, motivation, language anxiety and analytic ability would have led to differences in their L2 knowledge. It was, therefore, surprising to find so few significant correlations between these ID factors and the three types of knowledge. Also, the
significant correlations that were found were all on the weak side. One possible explanation for this may have been the poor reliability of some of the ID measures but many of the measures demonstrated acceptable reliability. Nor can the lack of variance in the ID scores or in the types of knowledge scores (see Tables 49 and 58) explain why so few significant relationships were found. The results of this study, then, are in marked contrast to the results of ID research in general (e.g. Dornyei, 2005) and differ also from the results reported in Ellis et al. (2009). Overall then the results are surprising and disappointing. In particular, it is puzzling to find no relationship between language analytical ability and Type 1 knowledge given that previous research (e.g. Roehr, 2006, 2009) has reported significant correlations between this ability and metalinguistic knowledge. However, there was some evidence of a relationship between language analytical ability and one of the test scores. A significant but weak correlation between language analytical ability and the MKT Part 1 scores was found ( \( r = .266; p < .01 \)). In other words, learners strong in language analytical ability were better able to identify the correct metalinguistic explanation for a grammatical error.

Even the negative correlation between language anxiety and Type 1 knowledge is somewhat surprising. Previous studies have reported a negative relationship between anxiety and language proficiency but one might have expected to find that anxiety impacted more on oral performance (i.e. on Type 2 knowledge) than on decision-making based on the conscious application of rules (i.e. Type 1 knowledge). The correlation between anxiety and Type 2 knowledge was close to zero (\( r = -.012 \)). Perhaps, anxiety becomes a factor in judging the grammaticality of sentences if learners are unsure of the rules.

Interestingly, however, the learners’ responses to questions in the interview suggested that anxiety might have been a factor in the tests contributing to Type 2 knowledge. Xiao I, for example, had the lowest Type 2 knowledge score and reported feeling apprehension when she had to communicate with her peers in English:

即使我已经到三年级了，已经跟同学都很熟悉了，我还是非常怕在我同学面前犯很多错误，因此在课堂上，我就尽量少用英语与同学交流，只有在不得已老师要求必须用英语交流完成某项任务的时候我才使用英语与同学交流。 (Although I’m in my third year of study at university and very familiar with all my classmates, I’m still quite afraid to make a lot of mistakes in front of them. Therefore, I
tried to use as little English to communicate with my fellow classmates as possible in class. I only use English for communication when it is required and necessary.)

Perhaps the anxiety questionnaire failed to capture the true nature of these learners’ anxiety when having to speak in English.

Language learning motivation has been found to be one of the factors most strongly associated with language achievement. Many studies have shown that ‘integrative motivation’ in particular is a powerful predictor of achievement in an L2 (Clement et al., 1978; Ramage, 1990). Thus, it is reasonable to anticipate that motivation would be strongly related to all three types of knowledge since it is a factor that is strongly correlated with language achievement. However, the results of the multiple regression and correlation analyses reported in Tables 59, 60 and 61 and 62 provide only limited evidence that motivation was a factor in these learners. Only ‘intrinsic interest’ and ‘information medium’ were found to correlate positively with Type 1 knowledge but the correlations were very weak ($r=.207$ and $r=.214$). Given the nature of the instructional experiences of these learners it is perhaps not so surprising to find that motivation was only a factor in Type 1 knowledge. Those learners who were more motivated to learn English were more likely to have developed the declarative knowledge of grammar rules that their instruction was likely to have emphasised and that the tests they had to take assessed.

Again, though the interview data do not bear out the quantitative findings, these data suggest that motivation was positively related to all three knowledge types. Xiao F, for example, who had a high Type 2 knowledge score, was clearly intrinsically interested in learning English. She said she liked reading English books rather than Chinese translations of them. Xiao G, who had the highest Type 3 knowledge score, was also keen on learning English:

我非常喜欢英语这门语言，喜欢吸取更多的词汇和学习英语国家的文化。(I really like English. I like to learn more words and the culture of English-speaking countries.)

Xiao H who achieved the highest score for Type 1 knowledge manifested an integrative motivation:
Again, then, one wonders to what extent the motivation questionnaire afforded a valid measure of these learners’ motivation to learn English.

Following Tanaka (2004), learner beliefs were classified into beliefs about language analytic learning, beliefs, experiential learning, and affective states. It might be expected that beliefs about analytical learning would relate to Type 1 knowledge, while beliefs about experiential learning might prove a factor in Type 2 (and perhaps Type 3) knowledge. Beliefs relating to affective states could be expected to be related to all three types of learning. However, only one statistically significant correlation was found – between analytic beliefs and Type 1 knowledge. In other words, learners who had stronger beliefs about analytical learning (e.g., studying grammar and vocabulary) were more likely to score higher in the tests that allowed for the conscious application of grammatical rules. This is readily interpretable. Learners who believe it is important to study language as a system are more likely to do well in tests that assess metalinguistic knowledge. The failure to find a clear relationship between experiential and/or affective beliefs and Type 2 knowledge may again be due to the fact that the learning environment provided little opportunity for learners to act on their beliefs and as a result to proceduralise their declarative knowledge.

Interestingly, the interview data revealed mixed beliefs relating to confidence and self-efficacy (i.e. affective beliefs). Xiao F, who achieved the highest Type 2 knowledge score was very confident. She believed that English was not hard to master if she worked hard and employed suitable learning methods. She believed that she would be able to speak English in a native-like way someday in the future. In contrast, Xiao I, Xiao J and Xiao K, who performed weakly in all the tests, all thought English was difficult and that it was really a remote dream for them ever to be able to speak English like a native English speaker. Xiao J, said:
Overall, however, the quantitative analyses failed to show any relationship between affective beliefs and knowledge types.

On the whole, the quantitative measures of language analytic ability, language anxiety, motivation and learners beliefs failed to distinguish learners in terms of the types of knowledge measured by the battery of tests. There were very few statistically significant correlations. Perhaps a more fine-grained qualitative analysis of learner IDs – such as that provided by the interviews – is needed to tease out how learner differences interact with the kinds of learning opportunities these learners experienced. In fact, current work on individual differences in language learning is moving in this direction (see, for example, Dornyei & Ushioda, 2009).

6.5 Summary

This chapter presented and discussed the results concerning the Chinese third year university students’ linguistic knowledge of L2 English, its relationship with their general L2 proficiency and the extent to which the individual difference factors (i.e., psychological factors) may have contributed to the different types of L2 knowledge. The same four tests (i.e., the EIT, TGJT, UGJT and MKT) were used in the current study as those used in R. Ellis’s study, but with a different population of learners (i.e., Chinese third year university students). It was hoped that this study could add further empirical evidence for the distinction between implicit and explicit knowledge. However, the results failed to support R. Ellis’s (2005) two-factor model of implicit and explicit knowledge. The exploratory factor analysis indicated a three factor solution suggested that the battery of tests provided measures of three relative distinct types of knowledge.
The following is a summary of the main findings:

(1) The results seemed to suggest that this particular group of learners may have drawn on their declarative (explicit) knowledge of L2 English in all the tests but somewhat differently depending on (1) whether it was required for production or decision making and (2) in the case of decision-making, whether it involved conscious rule application or a more intuitive response still based on their declarative knowledge. Thus the three types of knowledge identified by the EFA can be tentatively described as:

Type 1 – declarative knowledge applied through conscious rule application
Type 2 – declarative knowledge that has become proceduralised and therefore available for use in online production
Type 3 - declarative knowledge applied intuitively.

(2) The explanation for the differences in the knowledge structure of the students in this study and that reported in R. Ellis (2009) may lie in the environmental differences in the populations from which the samples of the two studies were drawn. The ‘second’ language learners in R. Ellis lived in New Zealand and the opportunities for communication this afforded them may have fostered implicit learning. In contrast, the ‘foreign’ language learners in China were dependent on the classroom for learning English and thus were more likely to have treated English as an ‘object’ to be studied and learned consciously – i.e. they engaged primarily in explicit learning. The absence of the Oral Narrative Production Task in the current study, which was considered the best measure of implicit knowledge, may also partly explain the different patterns of the results.

(3) In terms of the relationship between the participants’ L2 knowledge and their general language proficiency measured by the TEM 4, the fact that all the three types of knowledge correlated significantly with proficiency and Type 1 knowledge was the strongest predictor of it suggests that the proficiency test used did not require automatic processing and that the learners therefore relied primarily on their consciously applied rule-based knowledge.

(4) Overall, the quantitative measures of language analytic ability, language anxiety, motivation and learners beliefs failed to distinguish learners in terms of the types of
knowledge measured by the battery of tests, but the interviews provided some evidence that the individual differences investigated in the current study might have distinguished learners in terms of the types of knowledge measured by the battery of tests.

Notes
1. However, R. Ellis’s (2005, 2006, 2009) model could not be tested fully, because the Oral Narrative Production Task was not included in the current study.
2. However, Isemonger’s (2007) proposal could not be examined fully, because the Oral Narrative Production Task was not included in the current study.
CHAPTER SEVEN
CONCLUSION

7.1 Introduction
It has been acknowledged that implicit and explicit knowledge of grammar are distinct. As N. Ellis (2008) stated, children ‘automatically acquire complex knowledge of the structure of their language. Yet paradoxically they cannot describe this knowledge’ because ‘the acquisition of L1 grammar is implicit and is extracted from their experience of usage rather than from explicit rules’. In contrast, ‘adult acquisition of second language (L2) is a different matter’ in that ‘adult attainment of L2 accuracy usually requires additional resources of explicit learning’ (p.119). N. Ellis (2008) also stated ‘we know that implicit and explicit learning are distinct processes, that humans have separate implicit and explicit memory systems, that there are different types of knowledge of and about language, that these are stored in different areas of the brain, and that different educational experiences generate different types of knowledge’ (p.120).

Accordingly, there are three major purposes of the current study. First of all, it is intended to examine whether the four tests (i.e., the Elicited Imitation Test, Timed Grammaticality Judgment Test, Untimed Grammaticality Judgment Test and Metalinguistic Knowledge Test) proposed in R. Ellis (2009) can also provide separate measures of implicit and explicit grammatical knowledge with a different population in a foreign language context.

Second, it aims to explore the relationship between linguistic knowledge of an L2 (i.e., implicit and explicit grammatical knowledge) and the L2 proficiency in a foreign language learning context. It has been claimed that a conceptualisation of language proficiency in terms of L2 knowledge can be of great help in understanding and testing language knowledge.

Last but not least, this study aims to explore the relationship between individual learner factors and learners’ linguistic knowledge of L2 grammar. Upon reviewing studies of second language learning, individual difference factors can be found to contribute to learners’ L2 learning. However, almost no studies have investigated the relationship between these factors
and learners’ linguistic knowledge of L2 grammar. An investigation of the relationship can be of great help in distinguishing learners’ different levels of their L2 grammatical knowledge in terms of their individual differences, such as language analytic ability, learner beliefs, language learning motivation and language anxiety.

7.2 Summary of the main findings

This study sought answers to six research questions concerning the extent of the first and third year students’ linguistic knowledge of L2 English, the relationship between their knowledge structure and English proficiency and the psycholinguistic factors which may contribute to their different levels of L2 linguistic knowledge. These questions were mainly investigated quantitatively and with supplementary answers from qualitative data analysis. Four tests were employed in the current study expecting to measure the participants’ implicit and explicit knowledge respectively. The tests designed to measure implicit knowledge consisted of an elicited imitation test and a timed grammaticality Judgment test. The former had a primary focus of attention on meaning while the latter was conducted under time-pressure. The tests designed to measure explicit knowledge consisted of an untimed grammaticality Judgment test and a metalinguistic knowledge test, each with a primary focus on form, and they were self-paced. The participants were 192 Chinese first (N=100) and third year (N=92) university students majoring in English.

The main findings can be summarised as follows:

7.2.1 The first year students

- The results showed that R. Ellis’s (2005, 2006, 2009) model of implicit and explicit knowledge is well-suited to interpret the results regarding the tests in this population of learners. The EIT and TGJT were measures of implicit knowledge, while the UGJT UG and MKT were the measures of explicit knowledge.
- The grammatical and ungrammatical items in the GJT s were found to work differently to some extent. The grammatical items of the GJT s were found to load on the same factor with the EIT, whereas the ungrammatical items were found to load on the same factor with the MKT. The participants used more time to judge the grammatical items than the ungrammatical ones in the TGJT. They also used rules more often while judging ungrammatical items than judging grammatical ones in the UGJT. It was
concluded that different processes may be involved when the students judged the grammatical and ungrammatical items. R. Ellis (2004) proposed three steps that a learner may undergo when completing a GJT, namely ‘semantic processing’, ‘noticing’ and ‘reflecting’. Learners may undergo ‘semantic processing’ and ‘noticing’ while judging the grammatical items, whereas they may further reflect what is ungrammatical when they detect ungrammaticality.

- The participants achieved much higher explicit knowledge scores (M=.71) than implicit knowledge scores (M=.51), as anticipated. As previously explained, the first year students in this study had no experience of staying in an English-speaking country; they also had little, if any, experience communicating with native English speakers in English; and the English instruction they received prior to entering university was mainly form-based and exam-directed. Under these circumstances, they are likely to have primarily developed explicit knowledge.

- Both implicit and explicit knowledge correlated significantly with and also predicted general English proficiency measured by the Oxford Placement Test (OPT). The scores for implicit and explicit knowledge were also found to correlate significantly with and predict the OPT Grammar, but explicit knowledge was found to be the better predictor of OPT Grammar. One explanation for the stronger role played by explicit knowledge in predicting the OPT Grammar could be the students’ limited opportunities for exposure to English other than in formal classrooms.

- Implicit knowledge was found to have a moderate positive relationship with and to be the single predictor of the OPT Listening. Explanations for such results can be found in the time pressure exerted by the OPT Listening and the nature of the EIT as a measure of implicit knowledge.

- Overall, language anxiety and language analytic ability were found to correlate significantly and positively with implicit knowledge, while learner beliefs about language learning correlated with explicit knowledge. However, the relationships were either weak or moderate. The interviews provided supportive evidence that the individual differences investigated in the current study may have distinguished learners in terms of the types of knowledge measured by the battery of tests.
7.2.2 The third year students

- The results showed that R. Ellis’s (2009) model of implicit and explicit knowledge is not well-suited to interpret the results for this population of learners. Based on the results of an exploratory factor analysis, three types of knowledge were found among the participants.

- The results suggest that this particular group of learners may have largely drawn on their declarative (explicit) knowledge of L2 English on all the tests but somewhat differently depending on (1) whether it was required for production or decision making and (2) in the case of decision-making, whether it involved conscious rule application or a more intuitive response still based on their declarative knowledge. Thus the three types of knowledge identified by the EFA can be tentatively described as:

  Type 1 – declarative knowledge applied through conscious rule application
  Type 2 – declarative knowledge that has become proceduralised and so available for use in online production
  Type 3 -- declarative knowledge applied intuitively.

- The explanation for the differences in the knowledge structure of the students in this study and that reported in R. Ellis (2009) may lie in the environmental differences in the populations from which the samples of the two studies were drawn. The ‘second’ language learners in R. Ellis lived in New Zealand and the opportunities for communication this afforded them may have fostered implicit learning. In contrast, the ‘foreign’ language learners in China were dependent on the classroom for learning English and thus were more likely to have treated English as an ‘object’ to be studied and learned consciously – i.e. they engaged primarily in explicit learning. The absence of the Oral Narrative Production Task in the current study, which was considered the best measure of implicit knowledge, may also partly explain the different pattern of the results.

- In terms of the relationship between the participants’ L2 knowledge and their general language proficiency measured by the TEM 4, the fact that all three types of knowledge correlated significantly with proficiency and that Type 1 knowledge was the strongest predictor suggests that the proficiency test used did not require automatic processing and that the learners relied primarily on their consciously applied rule-based knowledge.
• Among the four individual difference factors investigated in the current study, only language learning motivation (positive) and language anxiety (negative) were found to correlate significantly with Type 1 knowledge. However, the relationships were either weak or moderate. No other statistically significant relationships were found between the other factors and the other two types of knowledge. Overall, the quantitative measures of language analytic ability, language anxiety, motivation and learners beliefs did not provide convincing evidence to distinguish learners in terms of the types of knowledge measured by the battery of tests. However, the interviews provided some evidence that the individual differences investigated in the current study might have distinguished learners in terms of the types of knowledge.

7.3 Comparison of the first and third year students
This part summarises and discusses the differences between the first and third year students in terms of their L2 linguistic knowledge structure, the relationship between their general L2 proficiency and L2 linguistic knowledge, and the relationship between the individual difference factors and their L2 knowledge. A detailed comparison of the results for the first and third year students can be found in Appendix X. A summary of the main differences is provided below.

7.3.1 The first and third year students’ L2 linguistic knowledge structures
Several differences and one similarity can be found between the first and third year students in terms of their scores on the testing instruments:

1. The third year students’ scores on all the tests were higher than the first year students’ scores (e.g., M=.70 and M=.55 for the EIT G) except for the UGJT ungrammatical items (M=.87 for both groups). All the differences were statistically significant (e.g., EIT G t[190]=−7.321, p=.000<.05).

2. The third year students responded more quickly than the first year students when judging both the grammatical and ungrammatical items in the TGJT (M=2.19s and 2.20 s vs. M=2.44 s and M=2.38 s). These differences were statistically significant (t[5.445,5.058], p=.000<.05).

3. The first and third year students’ rule use in the UGJT were not statistically different (t[−1.019, .325], p=.310 and .745>.05).
4. The factor analysis solutions differed for the first and third year students, which are shown in Table 63 below.

Table 63  Comparisons of the factor analyses

<table>
<thead>
<tr>
<th>Method(s) of factor analysis</th>
<th>Number of factors</th>
<th>Pattern of loadings</th>
<th>Hypothesized type of knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploratory and Confirmatory Factor analyses</td>
<td>Two factors</td>
<td>Factor 1—EIT and TGJT Factor 2—UGJT UG and MKT</td>
<td>Factor 1: Implicit knowledge Factor 2: Explicit knowledge</td>
</tr>
<tr>
<td>Exploratory Factor Analysis</td>
<td>Three factors</td>
<td>Factor 1—TGJT UG, UGJT UG and MKT (Part1) Factor 2—EIT G and EIT UG Factor 3—TGJT G and UGJT G</td>
<td>Factor1 : Type 1 knowledge Factor2: Type 2 knowledge Factor3: Type 3 knowledge</td>
</tr>
</tbody>
</table>

5. Both the first and third year students’ total scores on all the tests were significantly inter-correlated. Sub-test scores were also inter-correlated for both years. However, there was one exception—the third year students’ scores for the EIT UG only correlated with the EIT G and not with any of the other sub-test scores.

It is to be expected that the third year students’ scores on all the tests were higher than the first year students’ scores after receiving two more years of classroom instruction at the university. It is, however, interesting to note in which tests the third year students’ scores were higher. The third year students were significantly higher on the EIT and TGJT than the first year students. A comparison of the EIT scores with those reported in R. Ellis (2009) and in Bowles (2011) can be found in Table 64. It can be seen that the first year students’ scores were lower than the scores for the second language learners in R. Ellis and very similar to the scores of the foreign language (Spanish) learners in Bowles (2011). The third year students’ scores exceeded those of both the second and foreign language learners but were noticeably lower than the heritage learners in Bowles’ study. They were also considerably lower than the scores for the native speakers in both studies (i.e. .94 in Ellis et al and 1.00 in Bowles).
The explanation for the non-significant difference on the first and third year students’ scores on the UGJT UG reflects the fact that the first year students’ declarative rule-based knowledge was probably already well established when they entered university. However, interestingly the third year students’ knowledge of English metalanguage was greater as shown by the MKT scores for the two years. As R. Ellis (2004) pointed out a distinction needs to be made between rule-based explicit knowledge and knowledge of metalanguage. In general, then, the difference between the first and third year students’ L2 knowledge lies primarily in their ability to make use of their knowledge rapidly for both production (i.e., in the EIT) and judging the grammaticality of sentences in the TGJT. The significance of this is considered below.

The first and third year students both reported more ‘rule use’ while judging the ungrammatical items than the grammatical ones in the UGJT. This suggests that the learners in both years were drawing on conscious use of their rule-based knowledge when the test conditions encouraged this.

The results of the correlation analyses for both years showed that all the four tests were intercorrelated. In other words, there was a considerable amount of shared variance in the test scores. This reflects DeKeyser’s (2009) observation that ‘it is virtually impossible to design “pure” measures of implicit or explicit knowledge of L2’ (p.122). The same point was made by R. Ellis (2009).

DeKeyser (2009) pointed out ‘often students will have considerable amounts of explicit knowledge about parts of the L2, but little or no competence, i.e., implicit, intuitive knowledge, of the same elements in the same L2’ (p.124). This comment together with the results of the factor analyses for the third year students, which failed to support a simple distinction between ‘implicit’ and ‘explicit’ knowledge suggests the need to reconsider the interpretation placed on the results of the factor analyses for the first year students. These did
support R. Ellis’s (2005, 2006, 2009) model (i.e. a distinction between implicit and explicit L2 knowledge). However, the question that comes to mind is: Have the first year students really developed implicit knowledge of English? If DeKeyser is right, it is probable that they have not – a view supported by the fact they had had very limited communicative exposure to English in their school years. Commenting on the factor analyses reported in R. Ellis (2005, 2006) and Ellis & Loewen (2007), DeKeyser argued that they ‘can only show that two different components of knowledge are involved, not that the implicit-explicit distinction is the best label’ (p.125). He went on to suggest that the ‘phenomenon of differential knowledge access is not so much an issue of retrieval of explicit versus implicit knowledge, but of differentially automatised structure, i.e., various levels of explicit knowledge’ (DeKeyser, 2009, p.125). The factor analysis results of the third year students lend support to this interpretation. As discussed in Chapter 6, the three-factor solution points to a distinction between rule-based knowledge accessed consciously and rule-based knowledge accessed more automatically for production (in the EIT) and for decision-making (in the grammatical sentences of the GJTs). In other words, the tests demanded ‘differential knowledge access’ but the difference lay in whether they required non-automatised or automatised explicit knowledge rather than explicit as opposed to implicit knowledge. If this is true for the third year students, it would seem likely that it is also the case for the first year students. Both populations of learners rely primarily on explicit knowledge with the difference lying in the extent to which this has become automatised (as shown in Table 64).

It remains a possibility, then, as DeKeyser suggested, that R. Ellis’s results can be similarly interpreted. The majority of learners in his study were also dependent on classrooms very similar to those experienced by the first and third year students prior to arriving in New Zealand. In contrast, Bowles’ heritage learners had developed implicit knowledge given that their learning experiences were primarily natural and communicative. In short, the tests designed to measure implicit knowledge may be measuring different types of knowledge (automatised explicit knowledge or implicit knowledge) in different populations of learners. In other words, the tests cannot clearly distinguish between these two types of knowledge.

### 7.3.2 General L2 proficiency and L2 linguistic knowledge

Two points can be extracted from the first and third year students’ results regarding the relationship between their general L2 proficiency and L2 linguistic knowledge:

1. The first year students’ scores of the two types of knowledge both predicted scores in
their general L2 proficiency measured by the Oxford Placement Test, while the third year students’ scores for the three types of knowledge identified by the exploratory factor analysis predicted their general proficiency scores on the TEM 4.

2. In both groups, the factor that corresponded most clearly to declarative (explicit) knowledge proved to be the most powerful predictor of their general L2 proficiency (e.g., Beta=.317, p=.001 for the first year students’ Type 2 knowledge, and Beta=.390, p=.000 for the third year students’ Type 1 knowledge).

These results point to the following facts:

1. The two groups of learners were both drawing to a considerable extent on their declarative (explicit) knowledge when doing a proficiency test.

2. Neither the OPT nor the TEM includes a speaking component so they were unlikely to have made substantial demands on the learners’ proceduralised declarative knowledge. By and large, these were two tests that did not require automatic processing so the learners could rely on consciously applied rule-based knowledge and this is what the correlation and multiple regression analyses appear to show.

3. The results in both groups are not dissimilar to those reported in Elder and Ellis (2009). They reported that their measures of explicit knowledge correlated more strongly with proficiency (as measured by the TOEFL) than their measures of implicit knowledge. Thus, it can be inferred ‘language tests encourage a focus on display that invites self-monitoring at the expense of more spontaneous language performance’ (Elder, 2009, p.179).

7.3.3 Individual difference factors and L2 linguistic knowledge structure

The following points can be extracted after comparing the first and third year students’ results regarding the relationship between the individual differences and their L2 linguistic knowledge:

1. The first and third year students’ scores on the various tests of the individual difference factors (i.e., learner beliefs, language learning motivation, foreign language anxiety and language analytic ability) did not differ significantly (e.g., M=.72 and .73 for learner beliefs).

2. There were few statistically significant correlations between the individual difference scores and the participants’ scores for their types of knowledge. In both
groups, foreign language anxiety was negatively correlated with at least one type of knowledge, namely with Type 1 (implicit) knowledge scores in the case of the first year students and with Type 1 (explicit) knowledge scores in the case of the third year students. In addition, language anxiety was found to be the strongest predictor of Type 1 (implicit) knowledge for the first year students, however, it was not a predictor of Type 1 (explicit) knowledge for the third year students.

3. For the first year students, the learner beliefs scores were found to correlate significantly with and to be the only predictor of Type 2 (explicit) knowledge scores. For the third year students, the language learning motivation scores were found to correlate significantly with and to be the only predictor of Type 1 (explicit) knowledge scores.

The above findings can be discussed as follows:

1. For the first year students, it is not surprising to see foreign language anxiety correlated negatively with and predicted their Type 1 (implicit) knowledge. Such a result indicates that the students who had greater anxiety tended to possess less proceduralised knowledge ready to use for on-line production under time pressure. However, there was only a correlation between the third year students’ foreign language anxiety and their Type 1 (explicit) knowledge. Therefore, the result can be explained in two ways. It can be interpreted that the students who had greater anxiety tended to possess less rule-based knowledge than did their less anxious peers. It can also be explained as indicating that the students who owned less rule-based knowledge tended to be more anxious on the tests and in language learning compared to their peers who owned more rule-based knowledge.

2. It is not surprising to have the two relationships mentioned above (i.e., learner beliefs and Type 2 knowledge for the first year students, motivation and Type 1 knowledge for the third year students). However, one question rises--Why were there so few correlations among these individual difference factors and the learners’ L2 linguistic knowledge? For example, motivation as a very powerful predictor of language achievement was expected to correlate with all types of knowledge. Reasons for this are complex and hard to discuss. One possible reason may be that these individual difference factors (e.g., learner beliefs and motivation) are dynamic and situated, therefore at the point at which this research was conducted, these factors did not seem to distinguish the learners in terms of their
L2 linguistic knowledge, but their roles in it should not be denied because the follow-up interviews provided some evidence.

7.4 Theoretical contributions and pedagogical implications

The findings of this study theoretically and practically contribute to the field of SLA, language testing and language pedagogy in a number of ways.

Theoretically, this study identified L2 (English) linguistic knowledge structure of the L2 learners (Chinese university English majors) and tried to model general L2 proficiency in terms of L2 knowledge in a psychological way, which brings the fields of SLA and language testing one step closer to understanding and testing linguistic L2 knowledge. In addition, the current study explored the relationship between the L2 learners’ individual differences and their L2 linguistic knowledge, which can be of great help in research of distinguishing learners with different levels of L2 linguistic knowledge in terms of their individual differences.

Practically, the lack of valid instruments for measuring implicit and explicit knowledge hindered empirical studies investigating ‘issues of central theoretical importance in the study of L2 acquisition’ (R. Ellis, 2005, p.169). Although R. Ellis’s two-factor model of implicit and explicit knowledge could only account for part of the results (i.e., the first year students’ results), an investigation of the tests designed to measure learners’ L2 linguistic knowledge brings this field of research a step further and also directs researchers’ attention to it in order to address some long-standing issues such as ‘the relationship between type of instruction and the nature of resulting linguistic knowledge’ (Bowles, 2011, p,262).

Pedagogically, the current study initiates foreign language teachers into thinking about ways to create more communicative conditions to nurture learners’ implicit knowledge. As mentioned above, although R. Ellis’s two-factor model of implicit and explicit knowledge could interpret the first year students’ results, we still need to think about the first year students’ L2 linguistic knowledge structure very carefully. Does implicit knowledge really exist among the first year students? In fact, the findings of the study have seemingly shown that both groups of learners (i.e., the first and third year students) have not developed implicit knowledge in its true sense, but have developed proceduralised declarative knowledge instead.
This indicates that foreign language learning countries like China may not have conditions for English learners to develop their implicit knowledge, thus ‘How can we create more communicative conditions for learners to foster their implicit knowledge’ calls for deliberation.

7.5 Limitations of the current study

First, I used two measures to elicit implicit knowledge—EIT and TGJT. The ONPT (Oral Narrative Production Task) was not included because it would have been very time consuming to administer and data-analyse due to the fact that this study had already involved a large number of tests for measuring L2 knowledge, L2 proficiency and individual difference variables. However, with hindsight, an inclusion of the ONPT may have provided an insight through which to better understand the third year students’ knowledge pattern because the exclusion of this test (it can be considered the best measure for implicit knowledge because it does not create any situation for the occurrence of ‘simple imitation’ and ‘rote repetition’, which may occur in the EIT) may have been a reason for the third year students’ different knowledge structure from that of the participants in R. Ellis(2009).

Second, the proficiency tests employed in the study did not test four skills — listening, speaking, reading and writing comprehensively. The proficiency test administered to the first year students was the Oxford Placement Test which consists of listening and grammar, while the test for the third year students was a national English test for English majors — Test For English Majors (Band 4) which comprises listening, grammar, cloze, reading and writing. Therefore, a more comprehensive proficiency test or a more communicative test would be anticipated in future study in order to obtain a clearer picture of the relationship between general L2 proficiency and linguistic knowledge of an L2.

Third, more in-depth qualitative data collection and analyses for investigating the relationship between individual difference factors and L2 linguistic knowledge will be needed, because only a few weak and moderate statistically significant relationships were found between them. Although the qualitative interview analysis provided some evidence for the relationship, it was supplementary rather than predominant in the analyses of the current study.
7.6 Suggestions for future research

This study has made contributions to the fields of SLA and language testing in that it has taken the research in terms of (1) operationalising linguistic knowledge through tests, (2) conceptualising language proficiency in terms of linguistic knowledge, and (3) seeking answers from individual difference factors for different levels of L2 knowledge a step further. However, there are still interesting topics that require further investigation.

First, the operationalisation of these two constructs through the tests really needs further testing and refinement, as DeKeyser (2009) has suggested. For example, the Oral Narrative Production Task which taps learners' free production should be included and tested in further research. Moreover, the grammatical and ungrammatical items of a GJT were found to work differently in the current study. Therefore, whether grammatical or ungrammatical items of a GJT will be used for testing a type of knowledge should be distinguished and specified in future studies.

Second, such measures may allow empirical studies on the controversial interface-noninterface position and could be used to address some long-standing issues, such as the role of age effects in language acquisition or the relationship between type of instruction and the nature of resulting linguistic knowledge.

Third, this study has shown that individual difference factors may account for the learners’ different levels of L2 linguistic knowledge (e.g., implicit and explicit knowledge). However, only four individual difference variables (i.e., language analytic ability, language learning motivation, foreign language anxiety and learner beliefs about language learning) were involved. Hence, additional influential factors such as 'learning style' and 'learning strategy use' are required to be involved in further research. In addition, more detailed interview questions or observation will be required to examine what factors may account for learners’ different implicit and explicit knowledge.

7.7 Conclusion

As mentioned previously in Chapter 2, it has been widely acknowledged that the distinction between implicit and explicit knowledge is very important in many fields like SLA, cognitive psychology, applied linguistics etc. However, the interface issues between these two types of
knowledge are calling for empirical evidence. R. Ellis’s studies (2005, 2006, 2009) have taken the empirical testing of implicit and explicit knowledge a step further. He employed five tests to respectively measure implicit and explicit knowledge and found that these tests could provide relatively separate measures for the two types of knowledge. The current study employed four of them expecting to add more empirical evidence to the distinction of implicit and explicit knowledge through these testing instruments. The findings showed that R. Ellis’ model of implicit and explicit knowledge could account for one part of the results (i.e., the first year students), whereas it failed to do so for the other part of the results (i.e., the third year students). However, a definite conclusion that these four tests could not effectively distinguish implicit and explicit knowledge cannot be made according to the findings of the current study because reasons are various as discussed above. This area therefore still needs further examination, as DeKeyser (2009) suggests ‘further refinement seems to be leading to increasingly clear-cut results’ (p.122).

In addition, the results of the relationship between general L2 proficiency and L2 knowledge in the two groups of learners indicated that both groups have drawn largely on their consciously applied rule-based declarative (explicit) knowledge while doing the two general English tests (i.e., the Oxford Placement Test and Test for English Majors, Band 4). It may suggest ‘language tests encourage a focus on display that invites self-monitoring at the expense of more spontaneous language performance’ (Elder, 2009, p.179). The finding can be informative for language testing researchers and practitioners who are working on language proficiency tests, because the ultimate goal of language learning is spontaneous and unreflecting language use (Sharwood Smith, 1980), therefore those proficiency tests engaging in learners’ more implicit knowledge or highly automatised procedural L2 knowledge are needed.

Last but not least, what the individual difference factors may have contributed to learners’ L2 knowledge is still far from conclusive according to the quantitative results of the current study. Nevertheless, the qualitative interview data did provide some evidence for the effect of the individual differences distinguishing learners with different levels of L2 knowledge. Thus, this area does need further investigation. Deeper qualitative data collection and analyses would be helpful to identify the relationship between the individual difference factors and learners’ L2 knowledge.
Title of Research: Investigating linguistic knowledge of a second language and its relationship to language proficiency and individual learner differences in an EFL context.

To Participants
My name is Zhang Runhan. I am doing my Ph.D in the Department of Applied Language Studies and Linguistics at the University of Auckland in New Zealand.

I am conducting this research for my thesis on the relationship between implicit/explicit knowledge of an L2 and general L2 proficiency. I have chosen this topic because there have been few studies on investigating the relationship between implicit/explicit knowledge of an L2 and general L2 proficiency, especially in a Chinese context.

You are invited to participate in this research and I would appreciate any assistance you can offer me. I need to get data from more than 200 Chinese university-level first year and third year English majors. There are no other criteria for the selection of students. This research is conducted purely for an academic purpose. I am personally carrying out this research for my doctoral thesis.

Your university is not involved in this research.

The benefits of this research will be as follows:
- You will be able to know more about your knowledge of English.
- You will be able to know more about your language aptitude, beliefs, motivation, anxiety and their effects on your knowledge of English.
I have experience in studying at universities in many English-speaking countries. Therefore, I will be able to answer your questions or give some advice on studying English at home or going to university abroad.

However, this research will only take place with your consent and you can choose to stop participating or withdraw information at any time up to 10 days after you signed the consent form provided. The information collected as part of this research will be kept strictly confidential and your name will not appear in any report of the research.

If you take part in this study, you will be involved in the following things:

1. You will have to participate in four tests investigating your implicit knowledge and explicit knowledge respectively. They are Elicited Oral Imitation Test, Timed Grammaticality Judgment Test, Untimed Grammaticality Judgment Test and Metalinguistic Knowledge Test. Elicited Oral Imitation Test will be conducted individually and face to face. It will take about 25 minutes including the training. Your repetitions in this test will be audio-taped. The Timed GJT is a computer-delivered test, which will take you 10 minutes. The Untimed GJT and Metalinguistic Knowledge Test are paper-and-pencil tests. Altogether they will take you about 1 hour including the training sections.

2. You will have to finish one paper and pen language aptitude test. It only involves 14 multiple choice questions. It will take about 20 minutes.

3. You will have to answer four questionnaires with the background questionnaire, Questionnaire 1, 2 and 3 written in Chinese. The questionnaires will be conducted on different days and they will take less than 20 minutes each to finish.

4. You may be invited to take part in an interview in Chinese or English according to your own choice with the researcher several days after finishing all the tests and questionnaires. The interview will take about 20 minutes. Your speech in the interview will be audio-taped.

If you have any questions or wish to know more, please contact me directly:

Runhan Zhang
Tel: 13466772392(China)
0211318055(New Zealand)
The contact address of my supervisor is as follows:
Professor Rod Ellis
Email: r.ellis@auckland.ac.nz
The Department of Applied Language Studies and Linguistics
The University of Auckland

For any questions regarding ethical concerns please contact:
Chair, The University of Auckland Human Subjects Ethics Committee,
The University of Auckland, Research Office.

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN SUBJECTS ETHICS COMMITTEE on 09 September, 2009 for a period of three years from 09 September 2009.
Reference number 2009/384.
研究题目：中国环境下二语习得中隐性及显性知识与语言能力的关联性研究

致参加者：
我叫张润晗。现正于新西兰奥克兰大学（The University of Auckland）的应用语言研究及语言学系攻读博士学位。我的研究课题是中国环境下二语习得中隐性及显性知识与语言能力的关联性。我之所以选择这个题目是因为关于这方面的研究少之又少，尤其是在中国环境中进行这一课题的研究。

您被邀请参与到该研究中，我将非常感谢您提供给我的任何帮助。我需要从 200 多名英语专业大一及大三学生中搜集数据。在选择参加者上没有任何其他规则。该研究完全是出于学术目的。我将自己进行这项研究并用于我的博士论文中。您学校的名称将不会在任何报告中出现。

从这次研究中，您将得到以下益处：

● 您将会了解更多英语方面的知识。
● 您将会对您的语言学能, 学习信念, 学习动机, 学习过程中的焦虑状况以及这些因素对您英语知识的影响有更多的了解。
我在多个英语国家学习过。如果您想到国外深造或者想在国内更好地学习英语，我可以对您的问题进行解答并提供帮助。

此项研究是建立在您同意参加的基础上的，您可以选择在您签完同意书后十天内任何时候停止或者撤出您的任何信息。研究过程中的任何信息采集都将隐蔽保管，您的名字不会在任何报告中出现。

如果您同意参加本次研究，您将需要参与以下环节：

- 您将参加四个测试您显性及隐性英语知识的测试。它们是启发式口头模仿测试、限时语法判断测试、不限时语法判断测试及元语言知识测试。启发式口头模仿测试将以面对面的方式进行。这个测试包括训练部分总共大概需要 20 分钟。限时语法判断测试、不限时语法判断测试及元语言知识测试需要在计算机上完成。前三项测试，需要您通过按键选择正确还是不正确。后一项测试由 17 个选择组成。三项测试共需要大约 1 小时。
- 您将需要完成一个语言学能测试。该测试由 14 个单项选择组成，需要用笔进行作答，大概需要耗时 20 分钟左右。
- 您将需要完成四个调查问卷：个人信息，调查问卷 1，调查问卷 2 以及调查问卷 3。所有调查问卷均为中文问卷。问卷中除了名字外无需要填写其他问题，您只需按照您的真实想法和实际情况作出选择即可。每份问卷将在不同的时间下发，完成每份问卷需要耗时不到 20 分钟。
- 您有可能会被邀请参加面谈环节。面谈需要耗时 20 分钟左右，面谈内容将被录音。

如果您有任何的问题或者想要知道更多相关的信息，请与我联系：

张润晗
电话：13466772392

我导师的联系方式：

Rod Ellis 教授
邮箱地址：r.ellis@auckland.ac.nz
新西兰奥克兰大学应用语言研究及语言学系
如果您有任何其他涉及到道德伦理等方面的问题，请联系奥克兰大学研究中心奥克兰大学人文学科伦理道德事务委员会

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN SUBJECTS ETHICS COMMITTEE on 09 September, 2009 for a period of three years from 09 September 2009. Reference number 2009/384.
APPENDIX C
Consent Form for Students (English Version)

Department of Applied Language Studies and Linguistics
CONSENT FORM (Students)

THIS CONSENT FORM WILL BE HELD FOR A PERIOD OF SIX YEARS
Title of Research: The relationship between implicit/explicit knowledge of an L2 and general L2 proficiency in a Chinese context

Researcher: Zhang Runhan

The topic and procedures of this research project have been explained to me and I understand them. I have had an opportunity to ask questions and have them answered.

I understand that I may withdraw myself or any information traceable to me from this research project at any time up to ten days without giving a reason.

- I agree to take part in this research as described in the Participant Information Sheet.
- I understand that my speech during the Elicited Oral Imitation Test and the interview with the researcher will be audio-taped.

Sign: ____________________________
(Same as your ID card)
Name: ____________________________
(Please print clearly)
Date: ____________________________

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN SUBJECTS ETHICS COMMITTEE on 09 September, 2009 for a period of three years from 09 September 2009. Reference number 2009/384.
APPENDIX D

Consent Form for Students (Chinese Version)

Department of Applied Language Studies and Linguistics

CONSENT FORM (Students)

同意书

此同意书将保存 6 年的时间。

研究题目：二语环境下语言知识，语言能力以及个体差异变量间的关联性研究
研究者：张润晗
研究者已将研究题目及步骤向我解释过了，而且我已经了解和明白该研究的目的。我已经提出了我的问题，并且已经得到了解答。
我了解我在签署该同意书 10 天内有无任何理由退出或者撤回任何信息的权利。

- 我同意参加在参加者需了解的信息表中描述的研究环节。
- 我了解我在启发式口头模仿测试和面谈环节中话语将被录音。

签名： ———— ————
（姓名与身份证一致）
名字： ——
（请打印清楚）
日期： ————

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN SUBJECTS ETHICS COMMITTEE on 09 September, 2009 for a period of three years from 09 September 2009. Reference number 2009/384.
APPNEIX E
Language Analysis Test

Name:___________________

The list in the box below contains words/phrases from an imaginary language along with their English translation. Following this, there will be 14 short English sentences, each with four possible translations into the imaginary language. Based on the examples given in the box, we would like to ask you to try and work out which of the four options is the correct translation of each sentence. Thank you very much.

kau                   dog                                               pa                         we, us
meu                  cat                                                xa                          you
kau meud bo    The dog is chasing the cat.          pasau meud bo      Our dog is chasing the cat.

kau meud bi    The dog was chasing the cat.        pa meud bo            We are chasing the cat.
so                     watch                                           paxbo                     We are chasing you.

1. The dog is watching the cat.
   a. kau meud so       b. kau meud si
   c. meu kaud so       d. meu kaud si

2. The cat was watching the mouse.
   a. meud ciu so        b. meu ciud so
   c. meud ciu si       d. meu ciud si

3. You are watching us.
   a. paxbo                  b. paxso
   c. xapbo                  d. xapso

4. You were chasing the dog.
   a. xa kaud bo           b. pa kaud bo
   c. pa kaud bi            d. xa kaud bi

5. We were watching you.
   a. xapsi                   b. paxso
   c. paxsi                   d. paxbi

6. You are not watching the cat.
   a. xa meud bor       b. xa meud sor
   c. xa meud sir            d. xa meu sor

7. You are not chasing us.
8. We were not watching the dog.
   a. pa kaud sir       b. pa kau sir
   c. pa kaud sor       d. pa kaud bir

9. We were not chasing you.
   a. xapbir            b. paxbir
   c. paxbor            d. xapbor

10. Your cat is chasing the mouse.
    a. xacu meud bo      b. xaseu ciud bo
    c. meuxa ciud bo     d. ciuxa meud bo

11. You are not watching our dog.
    a. xa paseud bor     b. xa pasaud sor
    c. xa pasaud so      d. xa pasaud bor

12. Our mouse was not chasing the dog.
    a. oasiu kaud bi     b. xasiu kaud sir
    c. xasiu kaud bi     d. pasiu kaud bir

13. Your mouse is chasing us.
    a. xa ciu pabo       b. xasiu pbo
    c. xaciu pa bo       d. xaciu pabo

14. Our cat was not chasing you dog.
    a. pseu xasaud bir   b. pseu xsaud bir
    c. paseu xasaud bir  d. paseu xsaud bir
APPENDIX F

Background Questionnaire (English Version)

1. Name: ______
2. Age: ______
3. Gender: ______ Male       _____ Female
4. Grade: ______ First year   _____ Third year
5. How old were you when you started to learn English? _______ years old
6. How many years have you been learning English? _______ years
7. Altogether, how many years have you spent living in a country where English is widely spoken? _____ year
8. How many years have you studied English at school? _____ years
9. What was the instruction in English that you received at school before you entered into university like?(Tick the best answer)  
   A. Mainly formal (i.e. a lot of time was spent studying grammar)  
   B. Mainly informal (i.e. most of the time was spent communicating in English)  
   C. A mixture of informal and formal
10. What was the instruction in English that you received at university like?  
    (Tick the best answer)  
    A. Mainly formal (i.e. a lot of time was spent studying grammar)  
    B. Mainly informal (i.e. most of the time was spent communicating in English)  
    C. A mixture of informal and formal

Please give us your contact detail.

E-mail: ______

Mobile Phone______
APPENDIX G
Background Questionnaire (Chinese Version)

1. 姓名：________
2. 年龄：________
3. 性别：___男      ____女
4. 年级：___三年级   ____一年级
5. 您几岁开始学习英语？______岁
6. 您已经学习多少年的英语了？______年
7. 您总共在英语国家呆了多久？______年
8. 您在学校里学习了多少年的英语？______年

9. 您在上大学前接受的是什么方式的英语教学？（选择最佳答案）
   A. 主要是规则性教学（即花费很多时间在学习语法上）
   B. 主要是非规则性教学（即大部分时间用于英语交际上）
   C. 规则性与非规则性教学相结合

10.您在上大学后接受的是什么方式的英语教学？（选择最佳答案）
    A. 主要是规则性教学（即花费很多时间在学习语法上）
    B. 主要是非规则性教学（即大部分时间用于英语交际上）
    C. 规则性与非规则性教学相结合

您的联系方式:

电子邮箱地址：____________

手机：____________

宿舍电话：______________
I would like to invite you to help me by answering the following questions concerning your beliefs about English learning. Your answers will be collected, analysed and used in my Ph.D thesis. This is not a test, so there are no “right” or “wrong” answers. I’m interested in your personal experience and opinion. Please give your answers sincerely as only this will guarantee the success of the investigation. Thank you very much for your help!

Name:_________

Questions Related to Learning English
In this section, you will find a total of 27 statements related to learning English. After reading each statement, circle the response 1 (strongly disagree), 2(disagree), 3(neutral, namely neither agree nor disagree), 4(agree), or 5(strongly agree) that tells to what extent you agree or disagree with the statement.

Strongly agree= 5    Agree=4    Neutral= 3    Disagree=2    Strongly disagree= 1

1. I can learn well by speaking with others in English.  
2. If I am permitted to make mistakes in English, it will be difficult for me to speak correctly later on.  
3. I can learn well if I try to study English outside class on my own.  
4. I can learn English well by writing down everything in my notebook.  
5. In order to speak English well, it is important for me to learn grammar.  
6. It doesn’t matter if I make mistakes when speaking with others in English.
<p>| | | | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>7.</td>
<td>In order to learn well, it is important for me to review what I have been taught in the English class.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>8.</td>
<td>I should be able to understand everything I read in English.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>9.</td>
<td>In order to learn well, it is important for me to try to think about my progress in English.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>10.</td>
<td>I can learn well by listening to radio or watching TV in English.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>11.</td>
<td>Memorisation is a good way for me to learn English.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>12.</td>
<td>I can learn English well by living in an English-speaking country (e.g. New Zealand).</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>13.</td>
<td>I can learn English well by following a textbook.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>14.</td>
<td>I should not be forced to speak in the English class.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>15.</td>
<td>I can learn English well if I am studying just for pleasure.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>16.</td>
<td>I am satisfied with my progress in English so far.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>17.</td>
<td>I would like my English teacher to explain important things in my first language so I can understand everything.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>18.</td>
<td>I can learn English well in a class where the teacher maintains good discipline.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>19.</td>
<td>I can learn well by using English outside class.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>20.</td>
<td>I should be able to understand everything the teacher says in the English class.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>21.</td>
<td>It’s okay to guess if I do not know a word in English.</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>
22. I can learn well by reading English magazines or newspapers. 5 4 3 2 1
23. It is possible for me to learn to speak English very well. 5 4 3 2 1
24. I can learn well if I try to think in English. 5 4 3 2 1
25. In order to speak English well, it is important for me to learn vocabulary. 5 4 3 2 1
26. It is possible for me not to get nervous when speaking English. 5 4 3 2 1
27. I would like my English teacher to correct all my mistakes. 5 4 3 2 1

The End

Thank you for your cooperation.
APPENDIX I

Questionnaire 1 (Chinese Version)

我想邀请您回答一些您学习英语过程中关于学习信念方面的问题。我将对您的回答进行分析。这不是一项测试，没有正确和错误答案之分。我对您的学习经历和个人观点非常感兴趣，因此，您只需要诚实地回答以下问题。

非常感谢您的帮助和合作！

姓名:________

本部分包含了27个陈述性问题。每读完一个问题后，请在1（非常不同意），2（不同意），3（不确定），4（同意），5（非常同意）中选择一个符合您对该陈述认可程度的选项。

1=非常不同意 2=不同意 3=不确定（既不同意也不反对） 4=同意 5=非常同意

1.通过与别人说英语，我能学好英语。1 2 3 4 5
2.如果允许我在使用英语时出错，之后我将很难准确地说好英语。1 2 3 4 5
3.如果我试图自己在课外学习英语的话，我能学好英语。1 2 3 4 5
4.通过把所有内容写在笔记本上，我能学好英语。1 2 3 4 5
5.想说好英语，学习语法对我来说很重要。1 2 3 4 5
6.我与别人说英语时犯些错误，是无关紧要的。1 2 3 4 5
7.想学好英语，回顾在英语课上被教授的知识对我来说很重要。1 2 3 4 5
8.我应该有能力理解所有我在英语中读到的内容。1 2 3 4 5
9.想学好英语，试着想想我在英语中的进步对我来说很重要。1 2 3 4 5
10.通过听广播和看电视，我能学好英语。1 2 3 4 5
11.记忆对我学习英语是个好方法。1 2 3 4 5
12.通过在英语国家生活，我能学好英语。1 2 3 4 5
13.通过认真学习一本教科书，我能学好英语。1 2 3 4 5
14.我不应该被强迫在英语课堂上说英语。1 2 3 4 5
15.如果我仅仅是因为乐趣而学习英语，我能学好英语。1 2 3 4 5
16.到目前为止，我对我的英语进步感觉很满意。1 2 3 4 5
17.我愿意英语老师用我的母语解释重要的内容以便我能明白所有的内容。1 2 3 4 5
18. 在老师能维持好纪律的课堂上，我能学好英语。1 2 3 4 5
19. 通过在课外使用英语，我能学好英语。1 2 3 4 5
20. 我应该有能力理解老师在英语课堂上说的所有内容。1 2 3 4 5
21. 如果我不知道一个英语单词，猜测是个不错的方法。1 2 3 4 5
22. 通过阅读英语杂志和报纸，我能学好英语。1 2 3 4 5
23. 我有可能说一口流利的英语。1 2 3 4 5
24. 如果我试着用英语思维，我能学好英语。1 2 3 4 5
25. 想学好英语，学习词汇对我来说很重要。1 2 3 4 5
26. 在说英语的时候不紧张对我来说是有可能的。1 2 3 4 5
27. 我愿意让英语老师纠正我所有的错误。1 2 3 4 5

再次感谢您的合作！
APPENDIX J

Questionnaire 2 (English Version)

I would like to invite you to help me by answering the following questions concerning your reasons in learning English. Your answers will be collected, analysed and used in my Ph.D thesis. This is not a test, so there are no “right” or “wrong” answers. I’m interested in your personal experience and opinion. Please give your answers sincerely as only this will guarantee the success of the investigation.

Thank you very much for your help!

Name: ______

Questions Related to English Learning

In this section, you will find a total of 30 statements related to English learning. After reading each statement, circle the response 1 (strongly disagree), 2(disagree), 3(neutral, namely neither agree nor disagree), 4(agree), or 5(strongly agree) that tells to what extent you agree or disagree with the statement.

<table>
<thead>
<tr>
<th>Strongly agree= 5</th>
<th>Agree=4</th>
<th>Neutral= 3</th>
<th>Disagree=2</th>
<th>Strongly disagree= 1</th>
</tr>
</thead>
</table>
1. I feel in love with English at the first sight, without particular reasons. 5 4 3 2 1
2. I began to study English because my parents/school required me to learn it. 5 4 3 2 1
3. Before entering university, my purpose of learning English was mainly to obtain high scores in the university entrance examination. 5 4 3 2 1
4. Before entering university, my effort of English learning depended to a large extent on test scores. 5 4 3 2 1
5. Before entering university, my effort of English learning depended to a large extent whether I liked my English teacher or not. 5 4 3 2 1
6. After entering university, my effort of English learning depended to a large extent on test scores.

7. After entering university, my effort of English learning depended to a large extent whether I like my English teacher or not.

8. After entering university, my effort of English learning depended to a large extent on the quality of English classes.

9. After entering university, my effort of English learning depended to a large extent on the quality of English textbooks.

10. After entering university, my effort of English learning depended to a large extent on whether I like the fellow students in the English class.

11. An important purpose for my English learning is to obtain a university degree.

12. The direct objective of my English learning is to obtain high scores in examinations concerning going abroad or career development in China.

13. Learning English is very important for me, because English is a very useful tool in contemporary society.

14. Learning English can give me a sense of achievement.

15. I learn English in order to facilitate other academic subjects.

16. Only with good English skills can I find a good job in the future.
<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>17.</td>
<td>I learn English so as to catch up with economic and technological developments in the world.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>18.</td>
<td>I learn English because I am interested in English speaking peoples and their cultures.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>19.</td>
<td>I have special interests in language learning.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>20.</td>
<td>Out of my love of English songs/movies, I have developed a great interest in the language.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>21.</td>
<td>I learn English just because I like this language.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>22.</td>
<td>I learn English in order to let the world know more about China.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>23.</td>
<td>Out of my love of English literature, I have developed a great interest in the language.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>24.</td>
<td>Only when I have good command of English can I well contribute to China’s prosperity.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>25.</td>
<td>Only when I have good command of English can I live up to the expectations of my parents.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>26.</td>
<td>I learn English in order to find better education and job opportunities abroad.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>27.</td>
<td>I learn English so that I can go abroad to experience English-speaking cultures.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>28.</td>
<td>The ultimate purpose of my English learning is to become an immigrant in English-speaking countries.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>29.</td>
<td>Acquiring good English skills is a stepping-stone to one’s success in life.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>30.</td>
<td>Fluent oral English is a symbol of good education and accomplishment.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

The End

Thank you again for your help and cooperation!
APPENDIX K

Questionnaire 2 (Chinese Version)

我邀请您回答一些关于您学习英语原因方面的问题。我的博士论文将使用并分析您的回答。这不是一项测试，没有正确和错误答案之分。我对您的学习经历和个人观点非常感兴趣。因此，您只需要诚实地回答以下问题。您的回答将决定该研究的成功与否。

非常感谢您的帮助和合作！

姓名:__________

本部分包含了30个陈述性问题。每读完一个问题后，请在1（很不同意），2（不同意），3（不确定），4（同意），5（很同意）中选择一个符合您对该陈述认可程度选项。

1= 很不同意 2= 不同意 3= 不确定（既不同意也不反对） 4= 同意 5= 很同意

1. 我对英语一见钟情，说不出有什么特别的原因。 1 2 3 4 5
2. 我开始学英语是因为父母/学校要我学。 1 2 3 4 5
3. 上大学前学习英语，主要是为了升学考试。 1 2 3 4 5
4. 上大学前，我学英语的劲头很大程度上取决于我的学习成绩。 1 2 3 4 5
5. 上大学前，我学英语的劲头很大程度上取决于是否喜欢英语老师。 1 2 3 4 5
6. 上大学后，我学英语的劲头很大程度上取决于我的学习成绩。 1 2 3 4 5
7. 上大学后，我学英语的劲头很大程度上取决于是否喜欢英语老师。 1 2 3 4 5
8. 上大学后，我学英语的劲头很大程度上取决于英语课的质量。 1 2 3 4 5
9. 上大学后，我学英语的劲头很大程度上取决于所用的教材。 1 2 3 4 5
10. 上大学后，我学英语的劲头很大程度上取决于是否喜欢我的英语班。 1 2 3 4 5
11. 我学英语的一个重要目的是获取大学毕业证书。 1 2 3 4 5
12. 我学英语的直接目的是在出国或国内升学、求职考试中取得好成绩。
13. 学好英语对我很重要，因为它使社会非常有用的交流工具。
14. 学好英语能让我获得成就感。
15. 我学习英语，是为了更好地学习其他专业。
16. 学好英语，将来我才可能找到一份好工作。
17. 我学习英语是为了了解世界各国的经济、科技发展情况。
18. 我学习英语是因为对英语国家的人以及他们的文化感兴趣。
19. 我对语言学习有特别的爱好。
20. 对英语歌曲/电影的爱好使我对英语产生了很大兴趣。
21. 我学习英语是因为我喜欢这门语言本身。
22. 我学习英语是为了让世界了解中国。
23. 对英语文学作品的爱好使我对英语产生了很大兴趣。
24. 学好英语，我才能很好地为中国的富强尽力。
25. 学好英语，我才能不辜负父母的期望。
26. 我学习英语是为了出国寻找更好的受教育和工作机会。
27. 我学习英语是为了出国亲身体验英语国家的文化。
28. 我学习英语是为了最终移民外国。
29. 英语是人生前进路上一块重要的敲门砖。
30. 讲一口流利的英语，是教育程度和修养的象征。

再次感谢您的合作！
APPENDIX L

Questionnaire 3 (English Version)

I would like to invite you to help me by answering the following questions concerning your experiences of English learning. Your answers will be collected, analysed and used in my Ph.D thesis. This is not a test, so there are no “right” or “wrong” answers. I’m interested in your personal experience and opinion. Please give your answers sincerely as only this will guarantee the success of the investigation.

Thank you very much for your help!

Name: ______

Section 2: Questions Related to English Learning

In this section, you will find a total of 33 statements related to English learning. After reading each sentence and the choices, please circle one choice which can best express what you think.

<table>
<thead>
<tr>
<th>Strongly agree= 5</th>
<th>Agree=4</th>
<th>Neutral= 3</th>
<th>Disagree=2</th>
<th>Strongly disagree= 1</th>
</tr>
</thead>
</table>

1. I never felt quite sure of myself when I am speaking in my foreign language class. 5 4 3 2 1
2. I don’t worry about making mistakes in language class. 5 4 3 2 1
3. I tremble when I know that I’m going to be called on in language class. 5 4 3 2 1
4. It frightens me when I don’t understand what the teacher is saying in the foreign language. 5 4 3 2 1
5. It wouldn’t bother me at all to take more foreign language classes. 5 4 3 2 1
6. During language class, I find myself thinking about things that have nothing to do with the course. 5 4 3 2 1
7. I keep thinking that the other students are better at languages than I am. 5 4 3 2 1
8. I am usually at ease during tests in my language class. 5 4 3 2 1
9. I start to panic when I have to speak without preparation in language class. 5 4 3 2 1
10. I worry about the consequences of failing my foreign language class. 5 4 3 2 1
11. I don’t understand why some people get so upset over foreign language classes. 5 4 3 2 1
12. In language class, I can get so nervous that I forget things I know. 5 4 3 2 1
13. It embarrasses me to volunteer answers in my language class. 5 4 3 2 1
14. I would not be nervous speaking the foreign language with native speakers. 5 4 3 2 1
15. I get upset when I don’t understand what the teacher is correcting. 5 4 3 2 1
16. Even if I am well prepared for language class, I feel anxious about it. 5 4 3 2 1
17. I often feel like not going to my language class. 5 4 3 2 1
18. I feel confident when I speak in foreign language class. 5 4 3 2 1
19. I am afraid that my language teacher is ready to correct every mistake I make. 5 4 3 2 1
20. I can feel my heart pounding when I’m going to be called on in language class. 5 4 3 2 1
21. The more I study for a language test, the more confused I get. 5 4 3 2 1
22. I don’t feel pressure to prepare very well for language class. 5 4 3 2 1
23. I always feel that the other students speak the foreign language better than I do. 5 4 3 2 1
24. I feel very self-conscious about speaking the foreign language in front of other students. 5 4 3 2 1
25. Language class moves so quickly I worry about getting left behind. 5 4 3 2 1
26. I feel more tense and nervous in my language class than in my other classes. 5 4 3 2 1
27. I get nervous and confused when I am speaking in my language class. 5 4 3 2 1
28. When I’m on my way to language class, I feel very sure and relaxed. 5 4 3 2 1
29. I get nervous when I don’t understand every word the language teacher says. 5 4 3 2 1
30. I feel overwhelmed by the number of rules I have to learn to speak a foreign language. 5 4 3 2 1
31. I am afraid that the other students will laugh at me when I speak the foreign language. 5 4 3 2 1
32. I would probably feel comfortable around native speakers of the foreign language. 5 4 3 2 1
33. I get nervous when the language teacher asks questions which I haven’t prepared in advance. 5 4 3 2 1

The End

Thank you for your cooperation.
APPENDIX M
Questionnaire 3 (Chinese Version)

我想邀请您回答一些您学习英语经历方面的问题。我将对您的回答进行分析。这不是一项测试，没有正确和错误答案之分。我对您的学习经历和个人观点非常感兴趣。因此，您只需要诚实地回答以下问题。

非常感谢您的帮助和合作！

姓名：__________

本部分包含了33个陈述性问题。每读完一个问题后，请在1(非常不同意)，2(不同意)，3(不确定)，4(同意)，5(非常同意)中选择一个符合您对该陈述认可程度的选项。

1. 在外语课上，我在说英语的时候从来没对自己确定过。1 2 3 4 5
2. 在语言课上从不担心出错。1 2 3 4 5
3. 当我知道我在语言课堂上要被点名回答问题时，我感觉非常紧张。1 2 3 4 5
4. 在外语课上，当我不明白老师在说什么的时候，我感到恐惧。1 2 3 4 5
5. 多上些外语课对我来说一点困扰都没有。1 2 3 4 5
6. 在语言课上，我发现自己在想与课堂内容无关的事情。1 2 3 4 5
7. 我一直都认为其他同学在外语上比我好。1 2 3 4 5
8. 语言课堂的测试通常让我感觉很轻松。1 2 3 4 5
9. 在语言课堂上，当我在毫无准备下必须要说外语的时候，我开始感到恐慌。1 2 3 4 5
10. 我因为没有通过外语课的考试而忧虑。1 2 3 4 5
11. 我不明白为什么一些人对外语课感到不安。1 2 3 4 5
12. 在外语课上，我非常紧张以至于忘掉我知道的内容。1 2 3 4 5
13. 在外语课上，如果我主动回答问题的话，我会感觉很窘迫。1 2 3 4 5
14. 我与外语本族语者说话的时候不会紧张。1 2 3 4 5
15. 当我不明白老师正在纠正什么问题时，我感到沮丧。1 2 3 4 5
16. 即使我对外语课有充分的准备，我还是会感到焦虑。1 2 3 4 5

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我时常感觉我不想去上外语课。

当我在外语课上说外语的时候，我感觉很有信心。

我担心外语老师会纠正我犯的每一个错误。

当我在课堂上被点到回答问题的时候，我感觉我心跳得厉害。

我为外语考试准备得越多，我就越感觉到困惑。

当我为外语课做准备的时候，我感觉不到任何压力。

我总觉得其他同学外语说得比我好。

我在其他同学面前说外语的时候感觉很不自然。

外语课上得太快了，我担心我被落下。

我在外语课上比在其他课上感觉更紧张。

在外语课上说外语的时候，我感觉很紧张而且很困惑。

在我去上外语课的时候，我感觉很有信心而且很轻松。

当我不是都明白外语老师所说的每一个单词的时候，我变得紧张。

我会感觉到巨大的压力。

当我说外语的时候，我害怕其他同学笑话我。

我可能会因为我周围都是外语本族语者而感到舒服。

当外语老师问到我没有提前准备的问题的时候，我变得紧张。

再次感谢您的合作！
APPENDIX N

Elicited Imitation Test

1. (G) Chinese people are nicer and more polite than other people.
2. (G) Most college students want to get high marks in their examinations.
3. (G) People play Ping Pong well and football badly in China.
4. (UG) People should report the police stolen money.
5. (UG) Everyone loves comic books and read them.
6. (G) The film that everyone likes is Star Wars.
7. (G) People can win a lot of money in a casino.
8. (G) Spending 10 hours in an aeroplane isn’t much fun, is it?
9. (G) People should report a car accident to the police.
10. (UG) People have been using computers since many years.
11. (UG) The software that Bill Gates invented it changed the world.
12. (G) A good teacher makes lessons interesting and cares about students.
13. (G) It is not a good idea for teachers to punish students.
14. (UG) Not everyone can to learn a second language.
15. (G) To speak English well you must study for many months.
16. (UG) It is more harder to learn math than to learn chemistry.
17. (G) Princess Diana loved Prince Charles but divorced him.
18. (UG) If I had had a sister or a brother I will not feel lonely.
19. (G) Princess Diana’s death shocked the whole world.
20. (UG) The number of people with Aids was increased last year.
21. (UG) The Americans were first to land on the moon, isn’t it?
22. (G) If Russia had got to the moon first, America would have been worried.
23. (UG) Everyone wants to know what is President Bush like.
24. (UG) When man invented the motor car, life change for everyone.
25. (G) Last year the population of China increased a lot.
26. (UG) Young people play often internet games and drink a lot.
27. (UG) Young women like cigarettes and fast car
28. (G) Parents have a responsibility to care for their children.
29. (UG) People worry about their parent health and their children’s future.
30. (UG) Every child needs good father.
31. (UG) It is a silly question to ask ‘Do a mother need to love her child?’
32. (UG) Young people usually want leaving their families as soon as possible.
33. (G) Parents always want to know what their child is doing.
34. (G) It is difficult to answer ‘Do you really love me?’
APPENDIX O
Timed and Untimed Grammaticality Judgment Test

1. Since (G) I haven’t seen him for a long time.
2. Comparative (G) I think that he is nicer and more intelligent than all the other students.
3. Dative (G) The teacher explained the problem to the students.
4. V comp (UG) Liao says he wants buying a car next week.
5. Past ed (UG) Martin completed his assignment and print it out.
6. Tag (UG) We will leave tomorrow, isn’t it?
7. Adverb (G) He plays soccer very well.
8. Aux do (UG) Did Keiko completed her homework?
9. Modal (UG) I must to brush my teeth now.
10. Conditional (UG) If he had been richer, she will marry him.
11. Since (UG) He has been living in New Zealand since three years.
12. Reported (G) Pam wanted to know what I had told John.
13. Article (UG) They had the very good time at the party.
14. Passive (UG) Between 1990 and 2000 the population of New Zealand was increased.
15. Possessive (UG) Liao is still living in his rich uncle house.
16. Plural (UG) Martin sold a few old coins and stamp to a shop.
17. Since (UG) I have been studying English since a long time.
18. Modal (UG) I can to speak French very well.
19. Past ed (UG) Joseph miss an interesting party last weekend.
20. 3rd person s (G) Keiko eats a lot of sushi.
21. Reported (G) Bill wanted to know where I had been.
22. Aux do (G) Did Cathy cook dinner last night?
23. Dative (G) Rosemary reported the crime to the police.
24. Comparative (G) Mary is taller than her sisters.
25. 3rd person s (UG) Hiroshi live with his friend Koji.
26. V comp (G) Keum wants to buy a computer this weekend.
27. Adverb (UG) She writes very well English.
28. Conditional (G) If she had worked hard, she would have passed the exam.
29. Reported (UG) Tom wanted to know whether was I going.
30. Article (UG) I saw very funny movie last night.
31. Dative (UG) The teacher explained John the answer.
32. Modal (G) I must finish my homework tonight.
33. Possessive (UG) Keum went to the school to speak to her children teacher.
34. Since (G) Keiko has been studying in Auckland for three years.
35. Comparative (UG) This building is more bigger than your house.
36. Tag (G) That book isn’t very interesting, is it?
37. Passive (G) Her English vocabulary increased a lot last year.
38. Past ed (G) Hiroshi received a letter from his father yesterda.
39. Aux do (G) Does Keum live in Auckland?
40. Plural (G) Liao left some pens and pencils at school.
41. Conditional (UG) If he hadn’t come to New Zealand, he will stay in Japan.
42. Comparative (UG) My car is more faster and more powerful than your car.
43. Possessive (G) Joseph flew to Washington to meet the President’s advisor.
44. V comp (UG) Joseph wants finding a new job next month.
45. 3rd person s (G) Liao works very hard but earns very little.
46. Article (G) Japan is a very interesting country.
47. Modal (G) I can cook Chinese food very well.
48. Adverb (G) They enjoyed the party very much.
49. Tag (UG) The boys went to bed late last night, is it?
50. Reported (UG) She wanted to know why had he studied German.
51. Dative (UG) He reported his father the bad news.
52. Possessive (G) Keiko spoke to the professor’s secretary.
53. Past ed (G) Liao stayed at home all day and finished the book.
54. Plural (G) Hiroshi found some keys on the ground.
55. Article (G) They did not come at the right time.
56. Conditional (G) If he had bought a ticket, he might have won the prize.
57. V comp (G) Martin says he wants to get married next year.
58. Passive (UG) An accident was happened on the motorway.
59. 3rd person s (UG) Keum lives in Hamilton but work in Auckland.
60. Adverb (UG) She likes always watching television.
61. Aux do (UG) Did Martin visited his father yesterday?
62. Passive (G) Something bad happened last weekend.
63. Plural (UG) Keum bought two present for her children.
64. Tag (G) She is working very hard, isn’t she?
65. Relative (UG) The bird that my brother caught it has died.
66. Relative (UG) The boat that my father bought it has sunk.
67. Relative (G) The book that Mary wrote won the prize.
68. Relative (G) The car that Bill has rented is a Toyota.
APPENDIX P
Metalinguistic Knowledge Test

Metalinguistic Knowledge Test Part 1

1. You must to wash your hands before eating.
   a. ‘Must to’ is the wrong form of the imperative.
   b. Change to ‘must have to wash’ to express obligation.
   c. Modal verbs should never be followed by a preposition.
   d. After ‘must’ use the base form of the verb not the infinitive.

2. Hiroshi wants visiting the United States this year.
   a. ‘visiting’ should be written in the base form.
   b. The verb following ‘want’ must be an infinitive.
   c. We cannot have two verbs together in a sentence.
   d. It should be ‘visit’ because the event is in the future.

3. Matin work in a car factory.
   a. Work is a noun so it cannot have the subject ‘Martin’
   b. We must use the present simple tense after pronoun.
   c. We need ‘s’ after the verb to indicate third person plural.
   d. In the third person singular the present tense verb takes ‘s’.

4. If Jane had asked me, I would give her some money.
   a. ‘would’ is conditional so it should appear in the ‘if’ clause not the main clause.
   b. The first clause tells us that this is an impossible condition, so use the subjunctive.
   c. We must use ‘would have given’ to indicate that the event has already happened.
   d. When ‘if ’ clause is in the past perfect tense, main clause verb is in the past conditional.

5. Learning a language is more easier when you are young.
   a. ‘More’ is an adjective so we must use ‘easily’ not ‘easier’.
   b. The comparative ending of a two-syllable adjective is ‘er’.
   c. The ‘er’ ending indicates comparison, so ‘more’ is not needed.
   d. You cannot have two adjectives together in the same sentence.
6. Keiko grew **some rose** in her garden.
   a. The noun is countable, so after ‘some’ use the plural form.
   b. The wrong adjective has been used before ‘rose’.
   c. A noun must always have ‘a ’ or ‘the’ before it.
   d. Use ‘a few’ not ‘some’ with countable nouns.

7. His school grades **were improved** last year.
   a. The verb ‘improve’ can never be used in the passive form.
   b. We should insert ‘by him’ after the verb to indicate the agent.
   c. Use ‘improved’ as the sentence refers to a specific event last year.
   d. ‘Improve’ should take the active form even though the subjects is not the agent.

8. Martin lost **his friend book**.
   a. We need possessive ‘s’ to show that the friend owns the book.
   b. You cannot have two nouns next to one another in a sentence.
   c. The verb refers to a personal object, so must have an apostrophe.
   d. Insert ‘of’ before book to show that it belongs to the friend.

9. Keum **happen** to meet an old friend yesterday.
   a. It took place yesterday, so use a past tense verb ending.
   b. Third person singular verbs always have an ‘s’ ending.
   c. We don’t use a preposition after the verb ‘happen’.
   d. ‘Happen’ never follows the subject of a sentence.

10. Because he was late, he called **taxi**.
    a. Insert ‘a ’ before taxi because it is not a specific one.
    b. Use ‘some taxis’ because taxi cannot be singular.
    c. We must always use ‘the’ before countable nouns.
    d. Use the indefinite article because the taxi is unique.

11. They were interested in **what was I doing**.
    a. In embedded questions the word order is the same as that in statements.
    b. Change the word order, because ‘what’ is always followed by a pronoun.
    c. The subject should always come in front of the verb after question words.
d. The clause ‘what was I doing’ should be followed by a question mark.

12. Does Liao has a Chinese wife?
   a. With questions, always use the auxiliary ‘have’.
   b. We must use the base form after ‘do/does’.
   c. Use ‘have’ not ‘has’ because ‘does’ is in the past tense.
   d. The word order changes when we use the question form.

13. Jenny likes very much her new job.
   a. Adverbial phrases should occur after nouns not verbs.
   b. An adverb should not come between a verb and its object.
   c. The phrase ‘very much’ always occurs at the end of a sentence.
   d. The adverbial phrase must always precede the verb.

14. They have already finished, isn’t it?
   a. We cannot use ‘it’ because the main verb ‘finish’ does not have an object.
   b. ‘Have’ should be used instead of ‘is’ in all question tags referring to past time.
   c. The tag question should be positive because the main verb is in the affirmative.
   d. The form of the question tag must relate to the subject and verb in the main clause.

15. He has been saving money since 10 years.
   a. The wrong conjunction has been used in the time clause.
   b. We cannot use ‘since’ because the exact date is specified.
   c. Use ‘for’ following any verb in the past perfect continuous tense.
   d. Use ‘for’ not ‘since’ for a noun phrase referring to a period of time.

16. I explained my friend the rules of the game.
   a. The indirect object must never precede the direct object of a verb.
   b. ‘Explain’ (unlike the verbs ‘tell’ and ‘give’) can only have one object.
   c. After ‘explain’ we must insert a preposition before the indirect object.
   d. The preposition ‘to’ is always used for the dative form of a noun or pronoun.

17. The cake that you baked it tastes very nice.
   a. Omit ‘that’ when the relative pronoun is subject of the clause.
b. We should use ‘which’ instead of ‘that’ when referring to things.
c. Omit ‘it’ in the relative clause because it refers to same thing as ‘that’.
d. Omit ‘that’ when using ‘it’ in the relative clause to avoid having two pronouns.

**Metalinguistic Knowledge Test Part 2**
1. Read the passage below. Find ONE example in the passage for each of the grammatical features listed in the table. Write the examples in the table in the spaces provided. The first one is done for you. Note: it may be possible to choose the same example to illustrate more than one grammatical feature.

**Passage:**
The materials are delivered to the factory by a supplier, who usually has no technical knowledge, but who happens to have the right contacts. We would normally expect the materials to arrive within three days, but this time it has taken longer.

<table>
<thead>
<tr>
<th>Grammatical Feature</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definite article</td>
<td>The</td>
</tr>
<tr>
<td>Verb</td>
<td></td>
</tr>
<tr>
<td>Noun</td>
<td></td>
</tr>
<tr>
<td>Preposition</td>
<td></td>
</tr>
<tr>
<td>Passive verb</td>
<td></td>
</tr>
<tr>
<td>Conditional Verb</td>
<td></td>
</tr>
<tr>
<td>Adjective</td>
<td></td>
</tr>
<tr>
<td>Adverb</td>
<td></td>
</tr>
<tr>
<td>Countable noun</td>
<td></td>
</tr>
<tr>
<td>Indefinite article</td>
<td></td>
</tr>
<tr>
<td>Relative pronoun</td>
<td></td>
</tr>
<tr>
<td>Auxiliary verb</td>
<td></td>
</tr>
<tr>
<td>Modal verb</td>
<td></td>
</tr>
<tr>
<td>Past participle</td>
<td></td>
</tr>
<tr>
<td>Conjunction</td>
<td></td>
</tr>
<tr>
<td>Finite verb</td>
<td></td>
</tr>
<tr>
<td>Infinitive verb</td>
<td></td>
</tr>
<tr>
<td>Agent</td>
<td></td>
</tr>
</tbody>
</table>
2. In the following sentences, underline the item requested in brackets:
   A. Poor little Joe stood out in the snow. (Subject)
   B. Joe had nowhere to stay. (Infinitive)
   C. The policeman chased Joe down the street. (Direct object)
   D. The woman gave him some money. (Indirect object)
APPENDIX Q
Scoring System

There are five tests in this study: Elicited Imitation Test, Timed Grammaticality Test, Untimed Grammaticality Test, Metalinguistic Knowledge Test and Language Analysis. Scoring rules for those tests are discussed as follows:

I. Elicited Imitation Test (EIT for short)
In this test, participants failed to repeat the sentence or they didn’t repeat it in the obligatory context are scored “0”. G for Grammatical UnG for Ungrammatical. Percentage score is used. (See Table 1)

Comparatives:
1. Chinese people are nicer and more polite than other people. (G)
   Score “nicer” 1 and “more polite” 1
16. It is more harder to learn math than to learn chemistry. (UnG)
   Score “harder” instead of “more harder” 1

Verb complements:
2. Most college students want to get high marks in their examinations. (G)
   Score “want to get” 1
32. Young people usually want leaving their families as soon as possible. (UnG)
   Score “want to leave” instead of “want leaving” 1

Adverb placement:
3. People play Ping Pong well and football badly in China. (G)
   Score “well” 1 and “badly” 1
26. Young people play often internet games and drink a lot. (UnG)
   Score “play internet games often” instead of “play often” 1 and “a lot” 1

Dative alternation:
4. People should report the police stolen money. (UnG)
   Score “report stolen money to the police” instead of “report the police stolen money” 1
9. People should report a car accident to the police. (G)
Score “report a car accident to the police” 1

Third Person ‘s’:
5. Everyone loves comic books and read them. (UnG)
Score “loves” 1 and “reads” instead of “read” 1
12. A good teacher makes lessons interesting and cares about students. (G)
Score “makes” 1 and “cares” 1

Relative clauses:
6. The film that everyone likes is Star Wars. (G)
Score “that everyone likes” 1
11. The software that Bill Gates invented it changed the world. (UnG)
Score “that Bill Gates invented” instead of “that Bill Gates invented it” 1

Modal verbs:
7. People can win a lot of money in a casino. (G)
Score “can win” 1
14. Not everyone can to learn a second language. (UnG)
Score “can learn” instead of “can to learn” 1

Question tags:
8. Spending 10 hours in an aeroplane isn’t much fun, is it? (G)
Score “is it” 1
21. The Americans were first to land on the moon, isn’t it? (UnG)
Score “weren’t they” instead of “isn’t it” 1

Since and for:
10. People have been using computers since many years. (UnG)
Score “for” instead of “since” 1
15. To speak English well you must study for many months. (G)
Score “for” 1

Plural ‘s’:
13. It is not a good idea for teachers to punish students. (G)
Score “teachers” 1 and “students” 1
27. Young women like cigarettes and fast car. (UnG)
Score “cigarettes” 1 and “cars” instead of “car” 1

Regular past tense:
17. Princess Diana loved Prince Charles but divorced him. (G)
Score “loved” 1 and “divorced” 1
24. When man invented the motor car, life changed for everyone. (UnG)
Score “invented” 1 and “changed” instead of “change” 1

Unreal Conditions:
18. If I had had a sister or a brother I will not feel lonely. (UnG)
Score “I wouldn’t have felt lonely” instead of “I will not feel lonely” 1
22. If Russia had got to the moon first, America would have been worried. (G)
Score “would have been worried” 1

Possessive ‘s’:
19. Princess Diana’s death shocked the whole world. (G)
Score “Diana’s death” 1
29. People worry about their parent health and their children’s future. (UnG)
Score “parents’ health” instead of “parent health” 1 and “children’s future” 1

Ergative verbs:
20. The number of people with Aids was increased last year. (UnG)
Score “increased” instead of “was increased” 1
25. Last year the population of China increased a lot. (G)
Score “increased” 1

Embedded questions:
23. Everyone wants to know what is President Bush like. (UnG)
Score “what president Bush is like” instead of “what is President Bush like” 1
33. Parents always want to know what their child is doing. (G)
Score “what their child is doing” or “what their children are doing” 1
Indefinite articles:
28. Parents have a responsibility to care for their children. (G)
Score “a” 1
30. Every child needs good father. (UnG)
Score “a good father” instead of “good father” 1

Yes/no question:
31. It is a silly question to ask ‘Do a mother need to love her child?’ (UnG)
Score “Does a mother” instead of “Do a mother” 1
34. It is difficult to answer ‘Do you really love me?’ (G)
Score “Do you” 1

Table A

<table>
<thead>
<tr>
<th>Structure</th>
<th>Sentence Number</th>
<th>Grammatical or Ungrammatical</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparatives</td>
<td>1</td>
<td>G</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>UnG</td>
<td>1</td>
</tr>
<tr>
<td>Verb complements</td>
<td>2</td>
<td>G</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>UnG</td>
<td>1</td>
</tr>
<tr>
<td>Adverb placement</td>
<td>3</td>
<td>G</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>UnG</td>
<td>2</td>
</tr>
<tr>
<td>Dative alternation</td>
<td>4</td>
<td>UnG</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>G</td>
<td>1</td>
</tr>
<tr>
<td>3rd person -s</td>
<td>5</td>
<td>UnG</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>G</td>
<td>2</td>
</tr>
<tr>
<td>Relative clauses</td>
<td>6</td>
<td>G</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>UnG</td>
<td>1</td>
</tr>
<tr>
<td>Model verbs</td>
<td>7</td>
<td>G</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>UnG</td>
<td>1</td>
</tr>
<tr>
<td>Question tags</td>
<td>8</td>
<td>G</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>UnG</td>
<td>1</td>
</tr>
<tr>
<td>Since and for</td>
<td>10</td>
<td>UnG</td>
<td>1</td>
</tr>
</tbody>
</table>
I. Timed Grammaticality Judgment Test (Timed GJT for short)

In this test, according to the answers, “1” stands for “correct”; “9” stands for “incorrect”; “0” stands for “missing”. “incorrect” and “missing” are scored. “correct” is scored 1. Percentage score is used. (See Table 2)

Table B

<table>
<thead>
<tr>
<th>Answer</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>1</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Score</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Total Score: 68
II. Untimed Grammaticality Judgment Test (Untimed GJT for short)

In this test, according to the participants’ answers, “1” stands for “correct”; “0” stands for “incorrect”; “1” stands for “rule”; “0” stands for “feel”. “correct” is scored 1 and “incorrect” is scored 0. Percentage score is used. (See Table 3)

Table C

<table>
<thead>
<tr>
<th>Answer</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Rule</th>
<th>Feel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Score</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Score: 68</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

III. Metalinguistic Knowledge Test

1) There are 2 parts in this test. Part 2 has two sections: Section 1 and Section 2. Scores of those three parts will be counted separately and then will be added up. In Part 1, there are 17 multiple choice items. Percentage score is used. The answers are shown in the following table (Table 4):

Table D

| Number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|--------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| Answer | d | b | d | b | a | d | a | a | A | a  | b  | b  | d  | d  | d  | b  | c  |
| Score  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1   | 1   | 1   | 1   | 1   | 1   | 1   |
| Total Score: 17 |

2) Section 1 of Part 2 has 19 items. Percentage score is used. The answers are as follows (See Table 5):
<table>
<thead>
<tr>
<th>Grammatical Items</th>
<th>Answer</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verb</td>
<td>are, delivered, has, happens, have, expect, arrive, taken</td>
<td>1</td>
</tr>
<tr>
<td>Noun</td>
<td>materials, factory, knowledge, contacts, supplier, days, time</td>
<td>1</td>
</tr>
<tr>
<td>Preposition</td>
<td>to, by, within</td>
<td>1</td>
</tr>
<tr>
<td>Passive verb</td>
<td>are delivered</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>‘delivered’ or ‘are’</td>
<td>0</td>
</tr>
<tr>
<td>Conditional verb</td>
<td>would</td>
<td>1</td>
</tr>
<tr>
<td>Adjective</td>
<td>technical, right</td>
<td>1</td>
</tr>
<tr>
<td>Adverb</td>
<td>usually, normally</td>
<td>1</td>
</tr>
<tr>
<td>Countable noun</td>
<td>materials, factory, supplier, contacts, days</td>
<td>1</td>
</tr>
<tr>
<td>Indefinite article</td>
<td>a</td>
<td>1</td>
</tr>
<tr>
<td>Relative pronoun</td>
<td>who</td>
<td>1</td>
</tr>
<tr>
<td>Auxiliary verb</td>
<td>are, would, has</td>
<td>1</td>
</tr>
<tr>
<td>Modal verb</td>
<td>would</td>
<td>1</td>
</tr>
<tr>
<td>Past participle</td>
<td>delivered, taken</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>‘are delivered’ or ‘has taken’</td>
<td>0</td>
</tr>
<tr>
<td>Conjunction</td>
<td>but</td>
<td>1</td>
</tr>
<tr>
<td>Finite verb</td>
<td>are, has, happens, would expect, has taken</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>‘expect’ or ‘taken’</td>
<td>0</td>
</tr>
<tr>
<td>Infinitive verb</td>
<td>to arrive, to have</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>‘arrive’ or ‘have’</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>Agent</td>
<td>supplier, we</td>
<td>1</td>
</tr>
<tr>
<td>Comparative form</td>
<td>longer</td>
<td>1</td>
</tr>
<tr>
<td>Pronoun</td>
<td>we, it</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Score: 19**
Notes
a) In terms of the answers to all the grammatical items, ‘,’ means ‘or’, the participants give any one of the answers will be scored 1.
b) In terms of the finite verb, the participants have to give clear tense of the word (e.g. goes, went, has gone, would go, etc.), if the word is not chosen from the given passage.
c) In terms of infinitive verb, the participants have to give the full infinitive form (e.g. to cancel, to live, etc.), if the word is not chosen from the given passage.
d) In terms of agent, the participants have to give subjective pronoun (e.g. I, we, they, she, he), if the word is not chosen from the given passage.
e) Coordinator is suggested in the main study.

3) Section 2 of Part 2 has 4 items. Percentage score is used. The answers are as follows (Table 6):

Table F

<table>
<thead>
<tr>
<th>Grammatical Items</th>
<th>Subject</th>
<th>Infinitive</th>
<th>Direct Object</th>
<th>Indirect Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer</td>
<td>Poor little Joe or Joe</td>
<td>to stay</td>
<td>to Joe</td>
<td>him</td>
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<td>1</td>
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IV. Language Analysis
There are 14 items in this test and each correct answer will be scored 1. Percentage score is used. (See Table 7)

Table G

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APPENDIX R

Proficiency Tests


Oxford Placement Test 1

Listening Test

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<th>Name</th>
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<td>_____/100</td>
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<tr>
<td>Total Grammar</td>
<td>_____/100</td>
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<td>Grand Total</td>
<td>_____/200</td>
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</table>

Look at the example below. Listen to the tape. You will hear the example once only. Decide which word you hear, ‘soap’, or ‘soup’.

a. Will you get some soap soup at the supermarket?

The word was ‘soup’, so ‘soup’ is ticked. Now look at these examples, and listen to the tape again. This time, you tick the words you hear. For example, if you hear ‘shorts’, tick ‘shorts’.

c. The team need new shorts.
d. They’ve recently developed a new kind of wine around here.

The words on the tape were ‘shorts’ and ‘wine’, so the correct answers look like this:

b. The team need new shorts.
c. They’ve recently developed a new kind of wine around here.

Now the test will begin. Listen to the tape and tick (✓) the words you hear.
1. I gather you’ve been having trouble with your earring hearing.
2. A number of students are expected to join the advanced composition conversation class.
3. This beard of mine is awfully itchy. I’ll be glad when it goes grows.
4. I doubt if he’s very comfortable in his present prison bed.
5. Have you played tennis very much recently?
6. Martina lives in a great big freezing Friesian barn.
7. Do you have any idea how long ago it was founded?
8. Your letter must have crossed with my own mine.
9. One thing I really loved in the late nineties was the style of the clothes.
10. My sister says he’s she’s a very nice person.
11. That Dutch friend of mine you met yesterday is very good at chess jazz play.
12. That’s the Euro equivalent of 30p 40p.
13. Do we need to change the clothes clocks tonight?
14. Today’s a holiday horrid day isn’t it?
15. Williams now seems unlikely to regain her title.
16. It is recommended that dyslexic students follow a remedial reading writing option.
17. She’s been quite tearful cheerful the last couple of weeks.
18. It was only later we found out he wasn’t insured.
19. I can see to it if it has to be done.
20. I see the peaches pictures are starting to go yellow.
21. If it hadn’t been for him they wouldn’t have done it.
22. Have you got any more of this blended splendid butter?
23. I don’t think the management side took any notice.
24. At the end of this test the papers will be corrected collected by the invigilators.
25. If you have any problems, please contact the British Council Consul immediately.
26. During his holidays he spends most of his time at the Lotus test track washing cars.
27. Liverpool were really rare dangerous in the first half.
36. Do you think you could talk us through the next bit of the film?
37. How many texts are we going to need to get all the data we want?
38. There’s a fishery somewhere round here where they hatch trout by the thousand.
39. Are you going to Penny’s tonight?
40. Do you think we could have two minibuses for the summer courses?
41. Do you think Rich’s place is till buyable?
42. We’ve gone through today’s money in less than an hour.
43. I reckon Eric and I need a good holiday.
44. This horse will have to be shod immediately.
45. Can you get me some sealing tape when you’re in town?
46. Even if he leaves the country he won’t be safe from prosecution.
47. Since the accident the only thing he can do is manual work.
48. She’s very much the committed type.
49. You can get quite a view from up here.
50. What can we do with this slot to make the timetable work?
51. Keane was chaired off at the end of the match.
52. The future of the party now seems to depend on delegate decisions to be worked out at local level.
53. Have you done much writing recently?
54. We’ve all been heartened by recent events.
55. What we have here is essentially a physical problem.
56. Make sure you keep the ropes tied tight.
57. I think they sat the exam last week.
58. You’ll need a mass of cheese to make a fondue for that many people.
59. I can’t really advise you without knowing the type of contacts you’re presupposing.
60. The visit went ahead in defiance of the government’s views.
61. I thought his behaviour was unexceptional.
62. Look at the clouds over there.
63. Her ambition is to become a ballet dancer.
64. Did you get a chance to dry it out?
65. If you look very carefully you can see there used to be a cabin there.
66. Recent EU regulation have been disastrous for British fish stocks.
67. Pollution is a real threat to the North American bison.
68. Have you had an invitation to the lunch?
69. Do you know if she’s finished?
70. Yorkshire and Wales are both famous for their pony trails.
71. We just didn’t think he’d be armed harmed.  
72. I’m not feeling so ill today.  
73. They are old things they’ve grown out of, so you can take them for the jumble sale.  
74. My brother-in-law left Euston Houston early this morning, so he should get here tonight.  
75. The profitability of North Sea oil rigs is very dependent on the quality of the crude crew they find.  
76. You can buy logs by the barrow–barrel–load at the local timber works.  
77. I hear you’ve to a new rival arrival.  
78. Who was responsible for sending the infantry inventory?  
79. We’ll be letting them have a new assistant if they want one.  
80. He works for a company called JMB J&B.  
81. Have you read the latest book on Watergate by Haldeman?  
82. Some motels now have hair-dryers in the cloakrooms.  
83. Recent legislation makes it imperative that we men work together to help each Other.  
84. The Social Services try to ensure that children who need them get free three meals every day.  
85. It’s Richard’s birthday on Sunday. So he’ll have to do it on Monday.  
86. I gather their child is autistic.  
87. She was terribly scared as a result of the accident.  
88. This year Britain’s top oarsman rowed to his third world title.  
89. He’s an internal student.  
90. At Kilverstone Wildlife Park they’ve got an Andean Indian buffalo.  
91. In England all road users must have a licence.  
92. I’d like you to be responsible for the personal side of the deal.  
93. He and Ian Woosnam could well turn the tables next week.  
94. Who’s going to propose the royal toast?  
95. England would never have scored if it hadn’t been for the free kick by Beckham.  
96. Such measures have never previously been taken in the absence of a president precedent.  
97. When I saw the train I realized I would never catch him.  
98. We haven’t had any more news today.  
99. It’s hard not to lose face in a situation like that.  
100. I’ve just heard that these tests have been piloted in Japan.
Oxford Placement Test 1
Grammar Test PART 1

Name __________________________________________

Total Listening _____/100
Total Grammar _____/100
Grand Total _____/200

Look at these examples. The correct answer is ticked.

a. In warm climates people like sitting outside in the sun.

b. If it is very hot, they sit under the shade.

Now the test will begin. Tick the correct answer.

1. Water is to boil is boiling boils at a temperature of 100°C.                                      1 _______
2. In some countries it is very hot all the time.                                                   2 _______
3. In cold countries people wear thick clothes for keeping warm.                                   3 _______
4. In England people are always talking about the weather.                                         4 _______
5. In some places it rains almost every day.                                                        5 _______
6. In deserts there isn’t any grass.                                                                6 _______
7. Places near the Equator have warm weather even in the cold season.                             7 _______
8. In England the coldest time of year is usually from December to February.                      8 _______
9. The most people don’t know what it’s really like in other countries.                            9 _______
10. Very few people can travel abroad.                                                              10 _______
11. Mohammed Ali has won his first world title fight in 196.                                         11 _______
12. After he had won an Olympic gold medal he became a professional boxer.                         12 _______
13. His religious beliefs have made him change his name when he became champion.                 13 _______
14. If he has been surprised. If he had lost his first fight with Sonny Liston, no one would have been surprised. 14 _______
15. He has travelled a lot as a boxer and as a world-famous personality.                            15 _______
16. He is very well known all in all over in all the world.  
17. Many people is believing are believing believe he was the greatest boxer of all time.  
18. To be the best from in the world is not easy.  
19. Like any top sportsman Ali had ta must should train very hard.  
20. Such is his fame that people would will did always remember him as a champion.  

The history of aeroplane is quite a short one. For many centuries men are trying had tried to fly, but with little success. In the 19th century a few people succeeded to fly in balloons. But it wasn’t until the beginning of the century that anybody were able to fly in a machine who was heavier than air, in other words, in what we now call a ‘plane’. The first people to achieve ‘powered flight’ were the Wright brothers. Their was the forerunner of the jumbo jets that are so common sight today. They could hardly have imagined that in 1969. Not much more than half a century later. a man was walking on the moon. Already is taking the first steps towards the stars. Space satellites have now existed for around half a century and we are dependent on them for all kinds of information. Not only are they being used for scientific research in space, but also to see what kind of weather is coming. By 2008 there will have been satellites in space for fifty Years and the ‘space superpowers’ will be building massive space stations. When these will have been completed it will be the first time that astronauts will be able to work in space in large numbers. Apart for all that, in many ways the most remarkable flight of all was that of the flying bicycle, which the world on television, apart from a man to power it. As the bicycle-flyer said, ‘It’s the first time I realize what hard work it is to be a bird!’
Grammar Test Part 2

51. Many teachers say to tell their students should learn a foreign language.

52. Learning a second language is not the same like than learning a first language.

53. It takes long time long a long time to learn any language.

54. It is said that Chinese is perhaps the world’s harder hardest more hard language to master.

55. English is quite difficult because of all the exceptions who which what have to be learnt.

56. You can learn the basic structures of a language quite quickly, but only if you are wanting will to are willing to make an effort.

57. A lot of people aren’t used to the study to study to studying grammar in their own language.

58. Many adult students of English wish they would start would have started had started their language studies earlier.

59. In some countries students have to spend a lot of time working on by in their own.

60. There aren’t any some easy ways of learning a foreign language in your own country.

61. Some people try to improve their English by hearing listening listening to the BBC World Service.

62. Live Life Living with a foreign family can be a good way to learn a language.

63. It’s no use to try trying in trying to learn a language just by studying a dictionary.

64. Many students of English would rather not would rather prefer not would rather not to take tests.

65. Some people think it’s time we all learn should learn learnt a single international language.

Charles Walker is a teacher at a comprehensive school in Norwich. He has joined joined joins The staff of the school in 1998 and has been working worked works there ever since.

Before move to move moving to Norwich, he taught in Italy and in Wales.

and before that he has been was was being a student at Cambridge University. So far he isn’t wasn’t hasn’t been in Norwich for as long.

As he was in Wales, but he likes the city a lot and should would could like to stay there for at least another two years, or how which as he puts it, until his two children have will have will be grown up a bit.

He met his wife, Kate, in 1992 while he was to live was living had been living abroad for a while, and they got married in 1996.

Their two children, Mark and Susan, are were have been both born in Norwich.
The Walker’s boy, **who** is five, has just started at school, but **his** sister shall stay at home for another couple of years, because she is nearly two years younger than him. Charles and Kate Walker are used to live in the country, but now that they have children, they have moved into the city. Charles wanted a house next to the school in order to get to work easily. Unfortunately the one the two of them really wanted was too expensive, so they must buy one a bit further away. By the time the children have gone to secondary school that Charles and Kate hope will be in Norwich, the Walkers will have been living there for at least fifteen years. They can’t be sure if they will stay, but if they don’t, their friends won’t be too surprised.

Look at the following examples of question tags in English. The correct form of the tag is ticked.

a. He’s getting the 9:15 train, **isn’t he?**

b. She works in a library, **doesn’t she?**

c. Tom didn’t tell you, **didn’t he?**

d. Someone’s forgotten to switch off the gas, **didn’t one?**

Now tick the correct question tag in the following 10 items:

91. John’s coming to see you, **hasn’t he?**

92. It’s been a long time since you’ve seen him, **hasn’t it?**

93. He’s due to arrive tomorrow, **won’t he?**

94. He won’t be getting in till about 10:30, **isn’t he?**

95. You met him while you were on holiday, **didn’t you?**

96. I think I’m expected to pick him up, **aren’t I?**

97. No doubt you’d rather he stayed in England now, **didn’t you?**

98. Nobody else has been told he’s coming, **is he?**

99. We’d better not stay up too late tonight, **didn’t we?**

100. I suppose it’s time we called it a day, **didn’t we?**
II. Test for English Majors, Grade Four (TEM 4, 2009)
TIME LIMIT: 135 MIN
PART I DICTATION [15 MIN]
Listen to the following passage. Althought the passage will be read to you four times. During the first reading, which will be done at normal speed, listen and try to understand the meaning. For the second and third readings, the passage will be read sentence by sentence, or phrase by phrase, with intervals of 15 seconds. The last reading will be done at normal speed again and during this time you should check your work. You will then be given 2 minutes to check through your work once more.

Please write the whole passage on ANSWER SHEET ONE.
PART II LISTENING COMPREHENSION [20 MIN]
In Sections A B and C you will hear everything ONCE ONLY. Listen carefully and then answer the questions that follow. Mark the correct answer to each question on Answer Sheet Two.

SECTION A CONVERSATIONS
In this section you will hear several conversations. Listen to the conversations carefully and then answer the questions that follow.

Questions 1 to 3 are based on the following conversation. At the end of the conversation, you will be given 15 seconds to answer the questions. Now, listen to the conversation.

1. Mark is unhappy because of
A. his Chemistry homework. B. a girl in his class.
C. Linda's words. D. Friday night's party.

2. Which of the following is CORRECT?
A. Linda is Jane's friend. B. Mark is Jane's boyfriend.
C. John is Jane's boyfriend. D. Mark and John are good friends.

3. Did Mark eventually take Linda's advice?

Questions 4 to 7 are based on the following conversation. At the end of the conversation, you will be given 20 seconds to answer the questions. Now, listen to the conversation.

4. About the scratch on the product, the shop assistant thinks that
A. the customer made it himself. B. there was definitely not one then.
C. the customer should have checked. D. the customer was making trouble.
5. The customer was _____ when told he might not have worn the headphones properly.
A. annoyed B. surprised C. indifferent D. worried
6. How many complaints did the customer make about the product altogether?
7. The shop could exchange the product if the customer
A. makes no more complaints. B. can produce the receipt.
C. is still unhappy with it. D. brings it back within a week.

Questions 8 to 10 are based on the following conversation. At the end of the conversation, you will be given 15 seconds to answer the questions. Now, listen to the conversation.

8. Joe Smith telephoned Victoria for
A. the menu. B. the place. C. the reception. D. the campaign.
9. When will the lunch be held?
A. Friday next week. B. Thursday next week.
C. April 30th. D. This week.
10. All the following information is new to Victoria EXCEPT
A. how many people to attend it. B. why to hold it.
C. where to hold it. D. what to cook.

SECTION B PASSAGES
In this section, you will hear several passages. Listen to the passages carefully and then answer the questions that follow.

Questions 11 to 13 are based on the following passage. At the end of the passage, you will be given 15 seconds to answer the questions. Now, listen to the passage.

11. People choose London for post-Christmas shopping because
A. shops open early in the morning.
B. shops stay open for longer hours.
C. they can buy really cheap things.
D. they can shop with their friends.
12. We learn from the passage that
A. people are very keen on sales.
B. post-Christmas sales start at 3:30am.
C. post-Christmas sales last for a day.
D. sales include only a few items.
13. Which of the following is NOT mentioned in the passage?
A. Some people buy Christmas presents in the sales.
B. Some people shop online during the sales.
C. Some people buy presents for next Christmas.
D. Online retailers offer better post-Christmas sales.

Questions 14 to 17 are based on the following passage. At the end of the passage, you will be given 20 seconds to answer the questions. Now, listen to the passage.

14. Ballroom dancing used to be associated with
A. TV shows. B. old people.
C. celebrities. D. professional dancers.
15. According to the passage, recent popularity of ballroom dancing is the result of
A. the participation of celebrities.
B. the designing of colourful costumes.
C. the benefits it brings.
D. a TV programme.
16. Which of the following is NOT mentioned about the TV show?
A. Performers have to be formally dressed on the show.
B. Each professional dancer dances with a celebrity.
C. People on the show perform a different dance every week.
D. The show runs for about four months.
17. According to the passage, the TV show has the greatest impact on
A. old people. B. middle-aged people.
C. kids and young people. D. all of the above.

Questions 18 to 20 are based on the following passage. At the end of the passage, you will be given 15 seconds to answer the questions. Now, listen to the passage.
18. According to New Zealand's rules about naming children, which of the following names is NOT acceptable?

19. According to the passage, unusual names come from
A. popular culture. B. parents' invention.
C. sports. D. all of the above.

20. All of the following countries have strict rules about naming children EXCEPT

SECTION C NEWS BROADCAST
In this section, you will hear several news items. Listen to them carefully and then answer the questions that follow.

Questions 21 to 23 are based on the following news. At the end of the news item, you will be given 15 seconds to answer the questions. Now listen to the news.

21. Why were the fishing crew stranded on Oct. 10th?
A. They went to a remote area.
B. Their fishing boats collided.
C. They tried to repair their boats.
D. They decided to stay in the boats.

22. How did they survive during those three months?
A. On supplies they brought with them.
B. On supplies sent to them by rescue teams.
C. On supplies left at the military base.
D. Not mentioned in the passage.

23. How were the crew rescued eventually?
A. By helicopter. B. By boat. C. By radio contact. D. By a search team.

Questions 24 and 25 are based on the following news. At the end of the news item, you will be given 10 seconds to answer the questions. Now, listen to the news.

24. Juan Carlos has been King of Spain

25. What is the news item mainly about?
A. The King's birthday. B. The stability of the monarchy.
C. Criticism from both the left and the right. D. The King's public defence of his reign.

Questions 26 and 27 are based on the following news. At the end of the news item, you will be given 10 seconds to answer the questions. Now, listen to the news.

26. The three suicide bombings occurred in
A. November and December. B. October and November.
C. November. D. December.
27. Did people die in the bombings?
A. No one died in the bombings.
B. Yes. In one of the bombings.
C. Yes. In two of the bombings.
D. Yes. In all the bombings.

Questions 28 to 30 are based on the following news. At the end of the news item, you will be given 15 seconds to answer the questions. Now, listen to the news.

28. What is the purpose of the national survey?
A. To collect data on sources of pollution.
B. To identify pollution in rivers and lakes.
C. To help control environmental pollution.
D. To help control industrial wastes.
29. According to the news item, efforts of environmental protection are especially affected by
A. lack of technology.
B. rapid economic growth.
C. unknown pollution sources.
D. shortage of manpower.
30. Which of the following details is CORRECT according to the news item?
A. Census offices are set up by government departments.
B. A main centre receives reports from provinces.
C. A database is set up for each province.
D. Data will be reviewed and analyzed in mid-2009.

PART III CLOZE [15 MIN]

Decide which of the choices given below would best complete the passage if inserted in the corresponding blanks. Mark the best choice for each blank on Answer Sheet Two.

Scientists around the world are racing to learn how to rapidly diagnose, treat and stop the spread of a new, deadly disease. SARS — Severe Acute Respiratory Syndrome — was (31)____ for the first time in February 2003 in Hanoi, (32)____ since then has infected more than 1,600 people in 15 countries, killing 63. At this (33)____, there are more questions than answers surrounding the disease.

Symptoms start (34)____ a fever over 10.4 degrees F, chills, headache or body (35)____. Within a week, the patient has a dry cough, which might (36)____ to shortness of breath. In 10% to 20% of cases, patients require (37)____ ventilation to breathe. About 3.5% die from the disease. Symptoms (38)____ begin in two to seven days, but some reports suggest it (39)____ take as long as 10 days. Scientists are close to (40)____ a lab test to diagnose SARS. In the meantime, it is diagnosed by its symptoms. There is no evidence (41)____ antibiotics or anti-viral medicines help, (42)____ doctors can offer only supportive care. Patients with SARS are kept in isolation to reduce the risk of (43)____. Scientists aren't sure yet, but some researchers think it's a (44)____ discovered coronavirus, the family of viruses that cause some common colds.

Most cases appear to have been passed (45)____ droplets expelled when infected patients cough or sneeze. Family members of infected people and medical workers who care (46)____ them have been most likely to (47)____ the illness. But recent developments in Hong Kong suggest that the (48)____ might spread through air, or that the virus might (49)____ for two to three hours on doorknobs or other (50)____. Health experts say it is unlikely, though, that sharing an elevator briefly with an infected person would be enough to pass the virus.

(31) A. detected  B. caught  C. disclosed  D. revealed
(32) A. but  B. and  C. or  D. yet
(33) A. time  B. point  C. aspect  D. instance
(34) A. from  B. over  C. upon  D. with
(35) A. hurt  B. sore  C. aches  D. feelings
(36) A. process  B. advance  C. progress  D. convert
(37) A. automatic  B. artificial  C. mechanical  D. controlled
(38) A. regularly  B. ordinarily  C. traditionally  D. generally
(39) A. will  B. might  C. should  D. must
(40) A. cultivating  B. fostering  C. developing  D. designing
(41) A. which  B. that  C. whether  D. what
(42) A. so  B. but  C. still  D. yet
(43) A. communication  B. transportation  C. transformation  D. transmission
(44) A. lately  B. newborn  C. newly  D. renewed
(45) A. under  B. through  C. beneath  D. from
(46) A. for  B. over  C. after  D. about
(47) A. acquire  B. receive  C. obtain  D. contract
(48) A. ailment  B. ill-health  C. disease  D. infection
(49) A. continue  B. linger  C. delay  D. persist
(50) A. exteriors  B. outside  C. surfaces  D. coverings

PART IV GRAMMAR & VOCABULARY [15 MIN]
There are thirty sentences in this section. Beneath each sentence there are four words or phrases marked A, B, C and D. Choose one word or phrase that best completes the sentence. Mark your answers on Answer Sheet Two.

51. What a nice day! How about the three of us _____ a walk in the park nearby?
   A. to take  B. take  C. taking  D. to be taking
52. If there were no subjunctive mood, English _____ much easier to learn.
   A. could have been  B. would'be  C. will be  D. would have been
53. She _____ fifty or so when I first met her at a conference.
   A. had been  B. must be  C. has been  D. must have been
54. _____ the boss says, it is unreasonable to ask me to work overtime without pay.
   A. Whatever  B. Whenever  C. Whichever  D. However
55. A new laptop costs about _____ of a second-hand one.
   A. the price of three times  B. three times the price
   C. as much as the three times price  D. three times more than the price
56. I was very interested in _____ she told me.
A. all that  B. all which  C. all what  D. that

57. We consider ______ he should have left without telling anyone beforehand.
A. strange why  B. it strange what  C. it strange that  D. that strange

58. It is going to be fine tomorrow. ______.
A. So is it.  B. So it is.  C. So it does.  D. So does it.

59. Little _____ about her own safety, though she herself was in great danger.
A. she cared  B. she may care  C. may she care  D. did she care

60. The couple had no sooner got to the station _____ the coach left.
A. when B. as C. until D. than

61. Aren't you tired? I _____ you had done enough for today.
A. should have thought  B. must have thought  C. might have thought  D. could have thought

62. "It seems that she was there at the conference." The sentence means that
A. she seems to be there at the conference.
B. she seemed to be there at the conference.
C. she seems to have been there at the conference.
D. she seemed to being there at the conference.

63. Which of the following adverbs can NOT be used to complete " _____ everybody came"?
A. Nearly B. Quite C. Practically D. Almost

64. In "How much do you think he earns?" how much is ______ of the sentence.
A. the subject  B. the adverbial  C. the object D. the complement

65. "The man preparing the documents is the firm's lawyer" has all the following possible meanings EXCEPT
A. the man who has prepared the documents...
B. the man who has been preparing the documents...
C. the man who is preparing the documents...
D. the man who will prepare the documents...

66. During the TV interview, the singer announced that he was going to _____ his new album soon.
A. release  B. renew  C. relieve D. rehearse

67. After working for the firm for ten years, he finally _____ the rank of deputy director.
A. achieved  B. approached  C. attained D. acquired
68. Winter is the _____ season at most hotels in this seaside town, because very few tourists come to stay.
   A. slow B. slack C. low D. quiet

69. Come on, Jack, tell me the story. Don't keep me in ______.
   A. suspense B. suspending C. suspension D. suspender

70. The football match was _____ because of the heavy rain.
   A. called over B. called up C. called out D. called off

71. We had a good time there, and the food was plentiful and _____.
   A. conducive B. wholesome C. helpful D. appreciative

72. It was strange that she would _____ such an absurd idea.
   A. allow B. stick C. take D. entertain

73. The scientists have made an _____ study of the viruses that cause the disease.
   A. exhausted B. exhausting C. exhaustive D. exhaustion

74. Do you own your apartment or are you a _____?
   A. tenant B. customer C. client D. proprietor

75. Representatives from the companies indicated that they should go on working together in _____.
   A. unity B. entity C. partners D. partnership

76. We all know that Mary has had a strict _____.
   A. growth B. upbringing C. development D. cultivation

77. The drink was packaged in champagne bottles and was being _____ as the real stuff.
   A. passed out B. passed by C. passed over D. passed off

78. Last Sunday she came to visit us out of the blue. The italicized phrase means
   A. unexpectedly B. unhappily C. untidily D. unofficially

79. The person he interviewed was _____ his former schoolmate.
   A. no other than B. no more than C. none other than D. none the less

80. The young employee has a(n) _____ quality - he is totally honest.
   A. respectable B. admirable C. decent D. approachable

PART V READING COMPREHENSION [25 MIN]
In this section there are four passages followed by questions or unfinished statements, each with four suggested answers marked A, B, C and D. Choose the one that you think is the best answer. Mark your answers on Answer Sheet Two.
Do you realize that every time you take a step, the bones in your hip are subjected to forces between four and five times your body weight? When you are running, this force is increased further still. What happens if through disease a hip-joint ceases to be able to resist such forces? For many years hip-joints and other body joints have been replaceable either partially or completely. It is after all a simple ball and socket joint; it has certain loads imposed on it; it needs reliability over a defined life; it must contain materials suitable for the working environment. Any engineer will recognize these as characteristic of a typical engineering problem, which doctors and engineers have worked together to solve, in order to bring a fresh lease of life to people who would otherwise be disabled.

This typifies the way in which engineers work to help people and create a better quality of life. The fact that this country has the most efficient agricultural industry in the world is another good example. Mechanical engineers have worked with farmers and biologists to produce fertilizers, machinery and harvesting systems. This team effort has now produced crops uniformly waist high or less so that they are better suited to mechanical harvesting. Similar advances with other crops have released people from hard and boring jobs for more creative work, whilst machines harvest crops more efficiently with less waste. Providing more food for the rapidly increasing population is yet another role for the mechanical engineer.

81. According to the passage, when would most weight be imposed on hip-joints?
A. When one is walking. B. When one is running.
C. When one is standing. D. When one is lying down.

82. Engineers regard the replacement of hip-joints as a(n) ____ Problem.
A. mechanical B. medical C. health D. agricultural

83. According to the passage, how do engineers contribute to increasing efficiency of the agricultural industry?
A. By working with farmers.
B. By working in teams.
C. By growing crops of the same height.
D. By making agricultural machinery.

84. According to the context, "This team effort" in Paragraph Two refers to
A. mechanical engineers.
B. doctors and engineers.
A cellphone service is available to everyone, everywhere. Probably thousands of people have already been using it, but I just discovered it, so I'm going to claim it and also name it: Fake Foning.

The technology has been working well for me at the office, but there are infinite applications. Virtually in any public space.

Say you work at a big university with lots of talky faculty members buzzing about. Now, say you need to use the restroom. The trip down the hall will take approximately one hour, because a person can't walk into those talky people without getting pulled aside for a question, a bit of gossip, a new read on a certain line of Paradise Lost.

So, a cellphone. Any cellphone. Just pick it up. Don't dial. Just hold that phone to your face and start talking. Walk confidently down the hall engaged in fake conversation, making sure to tailor both the topic and content to the person standing before you whom you are trying to evade.

For standard colleague avoidance, I suggest fake chatting about fake business:

"Yes, I'm glad you called, because we really need to hammer out the details. What's that? Yes, I read Page 12, but if you look at the bottom of 4, I think you can see the problem begins right there."

Be animated. Be engaged in your fake fone conversation. Make eye contact with the people passing, nod to them, gesture keen interest in talking to them at a later time, point to your phone, shrug and move on.

Shoppers should consider fake foning anytime they spot a talky neighbor in the produce department pinching (用手捏) unripe peaches. Without your phone at your face, you'd be in for a 20-minute speech on how terrible the world is.

One important caution about fake foning. The other day I was fake foning my way past a colleague, and he was actually following me to get my attention. I knew he wanted to ask about a project I had not yet finished. I was trying to buy myself some time, so I continued fake foning with my doctor. "So I don't need the operation? Oh, doctor, that is the best news."

And then: Brrrrrrng! Brrrrrmg! Brrrrrmg! My phone started ringing, right there while it was planted on my face. My colleague looked at me, and I at him, and naturally I gasped. "What
is the matter with this thing?" I said, pulling the phone away to look at it, and then putting it back to my ear.
"Hello? Are you still there?"
Oops.

85. Which of the following statements is INCORRECT?
A. Cellphone service is popular among people.
B. Cellphone has much use in office.
C. Fake foning is a new cellphone service.
D. Fake foning is a new discovery.

86. What is fake foning?
A. A strategy to avoid people.
B. A device newly produced.
C. A service provided everywhere.
D. A skill of communication.

87. In the author's opinion, in order to make fake foning look real one has to
A. talk about interesting matters.
B. behave politely to people passing by.
C. hold the phone while walking.
D. appear absorbed in conversation.

88. What does the last example show?
A. One effective way is to fake fone one's doctor.
B. One has to be careful while fake foning.
C. Fake foning may not deceive people.
D. Fake foning is always quite successful.

89. After his phone suddenly began ringing, the author
A. immediately started talking to the caller.
B. immediately started talking to his colleague.
C. put the phone away and stopped talking.
D. continued with his fake conversation.

90. What is the tone of the passage?
It was late in the afternoon, and I was putting the final touch on a piece of writing that I was feeling pretty good about. I wanted to save it, but my cursor had frozen. I tried to shut the computer down, and it seized up altogether. Unsure of what else to do, I yanked (用力猛拉) the battery out.

Unfortunately, Windows had been in the midst of a delicate and crucial undertaking. The next morning, when I turned my computer back on, it informed me that a file had been corrupted and Windows would not load. Then, it offered to repair itself by using the Windows Setup CD.

I opened the special drawer where I keep CDs. But no Windows CD in there. I was forced to call the computer company's Global Support Centre. My call was answered by a woman in some unnamed, far-off land. I find it annoying to make small talk with someone when I don't know what continent they're standing on. Suppose I were to comment on the beautiful weather we've been having when there was a monsoon at the other end of the phone? So I got right to the point.

"My computer is telling me a file is corrupted and it wants to fix itself, but I don't have the Windows Setup CD."

"So you're having a problem with your Windows Setup CD." She has apparently been dozing and, having come to just as the sentence ended, was attempting to cover for her inattention. It quickly became clear that the woman was not a computer technician. Her job was to serve as a gatekeeper, a human shield for the technicians. Her sole duty, as far as I could tell, was to raise global stress levels.

To make me disappear, the woman gave me the phone number for Windows' creator, Microsoft. This is like giving someone the phone number for, I don't know, North America. Besides, the CD worked; I just didn't have it. No matter how many times I repeated my story, we came back to the same place. She was calm and resolutely polite.

When my voice hit a certain decibel (分贝), I was passed along, like a hot, irritable potato, to a technician.

"You don't have the Windows Setup CD, ma'am, because you don't need it," he explained cheerfully.

"Windows came preinstalled on your computer!"

"But I do need it."
"Yes, but you don't have it." We went on like this for a while. Finally, he offered to walk me through the use of a different CD, one that would erase my entire system. "Of course, you'd lose all your e-mail, your documents, your photos." It was like offering to drop a safe on my head to cure my headache. "You might be able to recover them, but it would be expensive." He sounded delighted. "And it's not covered by the warranty (产品保证书)!" The safe began to seem like a good idea, provided it was full.

I hung up the phone and drove my computer to a small, friendly repair place I'd heard about. A smart, helpful man dug out a Windows CD and told me it wouldn't be a problem. An hour later, he called to let me know it was ready. I thanked him, and we chatted about the weather, which was the same outside my window as it was outside his.

91. Why did the author shut down her computer abruptly?
A. She had saved what she had written.
B. She couldn't move the cursor.
C. The computer refused to work.
D. The computer offered to repair itself.

92. Which of the following is the author's opinion about the woman at the Global Support Centre?
A. She sounded helpful and knowledgeable.
B. She was there to make callers frustrated.
C. She was able to solve her computer problem.
D. She was quick to pass her along to a technician.

93. According to the passage, the solution offered by the technician was

94. "It was like offering to drop a safe on my head to cure my headache" in the last but one paragraph means that
A. the technician's proposal would make things even worse.
B. the technician's proposal could eventually solve the problem.
C. files stored on her computer were like a safe.
D. erasing the entire system was like curing a headache.

95. It can be inferred from the passage that the differences between the Global Support Centre and the local repair shop lie in all the following EXCEPT
A. efficiency. B. location. C. setup CDs. D. attitude
Not long ago, a mysterious Christmas card dropped through our mail slot. The envelope was addressed to a man named Raoul, who, I was relatively certain, did not live with us. The envelope wasn't sealed, so I opened it. The inside of the card was blank. Ed, my husband, explained that the card was both from and to the newspaper deliveryman. His name was apparently Raoul, and Raoul wanted a holiday tip. We were meant to put a check inside the card and then drop the envelope in the mail. When your services are rendered at 4 a.m., you can't simply hang around, like a hotel bellboy expecting a tip. You have to be direct.

So I wrote a nice holiday greeting to this man who, in my imagination, fires The New York Times from his bike aimed at our front door, causing more noise with mere newsprint than most people manage with sophisticated black market fireworks.

With a start, I realized that perhaps the reason for the 4 a.m. wake-up noise was not ordinary rudeness but carefully executed spite: I had not tipped Raoul in Christmases past. I honestly hadn't realized I was supposed to. This was the first time he'd used the card tactic. So I got out my checkbook. Somewhere along the line, holiday tipping went from an optional thank-you for a year of services to a Mafia-style protection racket (收取保护费的黑社会组织).

Several days later, I was bringing our garbage bins back from the curb when I noticed an envelope taped to one of the lids. The outside of the envelope said MICKEY. It had to be another tip request, this time from our garbage collector. Unlike Raoul, Mickey hadn't enclosed his own Christmas card from me. In a way, I appreciated the directness. "I know you don't care how merry my Christmas is, and that's fine," the gesture said. "I want $30, or I'll 'forget' to empty your garbage bin some hot summer day."

I put a check in the envelope and taped it back to the bin. The next morning, Ed noticed that the envelope was gone, though the trash hadn't yet been picked up: "Someone stole Mickey's tip!" Ed was quite certain. He made me call the bank and cancel the check.

But Ed had been wrong. Two weeks later, Mickey left a letter from the bank on our steps. The letter informed Mickey that the check, which he had tried to cash, had been cancelled.

The following Tuesday morning, when Ed saw a truck outside, he ran out with his wallet. "Are you Mickey?"

The man looked at him with scorn. "Mickey is the garbageman. I am the recycling." Not only had Ed insulted this man by hinting that he was a garbageman, but he had obviously neglected to tip him. Ed ran back inside for more funds. Then he noticed that the driver of the
truck had been watching the whole transaction. He peeled off another twenty and looked around, waving bills in the air. "Anyone else?"

Had we consulted the website of the Emily Post Institute, this embarrassing breach of etiquette (礼节) could have been avoided. Under "trash/recycling collectors" in the institute's Holiday Tipping Guidelines, it says: "$10 to $30 each." You may or may not wish to know that your pet groomer, hairdresser, mailman and UPS guy all expect a holiday tip.

96. The newspaper deliveryman put a blank card inside the envelope because
A. he forgot to write a few words on it.
B. he wanted the couple to send it back.
C. he used it to ask for a Christmas tip.
D. he was afraid of asking for a tip in person.

97. From the passage, we learn that the author
A. didn't like Raoul's way of delivering the paper.
B. didn't realize why Raoul delivered the paper that way.
C. didn't know that Raoul came very early in the morning.
D. didn't feel it necessary to meet Raoul when he came.

98. According to the passage, the author felt ____ to give Raoul a holiday tip.
A. excited B. delighted C. embarrassed D. forced

99. Which of the following is CORRECT about Mickey, the garbage collector?
A. He wrote a letter to the couple afterwards.
B. He failed to collect the money from the bank.
C. He wanted the couple to send him a Christmas card.
D. He collected both the cheek and the garbage that day.

100. Ed's encounter with the recycling team shows that
A. Ed was desperate to correct his mistake.
B. Ed only wanted to give money to Raoul.
C. Ed was unwilling to tip the truck driver.
D. Ed no longer wanted to give them money.
Will Tourism Bring Harm to the Environment?

You are to write in three parts.
In the first part, state specifically what your opinion is.
In the second part, provide one or two reasons to support your opinion.
In the last part, bring what you have written to a natural conclusion or make a summary.

Marks will be awarded for content, organization, grammar and appropriateness. Failure to follow the instructions may result in a loss of marks.

SECTION B NOTE-WRITING [10 MIN]

Write on ANSWER SHEET THREE a note of about 50-60 words based on the following situation:

Lily, your roommate, is looking for a part-time job in the coming summer vacation. You saw an ad for a private English tutor for a schoolboy. Write her a note, telling her what the job is and strongly recommending it to her.

Marks will be awarded for content, organization, grammar and appropriateness.

----THE END
### III. Answers for the Oxford Placement Test

#### Grammar Part

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<td>To keep</td>
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**Listening Part**

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14 horrid day 64 dry
15 Joys 65 Cabin up
16 Can 66 stocks
17 some kinds 67 bison
18 tearful 68 launch
19 regain 69 Finnish
20 Steve 70 Trials
21 Why 71 Armed
22 reading 72 ill
23 glass 73 all
24 injured 74 Euston
25 can see 75 Crew
26 pictures 76 barrow
27 wouldn’t 77 Arrival
28 blended 78 Infantry
29 notice 79 Newer system
30 collected 80 J&B
31 Council 81 HA
32 washing 82 Hair-dryers
33 rarely 83 Women
34 glass 84 Free
35 lash 85 Bath day
36 talk 86 Autistic
37 texts 87 Scarred
38 hatch 88 Oarsman rowed
39 Penny’s 89 Eternal
40 two minibuses 90 Indian
41 buyable 91 Rod
42 two days’ 92 Personnel
43 Eric and 93 He and
IV. Answers for the TEM4

Listening

Cloze
41. B that  42. A so  43. D transmission  44. C newly  45. B through

Vocabulary & Grammar
71. B  72. D  73. C  74. A  75. D

Reading Comprehension
Text A
81. B When one is running
82. A Mechanical
83. D By making agricultural machinery
84. D Farmers, biologists and engineers
Text B
85. C Fake foning is a new cellphone service
86. A A strategy to avoid people
87. D Appeared absorbed in conversation
88. B One has to be careful while fake foning
89. B Immediately started talking to his colleague.
90. B Humorous
Text C
91. B She couldn't move the cursor
92. B She was there to make the callers frustrated
93. D Unacceptable
94. A The technician's proposal would make things even worse
95. C setup CDs
Text D
96. C He used it to ask for a Christmas tip
97. B Didn't realize why Raoul delivered the paper that way
98. D Forced
99. B He failed to collect the money from the bank
100. A ED was desperate to correct his mistake

Dictation
For many people in the west, New Year’s Eve is the biggest party of the year. It’s time to get together with friends or family and welcome in the coming year. New Year’s parties can take place in different places. Some people hold a house party; others attend street parties, while some just go for a few drinks with their friends. Big cities have large and spectacular fireworks displays. There is one thing that all New Year’s Eve parties have in common, the countdown to midnighnt. When the clock strikes 12, people give a loud cheer and sing songs. It’s also popular to make a promise in the New Year. This is called a New Year’s resolution. Typical resolutions include giving up smoking and keeping fit. However the promise is often broken quite quickly and people are back into their bad habits within weeks or days.

Writing
Section A

Will Tourism Bring Harm to the Environment?
In recent years, tourism has developed rapidly in China. Many people believe that tourism produce positive effects on economic growth and we should try our best to promote tourism. But what these people fail to see is that tourism may bring about a disastrous impact on our environment. As for me, I'm firmly convinced that too much tourists bring harm to the environment.

The bad impact of tourism on the environment has mainly expressed itself in various ways. One way is the process of exploiting a new scenic spot. In order to attract tourists, a lot of artificial facilities have been built, which have certain unfavorable effects on the environment. This process usually breaks the ecological balance of the area. In some mountainous places, trees are being cut down to build hotels for others to see and explore the beauty of the mountains. Then land slides and mud-rock flows come up. Another way the development of tourism has damaged the environment occurs when tourists go to scenic spots. Some tourists don't have the awareness to protect the environment, and ignorantly throw their garbage here and there. Some people even kill the local wildlife to eat, which badly damages the balance of the natural environment.

It is wrong to sacrifice the environment for the growth of tourism. We must keep in mind that too much tourists bring harm to the environment. We need to find a balance between satisfying the needs of tourists and reducing to a minimum the pollution they cause.

Section B

Dear Lily,

I know you're looking for a part-time job in the coming summer vacation. And I have just seen an ad for a private English tutor for a schoolboy on the campus. Since you're good at English and like teaching, I think this job is very suitable for you. It will help you both earn some money and practice yourselves. So please think about it.
APPENDIX S

Interview Guide

Part A Learner beliefs
1. Do you think it is important for you to spend a period of time living in an English-speaking country if you want to study English well (or an environment full of English resources)? Why?
2. Most people can learn some things easier than other things. For example, one person can learn any sport quickly but they can’t learn math easily. Do you think you learn English easily or is it hard for you? Why?
3. Do you think there is a chance that your English conversation will be like a native speaker someday?
4. Do you think learning English grammar is important for you to learn English well?
5. How important is it to learn English vocabulary?

Part B Motivation
6. What made you choose English as your major?
7. What do you enjoy most about studying English?
8. How important do you consider English to be for your life at this time? How important do you think it is for your future?

Part C Foreign language anxiety
9. Would you regard yourself a normally easy-to-be-anxious person? In what kind(s) of situations, do you usually get anxious?
10. Which aspect(s) of the English class worry you the most, why and how?
11. If you feel anxious about your English learning, what do you think are the main reasons that cause the anxiety?

End

Thank you so much for your cooperation! That’s the end! Is there anything else you want to say? Or something you want to ask me?
APPENDIX T
Results of the Pilot Study

Table A Descriptive statistics for each test (n=51)

<table>
<thead>
<tr>
<th>Test</th>
<th>Mean (%)</th>
<th>SD</th>
<th>Reliability</th>
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<tr>
<td>TGJT</td>
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<td>.59</td>
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<tr>
<td>MKT</td>
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<td>12.05</td>
<td>.63</td>
</tr>
<tr>
<td>EIT G</td>
<td>28.44</td>
<td>5.93</td>
<td>.42</td>
</tr>
<tr>
<td>EIT UG</td>
<td>16.71</td>
<td>4.54</td>
<td>.33</td>
</tr>
<tr>
<td>TGJT G</td>
<td>31.58</td>
<td>7.87</td>
<td>.75</td>
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<tr>
<td>TGJT UG</td>
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<td>MKT(P1)</td>
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<td>MKT (P2 S2)</td>
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</table>

EIT : Elicited Imitation Test.
TGJT : Timed Grammaticality Judgment Test
MKT : Metalinguistic Knowledge Test
EIT G: Elicited Imitation Test Grammatical Items
EIT UG: Elicited Imitation Test Ungrammatical Items
TGJT G: Timed Grammaticality Judgment Test Grammatical Items
TGJT UG: Timed Grammaticality Judgment Test Ungrammatical Items
MKT P1 : Metalinguistic Knowledge Test Part 1
MKT P2 S1: Metalinguistic Knowledge Test Part 2 Section 1
MKT P2 S2: Metalinguistic Knowledge Test Part 2 Section 2

Table B  Promax rotated component matrix for all the tests with a two-factor solution (n=51)

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<th>Cumulative %</th>
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293
### Table C  Correlations between L2 knowledge and general L2 proficiency

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*p<.05  
**p<.01

### Table D  Descriptive statistics and reliability of all questionnaires and language analysis test (B refers to Learner Beliefs, M refers to Motivation) (n=51)

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<th>Measures</th>
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<table>
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<tr>
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<tr>
<td>Affective States(B3)</td>
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<table>
<thead>
<tr>
<th>Sub-types of motivation</th>
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<tr>
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<td>Learning Situation(M3)</td>
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<td>Going Abroad(M4)</td>
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### Table E Correlations between IDs and measures of L2 knowledge

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<th>MKT (Total)</th>
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<th>MKT (Part 2 Section 1)</th>
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<td>.242</td>
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**p<.01

EIT: Elicited Imitation Test.
TGJT: Timed Grammaticality Judgment Test
MKT: Metalinguistic Knowledge Test
MKT P1: Metalinguistic Knowledge Test Part 1
MKT P2 S1: Metalinguistic Knowledge Test Part 2 Section 1
MKT P2 S2: Metalinguistic Knowledge Test Part 2 Section 2

### Table F Correlations between the micro-types of learner beliefs and motivation and measures of L2 knowledge

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<th>TGJT</th>
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<th>MKT (Part 2 Section 1)</th>
<th>MKT (Part 2 Section 2)</th>
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<td>Affective States (B3)</td>
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<td>Motivation: Intrinsic Interest (M1)</td>
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<td>.129</td>
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</tbody>
</table>
Motivation: Individual Development (M6)  |  -.032  |  .073  |  -.063  |  -.158  |  -.087  |  .039  
Motivation: Information Medium (M7)    |  -.214  |  .038  |  -.359** |  -.110  |  -.151  |  -.387**

*p<.05

**p<.01

EIT: Elicited Imitation Test.
TGJT: Timed Grammaticality Judgment Test
MKT: Metalinguistic Knowledge Test
MKT P1: Metalinguistic Knowledge Test Part 1
MKT P2 S1: Metalinguistic Knowledge Test Part 2 Section 1
MKT P2 S2: Metalinguistic Knowledge Test Part 2 Section 2
### APPENDIX U

**Factor Analyses of the First and Third Year Students’ Beliefs Questionnaires**

1st year: Principal component factor analysis with a fixed 3-factor solution (Beliefs questionnaire)

<table>
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3rd year: Principal component factor analysis with a fixed 3-factor solution (Beliefs questionnaire)

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<td>7.969</td>
<td>36.469</td>
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<table>
<thead>
<tr>
<th>Component</th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
</tr>
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<td>Item 16</td>
<td>-.007</td>
<td>.615</td>
<td>.008</td>
</tr>
<tr>
<td>Item 17</td>
<td>-.271</td>
<td>.154</td>
<td>.669</td>
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<td>Item 18</td>
<td>-.123</td>
<td>.215</td>
<td>.510</td>
</tr>
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<td>Item 19</td>
<td>.771</td>
<td>.214</td>
<td>-.126</td>
</tr>
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<td>Item 20</td>
<td>.342</td>
<td>.076</td>
<td>.357</td>
</tr>
<tr>
<td>Item 21</td>
<td>.566</td>
<td>-.001</td>
<td>-.178</td>
</tr>
<tr>
<td>Item 22</td>
<td>.811</td>
<td>-.212</td>
<td>-.059</td>
</tr>
<tr>
<td>Item 23</td>
<td>.014</td>
<td>.651</td>
<td>.113</td>
</tr>
<tr>
<td>Item 24</td>
<td>.698</td>
<td>-.081</td>
<td>-.086</td>
</tr>
<tr>
<td>Item 25</td>
<td>-.146</td>
<td>.316</td>
<td>.418</td>
</tr>
<tr>
<td>Item 26</td>
<td>.183</td>
<td>.340</td>
<td>-.108</td>
</tr>
<tr>
<td>Item 27</td>
<td>-.137</td>
<td>-.028</td>
<td>.313</td>
</tr>
</tbody>
</table>
APPENDIX V
Sample of the Transcripts of the EIT

Student No.: f3

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Grammatical</th>
<th>Ungrammatical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18/44=4.9</td>
<td>11/22=50</td>
<td>7/22=31.8</td>
</tr>
</tbody>
</table>

1. Chinese people is nicer and more friendly than other people.
2. Most college students want to get high scores in their examination.
3. People play ping pong well and play table bad in China.
4. People should report the police stolen money.
5. Everyone like comic books and read them.
6. The film every loves is Hollywoods.
7. People can win a lot of money on the casino.
8. Spring time in an airplane is fun, isn’t it?
9. People should report car to the police.
10. People have been using computer for many years.
11. The software invented have change the world.
12. A good teacher make lessons interesting and care the students.
13. It’s not good idea for teacher to punish student.
14. Not everyone can learn a second language.
15. To study English well, you must learn many months.
16. It’s more hard to learn math than learn chemistry.
17. Princess Diana love Prince but divorced him.
18. If I have had a brother or sister, I won’t feel lonely.
19. Princess Diana’s music shocked the whole world.
20. The number of people in case is increasing.
21. The American is first to land on the moon, isn’t it?
22. If Russian have landed on moon first, Merican will be worried.
23. Everyone want to know what is President Bush like .
24. When man invent car, everyone changes.
25. Last year, the population of China increased a lot.
26. Young people play computer games and drink a lot.
27. Young women like cigarettes and fast car.
28. Parents have responsibility to care their children.
29. People worry about parents’ health and children’s future.
30. Every child needs good father.
31. It’s a silly question to ask ‘is a mother love their child?’
32. Young people like leaving their family asap.
33. Parents always want to know what their children is doing.
34. It’s very difficult to answer ‘Do you love me’?
APPENDIX W
Sample of the Transcripts of the Interview

Interviewer=A
Interviewee=B

Part A: Learner beliefs
A: Just to let you know that I would like to know your opinions, reasons for learning English and whether you are anxious while learning English. So it will be great helpful to just tell me what you really think. Do you think it is important for you to spend a period of time living in an English-speaking country if you want to study English well (or an environment full of English resources)? Why?
B: Of course, because I have to speak English in an English-speaking country. Everybody under that circumstance will learn English actively, so will I. The atmosphere of learning English in an English-speaking country is better than here.
A: Well, you think English environment is important for you to learning English. So do you think there is a chance that your English conversation will be like a native speaker someday?
B: That’s a dream. I hope I can realize it.
A: Alright, good. Most people can learn some things easier than other things. For example, one person can learn any sport quickly but they can’t learn math easily. Do you think you learn English easily or is it hard for you? Why?
B: It’s not very easy for me to learn English, but one of my teachers said I had the gift in English writing. So I think I’m better at learning English than other subjects.
A: Do you think learning English grammar is important for you to learn English well?
B: Well, grammar is really important to me because I think I always need to resort to grammar when I can’t express myself.
A: How import is it to learn English vocabulary?
B: Learning vocabulary is extremely important to me because I can’t express myself fully if I don’t have enough vocabulary.

Part B Motivation
A: What made you choose English as your major?
B: Well, I chose English because of several reasons. Of course, interest was the most important one. Also, you know English is widely used in the world now because of globalization. So I want to keep pace with the outside world.
A: What do you enjoy most about studying English?
B: Speaking and communication are quite enjoyable. When I was in high school, I liked to speak to one of the foreign teachers. I found it quite interesting.
A: How important do you consider English to be for your life at this time? How important do you think it is for your future?
B: It will play a very important role in my future life. I need it to find a job or go abroad.

**Part C Foreign language anxiety**

A: Would you regard yourself a normally easy-to-be-anxious person? In what kind(s) of situations, do you usually get anxious?
B: I don’t think so, but there is nervousness in my personality. In English classes, I usually get anxious when I’m called on to answer a question without any preparation.
A: Which aspect(s) of the English class worry you the most, why and how?
B: I didn’t have great worries about English class, but sometimes when I didn’t understand something, I got nervous.
A: If you feel anxious about your English learning, what do you think are the main reasons that cause the anxiety?
B: I get anxious when I can’t understand what my teachers are talking about in class. Sometimes I get anxious when I can’t speak so well as my classmates.
APPENDIX X
Comparison of the First and Third Year Students’ Results

1. Testing instruments and knowledge structure

(1) Descriptive statistics for the first and third year students’ scores

Table A Descriptive statistics for the first and third year students’ scores

<table>
<thead>
<tr>
<th>Tests</th>
<th>Reliability</th>
<th>Mean</th>
<th>Max.</th>
<th>Min.</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT</td>
<td>.76(.57)</td>
<td>.44(.57)</td>
<td>.77(.77)</td>
<td>.02(.32)</td>
<td>.12(.08)</td>
</tr>
<tr>
<td>TGJT</td>
<td>.70(.78)</td>
<td>.51(.61)</td>
<td>.78(.91)</td>
<td>.24(.34)</td>
<td>.10(.11)</td>
</tr>
<tr>
<td>UGJT</td>
<td>.72(.73)</td>
<td>.86(.89)</td>
<td>.99(.99)</td>
<td>.65(.60)</td>
<td>.08(.07)</td>
</tr>
<tr>
<td>MKT</td>
<td>.76(.61)</td>
<td>.56(.68)</td>
<td>.84(.83)</td>
<td>.33(.40)</td>
<td>.12(.09)</td>
</tr>
<tr>
<td>EIT G</td>
<td>.69(.56)</td>
<td>.55(.70)</td>
<td>.96(.96)</td>
<td>.05(.36)</td>
<td>.16(.12)</td>
</tr>
<tr>
<td>EIT UG</td>
<td>.49(.45)</td>
<td>.32(.44)</td>
<td>.68(.59)</td>
<td>.00(.14)</td>
<td>.11(.08)</td>
</tr>
<tr>
<td>TGJT G</td>
<td>.83(.85)</td>
<td>.69(.78)</td>
<td>.97(.97)</td>
<td>.00(.00)</td>
<td>.18(.16)</td>
</tr>
<tr>
<td>TGJT UG</td>
<td>.63(.79)</td>
<td>.33(.43)</td>
<td>.68(.85)</td>
<td>.09(.09)</td>
<td>.12(.17)</td>
</tr>
<tr>
<td>UGJT G</td>
<td>.70(.53)</td>
<td>.85(.92)</td>
<td>1.0(1.0)</td>
<td>.50(.71)</td>
<td>.10(.07)</td>
</tr>
<tr>
<td>UGJT UG</td>
<td>.72(.77)</td>
<td>.87(.87)</td>
<td>1.0(1.0)</td>
<td>.56(.44)</td>
<td>.10(.11)</td>
</tr>
<tr>
<td>MKT Part 1</td>
<td>.43(.49)</td>
<td>.61(.67)</td>
<td>.94(.88)</td>
<td>.24(.12)</td>
<td>.13(.13)</td>
</tr>
<tr>
<td>MKT Part 2</td>
<td>.73(.56)</td>
<td>.52(.69)</td>
<td>.83(.87)</td>
<td>.00(.41)</td>
<td>.15(.11)</td>
</tr>
</tbody>
</table>

EIT : Elicited Imitation Test.
EIT G : Elicitated Imitation Test grammatical items
EIT UG : Elicitated Imitation Test ungrammatical items
TGJT : Timed Grammaticality Judgment Test
TGJT G : Timed Grammaticality Judgment Test grammatical items
TGJT UG : Timed Grammaticality Judgment Test ungrammatical items
UGJT : Untimed Grammaticality Judgment Test
UGJT G : Untimed Grammaticality Judgment Test grammatical items
UGJT UG : Untimed Grammaticality Judgment Test ungrammatical items
MKT : Metalinguistic Knowledge Test
Figure A Mean scores of the measures

![Mean Scores](image)

(2) T-tests examining the first and third year students’ differences of the scores

Table B Differences of the first and third year students’ scores on the measures (df=190)

<table>
<thead>
<tr>
<th>Tests</th>
<th>SEM</th>
<th>t</th>
<th>Sig.(2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>.012</td>
<td>-8.585</td>
<td>.000</td>
</tr>
<tr>
<td>Year 3</td>
<td>.009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TGJT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>.010</td>
<td>-6.056</td>
<td>.000</td>
</tr>
<tr>
<td>Year 3</td>
<td>.012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UGJT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>.008</td>
<td>-3.095</td>
<td>.002</td>
</tr>
<tr>
<td>Year 3</td>
<td>.007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MKT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>.012</td>
<td>-7.935</td>
<td>.000</td>
</tr>
<tr>
<td>Year 3</td>
<td>.010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EIT G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>.016</td>
<td>-7.321</td>
<td>.000</td>
</tr>
<tr>
<td>Year 3</td>
<td>.013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EIT UG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>.011</td>
<td>-8.029</td>
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</tr>
<tr>
<td>Year 3</td>
<td>.009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TGJT G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>.018</td>
<td>-3.509</td>
<td>.001</td>
</tr>
<tr>
<td>Year 3</td>
<td>.017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TGJT UG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>.012</td>
<td>-4.714</td>
<td>.000</td>
</tr>
<tr>
<td>Year 3</td>
<td>.018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UGJT G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>.010</td>
<td>-5.761</td>
<td>.000</td>
</tr>
<tr>
<td>Year 3</td>
<td>.007</td>
<td></td>
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</table>
(3) Comparisons of the response time and the reported use of rules on the grammatical and ungrammatical items in the GJTs

Table C Comparisons of descriptive statistics of the use of time and rules

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Mean</th>
<th>Max</th>
<th>Min</th>
<th>SD</th>
<th>SEM</th>
<th>t</th>
<th>Sig.(2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TGJT</td>
<td>2.44</td>
<td>3.18</td>
<td>1.73</td>
<td>.34</td>
<td>.034</td>
<td>5.445</td>
<td>.000</td>
</tr>
<tr>
<td>UGJT</td>
<td>2.38</td>
<td>2.80</td>
<td>1.86</td>
<td>.23</td>
<td>.023</td>
<td>5.058</td>
<td>.000</td>
</tr>
</tbody>
</table>

| Rule Use |      |      |      |      |       |      |                |
| UGJT G   | .75  | 1.00 | .00  | .23  | .023  | -1.019| .310           |
| UGJT UG  | .84  | 1.00 | .00  | .17  | .017  | .325 | .745           |

(4) Comparisons of the correlation and factor analyses of the testing instruments

Table D Comparisons of the correlations among the four tests

<table>
<thead>
<tr>
<th>Year 1</th>
<th>EIT</th>
<th>TGJT</th>
<th>UGJT</th>
<th>MKT</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT</td>
<td>---</td>
<td>.359**</td>
<td>.523**</td>
<td>.410**</td>
</tr>
<tr>
<td>TGJT</td>
<td>---</td>
<td>.343**</td>
<td>.505**</td>
<td>.288**</td>
</tr>
<tr>
<td>UGJT</td>
<td>---</td>
<td>.341**</td>
<td>.377**</td>
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</tbody>
</table>

**p<.01
Table E Comparisons of the correlations among sub-measures of the tests

<table>
<thead>
<tr>
<th>Year 1 (Year 3)</th>
<th>EIT G</th>
<th>EIT UG</th>
<th>TGJT G</th>
<th>TGJT</th>
<th>UGJT G</th>
<th>UGJT</th>
<th>MKT (Part1)</th>
<th>MKT (Part2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIT G</td>
<td>---</td>
<td>.622**</td>
<td>.212*</td>
<td>.110</td>
<td>.429**</td>
<td>.225*</td>
<td>.411**</td>
<td>.185</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.334**)</td>
<td>(-.038)</td>
<td>(.287**)</td>
<td>(.048)</td>
<td>(.281**)</td>
<td>(.093)</td>
<td>(.205)</td>
</tr>
<tr>
<td>EIT UG</td>
<td>---</td>
<td>.276**</td>
<td>.109</td>
<td>.392**</td>
<td>.305**</td>
<td>.354**</td>
<td>.374**</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.066)</td>
<td>(.197)</td>
<td>(.180)</td>
<td>(.124)</td>
<td>(.179)</td>
<td>(.101)</td>
<td></td>
</tr>
<tr>
<td>TGJT G</td>
<td>---</td>
<td>-.128</td>
<td>.320**</td>
<td>-.015</td>
<td>.122</td>
<td>.123</td>
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<td></td>
<td></td>
<td>(.122)</td>
<td>(.216*)</td>
<td>(.129)</td>
<td>(.157)</td>
<td>(.010)</td>
<td></td>
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</tr>
<tr>
<td>TGJT UG</td>
<td>---</td>
<td>.122</td>
<td>.198*</td>
<td>.237*</td>
<td>.250*</td>
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<td></td>
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<td></td>
<td></td>
<td>(.140)</td>
<td>(.455**)</td>
<td>(.339**)</td>
<td>(.190)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UGJT G</td>
<td>---</td>
<td>.116</td>
<td>.386**</td>
<td>.325**</td>
<td></td>
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<td></td>
<td>(.126)</td>
<td>(.190)</td>
<td>(.175)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UGJT UG</td>
<td>---</td>
<td>.410**</td>
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<td>.083</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>(.347**)</td>
<td></td>
<td>(.176)</td>
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<td></td>
</tr>
<tr>
<td>MKT (Part1)</td>
<td>---</td>
<td></td>
<td></td>
<td>.424**</td>
<td></td>
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<td></td>
</tr>
<tr>
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<td></td>
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<td>(.212*)</td>
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</table>

** p<.01 *p<.05

(5) Comparisons of the factor analyses

Table F Comparisons of the factor analyses

<table>
<thead>
<tr>
<th>Year</th>
<th>Method(s) of factor analysis</th>
<th>Number of factors</th>
<th>Pattern of loadings</th>
<th>Hypothesized type of knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>Exploratory and Confirmatory Factor analyses</td>
<td>Two factors</td>
<td>Factor 1—EIT and TGJT Factor 2—UGJT UG and MKT</td>
<td>Factor 1: Implicit knowledge Factor 2: Explicit knowledge</td>
</tr>
<tr>
<td>Year 3</td>
<td>Exploratory Factor Analysis</td>
<td>Three factors</td>
<td>Factor 1—TGJT UG, UGJT UG and MKT (Part1) Factor 2—EIT G and EIT UG Factor 3—TGJT G and UGJT G</td>
<td>Factor 1: Type 1 knowledge Factor 2: Type 2 knowledge Factor 3: Type 3 knowledge</td>
</tr>
</tbody>
</table>
2. Comparison of the relationships between L2 knowledge and general L2 proficiency

(1) Correlation analysis

1st year students:

**Table G Correlation matrix**

<table>
<thead>
<tr>
<th>General Proficiency (OPT)</th>
<th>Type 1</th>
<th>Type 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.443**</td>
<td>.450**</td>
</tr>
</tbody>
</table>

**p<.01

OPT: Oxford Placement Test

3rd year students:

**Table H Correlation matrix**

<table>
<thead>
<tr>
<th>General Proficiency (TEM 4)</th>
<th>Type 1</th>
<th>Type 2</th>
<th>Type 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.494**</td>
<td>.445**</td>
<td>.212*</td>
</tr>
</tbody>
</table>

**p<.01

TEM4 : Test for English Majors, Band 4

(2) Multiple regression analysis

1st year students:

**Table I Multiple regression analysis of knowledge of English and general English proficiency**

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta</th>
<th>t</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 (Explicit)</td>
<td>.317</td>
<td>3.311</td>
<td>.001</td>
</tr>
<tr>
<td>Type 1 (Implicit)</td>
<td>.305</td>
<td>3.181</td>
<td>.002</td>
</tr>
</tbody>
</table>

R=.527  R²=.278  Adjusted R²=.263  F=18.688  Sig.=.000

Note. Method: Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of- F-to-remove >= .100)
Predictors: Explicit knowledge, Implicit knowledge
Dependent Variable: General English proficiency
3rd year students:

Table J Multiple regression analysis of knowledge of English and general English proficiency

<table>
<thead>
<tr>
<th>Model</th>
<th>Beta</th>
<th>t</th>
<th>Sig. (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>.390</td>
<td>4.390</td>
<td>.000</td>
</tr>
<tr>
<td>Type 2</td>
<td>.317</td>
<td>3.576</td>
<td>.001</td>
</tr>
<tr>
<td>Type 3</td>
<td>.194</td>
<td>2.304</td>
<td>.024</td>
</tr>
<tr>
<td></td>
<td>R=.612</td>
<td>R²=.375</td>
<td>Adjusted F=17.576</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Adjusted R²=.353</td>
</tr>
</tbody>
</table>

3. Comparison of the relationships between the individual difference factors and L2 knowledge

(1) Descriptive statistics

Table K Descriptive statistics for the individual difference factors

<table>
<thead>
<tr>
<th>Measures</th>
<th>Year 1(Year 3)</th>
<th>Items</th>
<th>Mean</th>
<th>SD</th>
<th>Reliability (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beliefs</td>
<td>27</td>
<td>.72 (.73)</td>
<td>.07 (.06)</td>
<td>.77 (.68)</td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td>30</td>
<td>.65 (.67)</td>
<td>.07(.07)</td>
<td>.75(.73)</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>33</td>
<td>.57(.55)</td>
<td>.07(.07)</td>
<td>.74(.78)</td>
<td></td>
</tr>
<tr>
<td>Analytic ability</td>
<td>14</td>
<td>.75(.75)</td>
<td>.18(.15)</td>
<td>.70 (.53)</td>
<td></td>
</tr>
</tbody>
</table>

Note:
Not much difference in terms of mean, SD and reliability.

(2) Correlations between the individual differences and the type of knowledge

Tables 12 and 13 Correlations between the individual differences and the type of L2 knowledge

Table L Correlations between the 1st year students’ IDs and their implicit/explicit knowledge

<table>
<thead>
<tr>
<th>Measures</th>
<th>Implicit</th>
<th>Explicit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner Beliefs</td>
<td>.152</td>
<td>.274**</td>
</tr>
<tr>
<td>Motivation</td>
<td>.104</td>
<td>-.043</td>
</tr>
<tr>
<td>Language Anxiety</td>
<td>-.306**</td>
<td>-.166</td>
</tr>
<tr>
<td>Language Analytic Ability</td>
<td>.231*</td>
<td>.148</td>
</tr>
</tbody>
</table>

** p<.01 *p<.05
### Table M  Correlations between the 3rd year students’ IDs and their three types of knowledge

<table>
<thead>
<tr>
<th></th>
<th>Type 1</th>
<th>Type 2</th>
<th>Type 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner Beliefs</td>
<td>.135</td>
<td>.032</td>
<td>.019</td>
</tr>
<tr>
<td>Motivation</td>
<td>.246*</td>
<td>.003</td>
<td>.009</td>
</tr>
<tr>
<td>Language Anxiety</td>
<td>-.209*</td>
<td>-.012</td>
<td>.037</td>
</tr>
<tr>
<td>Language Analytic Ability</td>
<td>.183</td>
<td>.058</td>
<td>.188</td>
</tr>
</tbody>
</table>

### (3) Correlations between the individual differences and the measures of L2 knowledge

#### Table N 1st year students’ correlations

<table>
<thead>
<tr>
<th></th>
<th>Language analytic ability</th>
<th>Learner beliefs</th>
<th>Motivation</th>
<th>Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>EITG</td>
<td>.269**</td>
<td>.123</td>
<td>.082</td>
<td>-.295**</td>
</tr>
<tr>
<td>EIT UG</td>
<td>.127</td>
<td>.055</td>
<td>.017</td>
<td>-.261**</td>
</tr>
<tr>
<td>TGJT G</td>
<td>.124</td>
<td>.125</td>
<td>-.027</td>
<td>-.187</td>
</tr>
<tr>
<td>TGJT UG</td>
<td>.035</td>
<td>.095</td>
<td>.204*</td>
<td>-.014</td>
</tr>
<tr>
<td>UGJT G</td>
<td>.231*</td>
<td>.071</td>
<td>-.028</td>
<td>-.244*</td>
</tr>
<tr>
<td>UGJT UG</td>
<td>-.020</td>
<td>.167</td>
<td>-.088</td>
<td>-.114</td>
</tr>
<tr>
<td>MKT (Part 1)</td>
<td>.124</td>
<td>.278**</td>
<td>-.051</td>
<td>-.198*</td>
</tr>
</tbody>
</table>

#### Table O 3rd year students’ correlations

<table>
<thead>
<tr>
<th></th>
<th>Language analytic ability</th>
<th>Learner beliefs</th>
<th>Motivation</th>
<th>Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>EITG</td>
<td>-.004</td>
<td>-.075</td>
<td>.062</td>
<td>-.018</td>
</tr>
<tr>
<td>EIT UG</td>
<td>.124</td>
<td>.071</td>
<td>.108</td>
<td>-.060</td>
</tr>
<tr>
<td>TGJT G</td>
<td>.172</td>
<td>-.058</td>
<td>.029</td>
<td>.077</td>
</tr>
<tr>
<td>TGJT UG</td>
<td>.033</td>
<td>-.066</td>
<td>.229*</td>
<td>-.188</td>
</tr>
<tr>
<td>UGJT G</td>
<td>.111</td>
<td>.199</td>
<td>.044</td>
<td>-.086</td>
</tr>
<tr>
<td>UGJT UG</td>
<td>.184</td>
<td>-.184</td>
<td>.197</td>
<td>-.226*</td>
</tr>
<tr>
<td>MKT (Part 1)</td>
<td>.266*</td>
<td>-.083</td>
<td>.119</td>
<td>-.052</td>
</tr>
</tbody>
</table>
LIST OF REFERENCES


Bialystok, E. (1981). The role of linguistic knowledge in second language use.


Loewen, S. (2009). Grammaticality Judgment tests and the measurement of implicit and explicit L2 knowledge. In Ellis et al. (Eds.), *Implicit and explicit knowledge in second language learning, testing and teaching* (pp.94-112). Bristol, Buffalo and Toronto: Multilingual Matters.


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