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**A Complex Dynamic Systems Theory Perspective
on Learner Individual Differences in Second
Language Listening Development**

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**A thesis submitted in fulfilment of the requirements for the Degree
of Doctor of Philosophy in Education (Applied Linguistics)
The University of Auckland, Auckland
New Zealand
2017**

Abstract

This study aimed to examine second language (L2) listening development as a non-linear complex system from a Complex Dynamic Systems Theory (CDST) perspective. It is assumed that L2 listening is affected by a group of dynamically evolving learner individual differences (LIDs) variables, which include language learning aptitude, working memory capacity (WMC), listening motivation, metacognitive awareness and learning style preferences. Using longitudinal mixed-methods, composed of quantitative studies and longitudinal multiple-case studies, this research provides empirical evidence for the role of CDST in researching L2 listening to develop effective L2 listeners.

The quantitative studies aimed to document the development of Chinese students' L2 listening proficiency and their LIDs. The studies investigated whether LIDs variables were correlated, and how they contributed to L2 listening performance. Participants were 300 undergraduate students from a medium-ranking university in Northern China. They were invited to complete listening comprehension tests designed to measure their listening proficiency, followed by three questionnaires and a series of tasks to assess their individual variability in terms of language learning aptitude, WMC, listening motivation, metacognitive awareness and learning style preferences. It was found that participants demonstrated progress in L2 listening over time. Structural equation modelling results revealed that LIDs variables were correlated to varying degrees. WMC and language learning aptitude made significant contributions to L2 learners' listening proficiency.

The longitudinal multiple-case studies aimed to track the on-going changes of participants' performances in L2 listening and LIDs variables, and to reveal how these variables developed, interacted and affected participants' process in learning L2 listening. Ten volunteers from the 300 students participated in the longitudinal multiple-case studies. For purpose of comparison, these volunteers were allocated to a high-level and a low-level group based on their listening proficiency. The same tests and questionnaires as used in the quantitative studies were used to track the

development of the participants' listening proficiency and LIDs variables. Qualitative data were collected via semi-structured interviews and self-report diaries to corroborate quantitative results.

Both the High- and the Low-level L2 listeners' listening scores improved, but they demonstrated different developing patterns according to LIDs variables. Findings indicated that these variables not only developed individually but also interacted with the situational forces. Data collected from the longitudinal multiple-case studies revealed complex interrelations between learners' WMC and language learning aptitude, between WMC and metacognitive awareness, between listening motivation and metacognitive awareness and between metacognitive awareness and learning style preferences. These findings corroborate the quantitative findings that LIDs variables were intercorrelated to varying degrees.

Results of this research revealed the dynamic nature of L2 listening development, provided in-depth information about the intertwined relationships among LIDs variables, and showed how the changes and interactions of participants' LIDs variables affected their L2 listening developmental trajectory. On the basis of these findings, a Model of Dynamic L2 Listening Development was proposed. The outcome of developing and considering this model led to a conclusion that CDST provided a useful lens in exploring the non-linear, dynamic and complex development of L2 listening. It identified L2 listeners' LIDs as an intertwined construct, and provided theoretical, methodological and pedagogical implications for conducting further research in this field.

Acknowledgements

First and foremost, I would like to express my heartfelt gratitude to my main supervisor Professor Lawrence Jun Zhang for his professional guidance and continuous support during my doctoral study. His teaching and research expertise have influenced my academic life. His constant support and encouragement have been extremely important through every stage of my study. His advice on both my research and my life has been priceless, motivating me to strive towards my goal.

I would also like to extend my special thanks to my co-supervisor, Professor Judy M. Parr for her constant support, constructive suggestions, and valuable feedback on my study. I am deeply indebted to her meticulous and patient efforts in walking me through rounds of drafting and refining the thesis during the last stage of writing.

My gratitude goes to research advisors Professor Andrew D. Cohen and Professor Jack C. Richards for sharing their pearls of wisdom and their insightful comments on my thesis, especially in the early stage of my study, which motivated me to reflect on my research from various perspectives.

My sincere appreciation extends to the two thesis examiners for their time and effort in reading and offering valuable comments on my thesis. They not only acknowledged the substantial and original contribution of my thesis but also proposed constructive feedback which inspired me to have a critique and critical appraisal of the research possibilities opened up by my study.

I am also grateful to all the participants in this study, who were kind enough to take the time to fill out the questionnaires, complete the numerous tests, and talk to me candidly about their learning experiences. Thank you for your trust and for your cooperation. Without you, this entire project would not have been feasible.

It is with profound gratitude that I dedicate this thesis to my beloved parents and my twin brother for their love, financial support and constant encouragement. Words cannot express how grateful I am to my family for all of the sacrifices that they have made. They are my strong support and motivation to help me pursue doctoral study overseas. Thank you.

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CHAPTER 1 INTRODUCTION

1.1 OVERVIEW

This chapter provides an overview to the thesis by describing Complex Dynamic Systems Theory (CDST) as it relates to English as a foreign language (EFL) development by indicating the theoretic notions. This is followed by introducing the current situation of learning and teaching listening in Chinese universities, the research context of the study. The chapter then points out the potential problems in the current context of learning listening in second language (L2), especially in regard to English as a EFL in China, and portrays the research niche in researching L2 listening from the CDST perspective. The rationale and objectives of this study are expounded subsequently, followed by a brief outline of the theoretical and pedagogical significance of the current study. The chapter ends by providing an overview of the organisation of the whole thesis.

1.2 RELEVANT KNOWLEDGE AND RESEARCH NICHE OF THE PRESENT STUDY

1.2.1 Theoretical Notions

When the notion of dynamic systems was introduced into SLA research, it was under various rubrics such as Chaos Theory (Larsen-Freeman, 1997), Emergentism (Ellis & Larsen-Freeman, 2006), Dynamic Systems Theory (De Bot, Lowie, & Verspoor, 2007a) and Complexity Theory (Larsen-Freeman & Cameron, 2008a). The new approach, that of Complex Dynamic Systems Theory (CDST) (Larsen-Freeman, 2015b, 2017), which may be seen as the “dynamic turn” in second language

acquisition (SLA), resonated with many scholars because non-linear system dynamics appeared to describe some puzzling language learning phenomena nicely (Dörnyei, MacIntyre, & Henry, 2015, p. 1). It is called a paradigm by some, a metatheory by others, and a theoretical framework by the majority. The point is that its influence and promise extend beyond those of most theories.

As applied linguists know very well, how we use language both constructs and reflects our understanding of things around us. Because of this, it is believed that a more apt designation than SLA to describe such phenomena is second language development (SLD), which rests on a view of language from the CDST perspective (Larsen-Freeman, 2015a, 2015b, 2017). Such a perspective rejects the commodification of language implied by the term “acquisition”, imbuing language with a more dynamic quality, as implied in the term “development”, which views language as an ever-developing resource. In addition, this perspective respects the fact that from a target-language vantage point, regress in learners’ performance can also be considered as progress in language development. Finally, the term SLD recognises that there is no common endpoint to which all learners arrive. After all, learners actively transform their linguistic world; they do not merely conform to it (Larsen-Freeman, 2015a, p. 1). In brief, change and emergence are central to any understanding of complex dynamic systems.

The complex and dynamic principles also make intuitive sense research-wise. It has been known that the manifold issues and variables affecting SLD are interrelated, for example, individual variability in learners’ characteristics in language learning. The new CDST paradigm represented a holistic approach that took into account the

combined and interactive operation of a number of different elements, learning conditions relevant to specific situations in L2 learning, rather than following the more traditional practice of examining the relationship between well-defined variables in relative isolation (Dörnyei et al., 2015, p. 1). Thus, proposals for a dynamic paradigm shift in the research community during the first decade of the new millennium were generally well received. By the end of the 2010s, however, it had become noticeable that while there was a growing body of literature on complex dynamic systems within SLA contexts, very little of this work was empirical in nature (Dörnyei et al., 2015, p. 1), especially in regard to L2 learning. There are at least three aspects of such a CDST approach that push researchers into uncharted territories: modeling *non-linear change*; observing the operation of the *whole system* and the interaction of the parts within it; finding *alternatives* to conventional quantitative research methodologies that largely relied on statistical procedures to examine linear, rather than dynamic relationships (De Bot & Larsen-Freeman, 2011, p. 18)

Furthermore, even when dynamic principles were referred to in data-based studies, they were often to explain away difficult-to interpret results based on the argument, that such results occurred because of the unpredictable or “emergentist” nature of the system. Facing the uncertainty and challenge of this new paradigm, Dörnyei, MacIntyre and Henry (2015) observed it was not uncommon to hear scholars express the sense of being at a loss as to how exactly to go about researching complex dynamic systems.

1.2.2 The Research Context

1.2.2.1 English as a foreign language (EFL) in China

The important status of English is widely recognised in China, as it plays a pivotal role in political, economic and educational globalisation. English, as a lingua franca, is perceived as a necessary and critical second, or other, language, for everyone worldwide. Success in English is considered as a gateway to better education or overseas study, professional development, employment opportunities and social advancement (Chang, 2012). Scores in English courses are an essential criterion of school and university admission in the contemporary Chinese educational system. The practice of English teaching, at tertiary levels, has been nationally regulated by the *College English Curriculum Requirements* (Ministry of Education of the People's Republic of China, 2007), which are used as benchmarks for teaching materials compilation, curriculum development and teaching evaluation (Zhang & Liu, 2015). These policies require English to be set up in tertiary education as a compulsory course with the aim of enhancing university students' language competence to meet their study and career needs. University students need to pass the College English Test (CET), which is a nationally adopted test battery with two levels, namely, Band 4 and Band 6, as a measure of their English proficiency. Test scores are often used as a criterion for job recruitment (Shen & Zhang, 2016).

1.2.2.2 Learning and teaching L2 listening in China

Recently in China, learners have been exposed to English at an early age (e.g. in kindergarten) and learners' listening and speaking capacity is emphasised in the revised *College English Curriculum Requirements* (MoE, 2007). This document stated that the objective of College English is "to develop students' ability to use English in an all-round communicative way, especially in listening and speaking, so that in

Chinese students' future studies and careers as well as social interactions they will be able to communicate effectively" (p. 18). L2 Listening is viewed as a necessary learning ability in the context of EFL learning. Paradoxically, at the tertiary stage, pedagogy in the English class for undergraduates is designed to foster a comprehensive knowledge of English with a focus on grammar, vocabulary and reading, while speaking and listening courses are usually set up as electives.

L2 listening is comprised of overlapping types of processing: neurological, linguistic, semantic and pragmatic. Success in L2 listening relates to learners' individual variability and depends on learners' linguistic and world knowledge (Rost, 2014). In China, the instructional process for listening is divided into model test demonstration and imitation in preparation for the CET 4 and CET 6. Teachers seldom provide sufficient feedback on students' listening skills or strategies, and rarely supplement students' learning of listening with strategic or phonological knowledge. Little attention is paid to learner individual differences (LIDs) in students' background knowledge and cognitive abilities that play an important role in enhancing their L2 listening development (Hu, 2015; Xu & Li, 2009). Unfortunately, the majority of Chinese students have difficulty in performing well in listening tests due to the imbalance of the instructional emphasis in English learning and teaching. Even if the CET was designed as an objective and accurate evaluation of English proficiency, university students are unlikely to perform well (Zheng & Cheng, 2008).

1.2.3 Statement of the Problem in L2 Listening Development

English language education at the tertiary level in China is conceptualised as not only the teaching of language knowledge and skills, but also of language learning strategies and cross-cultural communication skills (MoE, 2007; Shen & Zhang, 2016; Zhang &

Yu, 2015). However, from the learners' point of view, listening was often seen as a passive process of merely listening to a text and then completing the after-listening questions. Educators and teachers paid more attention to the product of listening than the dynamic listening process, and individual learners' differences in completing listening tasks were rarely considered (Goh, 2010; Graham, 2017). It was assumed that learners' listening skills would improve automatically if other language skills, namely, reading and writing were developed to a desirable level. Therefore, specific classroom listening instruction, including strategies training and relevant listening activities, was thought to be unnecessary; listening activities remained virtually a test of comprehension (Chang, 2012). As a result, listening comprehension remained a language skill which most Chinese EFL learners often felt was difficult to master and hard to improve. As Graham (2006) has argued, in such circumstances, more listening activities would most likely only add to learners' sense of failure rather than assist them in developing listening proficiency.

The language policy also calls for an urgent need to cultivate learners' motivation and confidence to regulate their own learning processes. It also states that the learner should be seen as central in classroom environments (MoE, 2007; Yang & Ding, 2004). Although great advancements have been made in promoting listening strategies, many students still lack motivation and confidence in L2 listening. The great pressure of the test-oriented teaching system, limited knowledge of language, and insufficient use of listening strategies have been found to be major obstacles for learners in enhancing L2 listening proficiency (Shen & Zhang, 2016; Vandergrift & Baker, 2015). Despite abundant research documenting how expert and novice L2 listeners are different (e.g., Goh, 2000, 2008; Vandergrift, 2003, 2007) and how strategies training is effective

(e.g., Vandergrift, Goh, Mareschal, & Tafaghodtari, 2006; Vandergrift & Goh, 2012; Zhang & Goh, 2006), little is known about the individual listener's characteristics that contribute to successful L2 listening comprehension (Vandergrift & Baker, 2015). Empirical research on dynamic changes of learners' performance during L2 listening processes is needed. As highlighted by the above literature review, the following are areas in which there is little research:

- 1) Empirical explorations into the role of CDST in observing the dynamic development and complex nature of L2 listening;
- 2) Investigations into the complex interactions of L2 learners' LIDs variables and how they affect listeners' performance within the dynamic L2 listening system.

1.3 RATIONALE AND SIGNIFICANCE OF THE STUDY

1.3.1 Objectives of the Study

Informed by CDST, this study explored the complex nature and dynamic development of EFL learners' L2 listening proficiency in relation to LIDs over an academic year. It was designed with a longitudinal mixed-method approach, including large-scale quantitative studies and longitudinal multiple-case studies in one year. It investigated the non-linear nature of EFL learners' listening development and how LIDs variables contributed to these learners' progress of L2 listening.

The purpose of the current study is threefold. The first step was to track L2 listeners' changes in listening proficiency and to explore their development of LIDs over the academic year of 2015. The second stage was to investigate the correlations and the complex interactions between LIDs variables in the L2 listening process from the CDST perspective. Thirdly, the current study probed into the contributions of LIDs

variables to L2 listening development and the role of the EFL learning context as a part of the dynamic nature of L2 listening development. Specifically, the following research questions were addressed in this thesis.

- 1) What on-going changes in participants' L2 listening proficiency over the year were demonstrated?
- 2) How did participants' L2 listening proficiency develop over time?
- 3) To what extent did L2 learners show any variations in the five LIDs variables (that is, language learning aptitude, working memory capacity (WMC), listening motivation, metacognitive awareness, and learning style preferences)?
- 4) What was the relationship between the LIDs variables in L2 listening development?
- 5) To what extent did the LIDs variables contribute to learners' L2 listening development?
- 6) What were the developing patterns of the five LIDs variables and how did they interrelate and affect the development of L2 listening?

1.3.2 Significance of the Study

L2 development is considered as a non-linear dynamic process from the CDST perspective (e.g., De Bot & Larsen-Freeman, 2011; De Bot et al., 2007a; Larsen-Freeman & Cameron, 2008a). Accordingly, L2 learners' development of listening proficiency interacts with their linguistic, social, cognitive and emotional systems. All variables involved in L2 listening development are interconnected, and interact over time.

Theoretically, this study aims to enrich our understanding of L2 learning in general, and L2 listening in particular, by applying CDST. It was also anticipated that

exploring learners' LIDs within an L2 listening context, based on CDST, could contribute to extending the concept of LIDs that are usually operationalised within a purely cognitive perspective to include the sociolinguistic/sociocultural approach (Larsen-Freeman & Cameron, 2008a; Larsen-Freeman, 2002, 2015b; Nizhegorodcew, 2012). In addition, this study is expected to lead to further empirical studies from the CDST perspective by integrating quantitative studies with detailed observational multiple-case studies, and thus providing a better understanding of how to research L2 learning within complex dynamic systems.

The current research is anticipated to offer pedagogical implications for EFL listening instruction to foster lifelong learning of listening. The findings of this study may provide empirical information on how to adjust L2 listening instruction according to the non-linear listening process to counter the dominant position of product-oriented and test-driven listening instruction in China. The present study thus will argue for the feasibility and effectiveness of listening instructions through LIDs in Chinese EFL learners, and viewing these EFL listeners as dynamic and unique entities rather than a group with static traits. Understanding the complex development and effects of EFL listeners' LIDs is expected to raise awareness of why and how students learn and how to teach L2 listening effectively. In addition, the inclusion of an investigation into the dynamic nature of L2 listening may provide greater insight into EFL learners' listening development in a Chinese context. The outcomes of this study may contribute to innovations in teachers' planning and development of L2 listening materials.

1.4 ORGANISATION OF THE THESIS

The current thesis comprises eight chapters. Chapter 1 provides an overview of the current research including theoretical notions, the research context, existing problems

and research objectives, as well as the significance of this study. Chapter 2 presents the conceptual framework for the current study, including the theoretical background of CDST that accounts for the processes in which L2 listening and LIDs are developed. The history and development of LIDs, and the basic concepts related to L2 listening development are also provided. The literature on L2 development from the CDST perspective is reviewed in Chapter 3, including a wide range of empirical research findings on LIDs and L2 listening development. Chapter 4 presents an explicit description of the research design, instruments and procedures for data collection and analysis. Chapters 5 and 6 present the major findings of the quantitative studies and the longitudinal multiple-case studies, respectively. Results of the quantitative studies are reported in Chapter 5, including the general statistical results of the development in terms of listening proficiency and LIDs variables. The relationships between LIDs variables and L2 listening success are also demonstrated in this chapter. Chapter 6 reports findings of the longitudinal multiple-case studies and discusses the developing patterns of LIDs variables and the complex interrelations among them, reflecting how the intertwined correlations affect L2 listening development in detail. Chapter 7 interprets and further discusses findings of the current study in relation to previous literature and relevant CDST characteristics. It conceptualises LIDs as a whole construct and presents the Model of Dynamic L2 Listening Development, recapitulating the major findings and rationalising the listening development patterns of the L2 listeners. Finally, Chapter 8 endeavours to point out the theoretical, methodological contributions and pedagogical implications. Limitations and recommendations for future research are also addressed, followed by a conclusion to the whole thesis.

CHAPTER 2 CONCEPTUAL FRAMEWORK

2.1 OVERVIEW

This chapter begins with a presentation of the theoretical framework of Complex Dynamic Systems Theory (CDST) (De Bot, Lowie, & Verspoor, 2007b; De Bot, Lowie, & Verspoor, 2005; De Bot, 2008; Larsen-Freeman & Cameron, 2008a; Larsen-Freeman, 1997, 2015a; Van Geert, 1991, 1995, 2003, 2008), including its definition, characteristics and its perspective on researching L2 development. The issue of learner individual differences (LIDs) is then addressed, focusing on its definition and construct. Scholars' views in the existing ESL/EFL literature on LIDs are reviewed, specifically those of Skehan's (1989), Robinson's (2002b), Dörnyei's (2005) and Ellis's (2008). This is followed by the presentation of the CDST perspective on researching LIDs, with an introduction to the development of some key LIDs variables (e.g., language learning aptitude, working memory capacity (WMC), L2 learning motivation, metacognitive awareness and learning style preferences). Finally, the definition, types and the processes of listening comprehension and the key issues in researching L2 listening development are reviewed, followed by the description of the dynamic metacognitive approach to understanding L2 listening development. This chapter intends to make clear that L2 listening develops in a non-linear and complex manner. Its success is influenced by LIDs variables within the complex learning context. The chapter ends with a brief summary.

2.2 COMPLEX DYNAMIC SYSTEMS THEORY (CDST) AND L2 DEVELOPMENT

2.2.1 Theoretical Development of CDST

About 20 years ago, the term *dynamic systems* began to appear in the titles of articles in developmental psychology. Since then, the concept *dynamic systems* has often been discussed within several interrelated theories: Chaos Theory; Complexity Theory (Larsen-Freeman & Cameron, 2008a; Larsen-Freeman, 1997, 2002, 2006a, 2012); Emergentism (Elman, 1999; MacWhinney, 1998, 2005) and Dynamic Systems Theory (De Bot et al., 2007b, 2005; De Bot, 2008; Thelen & Smith, 1994; Van Geert, 1995, 2008; Verspoor, Lowie, & Dijk, 2008). Dynamism, regardless of the difference of the above theories with different labels, often refers to “the same particularly interesting set of complex systems, those open systems that are far-from equilibrium yet maintain stability through continuous change and adaptation” (Larsen-Freeman & Cameron, 2008a, p. 36). CDST is acknowledged within this line of thinking to which the study of change is central (Larsen-Freeman, 2015b, 2017); it also contributes to the notion of emergence, “the spontaneous occurrence of something new” (Van Geert, 2008, p. 182). CDST is transdisciplinary investigating issues ranging from meteorology, mathematics, neurology, and psychology; it seems to be an overarching theory that is able to account for every interacting variable, non-linear behaviour, and sometimes unpredictable outcomes. Given its potential for encouraging entirely new regimes of thought, hereafter, the above theories will be referred to collectively as the CDST perspective in this study.

Applied linguistics is centrally concerned with language learning processes: language development, language use, language acquisition and learning, and, of course,

language teaching. These are commonly known as a complex and dynamic process (Jessner, 2008), and call for different theories and different methods from those associated with static grammatical description (Larsen-Freeman & Cameron, 2008a, p. 79). Change and heterogeneity are central to CDST (De Bot & Larsen-Freeman, 2011; Larsen-Freeman, 2015b, 2017). Thus, it could be such a principal theory that refers to the study of these changing systems in language learning and development. CDST does not regard real-life messy facts as “noise” but as part of the “sound” learners get in real life. The basic characteristics of CDST are outlined in the following section.

2.2.2 Characteristics of CDST

The term “dynamic” has a fairly straightforward meaning. Dynamic refers to the changes that a system undergoes due to internal forces and energy from outside itself. Sometimes the system changes continuously, sometimes discontinuously, even chaotically. Characteristics of CDST are identified by De Bot (2011) and Larsen-Freeman (2015b), namely, sensitive dependence on initial conditions; complete interconnectedness; non-linearity development; openness and change through internal reorganisation and interaction with the environment; dependence on internal and external resources; constant change and “attractor state”; chaotic variation over time; iteration; change caused by interaction with the environment and internal reorganisation; and emergent properties. Each is introduced and discussed with some indications as to how it may play a role in L2 development as extrapolated below.

(1) Sensitive dependence on initial conditions

A slight change in initial conditions can have vast implications for future behavior (Larsen-Freeman, 2015b, p. 5). The term “butterfly effect” is mostly used to represent this feature for it refers to the well-known example of the meteorologist Edward

Lorenz, who established that even if differences are minimal in the beginning conditions, they can generate massive effects on the whole system later (Verspoor, 2015). Language learners differ from each other in many aspects during the learning process, which may lead to different learning outcomes even if they had similar learning experiences. This explains why similar teaching approaches and strategies do not necessarily lead to similar learning results.

(2) Complete interconnectedness

All parts within the dynamic system are connected with one another. Regarding language as a dynamic system means subsystems such as lexical, phonological and the syntactical systems are interconnected. Changes in each of them will affect other systems. In other words, all connections between systems are equally strong and the mutual impact of changes will be equally effective. In the current study, changes on each individual variable are assumed to influence others and to affect L2 listening development.

(3) Non-linearity development

Traditionally, linear relationships between cause and effect are generally assumed in language development studies. For example, when learners start to listening to a new language, they will progress when they invest considerable time in practicing it; however, there is no direct and linear cause and effect relationship in dynamic systems. Because non-linearity is closely related to the interconnectedness of the system, the more components interact, the more problematic it becomes to predict how change will occur. For example in L2 listening development, listening outcomes may be influenced by learners' motivation for learning, and then motivation may interact with

time they invested and their language proficiency levels. Besides the direct effects of these variables, interconnectedness among them may exist and lead to variations in L2 listening achievement. The present study aims to explore the impacts that different LIDs variables have on non-linear L2 listening development.

(4) Openness and change through internal reorganisation and interaction with the environment

As long as a complex system remains open, interacting with its environment, it will continue to evolve (Larsen-Freeman, 2015b, p. 6). And there is no goal or direction in development from the CDST perspective. For example, the listening curriculum and extracurricular listening activities are at work constantly. Therefore, both of these two forces should be observed and explored in this study on L2 listening development.

(5) Dependence on internal and external resources

Every developing system is constrained by limited resources: language learning and language use are equally dependent on resources. Van Geert and colleagues (Van Geert, Savelsbergh, & Van der Mass, 1997; Van Geert, 2008) distinguished internal resources for the learning system from resources that are external. Internal resources are those within the learning individual (e.g., the capacity to learn, time to learn, memory capacity, problem solving skills, internal informational resources), while the external resources are those outside the learning individual (e.g., spatial environments to explore, time invested to support learning, external informational resources) (De Bot & Larsen-Freeman, 2011, p. 14). Therefore, internal and external resources interact over time. Systems and resources are interconnected and merit equal attention, for example, learners' working memory capacity (WMC) is a resource for their

language proficiency, and vice versa. This suggests that learners with higher levels of proficiency would allow for larger holistic units to be stored in their memory.

(6) Constant change, and “attractor state”

The seemingly stable system is actually dynamically changing all the time due to the constant working and interactions between internal and external forces, as the non-linearity implies. The system, sometimes, settles into a new form with minor or negligible changes, known as an “attractor state”, defined as the state what the system prefers to be in over other states at a particular point in time (De Bot & Larsen-Freeman, 2011, p. 14; Hiver, 2015). Its opposite state at a particular point in time is called “repellor state”. A metaphor used to explain this,

The “attractor” is that a ball rolling over on the surface such as that of moon, partly smooth, partly with holes and mountains. It will be attracted to the holes and be repelled by the mountains. The ball takes much energy to make it move again from the ‘attractor state’ from the holes or basins to the smooth surface and develops into the “repellor state”, but such stages cannot be predicted. (De Bot & Larsen-Freeman, 2011, p. 15)

The phenomenon of fossilisation could be described as an attractor state in L2 development. “Attractor states” are not defined by an external force but result from the development in the system which is constantly in interaction with the environment. “Attractor states” can be recognised as a result of internal changes. Minor differences in initial conditions may also lead to different “attractor state”. Understanding the “attractor state” in L2 development would help to capture the typical complex interactions between internal and external forces and may also explain variation in learners’ L2 learning attainment due to different factors, different initial stages, and different interactions (De Bot & Larsen-Freeman, 2011).

(7) Chaotic variation over time

Variation in language development occurs all the time and may be caused by various, not obvious and unpredictable reasons, such as physical fatigue, decline in motivation, memory capacity or different learning styles. The result of dynamic language development is difficult to anticipate due to the interaction of variables over time (De Bot & Larsen-Freeman, 2011). How the variables interact, thus, is important for researchers to examine.

(8) Iteration

Iterations are the repeated applications of the same procedure over and over again but with every step, the system changes; the next step is different from the previous one and the one that follows (De Bot & Larsen-Freeman, 2011). This is true in actual L2 listening activities in which listeners refresh their conceptualisations about the unfamiliar words or phrases in the listening processes with the help of existing vocabulary or world knowledge.

(9) Change caused by interaction with the environment and internal reorganisation

Variation and chaos happen all the time and systems will change due to interaction with their environment and internal reorganisation. For language learning we can illustrate such changes by looking at the acquisition of unfamiliar words. When a learner has one word for a certain type of crying, like “cry”, all types of crying will be referred to using this word, when at some point the word “wail” is acquired, the lexical system will reorganise itself by differentiating various types of crying (De Bot & Larsen-Freeman, 2011).

(10) Emergent properties

Generally, higher level properties are regarded as emergent properties that arise from the interaction of low-level components. For example, an aeroplane is an emergent property of its interconnected parts, which disappears if the parts are disassembled and just placed in a heap. So an aeroplane is more than the sum of its parts, but it is dependent on all those parts to function (De Bot & Larsen-Freeman, 2011). In research and theories on language development, emergentism, now one of the leading theories (Ellis & Larsen-Freeman, 2006; N. C. Ellis, 2008), is the potential of complexity arising out of the interaction between simple processing procedures and a rich environment (De Bot & Larsen-Freeman, 2011, p. 17).

To sum up, an understanding of the characteristics of CDST is crucial if scholars are to go beyond the static or structural relationships between properties or variables, and if they wish to understand the mechanism of language development and learning as it applies to individuals (Van Geert, 2008). In following sections, the application of CDST in the field of L2 development research will be discussed, regarding the dynamic nature of L2 learning and development.

2.2.3 Researching L2 Development from the CDST Perspective

Non-linearity is the first major area of differences between the CDST perspective and a traditional approach to L2 development research; it involves how we understand and attempt to explain the phenomena that are observed, namely, the nature and the level of explanations (Larsen-Freeman & Cameron, 2008a, pp. 230–231). Closely related is causality. Traditionally, L2 learning was often considered as a linear development, and linear correlations were proposed between cause and effect. For example, when learners have to learn vocabulary in a foreign language they expect to learn twice as

many words when they invest twice as much time in learning them. The relation between cause and effect, however, is often non-linear from the CDST perspective, that is, there is no proportionate effect for a given cause. From this perspective, language, language acquisition, and language attrition are characteristics of development as progress, and much more intricate, complex, and even unpredictable than a linear position would allow. Thus, the term, second language development (SLD), is preferred rather than second language acquisition (SLA) in recent studies on the basis of considering language learning as a non-linear and complex dynamic process (De Bot & Larsen-Freeman, 2011; Larsen-Freeman, 2010, 2015a). The CDST perspective proposes language learning has interconnecting and self-organising systems that co-adapt and may display sudden discontinuities and the emergence of new modes and behaviours (Larsen-Freeman & Cameron, 2008a).

Secondly, from the CDST perspective, *changes* in variability can be indicators of development. The disordered details within the developmental stages; changes in stability and variability; the close interactions between language and the cognitive, social and environmental factors enable the researcher to uncover the actual development process of language acquisition or possible attrition in language learning. In this process, different elements or variables consist of a complex dynamic system at different levels. These variables themselves as a result of internal changes, interlink with one another and develop, change and interact constantly in time. Thus, SLD is seen as a non-linear iterative process in which new input is added continuously to the existing knowledge.

Thirdly, the *non-linearity* in SLD is closely related to the *interconnectedness* of complex dynamic systems within which all parts are connected to all other parts. The more components interact within the system, the more problematic it becomes to predict how the system will change and develop. Subsystems of language such as the lexical system, the phonological system and the syntactical system are interconnected and developed as a dynamic system and affect all others. But it needs to be emphasised that all connections between systems are not equally strong: some systems are strongly connected, while for other systems the connections are loose (De Bot & Larsen-Freeman, 2011). An individual L2 language learner can be regarded as a dynamic system consisting of different LIDs variables such as intentionality, WMC, intelligence, motivation, language learning aptitude, metacognitive knowledge, and learning style preferences (Zhang & Zhang, 2013). All variables are interrelated and therefore changes in one variable may have an impact on all other variables that are parts of the system. In addition, these variables are also related to the social system including the degree of exposure to the second or foreign language, maturity, level of education, and the environment with which the individual learner interacts (De Bot et al., 2007b, pp. 7–8). The multidimensional interactions among the different individual variables and, between variables and the learning context represent the interconnectedness of L2 development as a dynamic system.

Fourthly, *context* includes the physical, social, cognitive and cultural aspects when examined from the CDST perspective, and is not separable from the system. Language learning is elaborated as including the external social context (e.g., the relationships with other learners and the teacher), the cultural context (e.g., the roles the teacher and the students play in this culture); the physical environment, the pedagogical context

(e.g., the task or materials), the sociopolitical environment, and the internal cognitive context (e.g., LIDs variables such as WMC) (Larsen-Freeman & Cameron, 2008a, p. 239). Many of these “contextual conditions” are also complex, dynamic, adaptive systems. Each language learner is unique, bringing a different set of physical, affective and cognitive systems to a language learning event, thus acting differently in assembling their language and other resources from a different starting point in response to contextual conditions. Thus, the learner and the learning from context cannot be separated from the CDST perspective in order to measure or explain the unique learning experience.

Lastly, as indicated earlier, the term “development” is used in recent L2 research rather than acquisition or attrition. From the CDST perspective, constant changes characterise the development of language learning, instead of exact goals or directions, in which two forces, external interaction with the environment and internal self-organisation, are at work constantly. All these external and internal forces constantly work together and interact continuously influencing the language learning dynamically all the time. Meanwhile, changes also continuously arise from their self-organisations and reorganisations within the system.

Another aspect is important to consider when reflecting on theory in L2 development from the CDST perspective is the fact that cognitive activities are embodied, shared, and situated in nature. Thus, the traditional distinction in applied linguistics (AL) research between sociolinguistic and psycholinguistic approaches no longer holds (De Bot & Larsen-Freeman, 2011, pp. 17–18). CDST offers and encourages new regimes of thought that consider the social situation of language use and development and the

psycholinguistic processing at the same time. The central tenet of the CDST perspective is that the system's non-linear developmental trajectory arises from the complex and on-going interaction between its various components and subsystems simultaneously, with the multiple influences from its environment (Zheng, 2011, p. 65). Both the external contexts and the internal LIDs variables should be given equal attention in explaining the behaviours and changes in language learning (Dörnyei, 2009d).

To summarise, CDST attempts to grasp the nature of description and explanation of changes in language development. Studies from the CDST perspective are not the same as the traditional pursuit of an exhaustive taxonomy of factors that might account for any learning behaviour of any given phenomenon. Adopting the CDST perspective, it is necessary to take into full consideration the componential complexity and dynamics of all the on-going multiple influences between LIDs variables and environmental factors. It is hoped that in doing so researchers can probably enhance the understanding EFL learners' development and change within the complex dynamic language learning process.

2.3 LEARNER INDIVIDUAL DIFFERENCES (LIDs) IN L2 DEVELOPMENT

LIDs research originated at the end of the 20th century. As Ellis points out, individuals learning an additional language “vary not only in the speed of acquisition but also in their ultimate level of attainment, with a few achieving native-like competence and others stopping far short” (2004, p. 526). These differences in achievement can be attributed to a number of factors: the duration and intensity of instruction; the amount and quality of naturalistic exposure; the choice of teaching methodology; teachers'

dedication, skills and abilities; textbooks and supplementary materials. It is LIDs, within a range of cognitive, affective and social variables, which account for the learner's success or failure in learning another language, and deciding their ultimate level of attainment. Such factors explain why some learners are highly successful and others only move beyond the level of rudimentary communication (Pawlak, 2012b).

Traditionally, learner characteristics in applied linguistics investigated within the context of LIDs were conceived to be attributes that mark a person as a distinct and unique human being (Dörnyei, 2009a, p. 231). Seminal publications (Dörnyei, 2005, 2009a; Ehrman, Leaver, & Oxford, 2003; R. Ellis, 2008; King, 2016; Robinson, 2002a) showed that individual variables, such as age, aptitude, motivation or strategy use have a strong positive relationship with language attainment, and thus viewed as potent predictors of learning success.

The following sections will first provide the definition of LIDs, and then review the development of five LIDs variables (namely, language learning aptitude, WMC, learning motivation, metacognition, and learning style preferences). This will be followed by describing the tendency of researching these variables from the CDST perspective in section 2.3.2.

2.3.1 Definition of LIDs

According to (Dörnyei, 2005), LIDs are easy to define as they concern anything that marks a person as a distinct and unique human being. LIDs are usually seen as background learner variables that modify and personalise the overall trajectory of the language acquisition processes, accounting for, how long and how hard (motivation), how well (aptitude), how proactively (learning strategies) and in what way (learning

styles) the learner engages in the learning process (Dörnyei, 2010b). Dörnyei further defined LIDs construct as “dimensions of enduring personal characteristics that are assumed to apply to everybody and on which people differ by degree. Or in other words, they concern stable and systematic deviations from a normative blueprint” (Dörnyei, 2005, p. 4). LIDs can be broadly classified into cognitive and affective/conative variables, where cognitive variables (such as intelligence, language learning aptitude, or WMC and speed) are distinguished from affective/conative variables (such as anxiety, motivation, and emotion) (Robinson, 2002b).

Another major concern evident in the studies on LIDs is the attempts of many SLA theorists and researchers to classify the diverse variables which may influence the rate of language learning and ultimate level of language achievement. Enormous variations exist in the competing taxonomies on LIDs proposed by different scholars, which reflects their disagreement on the conceptualisation, categorisation and assessment of LIDs. The controversy mainly focuses on the number of aspects into LIDs should be classified (e.g., cognitive, affective, personality and socio-cultural aspects) (Brown, 2000; Cook, 2013; Johnson, 2001); and how to distinguish the confusing variables (e.g., learning styles and cognitive styles; learning strategies and learning styles). Such problems are also evident even in highly referenced state-of-the-art overviews of research into LIDs. Cohen and Dörnyei (2002), for example, framed their discussion around the distinction between those learner characteristics that are beyond the teachers’ control, such as age, gender and aptitude, and those which can be actively shaped to increase the effectiveness of instruction, such as motivation, learning styles and learner strategies.

Ellis (2008) grouped what he views as a group of LIDs according to whether they represent: i) *abilities* (i.e., cognitive capabilities for language learning), such as intelligence, language learning aptitude and WMC; ii) *propensities* (i.e., changeable cognitive and affective qualities which manifest learner preparedness or orientation to language learning), such as learning style preferences, learning motivation, anxiety, personality and willingness to communicate; iii) *learner cognitions* about L2 learning (i.e., learners' beliefs and arguably, also their expectations and preferences about learning and teaching), and learner actions (i.e., learning strategies) (Pawlak, 2012b). Researchers proposed these different lists as to what is included in LIDs, but all agreed that there are a few core variables of LIDs that are influential ones in language development as listed in Table 2.1.

Table 2.1 Core Variables of Learner Individual Differences

	Skehan(1989)	Robinson (2002b)	Dörnyei (2005)	Ellis (2008)
1	Intelligence	Intelligence		Intelligence
2	Language aptitude	Language aptitude	Language aptitude	Language aptitude
3	Working memory (added in 2002)	Working memory		Working memory
4	Motivation	Motivation	Motivation	Motivation
5	Language learning strategies		Language learning strategies	Learning strategies
6	Field independence		Learning and cognitive styles	Learning styles
7	Extroversion/introversion		Personality	Personality
8	Risk-taking		Willingness to communicate	Willingness to communicate
9	Anxiety	Anxiety	Anxiety	Anxiety
10			Learner beliefs	Learner beliefs
11			Self-esteem	

Source: Dai (2010, p. 12). Copyright rests with the original author.

It needs to be pointed out that LIDs are a broad synthesis which includes different aspects of cognitive and affective variables. Due to the outcome of the complex interaction between cognition, affect and social influences, many recent studies have tried to avoid classifying the different variables into broader categories (Pawlak, 2012b). Therefore, some scholars have elected to focus on five individual variables, namely, language learning aptitude, WMC, motivation, learning strategies, and learning style preferences, which are considered to have considerable potential in predicting success in L2 learning (Dörnyei & Skehan, 2003; Ehrman et al., 2003; S.M. Gass & Selinker, 2008; Pawlak, 2012b). Thus, these LIDs variables are going to be focused in the current study, and will be discussed from the CDST perspective in the following section.

2.3.2 The CDST Perspective on LIDs Variables

The traditional conceptualisation of learner characteristics influenced by the “individual difference myth” (Dörnyei, 2010b, p. 253) consistent with a psycholinguistic approach to SLA, does not do justice to the dynamic, fluid and continuously fluctuating nature of learner factors. Neither does it account for the complex internal and external interactions that can be observed in higher-order intellectual functions (Dörnyei, 2010b). Developing sociolinguistic SLA models, more concerned with environmental factors affecting L2 learners’ competence, emphasised the interface between the external linguistic knowledge provided in the input as well as the internal psycholinguistic processes. The most characteristic feature of LIDs research is its concern with the context in which these studies have been carried out.

It is widely accepted that LIDs variables are powerful learner variables with potential make-or-break quality, affecting a range of different aspects of the language

acquisition process (Dörnyei, 2017). Dörnyei has argued that “scholars are now increasingly proposing new dynamic conceptualisations in which individual variables enter into some interaction with the situational parameters rather than cutting across tasks and environments” (2005, p. 218). Thus, Dörnyei stressed the significance of viewing LIDs as context-dependent and dynamic entities rather than as absolute and fixed factors, and proposed abandoning the search for linear relationships in favour of investigating the effect of combinations of various traits under different learning circumstances. Individual characteristics, he claimed, are related to the processes of L2 learning, a stance that is somewhat in line with the tenets of CDST mentioned in the previous section (Larsen-Freeman & Cameron, 2008a).

This changing perspective on the development of individual characteristics reflects the benefits of a context-embedded approach to the study of LIDs, which has been emphasised by Nizegorodcew (2012), who has argued that socio-cultural and sociolinguistic perspectives on SLA could afford more valuable insights in this area. Similarly, Aronin and Bawardi (2012) expressed the opinion that it is necessary to reassess and restructure more traditional theoretical paradigms and empirical enquiries in the light of the latest developments of this kind. They discussed LIDs within the context of contemporary global and sociolinguistic changes. Ellis (2004, p. 547) also stated that “the contextualised individual differences research should take into account specific settings in which L2 learning takes place as well as the tasks learners are requested to perform”. Thus, as the newly developed CDST proposes, L2 learners are viewed as becoming part of a culture of the classroom and/or a community.

2.3.3 Dynamic Nature of the Five LIDs Variables

L2 learners differ in LIDs variables even though they are exposed to the same language learning environment, taught by the same language teacher, and received the same amount of practice (Dörnyei, 2005; Pawlak, 2012a). Consequently, LIDs have attracted many scholars' attention in recent years and has led to a large body of literature addressing the issue of LIDs in language learning over the last few decades. As the literature is wide ranging, in this section of the thesis, the discussion will be confined to LIDs variables of language learning aptitude, WMC, motivation, learning strategies and learning style preferences. These variables are believed that have contributed to identifying the causes of success and failure in learning languages, and are proposed as potential predictors of language attainment (Dörnyei & Skehan, 2003; Ehrman et al., 2003; S.M. Gass & Selinker, 2008; Pawlak, 2012b). The following sections will provide a brief introduction to the development and the dynamic nature of these five highlighted LIDs variables from the CDST perspective.

2.3.3.1 Language learning aptitude

Snow (1992) pointed out that aptitude has several meanings, including readiness, suitability, susceptibility and propensity for learning in particular situations. He also highlighted the fact that aptitude is not a constant and innate intellectual capacity; rather, it is a conglomerate of individual characteristics that interacts dynamically with the situation in which learning takes place (Kormos, 2013, p. 132). It has been argued consistently that aptitude is not a unitary factor but rather a composite of different abilities. Previous studies on the conceptualisation of this notion differ and can be classified into a "Carroll" and "post Carroll" period.

Language learning aptitude has been defined here, based on Robinson (2002b, 2005), as combinations of cognitive abilities, or a number of aptitude complexes, that are closely related to different learning conditions concerning instructional exposure to L2 input. The Aptitude Complexes Hypothesis (ACH), based on the ideas of “aptitude complexes” by Snow (1987, 1994), is a comparatively new conceptualisation for aptitude (see Figure 2.1).

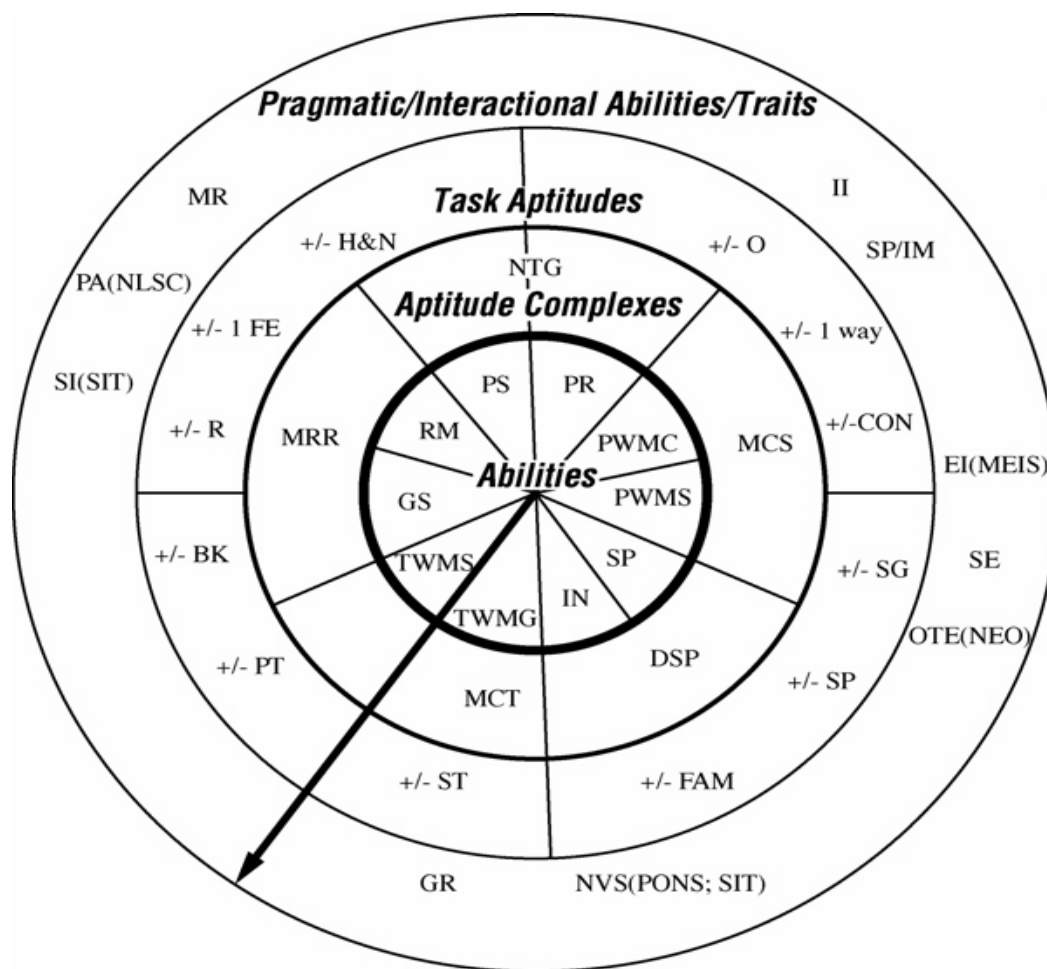


Figure 2.1 *Aptitudes, Developments, and Learning Contexts: Changes in the Relative Contribution of Aptitude Factors to Different Aspects of L2 Learning*

Note. (Inner two circles: initial input-based learning; third circle: output practice and complex task performance; and outer circle: transfer of task performance to real- world interactive settings.)

Key to Figure 2.1:

Abilities (inner circle): PS = Processing Speed; PR = Pattern recognition; PWMC = Phonological Working Memory Capacity; PWMS = Phonological Working Memory Speed; SP = Semantic Priming; IN = Lexical Inferencing; TWMC = Text Working Memory Capacity; TWMS = Text Working Memory Speed; GS = Grammatical Sensitivity; RM = Rote Memory

Aptitude Complexes (second circle): NTG = Noticing the Gap; MCS = Memory for Contingent Speech; DSP = Deep Semantic Processing; MCT = Memory for Contingent Text; MRR = Metalinguistic Rule Rehearsal

Task Aptitudes (third circle): +/- ST = Single Task; +/- PT = Planning Time; +/- BK = Background Knowledge; +/- H&N = Here-and-Now; +/- FE = Few Elements; +/- R = Reasoning; +/- O = Open Task; +/- 1way = 1-Way Task; +/- CON = Convergent Task; +/- SG = Same Gender Participants; +/- SP = Same Proficiency Participants; +/- FAM = Familiar Participants

Pragmatic/Interactional Abilities/Traits (fourth circle): II = Interactional Intelligence (Levinson, 1995); SP/IM = Self Presentation/Impression Management (Goffman, 1967); MR = Mind Reading (Baron-Cohen, 1995); PA (NLSC) = Pragmatic Ability (Nonliteral speech comprehension; Langdon et al., 2002); SI (SIT) = Social Insight (Social Insight Test; Chapin, 1967); EI (MEIS) = Emotional Intelligence (Multifactor Emotional Intelligence Scale; Mayer et al., 2000); SE = Self-Efficacy (Bandura, 1986); OTE (NEO) = Openness to Experience (Neuroticism, Extroversion, Openness Personality Inventory; Costa & MacRae, 1985); GR = Gesture Reading (Goldin-Meadow et al., 1993); NVS (PONS; SIT) = Nonverbal Sensitivity (Profile of Nonverbal Sensitivity Test; Social Interpretation Test; Rosenthal et al., 1979; Archer, 1983)

Source: Robinson (2005, pp. 52–53). Copyright rests with the original author.

The ACH claims that a set of basic cognitive abilities in the inner circle (such as processing speed (PS); pattern recognition (PR); phonological working memory capacity (PWMC); phonological working memory speed (PWMS), combine to form higher order aptitude complexes in the second inner circle (such as noticing the gap (NTG); memory for contingent speech (MCS) that are being drawn on in learning a certain task. These two inner circles are the heart of this model. And there are four “aptitude complexes” in the framework. They are namely an aptitude for a focus on form; an aptitude for incidental learning via oral content; an aptitude for incidental learning via written content; and an aptitude for explicit rule learning (for more see Wen, Biedroń, & Skehan, 2017).

This aptitude proposal seems to provide possible ways to distinguish learners’ aptitudes at either the primary learning level with lower-level basic abilities or advanced learning level with higher-order aptitude complexes. It also represents the complicated nature of language learning aptitude, as well as its dynamic feature in language development. Furthermore, conceptualising language learning aptitude as the ACH suggests the direction for, and possibility of, researching this individual trait as a complex dynamic system (Sternberg & Grigorenko, 2002) from the CDST perspective.

Accordingly, new aptitude measurements are needed that go beyond traditional tests. The Modern Language Aptitude Test (MLAT) is still the most influential aptitude measurement battery more than forty years after its publication. It was designed by Carroll and Sapon (1959) to measure aptitude by conceptualising language learning aptitude in terms of phonetic coding ability, grammatical sensitivity, rote learning ability and inductive language learning ability. The MLAT generated strong

correlations with language learning attainment, becoming the cornerstone of aptitude research. Skehan (1989) reconstructed the original aptitude model into a three-way distinction between auditory ability, linguistic ability and memory ability. Later, Sasaki (1996) discovered that language learning aptitude was comprised of both general cognitive abilities and specific linguistic abilities. Other authors built on these earlier works exploring new dimensions. Grigorenko and Sternberg (2000) for example, operationalised language learning aptitude as five acquisition processes performed in the visual and oral mode at the level of lexis, morphology, semantics and syntax. Robinson (2005) proposed that language learning aptitude is a complex system consisting of 10 basic cognitive abilities drawn upon in different learning conditions. Corresponding to the new aptitude constructs, alternative and complementary batteries and measurements, besides the MLAT, were designed and used in a large number of previous studies (Carroll & Sapon, 1959; Parry & Child, 1990; Petersen & Al-Haik, 1976; Pimsleur, 1966), some of which have been criticised. Robinson later synthesised the features of these measurements:

Prediction of rate, and feasibility of administration, with the goal of selection into programs (and subsequent assignment to languages of different levels of difficulty), is, therefore, the main purpose, constraint, and objective which the Modern Language Aptitude Test (MLAT), the Defense Language Aptitude Battery (DLAB) (Petersen & Al-Haik, 1976), and also VORD (a test of an artificial language) (Parry & Child, 1990) were developed to meet. Very similar to the MLAT, DLAB and VORD in format and measurement scope was Pimsleur's Language Aptitude Battery (PLAB) (Pimsleur, 1966), which differs mainly in that it was developed to be administered to a younger population than the post puberty, teenage, and young adult population for which the MLAT, DLAB, and VORD were developed. (Robinson, 2005, p. 48)

The above comments are also relevant to the Cognitive Ability for Novelty in Acquisition of Language as applied to foreign language test (CANAL-FT) or Kiss and Nikolov's (2005) aptitude test for children. These tests have served both SLA research and L2 pedagogy well as indicators of future success: Higher scores on these tests were predictors of language learning success in a variety of institutional contexts. None of these tests, however, has proved superior to the MLAT in predicting proficiency with respect to both explicit and implicit learning (Sawyer & Ranta, 2001).

Although, widely adopted in studies on language learning aptitude, and successfully predicting and facilitating language learning, most of these aptitude tests failed in presenting the exact aptitude components and how the cognitive abilities facilitated learning, especially under different conditions of instructional exposure. It is suggested that different aptitude components correlate with different aspects of language learning. For example, the grammatical analytical capacity within the construct of the MLAT is shown to be closely related with learners' written performance (Kormos & Trebits, 2012). The specific proportion that each aptitude component occupies under different types of acquisition contexts, however, is still obscure (Kormos & Sáfár, 2008; Robinson, 2005). In some cases, the components of these traditional aptitude tests do predict differential learning in immersion, and communicative classrooms (e.g., Harley & Hart, 2002; Sawyer & Ranta, 2001), but the differences in aptitude do not predict learners' differences in other individual variables during the natural acquisition processes. For example, participants' performances on aptitude cannot be equated to their working memory results in processing meaning for incidental learning (Robinson, 2002b). Taken together, results of above studies show that traditional measures of aptitude need to be modified and updated in order to be optimally predictive in

contemporary classroom settings. Accordingly, where testing and instruction occur simultaneously, dynamic measurement is suggested to measure language learning aptitude to enable researchers to assess learners' ability to learn in real time (Sternberg & Grigorenko, 2002). Measurements are required also to enable conceptualisation of the newly developed theoretical aptitude construct, that is, aptitude complexes (Robinson, 2005).

The LLAMA Language Aptitude Test (Meara, 2005) is such a measure, which consists of a novel set of exploratory tests designed to assess aptitude for L2 learning. This battery with four subtests grew out of a series of projects carried out by students of English Language and Linguistics at the University of Wales, Swansea. The LLAMA aptitude tests are computer-based, automatically scored and most importantly, are not restricted by test-takers' first language (L1). More information about the test will be discussed in the section of research instruments within the methodology chapter.

To sum up, language learning aptitude should be considered in various trait complexes, as well as an examination of the interactions of these complexes with instructional and situational variables as well (Dörnyei, 2009a). The new direction for aptitude studies should also involve the study of aptitude measures which are proposed to combine language learning aptitude with other LIDs variables from the CDST perspective.

2.3.3.2 Working memory capacity (WMC)

2.3.3.2.1 Definition and classification of WMC

The language learning and use draws on a range of cognitive processes. One process receiving increasing attention is WMC. Various definitions have been proposed by

different scholars all of whom viewed WMC as the mental processes responsible for the temporary storage and manipulation of information in the course of on-going processing. Working memory is not memory per se, if by that term we simply mean the capacity to store the products of our experience in the world. Rather, working memory is better understood as a system that controls and regulates human behaviour, or, in more general terms, as “a set of limiting factors for performance in cognitive tasks” (Oberauer, Süß, Wilhelm, & Wittman, 2003, p. 168). The well-known model of WMC was first proposed by Baddeley & Hitch (1974), and the construct has been the focus of extensive research in cognitive psychology and psycholinguistics since then. A later developed version from Baddeley (A. Baddeley, 2000) is presented in Figure 2.2.

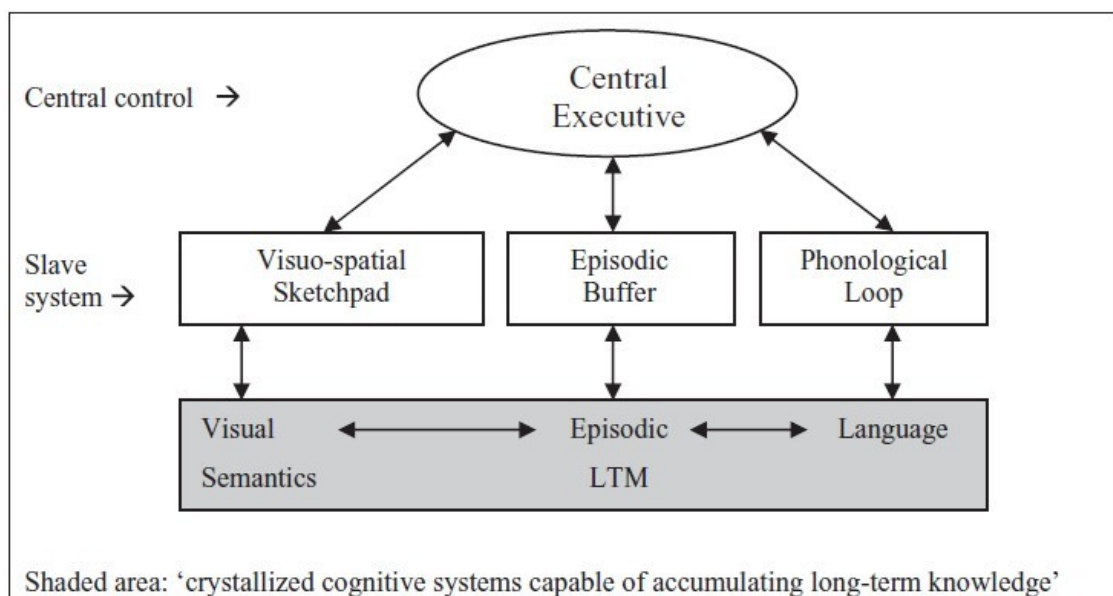


Figure 2.2 Development of the WMC Model

Source: (A. Baddeley, 2000, p. 418). Copyright rests with the original author.

In Figure 2.2, two of the elements are the phonological loop and the visuo-spatial sketchpad, which consist of the short-term storage domain. The phonological loop handles phonological and verbal information, while the visuo-spatial sketchpad processes visual and spatial information. The third element of WMC is the central

executive, controlling the flow of information between these domains and other cognitive processes. Later a fourth element, the episodic buffer, was added (A. Baddeley, 2000) to the short-term storage domain as the place where various types of information are temporarily stored and integrated. The three short-term storage domains are called “slave” systems to denote their passive roles as repositories of information controlled by the central executive.

Originally, differences in WMC have been related to performance in cognition and language in experimental, neuro-cognitive and LIDs research (Miyake & Shah, 1999; Oberauer et al., 2003). WMC has attracted the attention of L2 researchers over the past two decades, who have been interested in how the LIDs variable of WMC might account for variation in L2 learning and use. Researchers have examined the role of WMC in various L2 language processes, including sentence processing (Felser & Roberts, 2007; Juffs, 2004), speaking (Fortkamp, 2000; O ’brien, Segalowitz, & Collentine, 2006), learning grammar (J. N. Williams & Lovatt, 2003), the processing of input and intake (Mackey, Philp, Egi, Fujii, & Tatsumi, 2002), vocabulary development (Cheung, 1996; Papagno, 1995), L2 reading (Leeser, 2007; Walter, 2004) and L2 writing (Adams & Guillot, 2008). Of these the last three aspects have been the greatest focus in the studies on WMC and L2 learning. WMC has also been implicated as a core component of language learning aptitude (Dörnyei & Skehan, 2003; Robinson, 2005; Sawyer & Ranta, 2001) and as a predictor of the overall language learning proficiency (Van den Noort, Bosch, & Hugdahi, 2006). Robinson (2002b) also pointed out that language learning aptitude is a dynamic construct that includes other cognitive abilities such as WMC (Kormos & Sáfár, 2008).

The processing of phonological information is central to language learning and use. Thus, the phonological short-term memory (PSTM)/phonological memory (PM), is of central importance compared to other WMC aspects. In Baddeley's model PSTM is handled by the phonological loop, which is the most widely researched component of WMC, and has been assumed to play a central role in L1 development (A. Baddeley, 1996). PSTM is responsible for the processing and temporary retention of both familiar and novel phonological information (Juffs & Harrington, 2011). This subsystem consists of a phonological store, which holds information for a few seconds and an articulatory rehearsal process, which refreshes decaying information amongst other functions. The rehearsal process is analogous to sub-vocal speech and takes place in real-time, resulting in a limited span of immediate memory (after a certain number of items, the first one will fade before it can be rehearsed) (Kormos & Sáfár, 2008, p. 262). PSTM has also been revealed to play a pivotal role in child and adult L2 development. The importance of PSTM in learning new sound patterns has been argued as critical to L2 vocabulary learning (Gathercole, Pickering, Hall, & Peaker, 2001). It has also been implicated in the learning of L2 grammar (Speciale, Ellis, & Bywater, 2004) and L2 oral performance (Ellis, 1996; O'brien et al., 2006). In addition, PSTM has been identified as a vital element of language learning aptitude (Hummel, 2009; Kormos & Sáfár, 2008; Robinson, 2005; Sawyer & Ranta, 2001).

2.3.3.2.2 WMC measurements

The methodological measurement development is another important aspect of L2 WMC research. Learners' WMC is determined by both storage and processing components which can be measured individually or in combinations with a division between simple and complex WMC measurements. Firstly, simple short-term storage capacity concerns the storage ability and is typically measured by the number or span

of unrelated digits or words that can be recalled immediately (Juffs & Harrington, 2011; Wen, 2016). For example, the alphabet span test (Craik, 1986), the forward digit span test (Botwinick & Storandt, 1974), the non-words repetition task (NWRT) (A. Baddeley, Gathercole, & Papagno, 1998), and the non-words recognition task (NRT) (Gathercole et al., 2001) have been widely used as simple WMC measurements. Test items are usually presented in sets of ascending size, with the individual recalling increasing numbers of items until a maximum is reached with the unrelated words or numbers presented in either written or aural mode (Shah & Miyake, 1996). It is necessary to emphasise that nonsense words presented and recalled in NWRT and NRT can conform to the phonotactic rules but vary in how much they resemble actual words in the language through including sounds that are or are not in the language (Gathercole, 2006). The NWRT and NRT were designed to assess an individual's capacity to encode new phonological sequences, namely, the capacity of PSTM.

Secondly, processing capacity is measured through tasks that make simultaneous demands on both the capacity of storage and processing, sometimes referred to as complex WMC measurements (Colom, Rebollo, Abad, & Shih, 2006; Juffs & Harrington, 2011; Wen, 2016). The most well-known of these is the Reading Span Test (RST) (Daneman & Carpenter, 1980) which assesses simultaneously an individual's ability to read and comprehend a set of sentences, and then recall the last word in each sentence. The RST was used mainly in studies exploring L2 reading, writing and vocabulary development (e.g., Adams & Guillot, 2008; Cheung, 1996; Leiser, 2007; Papagno, 1995; Walter, 2008). A spoken version of the RST, the Listening Span Test (LST) was designed to meet the demand of L2 speaking and listening research. It follows the same format of RST but requires participants to listen

rather than read the sentences (Daneman & Carpenter, 1980; Mackey, Adams, Stafford, & Winke, 2010; Mackey et al., 2002).

Thus, the dual-tasks of RST and LST (Daneman & Carpenter, 1980) were considered as complex WMC tasks and were frequently regarded as instruments testing not only the WMC, but also the PSTM which is especially important to listening (Kormos & Sáfár, 2008). Kormos and Sáfár showed that the phonological loop and WMC were distinct constructs as no meaningful correlations were found between learners' performance on the backward digit span and the phonological loop task. It was thus proposed that PSTM and WMC develop independently and might cause different types of learning difficulties. Gathercole, Tiffany, Briscoe, Thorn and ALSPAC Team (2005) also suggested that PSTM and WMC contribute differently to the success of language learning (Gathercole, Alloway, Willis, & Adams, 2006). Similarly, Martin and Ellis's study (2012) demonstrated significant independent effects of PSTM and WMC on L2 vocabulary learning and on L2 grammar learning.

Robinson's (2005) Aptitude Complexes Hypothesis (ACH) (see section 2.3.3.1) proposed that WMC be viewed as a part of Memory for Contingent Speech (MCS), which is the initial input-based learning and consists of two separate primary abilities of WMC, i.e., phonological working memory capacity (PWMC) and phonological working memory speed (PWMS). The relationship between MCS and its measurements is presented in Figure 2.3:

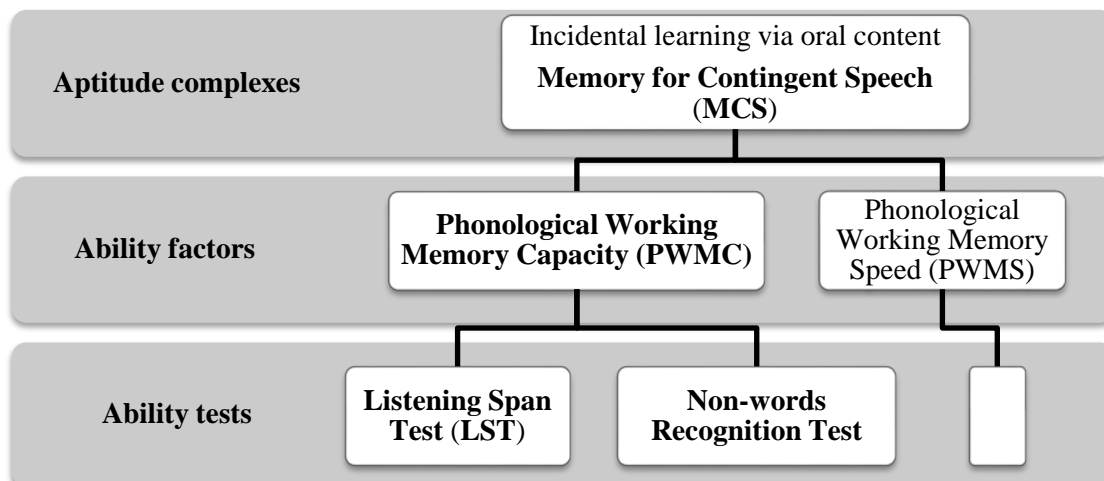


Figure 2.3 Hierarchical Relationships between MCS and Its Measurement

Based on: Robinson (2002b, p. 119). Copyright rests with the original author.

The pivotal role of WMC and the PSTM in L2 development cannot be neglected even if divergences of their relationships have been identified in previous research findings. An increasing controversy has triggered another key issue in studies of WMC, which is how far WMC can be considered as a trait. In other words, whether WMC is a stable individual characteristic that ultimately has a neuro-cognitive basis or a dynamic processing state whose capacity and efficiency is affected by other factors such as domain knowledge and learner goals. The latter opinion has been widely accepted and is proposed in recent WMC research. Evidence of a correlation between WMC and practice (e.g., Lee & Chen, 2005; Turley-Ames & Whitfield, 2003; Van den Noort et al., 2006) suggests that WMC is a dynamic construct that reflects the learners' knowledge of organisation and experience, rather than a relatively fixed individual trait. Furthermore, changes were identified in the development of WMC as a result of experience have been reported (Grigornko & Sternberg, 2000; MacDonald & Christiansen, 2002; Service, Simola, Metsänheimo, & Maury, 2002). It has been suggested that WMC should be viewed as a mixture of a dynamic trait and a state

variable, in which stable patterns of performance across tasks are evident, but that performance can be affected at any particular time by specific conditions (Engle, 2007). De Bot & Larsen-Freeman (2011) have argued that this can be considered as supporting the feature of “attractor state” in a dynamically developing system.

In sum, it is clear from the above literature that WMC is not a unitary construct. Rather, it is a set of processes that underpin the learning and use of a second or additional language. The dual functions that WMC exhibits in information storage and processing can be considered as a complex dynamic system in which the subcomponents of WMC interact and play important but different roles according to the L2 domain. Some studies have suggested that WMC is an essential part of language learning aptitude (Kormos & Sáfár, 2008; Robinson, 2002b, 2005), but evidence is limited. Studies on WMC are mainly correlation analyses between WMC/PSTM and certain L2 learning aspects. The contributions of WMC/PSTM to L2 learning, and whether learners demonstrate differences or changes in WMC over the L2 learning development, however, are not clear yet. For example, the WMC or PSTM might play a significant role in early vocabulary learning and, later, perhaps also contribute to grammar learning (French & O’Brien, 2008). Thus, more studies are urgently needed to explore the dynamic feature in learners’ development of WMC and PSTM, as well as the complex influence that WMC and PSTM exert on their L2 learning, especially L2 listening in this study.

2.3.3.3 L2 Learning motivation

Motivation, as one of the most important concepts in LIDs, has been studied for over five decades in the field of SLA. It is the driving force to initiate L2 learning, and later provides continuous impetus to sustain the long and sometimes tedious learning

process. It is believed that all the other variables involved in SLA presuppose motivation to some extent. Without sufficient motivation, even individual learners with remarkable capabilities cannot achieve long-term goals: neither is an appropriate curriculum nor good teaching enough on its own to ensure learners' achievement. It is believed that a learner could counteract considerable deficiencies in his or her language learning aptitude, and in learning conditions, if he or she is highly motivated (Dörnyei, 2005). L2 motivation research, however, has been a thriving area within L2 studies. Thus, the theoretical development of L2 learning motivation will be briefly reviewed first, and then a new motivational framework will be introduced.

2.3.3.3.1 A brief history of L2 learning motivation theoretical development

The majority of previous studies on L2 motivation can be classified into categories according to their social, psychological, behavioural and cultural research foci (Ushioda & Dörnyei, 2012). Table 2.2 below presents a brief overview of the successive phases of evolution of L2 motivation studies in the last five decades.

Table 2.2 L2 Motivation Research and Corresponding Constructs

L2 Motivation Research	Research focus	Representative researchers	Corresponding constructs
Social psychological approaches	Examines how an individual's attitudes towards the second/foreign language and the L2 community influence L2 learning behaviour and outcomes	Gardner and Lambert (1959;1972); Gardner (1985, 2000, 2001); Gardner and MacIntyre (1993a; 1993b); Dörnyei (2005)	Integrativeness, Integrative and instrumental orientations, L2 ideal self, L2 ought-to self
Cognitive psychological approaches	Looks for internal factors that sustain an individual's L2 learning	Noels (2001a, 2001b); Noels, Pelletier, Clement, and Vallerand (2000); Noels, and Pelletier (1999); Williams and Lambert (1999)	Intrinsic motivation, extrinsic motivation, amotivation, causal attribution
Situated and process-oriented approaches	The situated approach investigates "the motivational impact of the various aspects of the learning context"	Brown (1990, 1994); Clement, Dörnyei, and Noels (1994); Crookes and Schmidt (1991); Dörnyei (1994a, 1994b,	Internal and external factors that influence motivation, self-motivational

	(Dörnyei, 2003, p. 11) The process-oriented approach captures the dynamic and temporal character of L2 motivation	2002a, 2002b); Dörnyei and Otto (1998); Dörnyei and Csizer (2002); Oxford and Csizer (2002); Oxford and Shearin (1994); Skehan (1989, 1991); Ushioda (1994, 1996); Williams (1994)	strategies, L2 motivation process model, task motivation
Poststructuralist approaches	Addresses the relationship between the individual and the social world and its impact on the learner's investment in L2 learning	Norton (2000; 2001); Syed (2001); Pavlenko and Norton (2007)	Investment, identity, imagined communities, social self

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As shown in Table 2.2, studies on motivation have evolved, reflecting increasing degrees of integration within developments of mainstream motivational psychology. At the same time it has retained a sharp focus on aspects of motivation unique to language learning as identified and further grouped into four periods, as suggested by Ushioda and Dörnyei in the following:

- The social-psychological period (1950-1990), characterised by the work of Robert Gardner and his associates in Canada
- The cognitive-situated period (during the 1990s), characterised by work drawing on cognitive theories in educational psychology
- The process-oriented period (turn of the century), characterised by a focus on motivational change
- The socio-dynamic period (current), characterised by a concern with dynamic systems and contextual interactions. (Ushioda & Dörnyei, 2012, p. 396)

These phases vary in the emphasis on motivation, encompassing a wide range of different theoretical perspectives. The scope of these perspectives includes various approaches to motivating language learners to initiate and sustain the lengthy process of mastering an L2 (Dörnyei, 2010b).

Originally, L2 motivation research was founded within a *social-psychological* framework in the bilingual social context of Canada. Gardner and Lambert (1972) speculated that the motivation to learn an L2 is different from other types of learning motivation with respect to the important social and psychological dimensions in the field of SLA. Accordingly, two kinds of motivational orientation in language learning have been proposed: “the integrative and (the) instrumental orientation motivation” (p. 132). A wealth of empirical investigations in Canada was generated on the basis of Gardner and Lambert’s theory and models. By the late 1980s and early 1990s, the need for exploring the internal factors that sustain an individual’s L2 learning and micro situated analysis of motivation in specific learning settings (e.g., classrooms) marked the start of the *cognitive-situated* period of L2 motivation research (Dörnyei, 2005).

The cognitive-situated period entailed focusing more on motivation in L2 instructional contexts, integrating cognitive motivation concepts from the education field (e.g., intrinsic motivation, self-efficacy, attributions) and developing more extensive theoretical frameworks (e.g., Dörnyei, 1994; M. Williams & Burden, 1997). Then, with the increasing number of situated analyses of motivation in the classroom setting, scholars’ attention was drawn to the unstable nature of motivation during the learning process: during engagement in a learning task, through successive lessons, or across the broader time span of a course of study. Thus, investigating the complex ebb and flow of motivation using theoretical models and corresponding research designs that attempt to measure motivation at a particular point in time and investigate relationships with other variables such as language achievement or learning performance, is challenging (Ushioda & Dörnyei, 2012). The *process-oriented*

approach emerged in response to the needs of analysing motivational changes and conceptualising the distinction between motivation to engage in L2 learning and motivation during learning engagement.

The process model of L2 motivation (Dörnyei, 2005) was divided into pre-actional (choice motivation), actional (executive motivation), and post-actional (evaluation) phases, each shaped by various internal and contextual motivational influences and regulatory mechanisms (Dörnyei & Otto, 1998; Dörnyei, 2000, 2001, 2005). However, there are the two key shortcomings that the process model of L2 motivation has: 1) it assumes the clearly defined beginning and ending of a learning process; 2) it supposes that the actional process occurs in relative isolation, without interference from other actional processes in which the learner may be simultaneously engaged (Ushioda & Dörnyei, 2012, p. 398). The second of these is also a deficiency of most current motivation studies in SLA to date. Most scholars have not taken adequate account of the dynamic and situated complexity of the learning processes, or the various goals and agendas shaping learner behaviour. In an attempt to offer a solution to this potential limitation for research, L2 motivation studies evolved to the current *socio-dynamic* period. This phase, characterised by a focus on the situated complexity of the L2 motivation process and its organic development in interaction with a multiplicity of internal, social, and contextual factors, is a move toward relational or the CDST perspectives on motivation (e.g., L. Chan, Dörnyei, & Henry, 2015; Dörnyei, Muir, & Ibrahim, 2014; Dörnyei, 2009a; Larsen-Freeman, 2015b; Ushioda, 2009; Yashima & Arano, 2015; You & Chan, 2015). A novel conceptualisation of motivation is the Directed Motivational Current (DMC) as being proposed by Dörnyei et al. (2014, 2015; Muir & Dörnyei, 2013). This conceptualisation has the capacity to align the

diverse factors that are simultaneously at work in a complex system in which motivation acts as a regulatory force (Dörnyei, Ibrahim, & Muir, 2015, p. 96). The relationship between individuals and contexts is conceived of as complex with dynamic organic systems emerging and evolving over time within the dynamic contextual paradigm for the analysis of motivation (e.g., Järvelä, 2001).

2.3.3.3.2 Directed Motivational Current (DMC) as a new motivational framework

A DMC is a unique phenomenon, “individuals experiencing a DMC are often aware that they are functioning at a heightened state of productivity and are able to perform with increased intensity, over and above what they may have believed possible” (Dörnyei et al., 2015, p. 97). It is believed that a DMC provides a way to explore the intricate nature of the learning processes underlying motivation construction over a prolonged period. Thus a DMC is considered as a new motivational framework (Dörnyei et al., 2014, 2015; Larsen-Freeman, 2015b; Muir & Dörnyei, 2013) and is defined as:

An intense motivational drive which is capable of both stimulating and supporting long-term behaviour, such as learning a foreign/second language (L2). (Dörnyei et al., 2014, p. 9)

The power of a DMC, in detail, is created through the combination of a clear *vision* (see Muir & Dörnyei, 2013) and a matching action structure; the latter is one of the main components of a DMC, involving a powerful launch and subsequent steady onward progression. This progression is scaffolded by sets of behavioural routines (e.g., regular amounts of time spent on a task) and proximal sub-goals (i.e., shorter-term targets that structure action and cause satisfaction when achieved). The four main components of a DMC includes: 1) generating parameters; 2) goal/vision-orientedness;

3) the salient facilitative structure; and 4) positive emotionality as describe in the following (Dörnyei et al., 2015):

1) Generating parameters

The goal-setting process (Latham & Locke, 1991) is a necessary element for any DMC. A successful DMC requires a clear starting point, a launch of the whole process which is a combination of contextual, personal and time factors that emerge together in a unique and highly productive manner (Dörnyei et al., 2015). The specific triggering stimulus is a crucial point in initiating the launch, for example, an opportunity for action.

2) Goal/vision-orientedness

The second and the most prominent feature of a DMC is its directional nature. This is a powerful motivational drive that only happens when there is a well-defined goal, target or outcome that acts as cohesion for one's efforts and assists the energy to concentrate on the final goal achievement (Dörnyei et al., 2015). A DMC is always, and in every case, directional. The relative success of a DMC hinges on a clear vision being established and truly internalised (Muir & Dörnyei, 2013, p. 365).

3) Salient, facilitative structure

A DMC requires a distinctive structure that is both salient and facilitative, a structure which plays a significant role in facilitating the progress of motivated behaviour. A starting point, as mentioned earlier, is the first phase of the DMC structure which will launch the process. Then, the “current” of DMC will take over through the inclusion of a number of regular sub-goals, which divide long-term progression into “digestible

chunks”, such as proxy targets and criteria to evaluate and confirm the progress. This process represents the regular progress checks, a pathway and the second component that a successful DMC required. It will provide affirmative feedback, for example, the weekly health check during a medical treatment. The third criterion is the existence of recurring behavioural routines; these constitute the “motivational autopilot”, and are integral parts of the DMC experience. Each step of the routine is performed without exercising volitional control, and failure to follow the routine may lead to feelings of dissatisfaction or guilt (Dörnyei et al., 2015).

In sum, the salient structure of a DMC is launched by a starting point, followed by regular sub-goals which offer tangible feedback of progress. For example, the fulfilment of sub-goals would keep learners’ learning motivation high, until they approach their desired target, such as realising their learning goals in a language learning programme.

4) Positive emotionality

Different from happiness per se or a simple experience of pleasure, a DMC is characterised by positive emotionality, linked to a sense of realising one’s potential, accomplishing one’s mission or achieving one’s desired target. According to Dörnyei, Ibrahim and Muir (2015), these are exactly the primary domains where a DMC operates. They argued that a DMC is capable of projecting positive emotionality to all the stages of the progress in which individuals realise their respective skills and talents. The positive emotionality serves as a regulator of affect as it eliminates unpredictable shifts in behaviour caused by emotional fluctuation. These can be observed at all the stages of the progress because a DMC always involves a personal journey which is

central to the sense of self. For example, a previously tedious and boring activity can suddenly become pleasant and enjoyable to a person when it is being perceived as congruent with their deep-seated values, and as a part of the DMC process (Dörnyei et al., 2015).

Although the concept of a DMC is proposed as a new motivational framework with novel ideas, it does not mean that the aspects of this present conceptualisation have not been discussed in motivation literature in the past. Several established motivation theories which have touched upon key aspects of a DMC are briefly addressed in following (for more comprehensive summaries see Dörnyei et al., 2014, 2015; Larsen-Freeman, 2015b; Muir & Dörnyei, 2013):

1) Goal-setting Theory

A DMC requires a series of regular sub-goals to serve as both proxy targets (Latham & Seijts, 1999) and a source of affirmative feedback. Goal-setting theory was a prerequisite for a DMC to explain the different performance in terms of focused direction and effort persistence in goal attributes.

2) Flow Theory

Similar to Csikszentmihalyi's (1988) flow experience, a DMC features directed concentration, full engagement, high interest, clear feedback and goal-orientedness. The significant difference between these two concepts lies primarily in the time scale upon which they occur. The flow theory of Csikszentmihalyi's (1990) is concerned with short-term and one-off tasks (e.g., reading, painting), while the duration of a DMC can span longer periods of time and focuses on on-going behavioural sequences.

3) Future time perspective

This theoretical approach in mainstream psychology (e.g., Zimbardo & Boyd, 1999) has gained increasing momentum over the past decade. It is most relevant to the discussion of a DMC as it is primarily concerned with “an individual’s beliefs or orientation toward the future concerning temporarily distant goals” (Bembenutty & Karabenick, 2004, p. 36). In the context of learning, it has been repeatedly shown that future-oriented students, who ascribe higher valence to goals in the distant future, tend to be more persistent and obtain better academic results in the present (e.g., Kauffman & Husman, 2004). This tendency of future-oriented individuals to look ahead and set distant goals helps learners to overcome the complexities of their present learning environment. Thus retains focus on what they want to achieve, which is a valuable link with the DMC process (Dörnyei et al., 2015).

4) Self-determination Theory

Self-determination theory (Ryan & Deci, 2000), the basis of the intrinsic motivation which is related to the enjoyment of the task itself, as opposed to pursuing rewards or recognition (i.e., extrinsic motivation), is a further theoretical strand relevant to a DMC process. This theory also states that any meaningful engagement with an activity must be self-regulated, self-determined and autonomous (Murray, Gao, & Lamb, 2011; Ryan & Deci, 2000; Zhang, 2016), thus creating a strong link with the “ownership” condition of a DMC. Self-determination theory helps to explain learners’ own efforts and autonomous engagement with learning tasks in the broader process of the learning successes. As such it is invaluable to the exploration of what is needed to for a DMC to occur.

Therefore, a DMC is a potent motivational concept that emerges from the alignment of a number of personal, temporal and contextual factors and parameters, creating momentum to pursue an individually defined future goal or vision that is personally significant and emotionally satisfying (Dörnyei et al., 2015, p. 103). Dörnyei et al. (2015) believed that most people, and even organisations, will have encountered a DMC at some point, and if a DMC is successfully launched, it is capable of overriding the complexity and chaos of the system. Thus, a DMC provides us not only the possibility to tap into vast hidden resources of motivational power, but also offers a window for systematic research in our chaotic world as CDST proposed (De Bot & Larsen-Freeman, 2011; De Bot et al., 2007b, 2005; De Bot, 2008; Larsen-Freeman & Cameron, 2008a; Larsen-Freeman, 2015b; Verspoor et al., 2008; You & Chan, 2015). Thus, either people or organisations can be considered in the DMC and can move on to new levels of existence or operation. To sum up, DMC is the newly generated conceptualisation of L2 motivation, the significance of which is its capacity to align diverse factors, to override various obstacles and to regulate emotional fluctuation (Dörnyei et al., 2015, p. 104).

2.3.3.4 Metacognition

Metacognition is a core factor in the over 30 years of research on language learning/learner strategies (LLS). Many of the research findings have not only benefitted academic and pedagogical inquiries (Cohen & Macaro, 2007; Grenfell & Macaro, 2007; Macaro, 2006; Oxford, 2011), but also enriched classroom practice around the world (Gong, Zhang, Zhang, Kiss, & Ang-tay, 2011; Gu, Hu, Zhang, & Bai, 2011; Rose, 2012; Zhang, Aryadoust, & Zhang, 2016; Zhang, 2008, 2010). The following sections are going to address the definition and typology of metacognition,

and introduce a dynamic metacognitive systems perspective as the newly developed CDST proposes.

2.3.3.4.1 Definition of metacognition

Studies suggest that language learners have definite beliefs about how to learn a second or foreign language (Wenden & Rubin, 1987; Wenden, 1986, 1991), and they are also capable of becoming aware of their mental processes (O'Malley, Chamot, & Küpper, 1989). These beliefs and this awareness are collectively called “metacognitive knowledge” by Flavell (1979), who coined the term “metacognition.” The concept of “metacognition” was first raised in developmental psychology in the 1970s. The prefix “meta” literally means “beyond”. Metacognition therefore means “beyond cognition”. John Flavell, a cognitive psychologist, defined metacognition as “knowledge that takes as its object or regulates any aspect of any cognitive behaviour” (Flavell, 1979, p. 8). He then described metacognition as awareness of how one learns, awareness of when one does and does not understand, knowledge of how to use available information to achieve a goal, ability to judge the cognitive demands of a particular task, knowledge of what strategies to use for what purposes, and assessment of one’s progress both during and after performance (Gourgey, 1998, pp. 83–84). “It was the process of using cognitive processes to improve thinking skills. And it was called metacognition because its core meaning was cognition about cognition” (Flavell, 1985, p. 104).

Metacognition relates to language learning, and deals with learners being aware of the strategies they are using and monitoring the process and success of their learning while using cognitive strategies to learn languages. Anderson defined metacognition as “thinking about thinking” (2002, p. 1), he stated the use of metacognitive strategies ignite one’s thinking and can lead to higher learning and better performance.

Furthermore, understanding and controlling cognitive process may be one of the most essential skills that teachers can help L2 learners develop. Similarly, Vandergrift and Goh (2012) posited that:

Metacognition is our ability to think about one's own thinking or 'cognition', and, by extension, to think about how learners process information for a range of purposes and manage the way we do it. It is the ability to step back, as it were, from what occupies a learner's mind at a particular moment in time to analyse and evaluate what we are thinking. (Vandergrift & Goh, 2012, pp. 83–84)

Many studies have examined metacognition, but controversy still exists over what metacognition entails. Because metacognition is usually considered essential in relation to second or foreign language learning processes and strategies, it has been conceptualised as a set of complex dynamic systems rather than a purely cognitive enterprise (Zhang & Zhang, 2013).

2.3.3.4.2 Typology of metacognition

Flavell (1979) and Anderson (2002) distinguished metacognition as having three major components: metacognitive knowledge, metacognitive experience, and metacognitive strategies. These three components of metacognition work interactively, the relationship among them is as follows:

- (1) Metacognitive knowledge helps individuals to understand their experiences, and is a prerequisite for developing metacognitive experiences;
- (2) metacognitive experiences activate the relevant metacognitive knowledge in memory to participate in the current metacognitive activities, that is they have a dynamic effect on metacognitive knowledge;
- (3) the ever-changing store of metacognitive knowledge makes further metacognitive experience possible;

- (4) metacognitive experiences provide the necessary information for the utilisation of metacognitive strategies;
- (5) the utilisation of metacognitive strategies inspires new metacognitive knowledge;
- (6) the utilisation of metacognitive strategies enables individuals to accumulate new experiences when providing cognitive activities, which revise and replenish the stored metacognitive knowledge. (Chang, 2012, p. 38)

Vandergrift and Goh (2012) emphasised the metacognitive approach to L2 listening, especially learner-oriented listening instruction, in which metacognition lies at the heart. According to Vandergrift and Goh (2012), learning to listen remains mainly an individual affair, and learners do not benefit significantly from the knowledge and experiences of their peers and teachers. Thus, on the basis of previous classification of metacognition, they proposed a metacognitive framework specifically for listening instruction which includes three components: metacognitive knowledge, metacognitive experience and strategy use (see Figure 2.4). Of the three, “metacognitive experience is taken as an involuntary response, while the other two are amenable to instruction and can contribute to more effective listening, confidence, and motivation” (Vandergrift & Goh, 2012, p. 101; see Zhang & Zhang, 2018 for a review).

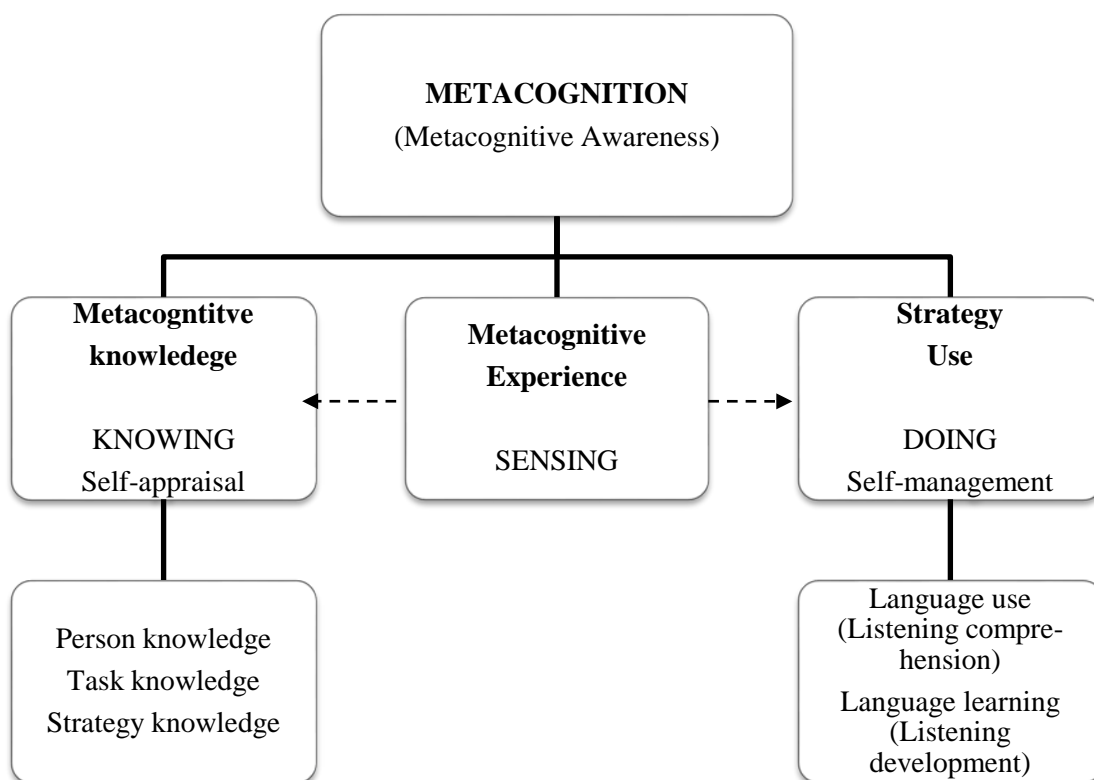


Figure 2.4 A Metacognitive Framework for Listening Instruction

Source: Vandergrift & Goh (2012, p. 85). Copyright rests with the original authors.

Metacognitive awareness in the diagram refers to a state of consciousness of our own thoughts as we focus on a particular cognitive or learning situation (Vandergrift & Goh, 2012, p. 84). In the L2 listening process, what L2 listeners know about their own knowledge often directly affects their listening outcomes. Successful listeners know and apply more metacognitive knowledge in L2 listening while weak listeners benefit the most in terms of proficiency improvement after exposure to classroom instruction about metacognitive knowledge (Zhang & Goh, 2006; Zhang, 2001).

In the metacognitive framework, metacognitive experience is a thought and feeling, which is useful in assisting learners to understand about the task, themselves or the

world around them. The two arrows in Figure 2.4, pointing from metacognitive experience to the other two components, show that metacognitive experience can influence the development of metacognitive knowledge, as well as the selection and use of strategies (Vandergrift & Goh, 2012, p. 86).

Metacognitive knowledge can be further classified into person, task, and strategy knowledge, three kinds of knowledge about cognition that learners have, and store. Each represents different types of knowledge about L2 listening and plays a distinctive, relevant role in L2 listening (see Table 2.3).

Table 2.3 Types of Metacognitive Knowledge about L2 Listening and Examples from Learners

Type	Examples for L2 listening
<p>Person Knowledge Knowledge of the cognitive and affective factors that facilitate one’s own listening comprehension and listening development.</p>	<p>Self-concept and self-efficacy about listening</p> <ul style="list-style-type: none"> • I am an anxious listener. • I can improve my listening if I try harder. • I dare to take risks • My ability to relate to the content of the text determined the accuracy of my anticipations which in turn affected the quality of my listening. <p>Specific listening problems, causes, and possible solutions.</p> <ul style="list-style-type: none"> • I have problems catching the beginning of what other people say. • English sounds and pronunciation are too different from Korean. • I can “psych” myself, talk, and comfort myself to get rid of negative feelings.
<p>Task Knowledge Knowledge of purpose and nature of the listening task, knowledge of task demands and knowledge of when deliberate effort is required</p>	<p>Mental, affective, and social processes involved in listening.</p> <ul style="list-style-type: none"> • You need to concentrate very hard if you are not strong in the language. • You need to stay calm to hear clearly. • Listening is difficult because people expect you to respond to them when they talk to you. • Pay attention to the exercise in front of us and the oral at the same time because if we get lost, we can’t catch up. <p>Skills for completing listening tasks</p> <ul style="list-style-type: none"> • When you listen to a talk, you need to get only the general idea. • Since I now can anticipate, I am more aware of what to listen to and pick up more of the conversations. • I find I have slow reaction to numbers. So I want to do more practice like listening more to business news or anything that contains a lot of numbers.

	<p>Factors that influence listening</p> <ul style="list-style-type: none"> • That speaker’s accent is different from the one my teacher has and it makes listening challenging for me. • New reports are more difficult to follow than stories. • I need to look for key words and not let myself drown in the dialogue...I really need to work on this. <p>Ways of improving listening outside class</p> <ul style="list-style-type: none"> • I should try to talk to English speakers more. • Mobile devices are excellent for my listening development. • I think I should listen to news and watch some documentaries too...not just listen to songs I like.
<p>Strategy Knowledge Knowledge about effective strategies for listening tasks and knowledge about how best to approach listening tasks.</p>	<p>General and specific strategies to facilitate comprehensions and manage learning</p> <ul style="list-style-type: none"> • If you don’t understand what you hear, just guess. • Watching English movies can help my listening, but I should try not to read the Chinese subtitles. • Predicting may not always be correct but it helps. <p>Strategies appropriate for specific types of listening tasks</p> <ul style="list-style-type: none"> • To get the information on train time, you need to listen to all the details carefully. • When somebody is speaking too fast, we can ask them to slow down or repeat. • During the second listening, I can keep my ears open for the things I missed but my partner caught. <p>Ineffective strategies</p> <ul style="list-style-type: none"> • I shall make my reaction as quickly as possible as I can. The less translation the better. • Try not to focus too hard on the text, it will only make you anxious. • My listening depends on guessing too much. If I couldn’t guess the topic correctly, what would I do?

Source: Vandergrift & Goh (2012, pp. 87–88). Copyright rests with the original authors.

It is important to note that strategy knowledge is a component of metacognitive knowledge, that is knowing about strategies, to be distinguished from strategy use, the third component of metacognition.

Strategy use is also a component of metacognition building on strategy knowledge. It refers to an individual’s ability to use appropriate strategies to achieve cognitive, social, and affective goals, and includes awareness of when and how to use specific strategies (Vandergrift & Goh, 2012, p. 89). It involves the development of specific processes or engagements to make learning faster, easier, more self-regulated, more

effective, more enjoyable or more transferable to new situations. Some studies have confirmed that learners who have good strategic knowledge are also more likely to use various types of strategies (Zhang & Goh, 2006; Zhang & Zhang, 2013, 2018; Zhang, 2010). Moreover, language learning and language use also benefits from the use of strategies (Cohen & Macaro, 2007; Cohen, 2014). Thus, learners are assumed to benefit from different strategies in improving their comprehension, retention, and recall of information and, at the same time, in planning for overall listening development. As the classification of metacognition not only includes the metacognitive knowledge but also metacognitive experiences and strategy use development, the current study, will mainly focus on metacognitive awareness that are essential in understanding learners' listening processes in relation to socio-cultural and specific learning and teaching situations.

2.3.3.4.3 A dynamic metacognitive systems perspective

Metacognition embraces a range of beliefs, thinking, understanding, behaviours and strategies for current and future actions (Dunlosky & Lipko, 2007). Several studies investigating metacognition in language learning (e.g., Zhang & Xiao, 2006), L2 listening (Goh, 1997; Zhang & Goh, 2006; Zhang, 2002), or L2 reading (Zhang, 2001, 2010) have suggested that successful language learners possess a richer repertoire of beliefs about effective language learning than their less successful peers. Moreover, the beliefs of successful language learners appeared to be guided by a correct understanding of the various factors related to learning effectiveness (Cotterall & Murray, 2009). These factors include learners' self-efficacy, perceptions of the learning tasks, knowledge of language learning strategies, agency (Gao, 2010), and the socio-cultural context in which they deploy their metacognitive knowledge and strategies. This suggests that current studies on language learning should include not

only strategies, but also the learner, the learning tasks, learner agency, and the learning environment (social as well as pedagogical), as a complex interactive and dynamic system. The conception of metacognition as a dynamic system thus reflects the developing nature of learners' metacognitive knowledge systems (Zhang & Zhang, 2013). Adopting the CDST perspective to L2 learners' use of strategies in second and foreign language learning could facilitate construing these variables as intertwined cognitive and socio-cultural variables. Thus, for future studies, it would seem essential to treat learners' strategy use as a complex dynamic system on the basis of its ever-evolving nature, especially when examined in light of socio-cultural and cognitive variables within the dynamic systems of L2 learners' language developmental trajectories, the focus of the present study.

2.3.3.5 Learning style preferences

As one of the LIDs variables, language learning styles is a framework for conceptualising different manners in which L2 learners obtain and comprehend information for the language learning process. Style studies in the field of SLA provide both good and bad news. The good news is research interest in language learning styles is longstanding with several instruments developed and used to understand and explore the role of learning styles in SLA (e.g., Bailey, Onwuegbuzie, & Daley, 2000; Ehrman et al., 2003; Ehrman & Leaver, 2003; J. M. Reid, 1995, 1998). The bad news is, because of the problematic nature of this concept, the conceptual ambiguities and difficulties associated with the notion of learning styles have not been clearly addressed.

2.3.3.5.1 Learning style and cognitive style

The study of learning and cognitive styles within the field of SLA research has long been problematic. According to Reid, learning styles refer to “an individual's natural,

habitual, and preferred ways of absorbing, processing, and retaining new information and skills” (J. M. Reid, 1995, p. viii). They are “broad preferences for going about the business of learning” (Ehrman, 1996, p. 49). Cognitive styles were used in the earlier days in the field of learning style research because they are devoid of any educational and situational or environmental interference, thereby allowing for a “purer” definition. Cognitive styles are usually defined as “an individual’s preferred and habitual modes of perceiving, remembering, organizing, processing, and representing information” (Dörnyei, 2005, p. 124). Studies of cognitive styles, however, were criticised for being vague and superficial (for example, the lack of a clear distinction between style and intelligence); there is also a “fluid” relationship between cognitive styles and personality. Thus, cognitive styles are typically identified as being in a “conceptual grey area” (Hampson & Colman, 1994, p. x) between personality and intelligence, and are expected to explain variance beyond both of these variables.

Although difficult to distinguish adequately, cognitive styles and learning styles are not the same but were used in an interchangeable manner, in the L2 literature. Dörnyei and Skehan explained that the concept of cognitive styles is more restricted to information-processing preferences while learning styles embrace all aspects of learning (2003, p. 602). Various descriptive models have been proposed to conceptualise cognitive and learning styles but only some of these have focused specifically on language learning investigation. The major interpretations of the style includes Witkin et al.’s (1971) distinction between *field independence* and *field dependence*; Reid’s (1987) identification of *perceptual learning modalities* (i.e. visual, auditory, kinaesthetic and tactile); Wiling’s (1987) differentiation between *concrete*, *analytical*, *communicative* and *authority-oriented learning styles*; Riding’s (1991)

taxonomy based on the superordinate dimensions of the *holist-analytic* and *verbal-imagery style*; Skehan's (1998) description of learners as *analysis-oriented* or *memory oriented*; Ehrman and Leaver's (Ehrman et al., 2003) construct differentiating between *ectasis* and *synopsis* (i.e. need for conscious or unconscious learning, respectively); and Kolb's (Kolb, Boyatzis, & Mainemelis, 2001; 2015) distinction whereby learning styles are constructed on the basis of two main dimensions of *concrete vs. abstract thinking* and *active vs. reflective information processing* (i.e. divergers, convergers, assimilators and accommodators) (Dörnyei, 2005; Pawlak, 2012a).

Rayner (2000) summarised the distinction as follows. Learning style can be represented as a profile of the individual's approach to learning. It can be seen to comprise two fundamental levels of functioning: the first is cognitive referring to a stable and internalised dimension related to the way a person thinks or processes information; the second is the level of learning activity, which is more external and embraces less stable functions relating to the learner's continuing adaptation to the environment. It follows from this distinction that the core of a learning style is the "cognitive style", which can be seen as a partially biologically determined and pervasive way of responding to information and situations. When such cognitive styles are specifically related to an educational context and are intermingled with a number of affective, physiological, and behavioural factors, they are thus more generally referred to as learning styles (Brown, 2000), which may vary and dynamically develop on the basis of these factors.

2.3.3.5.2 *Learning styles assessments*

Undoubtedly, the assessment of learning styles is the Achilles heel of all these descriptive systems. A number of published instruments have been designed for

teachers and researchers to measure L2 learning styles. Reid's (1995) Perceptual Learning Style Preference Questionnaire (PLSPQ) was the first learning style measurement and is widely known in the L2 field. It consists of 30 randomly ordered statements for six learning style preferences and uses 5-point Likert scale items, which mainly focuses on behavioural preferences. Similar to the PLSPQ, Oxford's (1995) Style Analysis Survey (SAS) but more complex with 110 items. The first section of the SAS targets sensory preferences, but the other four focus on other established personality/style characteristics (extraversion and introversion; intuitive and concrete/sequential; closure-oriented and open-oriented; and global and analytic). The two best known learning style measurements are Riding's Cognitive Styles Analysis (CSA) and Kolb's Learning Style Inventory (LSI). However, the nature of LSI is primarily a personality type inventory, and CSA was not sufficiently reliable or internally consistent even if these measurements are theoretically well-founded and have good psychometric properties (Dörnyei, 2005).

Ehrman and Leaver's (2003; Ehrman, 2001) Learning Style Questionnaire (LSQ) was based on a novel approach to understanding learning styles. A number of established learning style dimensions were reorganised under a comprehensive, superordinate, and parsimonious construct with two poles labelled *ectasis* and *synopsis* (an *ecten* learner wants or needs conscious control over the learning process, whereas a *synoptic* learner leaves more to preconscious or unconscious processing) (Dörnyei, 2005). The LSQ adopting this theoretical construct, attempted to reconceptualise cognitive and learning styles in the service of language learning. Later, Cohen, Oxford, and Chi's (2001) Learning Style Survey (LSS) is a further improvement based on the SAS and drew on Ehrman's (2001) theoretical construct. The LSS consisted of 11 facets of language

learning with a total of 110 items, focused more on language-related issues than the previously published style batteries, and containing more L2-learning-specific items, mixed with non-subject-specific ones. It remains to be seen whether this recently developed instrument will enable researchers to define and categorise learning styles more precisely, explicate their complex nature and interactions with other individual variables, or understand their contributions to language learning.

2.3.3.5.3 Learning styles and learning strategies

Learning styles are an immensely ambiguous phenomenon and nothing is clear-cut about strategy and style although there has been a substantial growth in the literature on learning styles (e.g., Naiman, Fröhlich, Stern, & Todesco, 1996; Oxford & Anderson, 1995; Oxford & Lavine, 1992; Oxford, 1995; J. M. Reid, 1987, 1995, 1998; Wintergerst, DeCapua, & Itzen, 2001; Wintergerst, Decapua, & Verna, 2003), and on learning strategies (e.g., Anderson, 2005; Cohen, 2014; Ehrman & Oxford, 1995; O'Malley & Chamot, 1990; Oxford & Ehrman, 1995; Rubin, 1975; Wenden & Rubin, 1987). It is believed that learning styles and learning strategies are interrelated concepts, differing primarily in their breadth and stability, with a style being a “strategy used consistently across a class of tasks” (Richard E. Snow, Corno, & Jackson, 1996, p. 281). These two LIDs variables are largely cognitive in nature but are open to some degree of external manipulation. Their relationship has also been explored and highlighted in a great number of studies (e.g., Carson & Longhini, 2002; Chang, Hao, & Zhang, 2016; Ehrman et al., 2003; Ehrman & Oxford, 1990; Ely & Pease-Alvarez, 1996; Oxford, 1990, 2001, 2003; Rossi-Le, 1995). In these studies, learning styles and strategies have been variously described and defined. Learning styles are more general, being an “individual’s natural, habitual and preferred ways of absorbing, processing, and retaining new information and skills” (Kinsella, 1995, p.

171). They seem to be comparatively stable and will be deployed by L2 language learners irrespective of the subject being learned or the skill being mastered. Learning strategies are the specific mental and communicative procedures that learners employ in order to learn and use language (Chamot, 2005; O'Malley & Chamot, 1990). Thus, learning styles are general approaches to language learning, while learning strategies are specific ways to deal with language tasks in particular contexts (Cohen, 2003; Oxford, 2003).

What makes a good language learner and why some L2 learners develop better language proficiency than others are fundamental questions which have attracted many scholars' attentions in the SLA field (Oxford, 2003). Oxford (1995) proposed that once learners are aware of their own learning styles, they could adapt to different learning tasks in particular learning contexts, and could also match their learning styles with appropriate learning strategies. Similarly, learners can compensate for the disadvantages of their learning styles to balance their learning by adjusting learning strategies. Thus, the best summary of the position of language learning styles in the broader field of L2 development is that they constitute an unrealised potential. Rod Ellis's (2008) conclusions encapsulate the current stance:

At the moment there are few general conclusions that can be drawn from the research on learning style. Learners clearly differ enormously in their preferred approach to L2 learning, but it is impossible to say which learning style works best. Quite possibly it is learners who display flexibility who are most successful, but there is no real evidence yet for such a conclusion. One of the major problems is that the concept of "learning style" is ill-defined, apparently overlapping with other individual differences of both an affective and a cognitive nature. It is unlikely that much progress will be made until researchers know what it is they want to measure. (R. Ellis, 2008, p. 671)

In future L2 studies on learning styles and learning strategies, it is important for learners to identify their own learning styles, recognise their strengths and thus expand their learning potential, becoming more flexible in the way they learn. Equally important is for teachers to modify classroom activities or match the kind of instructional activities to learners' preferred learning styles ensuring greater variety in activities. In time learners themselves may be encouraged to engage in style stretching by experimenting with new ways of approaching learning tasks and to ensure they can learn more efficiently (Cohen & Dörnyei, 2002; Dörnyei & Skehan, 2003; R. Ellis, 2004; Oxford, 2001).

2.3.3.6 Summary of the dynamic nature of LIDs variables

Firstly, the most striking aspect of the LIDs literature is the emerging theme of *context*, that is, the *situated* nature of the LIDs variables. Increasing numbers of scholars reject the perception that LIDs variables are context-independent or absolute, and now advocate for the new dynamic conceptualisation in which LIDs variables interact with the situational parameters rather than independently across tasks and environments. Thus, future LIDs research in the L2 field should first try to capture the dynamic and situated nature of LIDs variables. Secondly, LIDs variables should be seen to operate neither in concert nor to interfere with one another in a clearly delineated manner. Thus, instead of trying to detect the linear relationships between certain individual variables or corresponding outcomes with performative variables in isolation, researchers should work with more complex theoretical paradigms and assume the combinations of LIDs variables have more predictive power. Thirdly, as LIDs variables have been shown relate to specific learning processes within the certain contexts, scholars could, map the mental mechanisms underlying L2 learning, and

integrate linguistic and psychological approaches in a more balanced and complementary manner (Dörnyei, 2005).

2.4 L2 LISTENING DEVELOPMENT

This section focuses on L2 listening development by introducing the definition, types and processes of listening comprehension and followed by a review of some key issues in researching L2 listening development. Finally, informed by CDST, a dynamic metacognitive approach is suggested to understanding L2 listening development in the current study as L2 listening is a crucial part of L2 learning and development.

2.4.1 Definition of Listening Comprehension

Language is regarded as the most complex of all human behaviours. Within the modalities of language use, speech processing may be the most intricate, and listening comprehension might be the most demanding language skills. L2 learners want to understand target language (e.g. English) speakers and they want to be able to access the rich variety of aural and visual L2 texts via network-based multimedia, such as on-line audio and video, YouTube, podcasts and blogs, as well as interpersonal communication. Furthermore, listening comprehension is viewed integral to L2 learning with a beneficial impact on the development of other skills (Rost, 2013).

The definition of listening has evolved due to research in various discipline, with both individuals and specialists defining listening in terms of their personal or theoretical interests in the topic (Rost, 2013). Listening has been defined variously due to the advances in different aspects of communication, such as acoustic phonetics, telecommunications, and transpersonal psychology and so forth. Nearly every characterisation provides a unique perspective on personal tone to listening. Rost

defined listening in its broadest sense “as a process of receiving what the speaker actually says (receptive orientation); constructing and representing meaning (constructive orientation); negotiating meaning with the speaker and responding (collaborative orientation); and, creating meaning through involvement, imagination and empathy (transformative orientation)” (Rost, 2013, p. 2). Further, Vandergrift and Baker (2015) stated listening comprehension plays a key role in language acquisition and as the foundation for success in language immersion programmes. They operationalise L2 listening comprehension the same way as Buck (2001):

the ability to 1) process extended samples of realistic spoken language automatically and in real time; 2) understand the linguistic information that is unequivocally included in the text; and, 3) make whatever inferences are unambiguously implicated by the content of the passage. (Buck, 2001, p. 114)

Although the importance of listening competence is acknowledged, L2 learners are rarely taught how to listen effectively. While we have learned more about the cognitive nature of listening and the role of listening in communication, L2 listening remains the least researched of all four language skills (Chang, 2012; Shen & Zhang, 2016). This may be due to its implicit nature, the ephemeral nature of the acoustic input and the difficulty in accessing the processes. Thus, if L2 students are to become more effective learners, a richer understanding of the listening process is needed (Vandergrift, 2007).

2.4.2 Types of Listening

In the existing literature, scholars have distinguished listening into two broad types, which are listed below:

- One-way listening: Typically associated with the transfer of information (transactional listening).
- Two-way listening: Typically associated with maintaining social relations (interactional listening). (Nation & Newton, 2009)

The types of listening in this study are associated with transmission of information and are featured in the language classroom, which are limited in comparison with those that occur outside in our daily interactions. Thus, the demands of the listening comprehension place certain constraints upon the choices of listening materials made by the syllabus; while the listening tasks are conventional orthodox patterns of answering a series of discrete questions or of filling in information; and the listener's role is non-participatory (Field, 2008).

Different from various real life listening, a particular type of listening text or material is favoured in the language classroom, as Field (2008) has stated:

- It has to be long enough to permit around eight comprehension items; and the items need to be quite widely spaced so that two do not occur too closely together. This indicates a medium-length recording (say, around three minutes) – ideally, one which can be divided into shorter subsections for more intensive listening if necessary.
- The recording needs to be information-rich.
- Because of potential problems in distinguishing voices, the recording is most likely to feature a single speaker or two speakers of different sexes.
- The listener's role is usually as a non-participant, whose goal is to extract meaning rather than to respond in any way. (p. 58)

Field (2008) has also posited that the comprehension approach favours a particular type of listening task:

- The listener has to identify various points of information within the text.

- Listening therefore demands a high level of attention throughout the passage.
- The points that are targeted are selected by the teacher or materials writer, not the listener.
- The listener is often required to focus upon micro-points rather than macro-ones. (p. 59)

Although the type of listening is constrained in the language classroom, various types of listening that a real-world listener engages in (e.g., low-level monitoring, listening for detail, auditory scanning) are linked to various listening materials and tasks for listeners to practise them as in the types of situation in which they occur. Thus, a great flexibility is demanded of the listener; for example, listeners might choose to listen for main ideas or specific certain information of materials; use basic linguistic knowledge (e.g., vocabulary and syntax) and world knowledge (e.g., topic, text structure, schema, and culture) to decode and interpret language input during the listening comprehension process (Vandergrift & Baker, 2015).

2.4.3 Listening Processes

As a comprehension process, listening requires not only receptive language processing involving decoding and interpretation, but also physiological and cognitive processes at different levels (Field, 2003, 2008; Lynch, 2002; Rost, 2013). Thus, four listening processes: (1) top-down and bottom-up processing; (2) controlled and automatic processing; (3) perception, parsing, and utilisation; and (4) metacognition describe what listeners do during the act of listening, how they can do this efficiently, and how they regulate these processes, which are encapsulated in Figure 2.5 (Vandergrift & Goh, 2012, p. 17) and described in the following sections.

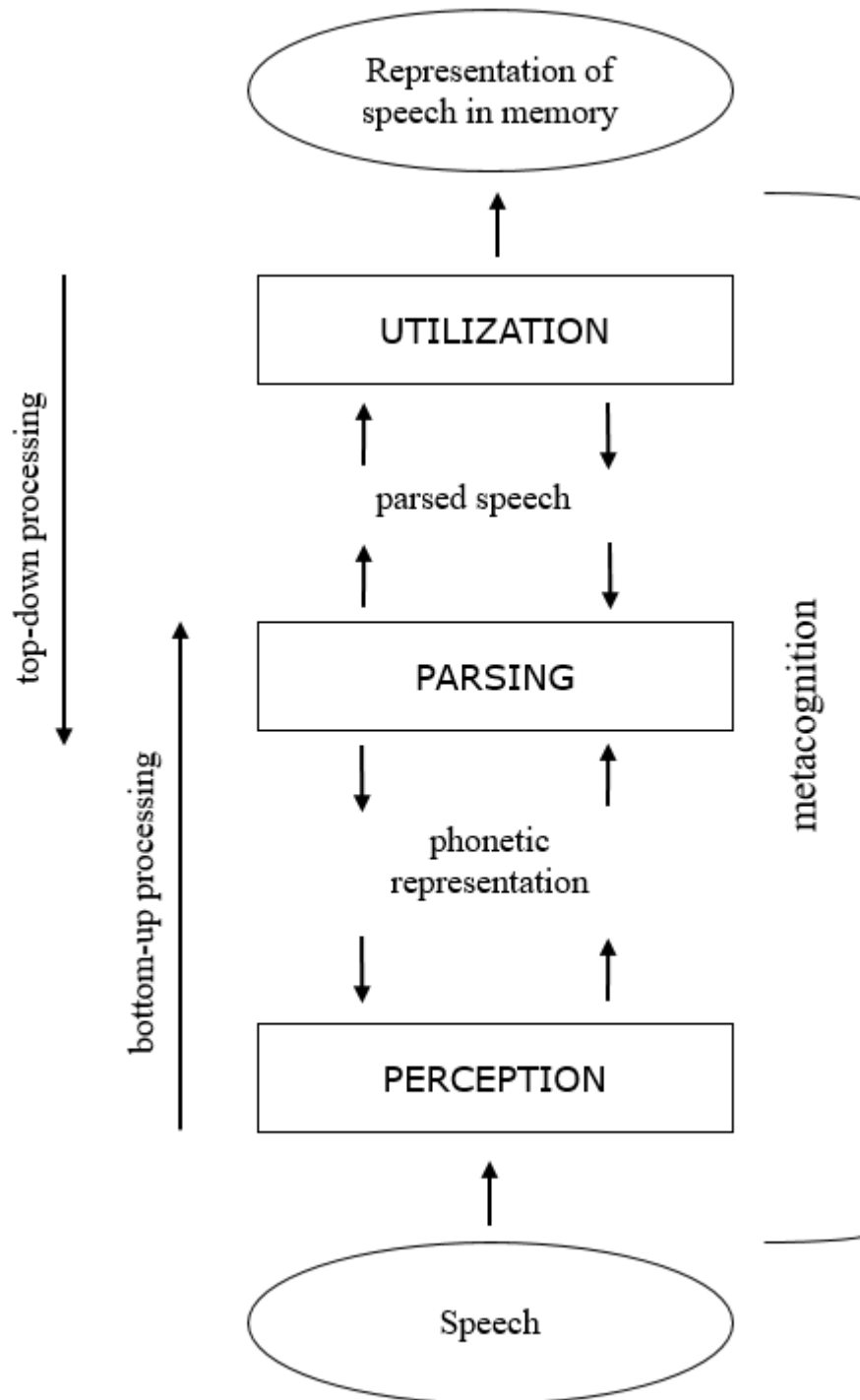


Figure 2.5 Cognitive Processes in L2 Listening and Their Interrelationships

Source: Vandergrift & Goh (2012, p. 17). Copyright rests with the original authors.

2.4.3.1 Top-down and bottom-up processing

Bottom-up processing involves segmentation of the sound stream into meaningful units to interpret the input information, which is a decoding process (Vandergrift & Goh, 2012, p. 18). It assumes that during listening, listeners use their prior linguistic knowledge of sounds and words to construct meaning through accretion, gradually combining increasingly larger and complex units of meaning from the phoneme-level up to discourse-level features. The linguistic knowledge includes phonological knowledge (phonemes, stress, intonation, and other sound adjustments made by speakers to facilitate speech production), lexical knowledge, and syntactic knowledge (grammar) of the target language (Vandergrift & Goh, 2012).

Top-down processing involves primarily the application of context and prior knowledge (e.g., topic, genre, culture, and other schema knowledge in long-term memory) to interpret the input message, a process which is seen as an involving interpretation. It assumes that listeners activate a conceptual framework for comprehension by using content words, topic and contextual clues of a listening text to form hypotheses in an exploratory manner. Listeners can apply different types of knowledge (e.g. prior, pragmatic, cultural and discourse) to understand the task materials (Vandergrift & Goh, 2012).

In reality, top-down and bottom-up processes rarely operate independently in listening comprehension because listening is an interactive and interpretive process in which listeners use both linguistic and prior knowledge to comprehend and understand messages. The degree to which listeners may use one process more than another will depend on their purpose for listening. For example, a listener who needs to find or

confirm specific details such as the time of a certain flights or price of a concert tickets, may engage in more bottom-up processing than a listener who is interested in obtaining an overview of what happened at a particular event (Vandergrift & Goh, 2012). A number of studies on these cognitive processes have suggested that L2 listeners need to learn how to use both processes to their advantage, depending on their knowledge of language, learner characteristics (e.g., language proficiency, WMC, age, learning style preferences), familiarity with the topic, the purpose of listening and the context of the listening event (McClelland & Rumelhart, 1986; O'Malley et al., 1989; Vandergrift & Goh, 2012; Xu & Li, 2009). Results of these studies stated that less successful listeners tend to rely primarily on either top-down or bottom-up processing. In contrast, successful listeners benefit both from top-down and bottom-up processes to understand listening materials, while using more types of strategies to comprehend oral inputs.

2.4.3.2 Automatic and controlled processing

L1 listeners' cognitive processing occurs automatically with little conscious attention to individual words, efficiently coordinating these processes, while moving back and forth between top-down and bottom-up listening processes as required for fluent listening comprehension (Vandergrift & Goh, 2012). In contrast, L2 listeners' listening is usually limited by language knowledge as well as their level of L2 proficiency or their familiarity with the topic of the text (Vandergrift & Baker, 2015; Vandergrift & Goh, 2012). Listeners may need to focus consciously on some aspects of the input or learn to selectively attend to basic elements of meaning, such as salient content words. Whatever listeners cannot process automatically is subject to controlled processing if time permits (Vandergrift & Goh, 2012).

Controlled (as opposed to automatic) processing involves conscious attention to and processing of elements in the speech stream. Restricted by working memory capacity (WMC) and the speed of the incoming input, learners' comprehension will suffer. For L2 listeners, controlled processing is not efficient because it cannot keep up with the incoming input. Comprehension consequently either breaks down or L2 listeners have to resort to contextual factors, compensatory strategies, and other relevant resources or information available to them, to guess at what they did not understand (Vandergrift & Goh, 2012, p. 19). A cognitive skill such as listening, as other skilled behaviours, can nonetheless, become automatic with practice (Johnson, 1997).

2.4.3.3 Perception, parsing, and utilisation

Anderson (1983, 1995) differentiated listening comprehension into a cognitive framework with three interconnected phases: perceptual processing (perception), parsing, and utilisation. Vandergrift and Goh found that although Anderson's three-stage listening model suggests a sequence of phases, the three phases have a two-way relationship with one another reflecting the integrated nature of how bottom-up and top-down processing occurs (Vandergrift & Goh, 2012, p. 21).

In the *perceptual* processing, adopting a bottom-up processing approach, learners' attention is concentrated on the text and to identify the phonemes (sound categories of the language), pauses, and acoustic emphases from the speech stream, and hold these in their memory. Listening strategies such as "selective attention" (attending to specific language aspects while listening) and "directed attention" (maintaining attention while listening) are therefore vital in this stage (Vandergrift, 2003). During the *parsing* phase, listeners retrieve potential meaning representations of new words

and phrases on the basis of their stored long-term memory knowledge and then construct these abstract representations as new input is processed. The listening strategies of “grouping” (classifying information in a listening tasks) and “inferencing” (using text information or context to guess the meanings of unfamiliar language items) are dominant in the parsing stage. Finally, in the *utilisation* phase, a top-down process is activated. Listeners use information from outside the linguistic input (e.g. information collected from the previous two stages) to interpret what they have retained (the pragmatic or previous knowledge stored as *schemata* in long-term memory). Listeners elaborate on the newly parsed information and monitor their comprehension and recall with the help of their prior knowledge. At this stage, “elaboration” (using prior knowledge or context to fill in missing information) strategy is a vital strategy (Vandergrift & Goh, 2012; Vandergrift, 2003).

Thus, listeners’ linguistic and schematic knowledge act as two sets of resources in a listening task. Memory also seems to play a crucial role in comprehension processing. Generally, long-term memory shapes the interpretation of what listeners hear, while short-term memory influences the efficiency of the cognitive processing, allowing the listener to think about an appropriate response in the interactive listening model (Vandergrift & Goh, 2012).

2.4.3.4 Metacognition

Proficient listeners are able to control or regulate the comprehension processes through their use of metacognitive knowledge (Vandergrift & Goh, 2012; Zhang, 2002). Goh (2008) stated that listeners’ awareness of these cognitive processes involved in comprehension, abilities to oversee, regulate and direct these processes are referred to

as metacognition. Further, the control dimension of metacognition involves use of cognitive processes such as planning, monitoring, problem-solving, and evaluating to regulate listening comprehension effectively. It is believed that the application of metacognitive knowledge is a mental characteristic shared by successful learners as Vandergrift et al (2006) proposed that 13 % of variance in listening attainment could be accounted for by metacognition. The nature and role of metacognition and the newly developed dynamic perspective has already being discussed specifically in the previous section (see section 2.3.3.4).

Traditionally, it is believed that learners' listening capacity improve if they are exposed over time to a large number of spoken texts in the target language, accordingly, the teaching of L2 listening places faith in extended practice. And attempts are made to grade the texts in terms of the frequency and complexity of the language they employ (Field, 2008). This may well be the case when learners are living in a target language environment, but the situation of those who are acquiring L2 in a classroom is very different.

Some listeners' skills do improve over time by dint of answering comprehension questions on a series of recordings, but those of many others (i.e., weaker listeners) do not. These weaker listeners do not succeed in recognising enough of the input to feel capable of extracting meaning from it. Thus, listeners would fail to have insights into the process by which the product is derived if they focus attentions upon the product of listening in the form of answers to questions or responses in a task. As most previous studies stated listeners do not just "receive" the speaker's message but have to actively reconstruct it (Field, 2008; Vandergrift & Baker, 2015; Vandergrift & Goh, 2012).

Therefore, teachers' goal should not be to obtain correct answers to questions but to discover more about the techniques and strategies employed by the respondents (Field, 2008, p. 82), which attracts a number of scholars' attentions in researching L2 listening in relation to some key issues.

2.4.4 Key Issues in Researching L2 Listening Development

The following sections review some important aspects in the studies on L2 listening development, in particular factors relevant to L2 listening development and listening strategies.

2.4.4.1 Factors that influence L2 listening proficiency

Listening is a complex active process in which learners decode and construct the meaning of a text by drawing on their previous knowledge about the world as well as their linguistic knowledge. Students achieve different levels of success in L2 listening even if they have had the same classroom learning experiences with the same instructions. Vandergrift and Goh (2012) summarised previous findings about factors that influence listening success. They proposed that the personal factors (including both cognitive and affective factors) and contextual factors, can affect the quality of cognitive listening processing and impact the L2 listening outcome. (Vandergrift & Goh, 2012).

Metacognition and motivation are also considered to be influential and powerful aspects in predicting L2 listening proficiency (Vandergrift, 2005). Metacognition, has been argued that have a positive influence on SLA (Byrne, 1996; Costa, 2001; Sternberg, 1998; Wenden, 1998), and play a pivotal role in L2 listening (Vandergrift & Goh, 2012) and that metacognitive abilities "are a mental characteristic shared by

successful learners” (Vandergrift et al., 2006, p. 435). Metacognition helps learners understand their learning style and capacity, and regulate and manage their learning process in an active way. Improvement of metacognition can also help learners become aware of their learning process and the demands of learning tasks to be able to choose appropriate learning strategies in different contexts. Learners can consequently process and restore new information better (Vandergrift et al., 2006).

L2 listening involves not only paying attention to linguistic input but also understanding the different cognitive demands made on the listener. A number of affective factors can influence how listeners respond to a listening task and thereby influence the listening outcome and listening success. Among these emotionally relevant learner characteristics, three have been researched in the context of L2 listening: anxiety, motivation and self-efficacy (Vandergrift & Goh, 2012). Recent studies of motivation have situated the complexity of L2 motivation process and its organic development in the interaction with a multiplicity of internal, social, and contextual factors. Thus, it is a move toward relational or the CDST perspective on researching motivation, which is now commonly known as DMC (Dörnyei et al., 2014, 2015; Larsen-Freeman, 2015b; Muir & Dörnyei, 2013), as introduced in section 2.3.3.3.2.

Further, some scholars claimed that the listening process is similar to that of reading, but more cognitively demanding than reading (Buck, 2001; Vandergrift & Baker, 2015; Vandergrift & Goh, 2012). Firstly, in the listening process, learners comprehend spoken language, which takes place in real time and is ephemeral. Listeners are not allowed to review the presented information as when they endeavour to comprehend

listening materials, and have little control over the speed of the input. Secondly, listeners must apply phonological knowledge to the comprehension process to segment the sound stream into meaning units and process them quickly. With limited time and space for listeners to review the words in a message, they have to hold as much information as they can in their working memory. This suggests that WMC might be a critical and crucial variable in L2 listening development. Similar to the reading process, listeners' background knowledge, learning style preferences and language learning aptitude is known to play powerful roles in L2 listening comprehension (e.g., Long, 1990).

Finally, listening comprehension is context sensitive. In the discussion of contextual factors, the three aspects: interactive listening, listening in formal learning contexts, and listening in informal learning contexts, were highlighted by Vandergrift and Goh (2012). As one of the contextual factors, interactive listening was a significant part of listening competence, and most often taking place in more informal contexts for language learning. During interactive listening, listeners' capacity to deal with comprehension was constrained by a number of affective factors, such as WMC, motivation, willingness to risks and fear of losing face. The contextual factor of listening in formal and informal learning contexts referred to academic listening and a study abroad programme respectively. Materials in these contexts differed in topics, linguistic, pedagogical and socio-cultural features, which required listeners' perceptions, abilities in solving problems and competence in the use of strategies for listening comprehension (Vandergrift & Goh, 2012)

Once again, the interrelatedness of cognitive, affective and contextual factors influence on the quality of the processing and strategies a listener may deploy in the listening process, which will further affect the quality and nature of the listening outcome. The quality of this outcome will, in turn, affect some of the affective factors that will impact on the strength of continued efforts to subsequent listening tasks (Vandergrift & Goh, 2012, p. 76). These factors are correlated with the complex listening process and have impact on L2 listening ability. Thus, correlations between a given factor and listening success cannot explain the dynamic nature of L2 listening development completely. Further studies are required to reveal the nature of the correlations of these factors and their relationships with L2 listening development.

2.4.4.2 Listening strategies

Following sections review studies related to listening strategies, firstly, by presenting a definition and classification of listening strategies; secondly, by presenting studies that were conducted to investigate the use of listening strategies by L2 learners.

2.4.4.2.1 Definition and classification of listening strategies

Strategies are special techniques or activities learners apply to facilitate the acquisition, storage, retrieval and use of information (Oxford, 1990). Applied to listening, strategies are deliberate procedures used by learners to enhance the learning and retention of listening comprehension of the target language (Rigney, 1978). The taxonomy of cognitive, metacognitive and social-affective strategies was proposed by Oxford (1991) and reported by Chang (2012), who applied it to listening,

Cognitive strategies are used to infer, predict, interpret, store and recall information acquired from listening input; metacognitive strategies are of assistance to plan, monitor and evaluate mental processes and to manage difficulties during listening; social strategies serve to enlist the help or cooperation of interlocutors to facilitate listening comprehension, and

affective strategies enable listeners to manage emotions, motivation and attitudes that influence comprehension (Chang, 2012, p. 26).

Based on earlier work in cognitive psychology, O'Malley and Chamot (1990) differentiated listening strategies in terms of phases in the listening comprehension process. They associated *perceptual processing* with listening strategies of selective attention and self-monitoring, *parsing processing* with the strategy of inferencing from the context, and *utilisation processing* with strategies of elaboration from world knowledge, personal experiences, or self-questioning. Building on the previous studies, especially the work of O'Malley and Chamot (1990), Vandergrift (1997b) identified a range of listening strategies reported by L2 learners as they were "thinking aloud" while listening to texts in French. Further, Vandergrift and Goh (2012) presented a comprehensive list of listening strategies derived from several key sources (Goh, 2002; O'Malley & Chamot, 1990; Vandergrift, 1997b, 2003), which is provided in Table 2.4.

Table 2.4 Strategies for L2 Listening Comprehension with Examples from Learners

<p>1. Planning: Developing an awareness of what needs to be done to accomplish a listening task, developing an appropriate action plan and/or appropriate contingency plans to overcome difficulties that may interfere with successful completion of the task.</p>	
<p>Advance organisation: Clarifying the objectives of an anticipated listening task and/or proposing strategies for handling it.</p>	<ul style="list-style-type: none"> • I read over what we have to do. • I try to think of questions the teacher is going to ask. • I have two months to prepare for my listening paper.
<p>Self-management: Understanding the conditions that help one successfully accomplish listening tasks, and arranging for the presence of those conditions.</p>	<ul style="list-style-type: none"> • I try to get in the frame of mind to understand French. • I put everything aside and concentrate on what she is saying. • I need to be more focused.
<p>2. Focusing attention: Avoiding distractions and heeding the auditory input indifferent ways, or keeping to a plan for listening development.</p>	

<p>Directed attention: Attending in general to the listening task and to ignore irrelevant distractors; maintaining attention while listening.</p>	<ul style="list-style-type: none"> • I listen really hard. • I pick out the words that are familiar so that... • I tried to concentrate on carrying out my plan.
<p>Selective attention: Attending to specific aspects of language input or situational details that assist in understanding and/or task completion.</p>	<ul style="list-style-type: none"> • I listen for the key words. • I pay special attention to adjectives. • Because I hear “also,” then I concentrate on the words after “also.”
<p>3. Monitoring: Checking, verifying, or correcting one's comprehension or performance in the course of a listening task.</p>	
<p>Comprehension monitoring: Checking, verifying, or correcting understanding at the local level.</p>	<ul style="list-style-type: none"> • There's one word I didn't hear. Er...the something is...er...protects eyes, some other I can't remember. • But actually I know this meaning, but it does not make sense to me in this sentence.
<p>Double-check monitoring: Checking, verifying or correcting understanding across the task or during the second time through the oral text.</p>	<ul style="list-style-type: none"> • If I could listen the next sentences, the following sentence, then maybe I can have the correct choice. • Sunny in the morning, that's not making sense (earlier) it sounded like a cold front, something doesn't make sense to me anymore.
<p>4. Evaluation: Checking the outcomes of one's listening comprehension against an internal measure of completeness and accuracy.</p>	
<p>Performance evaluation: Judging one's overall execution of the task.</p>	<ul style="list-style-type: none"> • How close was I? (at end of a think-aloud report) • I was saying to myself, mm...did I guess right? How can eyebrow protect the ultra-violet light to our eyes...I think what I know influence my understanding and comprehension.
<p>Strategy evaluation: Judging one's strategy use.</p>	<ul style="list-style-type: none"> • I don't concentrate too much to the point of translation of individual words because then you just have a whole lot of words and not how they're strung together into some kind of meaning.
<p>Problem identification: Identifying what needs resolution or what part of the task still needs to be completed.</p>	<ul style="list-style-type: none"> • Okay, I'm wrong, so I need to be more attentive and see what's going on... • So I need to think about what I missed, um, how I can, hear it, and kind of keep trying again. • I just memorise the word in my mind, how the word is pronounced, and when the teacher says it again, or in some other time, I will sometimes, I will ask the teacher.
<p>Substitution: Selecting alternative approaches, revised plans, or different words or phrases to accomplish a listening task.</p>	<ul style="list-style-type: none"> • That way of listening didn't help me. I'm now watching many video recordings instead. • I should stop translating so much...maybe guess more.

	<ul style="list-style-type: none"> • Sometimes in Chinese I need to repeat the sentence in my, in my thinking, but in English, I have no time, so I have to think about a picture.
<p>5. Inferencing: Using information within the text or conversational context to guess the meanings of unfamiliar language items associated with a listening task, or to fill in missing information.</p>	
<p>Linguistic inferencing: Using known words in an utterance to guess meaning of unknown words.</p>	<ul style="list-style-type: none"> • I use other words in the sentence. • I try to think of it (the word) in context and guess. • (Heard “adiposity”) Is it means, again means the store, it gives out energy?... Deposit. I thought of...it’s a word used in banking...I think there is some relationship, I guess. • I use the sound of words relate to other words I know.
<p>Voice and paralinguistic inferencing: Using tone of voice and/or paralinguistics to guess the meaning of unknown words in an utterance.</p>	<ul style="list-style-type: none"> • I listen to the way the words are said. • I guess, using tone of voice as a clue.
<p>Kinesic inferencing: Using facial expressions, body language and hand movements to guess the meaning of unknown words used by a speaker.</p>	<ul style="list-style-type: none"> • I try to read her body language. • I read her face. • I use the teacher’s hand gestures.
<p>Extra linguistic inferencing: Using background sounds and relationships between speakers in an oral text, material in the response sheet, or concrete situational referents to guess the meaning of unknown words.</p>	<ul style="list-style-type: none"> • I guess on the basis of the kind of information the question asks for. • I comprehend what the teacher chooses to write on the board to clarify what she is saying.
<p>Between parts inferencing: Using information beyond the local sentential level to guess at meaning.</p>	<ul style="list-style-type: none"> • Because in the beginning she said “race,” so maybe it was, maybe it was a race...maybe a horse race... • You pick out things you do know and in the whole situation piece it together so that you do know what it means.
<p>6. Elaboration: Using prior knowledge from outside the text or conversational context and relating it to knowledge gained from the text or conversation in order to embellish one’s interpretation of the text.</p>	
<p>Personal elaboration: Referring to prior experience personally.</p>	<ul style="list-style-type: none"> • I think there is some big picnic or a family gathering, sound like fun, I don’t know... • You know...maybe they missed, because that happens to me lots just miss accidentally and then you call up and say, “Well, what happened?”
<p>World elaboration: Using knowledge gained from experience in the world.</p>	<ul style="list-style-type: none"> • When I heard the first sentence talk about the animal, I looked for the information in my memory about this. So with this information I listened. • I guessed that it might be the beach. Because I know that it is a problem the beaches

	there's too much ultra-violet light.
Academic elaboration: Using knowledge gained in academic situations.	<ul style="list-style-type: none"> • [I know that] from doing telephone conversations in class. • I relate the word to a topic we're studied. • I try to think of all my background in French.
Questioning elaboration: Using a combination of questions and world knowledge to brainstorm logical possibilities.	<ul style="list-style-type: none"> • Something about 61, restaurant, 61. Maybe it's the address. • Um, he said he started, probably fixing up his apartment, something about his apartment. Probably just moved in, um, because they're fixing it up.
Creative elaboration: Making up a storyline or adopting a clever, yet plausible, perspective that could explain what the listener heard.	<ul style="list-style-type: none"> • Sounded like introducing something, like it says here is something but I can't figure out what it is, it could be like...one of the athletes, like introducing some person or something. • I guess there is a trip to the Carnival in Quebec so maybe it is lie something for them to enter a date, to write, or draw...
Visual elaboration: Using mental or actual pictures or visuals to represent information.	<ul style="list-style-type: none"> • I make pictures in my mind for words I know, then I fill in the picture that's missing in the sequence of pictures in my mind. • I have known something about camel, so you talk about hump, just like a picture showing before me, I can see two humps...
7. Prediction: Anticipating the contents and the message of what one is going to hear.	
Global prediction: Anticipating the gist or the general contents in a text.	<ul style="list-style-type: none"> • I can understand this sentence because I have known something about camel...if you don't say anything more I will still know what you're going to say...
Local prediction: Anticipating details for specific parts of a text.	<ul style="list-style-type: none"> • Because in the first sentence it says the hump...maybe the next sentence is on what the use of the hump, what's the importance to the camel, so it also helps me to understand.
8. Contextualization: Placing what is heard in a specific context in order to prepare for listening or assist comprehension.	
Linguistic contextualization: Relating a word or a phrase heard to an environment where the word has appeared before.	<ul style="list-style-type: none"> • I don't know the word's exact meaning, but I remember the word is on the road-"hump" • Theoretically? Is it related to theory? • (Heard "insulates") I think of grammar. I think it's a verb, "insurates"...to protect. Insure, does it mean to protect?
Schematic contextualization: Relating a clue to some factual information in long-term memory.	<ul style="list-style-type: none"> • And the last sentence, "It can store food" and that's something at the back of the camel, so I can relate to former sentence and the meaning, even though the word and the whole sentence I didn't know.
9. Reorganizing: Transferring what one has processed into forms that help understanding, storage, and retrieval.	

<p>Summarisation: Making a mental or written summary of language and information presented in a listening task.</p>	<ul style="list-style-type: none"> • I remember the key points and run them through my head, ‘what happened here and what happened here’ and get everything organised in order to answer the questions.
<p>Repetition: Repeating a chunk of language (a word or phrase) in the course of performing a listening task.</p>	<ul style="list-style-type: none"> • I sound out the words. • I say the word to myself.
<p>Grouping: Recalling information based on grouping according to common attributes.</p>	<ul style="list-style-type: none"> • I try to relate the words that sound the same. • I break up words for parts I might recognise.
<p>Note taking: Writing down key words and concepts in abbreviated verbal, graphic, or numerical form to assist performance of a listening task.</p>	<ul style="list-style-type: none"> • I write down the word. • When I write it down, it comes to mind what it means.
<p>10. Using linguistic and learning resources: Relying on one’s knowledge of the first language or additional languages to make sense of what is heard, or consulting learning resources after listening.</p>	
<p>Translation: Rendering ideas from one language in another in a relatively verbatim manner.</p>	<ul style="list-style-type: none"> • I ... this word came to my brain that is “shou duan, fang fa, shou duan.” It’s mechanism. The way... the strategy. • I’ll say what she says in my head, but in English. • A little voice inside me is translating.
<p>Transfer: Using knowledge of one language (e.g., cognates) to facilitate listening in another.</p>	<ul style="list-style-type: none"> • I try to relate the words to English. • I use my knowledge of other languages: English to understand German and Portuguese (primarily sound) to understand French.
<p>Deduction/induction: Reading a conclusion about the target language because of other information the listener thinks to be true.</p>	<ul style="list-style-type: none"> • I use knowledge of the kinds of words such as parts of speech. • I think it is an adverb or a verb... I think this word was not very important.
<p>Resourcing: Using available references about the target language, including textbooks or the previous tasks.</p>	<ul style="list-style-type: none"> • I think usually I just listen on, and I remember that word, and I’ll go consult the dictionary later, but I will not stop at this point.
<p>11. Cooperation: Working together with others to get help on improving comprehension, language use, and learning.</p>	
<p>Seek clarification: Asking for explanation, verification, rephrasing, or examples about the language and/or task.</p>	<ul style="list-style-type: none"> • I’ll ask the teacher. • I’ll ask for a repeat. • I heard “designed by a committee.” What’s the meaning of “designed by a committee”? • I didn’t know what the nurse said, then I asked, I asked someone beside me translate it to me.
<p>Joint task construction: Working together with someone other than an interlocutor to solve a problem, pool information, or check a learning task.</p>	<ul style="list-style-type: none"> • I like doing listening lessons with Mary. We talk a lot and help each other understand the difficult parts. • I learnt from the other students how to improve my listening.

12. Managing emotions: Keeping track of one's feeling and not allowing negative ones to influence attitudes and behaviours.	
Lowering anxiety: Reducing anxiety through the use of mental techniques that make one feel more competent to perform a listening task.	<ul style="list-style-type: none"> • I think of something funny to calm me down. • This time, the strategy that I induct is to be relaxed... don't be nervous... just continue.
Self-encouragement: Providing personal motivation through positive self-talk and/or arranging rewards for oneself during a listening activity or upon its completion.	<ul style="list-style-type: none"> • I try to get what I can. • O.K... my hunch was right. • I tell myself that everyone else is probably having some kind of problem as well.
Taking emotional temperature: Becoming aware of, and getting in touch with one's emotions while listening, in order to avert negative ones and make the most of positive ones.	<ul style="list-style-type: none"> • Okay I'm getting mad 'cause I don't understand. • In my listening practice, I keep myself relaxed and calm. • I was very anxious because I had to speak on the phone in English... I wrote down some words first.

Source: Vandergrift & Goh (2012, pp. 277–284). Copyright rests with the original authors.

Vandergrift and Goh's (2012) classification of listening strategies did not make distinctions among metacognitive, cognitive and socio/affective listening strategies, because listeners adjust strategies regarding the materials and current situations. The difficulty of distinguishing the strategies during the completion of the listening tasks, which reveals the complex and dynamic nature of listening comprehension. In the current study Vandergrift and Goh's (2012) classification of listening strategies and the framework of metacognitive knowledge will be used to explore students' awareness and actual use of strategies.

2.4.4.2.2 *Research on second language learners' use of listening strategies*

In general, it was found that listeners who have good strategic knowledge were more likely to use various listening strategies flexibly (Zhang & Goh, 2006) and were more successful in comprehending spoken texts (e.g., Bacon, 1992; Flowerdew & Miller, 1992; Murphy, 1985; O'Malley et al., 1989; O'Malley, Chamot, Russo, & Küpper,

1985; Vandergrift, 1997a, 1997b, 2003). Therefore, the use of listening strategies seems to be a significant indicator of whether a learner is an effective listener or not.

A number of studies have compared the use of listening strategies of more-proficient and less-proficient listeners (e.g., Goh, 2002; Gu, Hu, & Zhang, 2009; Smidt & Hegelheimer, 2004), novice and intermediate level learners (e.g., Vandergrift, 1997b), skilled and less-skilled listeners in the authentic setting of listening (Vandergrift, 2003); and in academic lectures through think-aloud protocols (Murphy, 1985), or questionnaires (Goh, 2002). These studies indicated that intermediate or more proficient listeners were open and flexible, using a wider variety of strategies with greater flexibility, frequency, sophistication, and appropriateness to meet task demands. They employed more configurations of strategies compared to less proficient listeners (e.g., Vandergrift, 1997b, 2003). In contrast, novice or less proficient listeners relied heavily on inferencing and translating to construct meaning, overcoming their limited vocabulary knowledge by using what they knew about the cognates.

Similar results were reported by Vandergrift (2003), and of Macaro, Graham and Vanderplank (2007) who identified common strategies that skilled listeners used more than less skilled listeners. This was particularly evident for strategies referred to as metacognitive strategies, such as planning, monitoring, and evaluating in the process of listening comprehension. Strategies assisted learners to control their thinking and learning while listening, as well as helping them to manage their overall learning process to become skillful L2 listeners. Good metacognitive control over appropriate strategy use is an essential aspect for long-term listening success (Graham & Macaro, 2008). Chang's quantitative analysis of listening strategies showed four key outcomes.

Firstly, all the metacognitive and cognitive strategies were used by listeners except the strategy of “evaluation”; secondly, skilled listeners had better control over the listening processes by using mainly metacognitive strategies, such as “comprehension monitoring”; thirdly, skilled listeners demonstrated openness and flexibility in their approach to listening through deploying more cognitive strategies, such as “question elaboration”; and, fourthly, less skilled listeners appeared to engage in more direct translation strategies, involving bottom-up processing, which impeded the development of a conceptual framework and an efficient construction of meaning (2012, p. 31).

To sum up, the studies reviewed above have shed light on various aspects of listening strategy research; for example, more proficient listeners adopted various strategies, whereas their less skilled peers relied more on the cognitive strategy of translation. Further, it was found that learners’ proficiency level had a clear impact on their strategies use. Skilled listeners were positive and purposeful in approaching the listening tasks compared to their more passive and less skilled counterparts.

2.4.5 A Dynamic Metacognitive Approach to Understanding L2 Listening

Development

In most previous L2 listening studies, listening activities such as listening to English songs and news, watching movies were considered as “homework” that requires learners to demonstrate some outcome of their listening. Intervention studies made efforts to improve learners’ L2 listening competence through establishing relevant factors (e.g., Chang, 2012; Graham & Macaro, 2008) that relate to L2 listening, such as exploring practical listening strategies (e.g., O’Malley & Chamot, 1990; Vandergrift et al., 2006; Vandergrift, 1997b). These were assumed to be beneficial for

L2 listeners, and to provide listeners with effective strategies instructions for comprehending listening tasks (e.g., Goh, 2008; He, 2005; Ji, 2002; Kong & Li, 2008; Mareschal, 2007; Nikoopour, Moakhar, & Esfandiari, 2017; Vandergrift & Tafaghodtari, 2010; Vandergrift, 2003; Yang, 2003). Few of them were learner-oriented, however, or designed to focus on learners' LIDs in L2 listening development. The metacognitive approach proposed by Vandergrift and Goh (2012) integrates the two emphases in learning: learning as an individual cognitive enterprise and learning as a social enterprise. It accounts for both cognitive and social processes in language learning, reflecting both cognitive and socio-cultural theories of learning. Moreover, this approach enables learners to think about their listening through an active and reiterative process which they could practice within an integrated and holistic approach to develop listening skills. This metacognitive approach is learner-oriented and aims to help language learners become self-regulated listeners who maximise opportunities for listening inside and outside the classroom, developing skills for real-life listening. Learners are empowered to do this through strategic actions, individual reflection, and collaboration with others.

In addition, metacognition, conceptualised as a set of complex dynamic system (Zhang & Zhang, 2013), is informed by both cognitive and sociocultural theories. Furthermore, listening entails top-down and bottom-up processing to apply linguistic knowledge (e.g. vocabulary and syntax) and phonological knowledge as well as world knowledge (e.g. topic, text structure, schema, and culture) during comprehension. Cognitive processing in listening is flexible and adaptable to different task demands, aiming to construct a mental representation of what has been comprehended in memory. Thus, thinking metacognitively about L2 listening development is a move toward the CDST

perspective. For example, the developmental trajectories of an EFL learner's listening strategy use and listening performance were investigated by Dong (2016) and her results confirmed the dynamic correlation between the two variables, which reflects the developing nature of learners' strategy systems as well as the dynamic nature of L2 listening development.

Most significantly, thinking dynamically about L2 learners' listening development helps to construe the variables that are integrally associated with language learners, for example, metacognitive awareness, the cognitive factors (e.g. language learning aptitude, WMC), affective (e.g., motivation) and socio-cultural contextual variables. Such influential factors (see section 2.4.4.1) determine the complexity and reflects the dynamic nature of L2 listening as proposed by CDST. When applied these complex variables to individual listeners, their listening outcome will vary depending on their preferred ways for receiving, processing and analysing information. Thus, these variables might either activate or hinder individual listeners' listening comprehension and listening attainment to varying extents. It is, therefore, essential to treat learners' L2 listening comprehension as a complex dynamic system on the basis of its ever-evolving nature, especially when examined in light of the socio-cultural and cognitive understandings within learners' L2 development trajectories.

2.5 CHAPTER SUMMARY

This chapter addressed the three aspects of the conceptual frameworks to be employed in the present study. Firstly, CDST was introduced with its basic characteristics. In addition, the dynamic nature of L2 development was introduced through comparing traditional research with current studies of L2 development in terms of theoretical background and research methodology, justifying the need to conceptualise L2

development as a complex dynamic system. Secondly, the pivotal role of LIDs in the field of L2 development, its definition was briefly reviewed. It is clear from the literature that CDST is of great value in viewing and explaining the LIDs. CDST has particular relevance when exploring the intricate and dynamic nature of the key LIDs variables, namely, language learning aptitude, WMC, L2 learning motivation, metacognitive awareness and learning style preferences. Research studies involving these five variables were briefly reviewed and discussed. The continuous development of each as an individual variable, and the indispensable roles all of the five LIDs variables played in L2 development were addressed. Finally, the focus of the present study, L2 listening, was generally reviewed through introducing listening types and processes, identifying major influential factors in listening, summarising listening strategies and discussing related empirical findings. Lastly, a dynamic metacognitive approach was introduced to construe current studies of L2 listening, with an emphasis on a learner-oriented approach. Such approach aims to maximise listening opportunities for L2 listeners, inside and outside the classroom, and eventually to assist L2 listeners in developing native-like authentic listening skills in real-life circumstances. Such an approach is framed within CDST in the current study.

CHAPTER 3 REVIEW OF RESEARCH ON L2 DEVELOPMENT

3.1 OVERVIEW

This chapter reviews empirical studies related to the current research. Firstly, the theoretical contribution of Complex Dynamic Systems Theory (CDST) to L2 development is discussed, followed by a review of relevant empirical research studies, especially those focusing on L2 listening development. The proposed methodologies for researching L2 development are then provided and introduced from the CDST perspective. In the third section of this chapter, empirical findings from research into learner individual differences (LIDs) from the perspective of CDST are reviewed. Finally, the research foci of the present study are briefly introduced. This chapter ends with an overall summary.

3.2 RESEARCH ON L2 DEVELOPMENT WITHIN THE CDST FRAMEWORK

As elaborated in the preceding chapter, it is clear that CDST is a theoretical approach to the study of language processing and language development with a wide range of theoretical and paradigmatic backgrounds. Exploring L2 development from the CDST perspective has been proposed by a number of scholars (e.g., De Bot & Larsen-Freeman, 2011; De Bot et al., 2007a; N. C. Ellis, 2008; Larsen-Freeman, 2012, 2015a). It has been agreed that an L2 model should be considered as a set of connections within a complex dynamic system that moves in the direction of the “edge of chaos” considered as a zone of creativity with the maximum potential for learning (Menezes, 2013, p. 407). The starting point was the work by Van Geert (1995) who has led the

field for more than a decade. The empirical studies utilising CDST as a theoretical framework can be grouped into two categories, as can be seen in Table 3.1, one focusing mainly on theoretical issues (e.g., N. C. Ellis, 2008; Jessner, 2008; Plaza-Pust, 2008), and the other concentrating more on methodological issues (e.g., Larsen-Freeman & Cameron, 2008a; Van Geert, 2008; Verspoor et al., 2008).

Table 3.1 Contributions of Research on L2 Development from the CDST Perspective

	Author(s)	Contributions
Theoretical	Nick Ellis (2008)	<ul style="list-style-type: none"> Proposed a dynamic cycle of language development--- language usage leads to language change, language change affects language perception, language perception affects language learning, and language learning affects usage, and so on. Linked individual change and variation with similar processes on the societal level. Reintroduced the old idea of a connection between synchronic and diachronic language and language development.
	Plaza-Pust (2008)	<ul style="list-style-type: none"> Argued for a mediation function for Universal Grammar (UG) between stability and change with universal principles Stated the link between a CDST approach and UG.
	Ulrike Jessner (2008)	<ul style="list-style-type: none"> Argued for an important role of metalinguistic awareness in the development of multiple languages Admitted the implementation and formalization of metalinguistic awareness in CDST terms is still underdeveloped.
Methodological	Van Geert (2008)	<ul style="list-style-type: none"> Focused on the model of growth or development with the aim of exploring the “evolution rules”. Acknowledged the interconnectedness of systems. Argued that simplification and some form of reductionism are needed.
	Larsen-Freeman & Cameron(2008a)	<ul style="list-style-type: none"> Focused on the research methodology change from traditional research to the new CDST approach. Proposed natural variation in systems should change our perspective of causality and explanation. Pointed out the importance of situatedness of the behaviours or skills we are interested in.

	<p>Marjolijn Verspoor, Wander Lowie, and Marijn van Dijk (2008)</p>	<ul style="list-style-type: none"> • Applied microgenetic analyses to study intra-individual variability in L2 development. • Argued that variation provided information about the dynamics of the developmental process of L2 learners. • Revealed that subsystems interacted with one another dynamically even for an advanced learner. • Suggested to discover developmental patterns in L2 development by longitudinal studies with dense data from the CDST perspective.
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Based on: de Bot (2008)

Nick Ellis (2008) made theoretical contributions by linking individual change and variation with similar processes on the societal level. He reintroduced the idea of a connection between synchronic and diachronic language change and development. Ellis proposed a cycle that language usage leads to language change, language changes affects language perception, language perception influences language learning, and language learning generates impacts on language usage, and so on (N. C. Ellis, 2008, p. 232). Plaza-Pust (2008) argued for a link between a CDST approach and Universal Grammar (UG), while Ulrike Jessner (2008) explored how CDST is applied to multilingualism research in the Dynamic Model of Multilingualism (DMM), arguing for an important role of metalinguistic awareness in the development of multiple languages.

Methodologically, Van Geert (2008) focused on a growth or development model that aims to find the evolution rules to explain the dynamics. According to Van Geert, it is useful to look at variation tend to interact all the time, and see how variation at one level impacts on variation at other levels. Verspoor et al. (2008) similarly emphasised variation is the natural outcome of interactions of variables in development. Based on

CDST, they viewed variation as a source of information rather than as noise. Their argument was that variation informs us about the dynamics of the developmental process, and differences in range of variation are indicators of steps of development. Larsen-Freeman and Cameron (2008a) focused on the dynamic systems and the change on specific requirements of research methodology in applied linguistics from a traditional approach to that inspired by CDST. A list of methodological principles was provided by Larsen-Freeman and Cameron (2008a) with new CDST approaches (e.g., ethnography, formative experiment, micro development, along with computer modelling) that may help us form a better picture of L2 development as a dynamic process. Larsen-Freeman and Cameron (2008a) agreed that both quantitative and qualitative methods are applicable in studies of L2 development conducted from the CDST perspective. De Bot, Lowie and Verspoor believed that

CDST can bridge the gap between holistic and reductionist views on SLA: it recognises the fact that all aspects of human behaviour are connected and that the brain is not isolated and cognition is both embodied and situated as holisticists would argue, but at the same time it does aim at the full quantification that is the ultimate goal of the reductionists. (De Bot et al., 2007b, p. 19)

Thus, CDST provides scholars with the opportunity to widen the scope of research into the L2 development process by looking at an individual language learner as a complex dynamic system, and considering the system's strong interaction with cognitive, social, and environmental factors.

3.2.1 Empirical Findings on L2 Development from the CDST Perspective

CDST was proposed and adopted mainly in the field of sociolinguistics initially, exploring how interactions between and among language learners might promote

language learning. For example, Cooper (1999) presented a CDST model for language change based on attractors on different levels, whereas Browman and Goldstein (1990) applied CDST to show how articulatory movements and cognitive aspects of phonology are related. Similarly, Rueckle (2002) described how visual word recognition can be approached from the CDST perspective, and Van Lieshout (2004) applied CDST in speech production.

Viewing language as a complex, dynamic system and considering language use as dynamically adaptive to a specific context from the CDST perspective, provide a useful way of understanding changes in the L2 learning progressions. Macintyre and Legatto (2011), for example, conceptualised willingness to communicate (WTC) as a dynamic system through adopting an idiodynamic methodology which captured the rapid changes in WTC. It was found that participants' WTC was changing from moment to moment in accordance with their interconnectedness system of the linguistic, social, cognitive and emotional systems. "Attractor" or "repeller states" were evident as these systems function together either to facilitate or interfere with communication. Meanwhile, applied linguists have also focused on the dynamic development of other linguistic features, such as metalinguistic knowledge (Jessner, 2008), chunks learning (Verspoor & Smiskova, 2012), multiple variables (Verspoor, Schmid, & Xu, 2012), learner agency (Mercer, 2011) and English speech (Polat & Kim, 2014). Results of these studies suggested that learners displayed great variability in their language development, and variables interacted with the internal and external sources within learners' language learning system (Larsen-Freeman, 2017).

One particular strand of CDST empirical studies has centred on exploring the complexity of L2 writing development (e.g., Bulté & Housen, 2014; H. Chan, Verspoor, & Vahtrick, 2015; Hou, 2017; Larsen-Freeman, 2006c; Polat & Kim, 2014; Spoelman & Verspoor, 2010; Verspoor, Lowie, Chan, & Vahtrick, 2017; Verspoor et al., 2012). Using the specific CDST methods of min-max graphs and regression analyses, Spoelman and Verspoor's (2010) conducted a three-year longitudinal case study on L2 writing development. The participant is a native Dutch speaker who has learnt Finnish for three years. Findings of this study suggested that the word, sentence and noun phrases complexity developed simultaneously, and demonstrated changes but that no meaningful relationship was found between accuracy and complexity measures over time. Another longitudinal case study (Polat & Kim, 2014) proposed that learners may develop better lexical and syntactic L2 skills without instruction but need a certain degree of instruction to achieve grammatical accuracy.

Larsen-Freeman (2006c) investigated the emergence of complexity, accuracy, and fluency (CAF) in the oral and written production of five Chinese learners of English. Using a time-series design subjects were provided with the same task but at different points. The study identified distorted details in learning English, showing that various components emerged at various levels, to various degrees, and at various times. It also suggested taking learners' motivation and intentions of learning into consideration when further studies aim to explore how participants carry out or engage with the task. The repeated task design successfully demonstrated that complexity and fluency improves but not accuracy. Larsen-Freeman concluded her study by emphasising:

- 1) language is not fixed, but is rather a dynamic system, evolving and changing in the dynamics of language use between and among individuals;
- 2) although progress in SLA may be viewed as the degree to which a

language learner's interlanguage aligns with the target language, there will never be complete convergence between the two systems; 3) there are no discrete stages in which learners' performance is invariant, although there are periods where certain forms are dominant; 4) progress cannot be totally accounted for by performance in any one subsystem because language is complex; 5) language is both a cognitive and social resource; 6) learners do not progress through stages of development in a consistent manner. There is a great deal of variation at one time in learners' performances and clear instability over time; 7) each individual developmental path with all its variation, may be quite different one from one another, even though these developmental paths appear quite similar. (Larsen-Freeman, 2006c, pp. 591–594)

Taking a dynamic usage-based perspective, another longitudinal case study by Chan, Verspoor and Vahtrick (2015) compared the development of sentence complexity in speaking versus writing in two beginner Taiwanese learners of English (identical twins) in an extensive corpus consisting of 100 oral and 100 written texts of approximately 200 words produced by each twin over eight months. Their observation provided evidence that language developed with inverse trends even if the identical twins lived in the same household with the same schooling and very similar exposure to English. They showed contrasting developmental patterns of syntactic complexity, which supported the emergentism of language development from the CDST perspective.

The dynamics of L2 writing development of a strong and a weak university learner were traced by Hou (2017). Participants' 12 texts written over a course of 18 months were examined and investigated in relation to the CAFIC rubric (i.e., complexity, accuracy, fluency, idiomaticity and coherence) from the CDST perspective. Her results showed that the stronger learner was more advanced to begin with and over time and

the subsystems in her linguistic system were more strongly coordinated. Comparatively, the weaker learner showed more variability in some measures with few meaningful relations among these measures. Findings of this study confirmed the dynamic developmental patterns and clarified differences in growth versus stagnation of learners' variability in L2 writing development.

Zheng (2011) described, analysed, and accounted for the L2 vocabulary development of eight Chinese students. Data were collected at both the macro-level and the micro-level of vocabulary development via tests, think-aloud protocols and semi-structured interviews at three time points during an academic year. Results confirmed the dynamic and non-linear nature of L2 vocabulary development, further suggesting that the process of L2 learning was full of interactions among external and internal forces. Verspoor et al. (2008) argued that studying intra-individual variability in L2 development could provide insight into the developmental dynamics of L2 learners. It was a case study on an advanced ESL learner's L2 writing progress during her three-year English learning in university. The variability of the advanced ESL participant's 18 writing essays in L2 was observed and analysed through the method of the min-max graph. Results revealed a general increase in the learner's L2 writing competence overtime, indicating moments of progress and regress and demonstrating a complex and dynamic pattern in the non-linear L2 writing development.

All above studies have followed the CDST approach and tracked the longitudinal development of language learning, revealing the complex and dynamic patterns in learners' acquisition of L2 writing, vocabulary, syntax and grammar through tracing their written and oral production. Findings of these studies confirmed that the

development of linguistic complexity is a dynamically complex process for L2 learners (Bulté & Housen, 2014; Verspoor et al., 2017). Thus, Dörnyei (2005) argued L2 development displays a considerable amount of variation from time to time and from situation to situation. The CDST perspective provides another way of understanding L2 development is not discrete and stage-like but a complex and changing system with the waxing and waning of patterns interact simultaneously with other systems, for example, the learner individual differences (LIDs). Although the number of relevant empirical studies of L2 development from the CDST perspective is limited, there are a group of scholars have considered L2 development as a dynamic system with non-linearity, complexity and variability as results of the CDST studies reported above.

3.2.2 Empirical CDST Studies on L2 Listening Development

CDST is acknowledged as an effective framework for understanding the linguistic complexity in L2 development; however, a small number of studies were identified with a focus on L2 listening development. Adopting the CDST perspective, Dong (2016) investigated the developmental trajectories of a Chinese EFL learner's listening strategy use and listening performance, and explored the dynamic correlation between the two variables over a forty-week span. Using the moving min-max graph, spline interpolation trajectories and moving window correlation, her findings revealed the non-linear listening developmental patterns; intense fluctuations and great variability were evident in the proximity of a phase transition; regression as a potential predictor to listening progress to some extent; and a downward trend relationship between the learner's strategy use and listening performance.

Qiu and Huang (2012), which focused specifically on L2 listening development from the CDST perspective. Qiu and Huang (2012) proposed a dynamic image schema (DIS) model (see Figure 3.1) which consisted of many different subsystems such as students' and teachers' demographic features, socio-cultural contexts, situational contexts, existing knowledge and incoming information (p. 244). The DIS emphasised the internal interactions of learners existing and incoming knowledge as well as the interplay between learners and external factors (e.g., teachers, family, community and socio-cultural contexts). Aiming to investigate the DIS and its effects on EFL learners' systematic improvement in listening comprehension, their study adopted an experimental design which is not advocated by CDST. Participants from the experimental group were trained to construct a DIS by connecting their existing knowledge with the incoming new information before refining and re-coding the incoming information on the basis of their previous knowledge. Results suggested that: 1) the DIS assisted listeners in comprehending and completing listening materials so that, ultimately, facilitated participants' listening comprehension; 2) listening was composed of different subsystems that dynamically interacted and brought changes in other systems and, thus, caused the holistic change of the overall system.

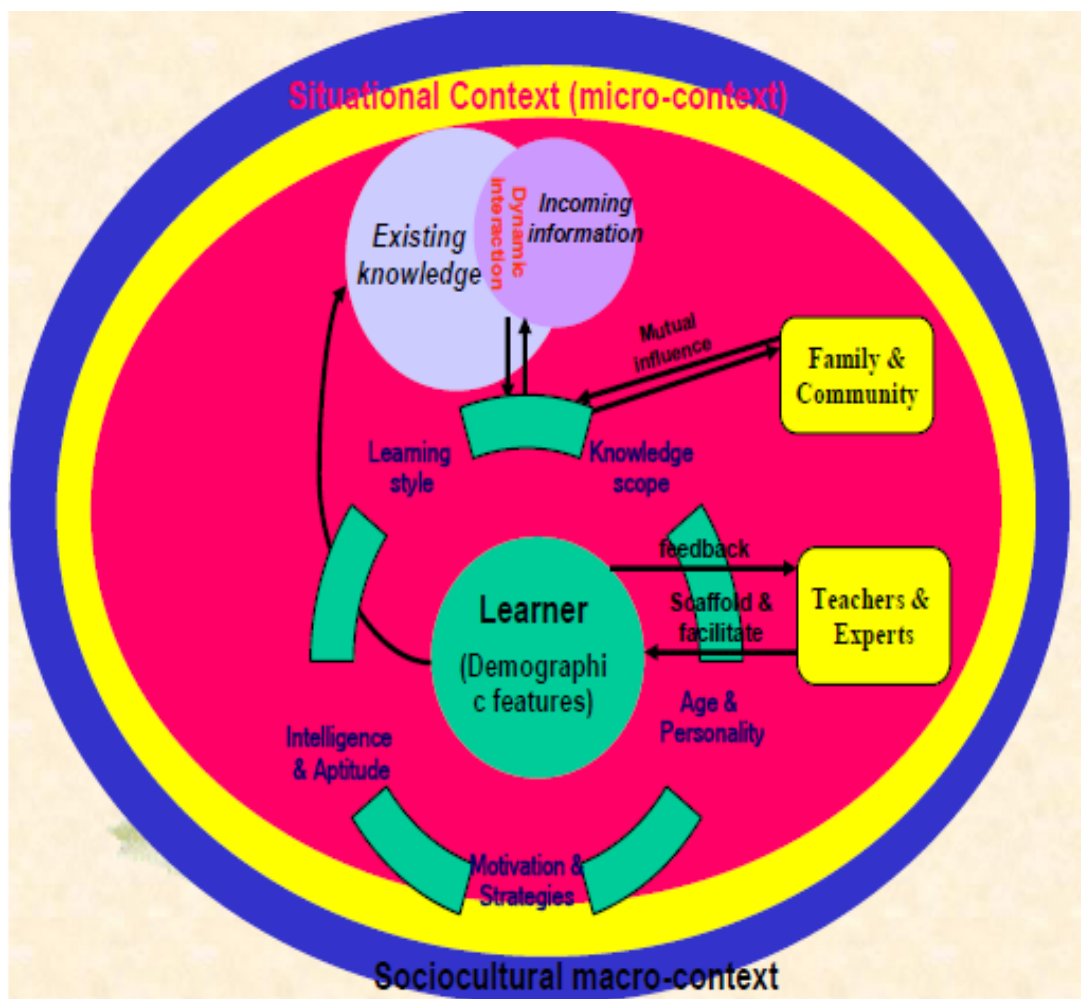


Figure 3.1 *The Dynamic Image Schema Model*

Source: (Qiu & Huang, 2012, p. 245). Copyright rests with the original authors.

Findings of these two empirical studies pave the way for further L2 listening studies from the CDST perspective. A series of CDST methodologies was used by Dong (2016) in analysing the participant’s data, which contributed to the theoretical and methodological knowledge of L2 listening development from the CDST perspective. However, there is a great risk of generalising her findings to the development of listening strategy and listening performance of other learners, as she only focused on one highly-motivated student. Differently, Qiu and Huang (2012) adopted an experimental design to examine 40 ESL learners’ systematic improvement in their

listening comprehension and successfully conceptualised the image schema as a dynamic system, through which the natural process of L2 listening was explored. Further, their study showed the possibility of applying quantitative methods in researching the dynamic development of L2 listening from the CDST perspective, confirming Van Geert's (2008) statement that the CDST is not an approach that aims to abandon established quantitative methods of studying language development. It offers, however, a novel perspective, and methods, to go beyond static or structural relationships in order to understand the mechanisms of language development. A limitation of Qiu and Huang's study is that it failed to explain exactly how all the contributing variables interacted and generated changes to the entire system. Therefore, more empirical studies are desperately needed from the CDST perspective through the combination of an experimental design with a large number of learners and an in-depth observation with specific participants. Furthermore, additional variables such as learners' motivation, attitudes, and learning styles, cultural backgrounds could be considered to enrich our understanding of the dynamics of L2 listening development.

3.2.3 The Methodologies for Researching L2 Development from the CDST

Perspective

The studies above suggest that CDST provides not only a framework that enables scholars to develop a better understanding of L2 development through integrating social and cognitive aspects, but also offers approaches (i.e., quantitative modelling, qualitative modelling, and dynamic description) to the study of dynamic systems of the L2 learning process. Specific methodologies are introduced as following.

The microgenetic approach, a proposed CDST methodology, focuses on studying change as it occurs in data that cover the entire period during which development is

studied (Lowie, 2017). This method can be used to track participants' on-going L2 development during task activities. It provides the investigation of the development of a skill, concept, or strategy with intense observation of a small number of participants over a short period of time in order to detect and track the dynamic changes in learners' language learning (Kim & Hall, 2002). Such an approach does not require the learner to have a certain degree of metacognitive and metalinguistic awareness to be able to reflect on their actions and to describe the changes in their competence. Thus, the microgenetic approach is highly recommended in observing young children's language learning process (Kim & Hall, 2002). Moreover, the microgenetic approach can document changes without producing anxiety in the language learner, as traditional pen-and-paper tests are likely to do (Pellegrini, 1996). Thus, this method was adopted by scholars in observing the function of peer revision scaffolding in L2 writing development (De Guerrero & Villamil, 2000); in tracking language learners' dynamic changes in the degree of task engagement (Platt & Brooks, 2002); in capturing the micro changes of learners' L2 pragmatic competence in a computer-based teaching context (Belz & Kinginger, 2002) and in an interactive book reading program (Kim & Hall, 2002); and also in establishing a significant role that gestures played in promoting language learning (McCafferty, 2002). Focusing on different aspects of L2 learning, findings of these studies confirmed that microgenetic approach is an effective CDST method in researching L2 development. Nonetheless, as intense observation cannot be maintained for long periods of time, the application of this approach is limited in research that has a long-term design. To meet this requirement, longitudinal studies are proposed from the CDST perspective.

Longitudinal studies can show the variability that may occur at the individual level, and how language learning may change over time, which enable the assessment of the process of language acquisition or possibly attrition. Longitudinal studies can be single-case (e.g., Polat & Kim, 2014; Spoelman & Verspoor, 2010) or multiple-case studies with about four or more participants (e.g., Larsen-Freeman, 2006c; Zheng, 2011). Generally, learners are provided with the same task but at different points during the series of observations. A time-series design is often used for longitudinal case studies as it is desirable for a dynamic description, which includes a series of observations to capture the relevant properties underlying participants' learning developmental process. A number of studies have recorded L2 learners' progress in linguistic complexity, accuracy and fluency (CAF) in language learning through the longitudinal studies (e.g., Larsen-Freeman, 2006c; Polat & Kim, 2014; Spoelman & Verspoor, 2010). Zheng (2011) noted that the nature of L2 vocabulary development was dynamic and non-linear and that the on-going process of L2 learning was full of interactions among external and internal forces. She argued that CDST had the potential to provide a suitable framework for explaining the linguistic development of language learners. Thus, a longitudinal case study approach is appropriate because it can identify relevant sub-systems and dynamic learning processes. Longitudinal case studies also have the potential to complement findings from traditional linear correlation analysis and cause-and-effect models in researching L2 development.

There is also a list of specific methodological principles proposed by CDST, for example, formative experiment, computer modelling, min-max graphs and retrodictive qualitative modelling (RQM) that help researchers form a better picture of L2 development as a dynamic process. Take the retrodictive qualitative modelling (RQM)

for example, it was proposed by Dörnyei (2014) to specifically study L2 learning motivation by the advocates of the CDST approach. The RQM utilises the regulating force of self-organisation that makes system behaviour predictable and therefore researchable. The key word is retrodiction, in that RQM reverses the traditional way of conducting research. The end-states (or outcome-states/prototypes) are firstly identified in system behaviour and then work backwards in a retrospective manner to uncover the developmental trajectories that led to those settled states. Chan, Dörnyei and Henry (2015) stated that the RQM pursues “retro-diction” by tracking back to the reasons why the system might have ended up with a particular outcome, thus producing a RQM of its evolution. Although RQM was adopted in defining L2 learners’ archetype in L2 development by Chan et al. (2015), more theoretical and empirical studies are needed to establish its reliability and validity.

Hence, the set of ideas and a range of tools by the advocates of the CDST approach pave the way for investigating L2 development and explaining different timescales and phenomena in language learning. Verspoor et al. (2011) provided specific “How to” sections for researchers who are interested in conducting L2 development studies from the CDST perspective, providing detailed information about the techniques and tools scholars used to code, analyse, present and model the data. For example, it contains step by step instructions as to how to obtain data and how to create learners’ profiles, make min-max graphs, and model vocabulary growth.

Finally, it must be emphasised that dynamic systems is not an approach that conflicts with current, established ways of studying language growth, learning, and change, but allows scholars to broaden these and provides possibilities for in-depth analysis (Van

Geert, 2008). Future research on L2 development from the CDST perspective is suggested by De Bot (2008): analysis of language development on the basis of dense data collection, experimental work focusing on variation and interactions of variables and modelling of language use and language development. De Bot continues by arguing that:

Development and variation might be studied on different time scales, from the growth and decline of language proficiency over the life span, to variation in developmental processes ranging from weeks to years, to variation on the level of the millisecond in experimental tasks. (De Bot, 2008, p. 176)

3.3 STUDIES ON LIDs IN L2 LEARNING

Learners vary enormously as to how successful they are in learning a language, thus, the literature on LIDs in L2 learning and teaching is extensive. Any literature attempt to provide a comprehensive and exhaustive account of the latest developments in this field would be challenging. This review therefore focuses on LIDs studies in L2 development that are relevant to the CDST perspective.

3.3.1 Empirical Findings on LIDs in L2 Learning from the CDST Perspective

LIDs of participants are considered as important predictors of language development in the SLA literature. A review of these studies shows recent research into LIDs is emerging with the theme of accounting for the dynamic change in L2 learning success. Scholars are now increasingly proposing the dynamic LIDs conceptualisation within L2 development (Larsen-Freeman & Cameron, 2008a; Nizgorodcew, 2012). Zhang (2010) has reported findings from an interview study of 20 Chinese students' EFL reading experiences in which he conceptualised metacognition as a dynamic system in L2 reading development. His findings confirmed there was a strong relationship between metacognition and successful EFL reading comprehension. Successful and

less successful readers differed in knowing and using the metacognitive knowledge. He also suggested that the context of L2 learning and the development trajectories of participants, as proposed by CDST, should be taken into consideration in future studies. Furthermore, Zhang recommended that traditional quantitative methods may serve as a foundation for ensuring the reliability of instruments for measuring initial language proficiency of learners and quantifying L2 learners' development over a long-time phase, while case study data could investigate, analyse and clarify details, and other aspects in the complex dynamic systems of L2 development.

Instead of trying to detect a linear relationship between specific individual variables and L2 learning, CDST proposes that combinations of LIDs variables might reveal more details about L2 learning than individual variables in isolation (Dörnyei, 2005). For example, Winke (2013) tried to reveal and reconstruct L2 learning aptitude, investigating its contribution to L2 learning with the mediation of motivation and strategy use. Her study had two hypotheses: 1) L2 aptitude comprises 4 components, namely, phonological working memory, rote memory, grammatical sensitivity, and phonetic coding ability; 2) that L2 aptitude affects L2 learning directly, and also indirectly through the mediation of motivation and strategy use. The first hypothesis was not supported by her results as grammatical sensitivity inversely contributed to the L2 aptitude construct, while phonetic coding ability and phonological working memory made almost no difference to the aptitude score. Furthermore, her results provided evidence that the second hypothesis was not supported as the direct and indirect effects of aptitude on L2 learning were not statistically significant. Although the effects were non-significant, it is still necessary to value and consider these results from the CDST perspective as it proposes that interconnectedness among variables

might diminish their individual predictive power on L2 learning. In addition, the particular context of this study might have influenced the findings as well.

Chan et al. (2015) identified learner archetypes through researching the dynamic L2 motivation system with a novel CDST proposed approach of retrodictive qualitative modelling (RQM) (Dörnyei, 2014). Chan et al. (2015) investigated learner archetypes and L2 motivational patterns in Year 7 to 9 students at a Hong Kong secondary school. Results provided insights into the significant dynamics of the motivational system associated with learner prototypes, and identified shifts of learners' learning archetypes indicating dynamic movements in motivation. Through evaluating RQM in action, they were able to provide explanations of motivational change in students which may act as encouragement for educators who are dealing with demotivated and struggling L2 learners.

Other literature which has proposed viewing L2 learners' LIDs as a complex dynamic system has demonstrated a direction for the current study, for example, the Aptitude Complexes Hypothesis (ACH) (Robinson, 2005), the Directed Motivational Current (DMC) (Dörnyei et al., 2014, 2015; Larsen-Freeman, 2015b; Muir & Dörnyei, 2013), and the dynamic metacognitive approach (Zhang & Zhang, 2013; Zhang, 2016). However, the growing body of literature on dynamic systems within the field of L2 development has been mainly theoretical. Thus, the proposal for a dynamic paradigm shift in recent L2 development research, with more empirical studies, is generally well accepted.

3.3.2 The CDST Perspective on LIDs

Research on L2 development and LIDs has contributed to an understanding of the ongoing process of L2 learning and its dynamic nature characterised by progression and regression. Nonetheless further research should investigate advances and backsliding in L2 learning as a result of complex interactions among LIDs variables. In De Bot and Larsen-Freeman's words: "if everything is interconnected, how is it possible to study anything apart from everything else?" (2011, p. 18). Thus, conceptualising LIDs as a complex dynamic system, and observing the operation of the whole system as well as the interaction of the parts may contribute further to LIDs research in L2 development with taking the following aspects into consideration.

Firstly, most researchers would now agree that the role of LIDs can only be evaluated in regard to their interactions with specific environment and temporal factors or conditions. In their recent analysis of SLA, Ellis and Larsen-Freeman (2006) summed up this issue as follows: "To attribute causality to any one variable (or even a constellation of variables) without taking time and context into account is misguided" (p. 563). Thus, taking certain contexts into consideration is a feature of CDST based language learning research.

Secondly, although research of LIDs is gathering momentum, it is still developing. Dörnyei (2005) suggested that future research should broaden the search for linear relationships in terms of investigating the effect of combinations of various traits under different circumstances, and considering LIDs variables in the processes of L2 development. Therefore, efforts should be made to uncover the missing pieces of language learning knowledge and enhance our understanding of the intricacies of LIDs

in L2 learning. Addressing this issue more generally, Dörnyei (2009a) argued that given the complex and interlocking nature of higher order human functioning---LIDs, it typically involves a blended operation of cognitive, affective, and motivational components. A convergence that is obvious from a neuropsychological perspective, because it is difficult to separate different levels of functions within the neural network. Moreover, individual L2 learners may exhibit different linguistic behaviours as they interact with different members of the community, highlighting the significance of LIDs in the contextual circumstances of L2 learning. Therefore, Dörnyei had argued that instead of conceptualising learner characteristics in a modular manner (i.e. in terms of distinct individual variables), future research should try to take a systemic approach by identifying LIDs as “wholes” (Dörnyei, 2009a, p. 235).

Finally, the approach that CDST proposed is to remove boundaries between quantitative and qualitative methodologies and merging the two approaches in the form of mixed methodology. Even if a number of existing studies have succeeded in reflecting the dynamic nature of L2 learning and its complex development, the generalisability of these studies has been limited because of the relatively small sample size. Thus, the combination of large-scale quantitative studies with specific qualitative observations might enable researchers to discover significant changes and complexities in language learning development. Such studies could provide a more comprehensive understanding of data fluctuations evident in longitudinal research. In particular, researchers may be able to better identify specific data to track the on-going development of individual variability along the language learning processes.

3.4 RESEARCH FOCI OF THE PRESENT STUDY

The present study is designed from the CDST perspective, aiming to gain a more comprehensive understanding of L2 listening development in the long-term. It focuses on the following aspects:

Firstly, L2 listening is viewed as a non-linear and dynamic developing system at the conceptual level from the CDST perspective (e.g., De Bot et al., 2007b; Larsen-Freeman & Cameron, 2008a; Van Geert, 2003). This overarching theoretical perspective could enhance our understanding of the dynamic and non-linear process of L2 listening development, including the critical issues as LIDs and their interactions with the learning context. Despite the promising prospects and usefulness of CDST, the application of which to L2 listening development has remained largely speculative and theoretical. It is worthwhile, therefore, to conduct further empirical work in this regard (e.g., Bell, 2009; Churchill, 2008; Dörnyei et al., 2015). The current study attempts to fill this research gap by integrating these various theoretical considerations into a model of L2 listening development particularly as occurring within a formal EFL learning context.

Secondly, the present study intends to focus explicit attention on five LIDs variables (that is language learning aptitude, working memory capacity, listening motivation, metacognitive awareness, and learning style preferences), together with their interactive relationships. As discussed earlier, learning a second or foreign language encompasses a wide range of knowledge as well as requiring competencies that are influenced by LIDs variables to activate, facilitate and retain the knowledge. The multi-faceted nature of LIDs has not yet been represented as a whole dynamic system

in the literature, with much of the existing work largely focused on one or two LIDs variables, for example, the effects of metacognition, motivation on L2 learning. While the necessity of investigating the influences of one or two LIDs variables on L2 listening is essential, most research has not gone further to connect or integrate more LIDs variables into the L2 listening development nor to investigate more deeply about their interactive roles in the learning process of L2 listening.

Thirdly, the present study aims to integrate LIDs and contextual influences into the inquiry into L2 listening development. Acknowledging the situated nature of L2 learning, the role of LIDs is influenced by the specific setting in which learning takes place as well as the kinds of tasks learners are asked to perform in learning an L2 (R. Ellis, 2004, pp. 546–547). As Chinese learners represent a large subgroup of English learners worldwide, “the available research into the Chinese EFL learners is disproportionate with the country’s foreign-language needs”(Zhang, 2001, p. 268). However, only a limited number of studies of listening have been specifically focused on this particular group in the contemporary Chinese context from the CDST perspective (e.g., Shi, 2009; Xu & Li, 2009; Zhang & Zhang, 2013). Thus, the present study focuses on Chinese university level learners in an attempt to redress the balance. By probing into their situated experience of learning listening and their interaction with the specific socio-cultural and pedagogical contexts, the aim is to gain further insights into the dynamic process of L2 listening development.

3.5 CHAPTER SUMMARY

In this chapter relevant literature on L2 development and LIDs has been discussed and reviewed from the CDST perspective. The review highlights some critical issues in a wide array of theoretical and empirical research. It also includes changes from

traditional research to more recent L2 development studies including newly proposed methodologies in researching L2 learning from the CDST perspective. The review suggests conceptualising LIDs variables as an interconnected complex system. It also proposes that L2 development should be regarded as a dynamic process with non-linear changes rather than a step-wise path of discrete stages with a clear beginning and end. The chapter concludes with an introduction to the research foci of the present study that aims to research L2 listening development with the consideration of LIDs variables, contextual features in the learning environment, and the interactions of these resources from the CDST perspective.

CHAPTER 4 RESEARCH DESIGN AND METHODOLOGY

4.1 OVERVIEW

This chapter describes the research design and methodology of the present study. It starts by presenting the research questions. Next, it provides a detailed description of the research design, including the longitudinal mixed-methods approach, the participants, the instruments, and the data collection procedures. The ensuing sections describe the data processing and analysis methods. Finally, ethical considerations are addressed, followed by a chapter summary.

4.2 RESEARCH QUESTIONS

To investigate the dynamic nature of L2 listening development and the learner individual differences (LIDs), the current study addresses six research questions:

- 1) What on-going changes in participants' L2 listening proficiency over the year were demonstrated?
- 2) How did participants' L2 listening proficiency develop over time?
- 3) To what extent did L2 learners show any variations in the five LIDs variables (that is, language learning aptitude, working memory capacity (WMC), listening motivation, metacognitive awareness, and learning style preferences)?
- 4) What was the relationship between the LIDs variables in L2 listening development?
- 5) To what extent did the LIDs variables contribute to learners' L2 listening development?
- 6) What were the developing patterns of the five LIDs variables and how did they interrelate and affect the development of L2 listening?

4.3 RESEARCH DESIGN

This is a correlational study with an aim to explore the dynamic nature of L2 listening development from the CDST perspective. This study drew on longitudinal mixed-methods approach that included the quantitative studies and multiple-case studies. Table 4.1 provides a general overview of the research design. Research questions 1), 3), 4) and 5) are going to be addressed and answered by the quantitative studies. Research questions 2) and 6) will be mainly discussed on the basis of data that were collected from the longitudinal multiple-case studies.

Table 4.1 An Overview of the Research Design

Instruments	Participants Number		
	Pilot Study	Quantitative Studies	The Multiple-Case Studies
Questionnaires	40	300	×
Tests			
Semi-structured interviews	×	×	10
Diaries with prompts			
Total	40	300	10

4.3.1 Longitudinal Mixed-methods Design

The nature of the investigation on L2 listening development in the present study made the mixed-methods of the quantitative studies and the longitudinal multiple-case studies desirable and valuable. Neale and Flowerdew (2003) have argued that the quantitative and qualitative traditions of longitudinal research are complementary. Compared with the single quantitative-oriented studies and qualitative-oriented longitudinal approaches, research using mixed designs has gained its popularity through integrating the strengths of both approaches. The emphasis on language learning as a complex and adaptive system with dynamic change patterns (e.g., De Bot & Larsen-Freeman, 2011; De Bot et al., 2007a, 2005; Larsen-Freeman & Cameron, 2008a; Larsen-Freeman, 1997; Verspoor et al., 2011) calls for a shift of attention from

traditional quantitatively-oriented cause-and-effect experimental designs to qualitatively-oriented longitudinal case studies (Dörnyei, 2009b, 2009c, 2009d; Larsen-Freeman & Cameron, 2008a, 2008b). This shift provides an additional perspective on subtle changes in the language development that may be conclude in large-scale studies. Dörnyei (2007) advocated a combination of quantitative and qualitative methods as appropriate for a longitudinal study of language development from the CDST perspective. Similarly, Ortega and Iberri-Shea (2005), in their overview of longitudinal SLA research, encouraged longitudinal research which capitalises on the strengths of mixed-methods designs. The longitudinal mixed-method design in the present study is intended, at least to some extent, to reveal the dynamic nature of L2 listening development by describing the complex interaction among a number of key LIDs variables in this dynamic system.

4.3.1.1 The quantitative studies

This study used quantitative studies to provide a description of the participants' linguistic proficiency, and their language development over time, particularly in regard to the five LIDs variables (that is, language learning aptitude, WMC, listening motivation, metacognitive awareness, and learning style preferences) associated with linguistic development. Quantitative studies provide quantitative descriptions of trends. From sample results, the researcher generalises or makes claims about the population (Creswell, 2009, p. 145). The strengths of quantitative studies are manifold: they are potentially systematic, rigorous, focused, and tightly controlled, involving precise measurement and producing reliable and replicable data that is generalisable to other contexts. Furthermore, from a practical perspective, even with the longer preparation period for selecting, piloting and verifying different instruments, the quantitative research process is relatively quick, and the data analysis can be done using statistical

computer software (Dörnyei, 2007). The majority of SLA studies have utilised quantitative research methods to investigate the development of various factors such as cognitive (e.g. aptitude, WMC), affective (e.g., anxiety, motivation) and strategy use, and explored the effects of them on general L2 learning ability or, particularly, L2 grammar learning (e.g., Kormos & Sáfár, 2008); L2 reading (e.g., Leiser, 2007; Walter, 2008) and writing (e.g., Adams & Guillot, 2008), vocabulary development (e.g., Cheung, 1996; Papagno, 1995; Zheng, 2011), as well as L2 listening (e.g., Goh, 2002; Vandergrift et al., 2006; Vandergrift, 2003; Zheng, 2011).

In the field of SLA, learners show variation over time and across social and cultural contexts. They also display within-individual variation and therefore under similar conditions, their reaction will vary widely (Dörnyei, 2005). The current research intends to explore the dynamic nature of LIDs, and to identify the complex and systematic development of L2 listening in which individual variability and situated contexts are involved. Thus, a quantitative research design is considered to clarify and explore the specific correlations among LIDs variables, and the relationships between LIDs variables and L2 listening development.

4.3.1.2 The longitudinal multiple-case studies

L2 learning generally takes a long time and it is only by investigating the learning process over time that better, deeper and richer insights can be attained. Consequently, the advantage of a longitudinal design in researching L2 development is well established (Ortega & Byrnes, 2008; Ortega & Ibarra-Shea, 2005). For example, as noted previously, results of Spoelman and Verspoor's (2010) and Polat and Kim's (2014) longitudinal case studies confirmed L2 learners' progress as well as the regress of complexity, fluency and accuracy in language learning and Zheng's (2011)

longitudinal study verified the dynamic and non-linear nature of L2 vocabulary development. Ortega and Ibarra-Shea (2005) argued that “longitudinalness” needs to be understood in terms of four criteria when planning a longitudinal study: the length of the study, multi-tiered data collection, the conceptual focus on capturing change by design, and the focus on establishing antecedent-consequent relationships through extended tracking of the phenomena firmly situated in its context rather than through experimental controls. As to the first criterion, the length of the study, one year is generally the benchmark in the field of social sciences (Harklau, 2008), although in applied linguistics, studies as short as three or four months have also been claimed as longitudinal (Ortega & Ibarra-Shea, 2005). In the field of L2 development, when the development of a particular linguistic form or an aspect of the learner performance is the main focus, a case study approach can provide an in-depth description of how these forms or aspects progress over a span of time (Seliger & Shohamy, 1989). There are two types of longitudinal case study, a single-case study design refers to there is only one participant, whereas multiple-case studies or a collective case study have more than one participant (Duff, 2008; Stake & E., 2005). The latter might increase the representativeness of cases or variation among cases (Duff, 2008), and assuage the unpredictability of a single case (Yin, 2014).

An advantage of multiple-case studies is that an in-depth investigation into a few cases to examine changes in the learners’ cognitive, affective, and linguistic development or performance is possible using a longitudinal design (Duff, 2008; Harklau, 2008). As reviewed previously, most research to date on the LIDs with L2 listening development has been one-off studies, focusing only on learners at one point in time. A consequence is that considerable information regarding the incremental nature of the

LIDs and L2 listening is missing in the field. Longitudinal multiple-case studies, by virtue of thick description, are potentially useful to capture the dynamic interaction between individual learners and the cognitive, pedagogical, socio-cultural contexts within which their learning is situated.

4.3.2 Participants

The participants in the quantitative studies were 300 first year students recruited on a voluntary basis from a university in North China, in the academic year 2015 to 2016. Convenience sampling was used for participants recruitment because it is a quick and comprehensive way to collect quantitative data (Creswell, 2014; Dörnyei, 2007). The 300 participants were from faculties across the university, including science, chemistry, statistics and maths. Students experienced an average of six class hours of academic English per week, as well as additional time they spent on various home assignments or after-class activities on their own. By the end of the one-year study, eight participants dropped out, so that, the data for 292 participants were included for the data analysis and will be presented in the findings chapters.

After the completion of the quantitative studies, all participants were invited to participate in the multiple-case studies. Those who were interested in participation were asked to contact the researcher either in person or by email within two weeks after the completion of the quantitative studies. Random sampling (Creswell, 2014; Dörnyei, 2007) of those who responded was conducted, resulting in ten participants who were separated into two groups according to their listening proficiency (based on their results of the listening tests in the quantitative studies). Information about the multiple-case studies was presented in the participant information sheet (PIS) by the

researcher, including the research aims, procedures, requirements and benefits and the consent form (CF).

4.3.3 Data Collection Instruments

4.3.3.1 Listening Motivation Questionnaire (LMQ)

The Listening Motivation Questionnaire (LMQ) is designed to measure the dimensions of second language listeners' listening motivation (see Appendix D). The questionnaire has been modified by the researcher based on Motivation for English Listening Questionnaire (MELQ) (Yang & Ding, 2004), and the motivation questionnaire used by Taguchi, Magid, and Papi (2009). The researcher has expanded the original 11 factors (36 items in total) into 12 factors (49 items in total) that relate to learning of listening. The twelve listening motivational factors are competitive, going abroad, interests, determination, self-effectiveness, atmosphere, major study, prevention, value, career, exam-related scores, and family and peer influence. There are three to five sub-items for each factor.

To make sure that participants would fully understand the questionnaire, both English and Chinese versions of the questionnaires were prepared. The English version of the questionnaire was translated into Chinese by the researcher, and the Chinese version was then back-translated into English by an EFL lecturer. The two English versions were compared and any differences discussed in order to improve the quality of the Chinese translation. The Chinese version of the LMQ was piloted with a group of 20 participants through email with the help of the researcher's postgraduate classmate. Participants were invited to complete the questionnaire at any time and place they wish. After the completion, the completed questionnaires were emailed back to the researcher within three days. Participants reported the instruction and questionnaire

expressions were clear and easy to understand, and there was no information that hindered their understanding in completing the LMQ. The internal reliability for the LMQ in the pilot study was .621, and in the main study was .846 as indicated by Cronbach's Alpha. The Questionnaire used a 5-point Likert scale was used to record participants' responses, results, from 1 "strongly disagree" to 5 "strongly agree", indicating the participants' level of interest in each listening motivational factor.

4.3.3.2 Metacognitive Awareness Listening Questionnaire (MALQ)

The Metacognitive Awareness Listening Questionnaire (MALQ) is a 21-item instrument used to investigate the participants' metacognitive awareness and perceived use of strategies while listening to spoken texts (see Appendix II). It investigates five distinct factors in listening (Vandergrift et al., 2006; Vandergrift & Goh, 2012):

- Planning and evaluation (i.e. strategies learners use to prepare themselves for listening and to evaluate the results of their listening efforts);
- Person knowledge (i.e. learners' perceptions concerning the difficulty presented by L2 listening and their self-efficacy in L2 listening);
- Problem-solving (i.e. strategies learners use to guess at what they do not understand, that is inferencing, and to monitor these inferences);
- Directed attention (i.e. strategies learners use to concentrate and to stay on task);
and
- Mental translation (i.e. strategies represent an inefficient approach to listening that a listener must learn to avoid).

To make sure that participants would fully understand the questionnaire, both English and Chinese versions of the questionnaires were prepared. The English version of the questionnaires was translated into Chinese by the researcher, and the Chinese version

was then back-translated into English by an EFL lecturer. The two English versions were compared and any differences discussed in order to improve the quality of the Chinese translation. The Chinese version of the MALQ was piloted with a group of 23 participants through email with the help of the researcher's postgraduate classmate. Participants were invited to complete the questionnaire at any time and place they wish. After the completion, the completed questionnaires were emailed back to the researcher within three days. Participants reported the instruction and questionnaire expressions were clear and easy to understand, and there was no information that hindered their understanding in completing the MALQ. The internal reliability for this pilot questionnaire was .578; and in the main study, the internal reliability of the MALQ was .765 as indicated by Cronbach's Alpha. The MALQ has a 6-point scale assessment, from 1 "strongly disagree" to 6 "strongly agree", indicating the level of participants' reported metacognitive awareness. Data were collected and then analysed in terms of the five aspects.

4.3.3.3 Learning Style Survey (LSS)

Participants' learning style preferences were measured by Cohen, Oxford, and Chi's (2001) Language Style Survey (LSS), an improved version of the Style Analysis Survey (SAS) that was designed by Oxford (1995). LSS is a relatively long instrument which contains 110 items grouped as 11 aspects of language learning. It does not predict the behaviour in every instance, but it can clearly indicate learners' overall style preferences (see Appendix III). The distinctive 11 aspects of LSS represent a learner's learning style on these aspects in the process of language learning, with at least two dimensions under each learning aspects. The eleven aspects are: 1) how learners use their physical senses (with the styles of *Visual*, *Auditory* or *Tactile*); 2) how learners expose themselves to learning situations (*Extroverted* or *Introverted*); 3)

how learners handle possibilities (*Random-Intuitive* or *Concrete-Sequential*); 4) how learners deal with ambiguity and with deadlines (*Closure-Oriented* or *Open-Oriented*); 5) how students receive information (*Global* or *Particular*); 6) how learners further process information (*Synthesizing* or *Analytic*); 7) how learners commit material to memory (*Sharpeners* or *Levelers*); 8) how learners deal with language rules (*Deductive* or *Inductive*); 9) how learners deal with multiple inputs (*Field-Independent* or *Field-Dependent*); 10) how learners deal with response time (*Impulsive* or *Reflective*); and 11) how literally learners take reality (*Metaphoric* or *Literal*).

A similar process was used as for the other two questionnaires to ensure full understanding. The Chinese version of the LSS was piloted with a group of 23 participants. All participants reported the instruction and questionnaire expressions were clear and easy to understand, and there was no information that hindered their understanding in completing the LSS. The internal reliability for this pilot questionnaire was .668 as indicated by Cronbach's Alpha. In the main study, the internal reliability for LSS was .862. LSS uses a Likert 5-point rating scale, from 1 to 5, 1=Never, 2=Rarely, 3=Sometimes, 4=Often, 5=Always. The participants were required to circle the response that represented their preferred approach and style. Participants' scores on the LSS were the average score of the 11 learning aspects.

4.3.3.4 LLAMA Language Aptitude Test

The LLAMA is a computer-based aptitude test battery (Meara, 2005). It grew out of a series of projects carried out by students of English Language and Linguistics at the University of Wales, Swansea. The programs that comprise the LLAMA suite can be downloaded free from the lognostics website: <http://www.swan.ac.uk/cals/calsres/lognostics.htm>. The battery is user-friendly and

requires approximately 25 minutes for the completion. Each sub-test is individually and automatically scored during the processing. Although largely based on the MLAT, it is unlike the MLAT in that the LLAMA tests are described as being language-independent which means there is no restrictions to test-takers' L1. They rely on picture stimuli and verbal materials adapted from a British-Columbian indigenous language and a Central-American language. Language independence is a highly desirable methodological feature for cognitive measures in order to avoid confounds that may arise in L1- or L2- based cognitive tests (Granena, 2013, p. 107). Language independence also minimizes the use of long-term memory strategies, which aid remembering of verbal stimuli through meaningful connections. It also facilitates test administration to learners of any L1 without the need for translations that may threaten the validity and reliability of the test, and of cross-linguistic comparisons. The LLAMA includes four sub-tests: LLAMA B, a test of vocabulary learning; LLAMA D, a test of sound recognition that requires previously heard sound sequences to be identified in new sequences; LLAMA E, a test of sound-symbol associations; and LLAMA F, a test of grammatical inferencing. With the exception of sound recognition (LLAMA D), the other three sub-tests include default study phases that last between two and five minutes. Questions are randomly selected and presented on the interface every time the sub-test is used to avoid memorisation of the question items; testing phases are untimed. Before undertaking a pilot study, the researcher completed the LLAMA test herself on different computers with Windows system (Win 7 or Win 8) and the Mac system to ensure its applicability.

In the pilot study, the researcher emailed the zip file of LLAMA and the Chinese manual instruction (see Appendix IV) to the volunteer participants. They were

required to read the instruction and fully understand it before completing the four sub-tests by themselves on the computer, and emailing their results back to the researcher. Participants noted that the Chinese version instructions were useful and helped them in understanding the test requirements and in completing the test. The internal reliability for the LLAMA aptitude test in the pilot study was .556, and its internal reliability was .699 in the main study as indicated by Cronbach's Alpha.

The scores for each of the LLAMA sub-tests range between 0 and 100 for LLAMA B, E, and F, and between 0 and 75 for LLAMA D. Each sub-test is individually and automatically scored. Thus, participants have four individual scores for each aspect of the aptitude measured by LLAMA tests.

4.3.3.5 Listening Span Test (LST)

Despite some different opinions in regard to the operationalisation of WMC, span tasks (counting span, operation span and reading span) seem to be the most widely acknowledged measures for assessing WMC, as they are found to have satisfactory validity and reliability (Conway et al., 2005). Span tasks involve a dual-task paradigm, which combines a memory span measure with a concurrent processing task. They were referred to as complex working memory (WM) measurements by Colom et al. (2006), as discussed in earlier section (see section 2.3.3.2.2).

The Listening Span Test (LST) for the current study is a version of the reading span test (RST), originally developed by Daneman and Carpenter (1980) to measure the WMC of the participants in studies of L2 reading, was modified by the researcher. Similar to the RST, the LST is a dual-task test that conforms to both the process and storage demand of WMC (see Appendix V). It consists of 42 unrelated simple

sentences that are affirmative, and in the active voice, ranging from 8 to 12 words in length, with every sentence ending with a different content word. The test involves four levels starting at two sentences and extending up to five sentences, with each level containing three trials. The 42 sentences were taken from the *New Horizon College English textbook*; the textbook used in Chinese university intensive reading classes, and were then modified by the researcher. A semantic plausible judgement test was incorporated into the LST to ensure that participants processed every sentence for semantic meaning and did not focus simply on the final words. There were 21 sentences designed as “nonsense” sentences by rearranging the content words. Such sentences are syntactically possible but semantically anomalous (e.g., *It is true that all animals need a job*). The remaining 21 were grammatically and semantically normal sentences (e.g., *The Eiffel Tower is a symbol of France*), arranged randomly. Participant heard each sentence only once. The sentences were first discussed by the researcher with other Ph.D. candidates, and subsequently modified to ensure the readability and semantic meaning of the sentences. The 42 test sentences and another extra ten practice sentences were recorded by a native speaker who is a Ph.D. candidate from the Faculty of Education and Social Work, University of Auckland.

Two pilot studies were administered to two different groups of volunteer participants. In the first pilot, a group of 15 participants were provided with a practice session before moving to the test session. Chinese instructions were printed on the answer sheet. Oral explanation was provided as needed. After the pilot study, participants reported on their understanding of the instructions, length of the interval time between pairs of sentences, and anything related to the completion of the test. All participants reported that the transition time, 2 seconds, between each trial was too short to process

and write down the final words. They also commented that the intervals between trials were needed to be identified clearly so as to know whether the trial was completed or not. To solve this problem, the researcher increased the transition time between trials to four seconds and added a signal tone to signal the end and the beginning of the two adjacent trials. Subsequently the revised LST was piloted with volunteer participants again.

In the second pilot study, a new group of 25 volunteer participants completed the revised LST followed by a retrospective report. They reported that they had sufficient time to process and write down the final words and the signal tone was helpful in detecting the end of the trial. Their performance on the LST was better than the prior group's. The internal reliability for this test, as indicated by Cronbach's Alpha, was .577 and .545 for the LST processing and recall respectively. This was consistent with the results of the main study for which the internal reliability for this measure, as indicated by Cronbach's Alpha, was .660 and .762 for the LST processing and recall respectively.

During the implementation of the final test in the quantitative studies, participants listened to the 42 sentences and judged whether the sentence was meaningful while retaining the last word of each sentence in mind. And then at the end of each set, they were required to recall and write down the last words of all 42 sentences, irrespective of order of the sentences. For example subjects might listen to the following set of sentences: "*New York is the capital city of Germany*"; "*Harry Potter was originally written by Shakespeare*" The sentences in each trial were read one by one with a pause during which participants can judge the truth value and write down "T" (True) or "F"

(False) on the answering sheet. There was a four-second interval with a signal tone between each trial during which the participants were required to recall the final words of *Germany* and *Shakespeare*. Prior to the test session, participants were first presented with instructions and a pre-recorded practice session of nine sentences in total. The words that served as recall items were common nouns with 1-3 syllables, and none of them was semantically associated to any other, as judged by the researcher with the help of other Ph.D. candidates from the Faculty of Education and Social Work, University of Auckland. LST is a complex WMC measurement, the sentence judgement procedure measures participants' WMC of information processing, whereas the word recall measures their WMC of short-term memory. The test awards 1 point for information processing and 1 point for short-term memory respectively, and 24 points in total for the LST.

4.3.3.6 Non-words Recognition Test (NRT)

A Non-word Recognition Test (NRT) is used to measure participants' phonological short-term memory (PSTM). In the NRT (see Appendix VI), the participants listen to a series of consonant-vowel-consonant (CVC) pseudo words of increasing length and judge whether these pseudo words are read in the same or different order. The length of the series increases as participants go through the task. The task comprises 24 trials, six of each length, starting at a length of four pseudo words and increasing to a length of seven pseudo words. In each trial, there are two series including identical pseudo words but in either an identical or a different sequence; each pseudo word is read with a 600 milliseconds pause, and followed by the next pseudo word. The last item of the first series is followed by a one second pause, after which the series is repeated. A sound signal is provided between trials to indicate the end of the current trial and the beginning of the next one, during which participants are required to identify whether

the pseudo words in the two series were read in the same or different sequence by checking “√” or “×” in their answer sheet. The series that is repeated consists of the same pseudo words as the original series, either in the same order (requiring a “√” response) or with the order of two or three adjacent items reversed (requiring a “×” response). The pseudo words employed in this analysis were based on the study of Gathercole Pickering, Hall and Peaker (2001) amended by the researcher. All of the pseudo words were checked and modified by the researcher to ensure they were pseudo words. Recording was done by the same native speaker as for the listening span test (LST).

This test was piloted with different groups of volunteer participants (40 participants in total) over three pilot studies. A different group of participants completed the test on each occasion; each was followed by a retrospective report. The test was adjusted each time according to identified shortcomings of the test, which were mostly related to the trial transition times. In the first pilot study the test was administered to a group of 10 participants with the interval between series of pseudo words in each trial was set at four seconds. Following feedback, the transition time between trials was decreased to three seconds.

The revised test was piloted with a new group of 11 participants, who reported that the interval time between the two series of pseudo words was sufficient for rehearsing the targets, and that the transition time between trials was long enough to reflect and review the sequences of the two series of pseudo words on the basis of their memory. At this pilot study also showed that the participants’ scores were high. Then, it was concluded that extra time may have led to inflated scores. Consequently, the transition

time between series and the pause between pseudo words were decreased. The revised test was then piloted with a new group of participants.

During the third pilot, the revised NRT was administered to a group of 19 participants. Participants reported they had had sufficient time to listen and process each series of pseudo words but had had no more time to rehearse the second series. Thus the period of 2 seconds was established as an appropriate trial transition time for the final test. The internal reliability for this test was .583 as indicated by Cronbach's Alpha, which was consistent with the results of the main study where the internal reliability for the NRT test, as indicated by Cronbach's Alpha, was .767.

Participants in the main study were given the instructions and had a practice session prior to the test session. The test was conducted in a classroom environment with the total task duration of about 10 minutes. The total number of correct answers by the participants was calculated. Each trial contributed 1 point to the final scores of the NRT, which is an index of participants' capacity of phonological short-term memory (PSTM). Therefore, each participant's PSTM scores ranged between 0 and 24 points in this test.

4.3.3.7 Listening Proficiency Tests (LPTs)

Participants' listening ability was measured by two individual listening tests. The first one is from College English Test (Band 4, CET 4) that was devised and tested nationally in China in December, 2013. The second one is the listening test from Academic Test 1 of IELTS 7.

The CET 4 listening test (see Appendix VII) is a national test for English as a foreign language in China which has a reputation for its validity and reliability. Students who hold the CET 4 Certificate are presumed to have reached the English level of graduates. The listening test is a component of CET 4 (along with reading and writing components) and contains three independent sections. Section A contains eight short conversations and two long conversations with one or more questions asked at the end of each conversation. Section B contains three short passages with three or four questions per passage. There are 25 multiple choice questions in section A and B altogether, and participants are required to answer multi-choice questions. Section C is a comprehension passage with dictations, which is read three times. The passage is read in the normal speed for the first time, during which participants are required to listen carefully to get the main idea. The passage is read slowly the second time with participants required to fill seven blanks with words and another three blanks with phrases or sentences. Participants check what they have written when the passage is read for the third time at a normal speed. The overall score for the listening test is 35 points in accordance with the scored assessment of CET 4.

The IELTS 7 listening test (see Appendix VIII) contains four independent sections, each with 10 questions. A variety of question types is used, including multiple choice, matching, plan/map/diagram labelling, form completion, note completion, table completion, flow-chart completion, summary completion, sentence completion and short-answer questions. Participants listen to the recording once and answer the questions as they listen. Topics of the IELTS listening materials cover nearly aspect of daily life and academic learning on authentic situations learners may come across if they go overseas for study, travel or work. The overall score for the listening test is 40

points, each section contributing 10 points. Participants' listening proficiency is judged on the basis of the average score they received from the two individual listening tests, the CET 4 and the IELTS listening comprehension tests.

4.3.4 Interviews and Listening Diaries

Ten participants volunteered to take part in the multiple-case studies, which serve as a complement to clarify the findings from the quantitative studies. Participants were invited to read the participation information sheet (PIS), and sign a consent form (CF) before agreeing to participate in the multiple-case studies research. Details of this process are provided in the section covering ethical considerations (see section 4.5).

4.3.4.1 Semi-structured interviews

Semi-structured interviews were included in the multiple-case studies. A semi-structured interview, as a form of formal verbal report, is composed of "a series of questions designed to elicit specific answers from respondents" and gain more insight into peoples' ideas, opinions, and their experience" (Fraenkel, Wallen, & Hyun, 2012, p. 451). It is an effective way to check the accuracy of information obtained through other forms of research methods, such as close-ended questionnaires (Dörnyei, 2007). In the current study, a semi-structured interview guide (see Table 4.2) was used to elicit information from participants on their developing awareness and use of strategies about L2 listening (Vandergrift & Goh, 2012). The guide was designed by the researcher in English and translated into Chinese for the convenience of participants' understanding (see Appendix IX). Participants were interviewed by the researcher four times, which were arranged in March 2015, June 2015, September, 2015 and December 2015. Core questions with appropriate prompts were prepared before the first interview. The length of the interview was determined by an individual's response

to the questions in the interview guide and also their willingness to communicate. The interviews were audio-recorded and transcribed by the researcher for data analysis.

Following the first interview, as a result of some issues identified by the researcher in the transcripts, the questions were refined, so key points could be pursued in the following research sessions. The interview questions were intended to elicit the participants' reflection on their learning histories, experiences, perceptions of L2 listening, and significant events that took place in the course of the academic year. It was anticipated that the responses would contribute to understanding contextual influences on their L2 listening progression. It was also anticipated that information elicited from the semi-structured interviews would support participants' L2 listening development in the real-life context in China.

Table 4.2 *Semi-structured Interview Guide*

	Interview questions	Knowledge
1.	Why do you want to learn and practice your listening?	Motivation
2.	What do you think of your listening ability compared with your other English skills (reading, writing, and speaking)?	Person knowledge
3.	Do you have any difficulties in doing listening comprehension tasks? If so, in what way do you solve the problems?	Person knowledge Task knowledge
4.	You have finished two listening tests. Did you pay attention to main ideas or details? Which type of test is easier for you?	Task knowledge Strategic knowledge
5.	What are the factors that may influence your listening performance when you are doing listening practice? (e.g., pronunciation, speed rate, vocabulary and topic)	Task knowledge
6.	Did you feel nervous when listening? Do you have this feeling in your daily listening practice? Are there any special ways you use to relieve your emotional tension, e.g., deep breath or remind yourself to relax?	Person knowledge
7.	What do you usually do to practice your listening after class? What kind of materials do you usually use?	Task knowledge
8.	When you were given the listening tests, what did you do first?	Planning
9.	Did you translate while listening? Do you benefit or suffer from translation while listening?	Mental translation
10.	If you cannot follow the listening material, what do you usually do (e.g., give up or try to catch up)?	Directed attention
11.	Do you have any special aims when practicing listening	Motivation

	recently (e.g., exams, interests)?	
12.	How do you evaluate your listening currently? Did you make progress? Why do you think so?	Evaluation
13.	Did your teacher teach you any listening strategies or skills? Do you believe listening strategies can help you improve your listening proficiency?	Strategic knowledge Person knowledge

4.3.4.2 Listening diaries

In addition to the interview, participants were asked to complete listening diaries to track on-going changes in the five LIDs variables related to L2 listening proficiency that are central to the study, that is language learning aptitude, WMC, listening motivation, metacognitive awareness and learning style preferences. Listening diary prompts (see Table 4.3) played a role in directing participants' reflections to particular listening events so that they could evaluate their performances, report relevant information or express any concerns. The diary prompts were designed in English and translated into Chinese by the researcher for the convenience of participants (see Appendix X).

The 10 participants were requested to hand in their diaries to the researcher either in person or through email every three weeks. They could complete the diary anytime and anywhere they like, and could write either in English, Chinese or both as they wished. No word limitation was set to the length of the diary as long as participants addressed the prompts provided by the researcher.

Table 4.3 Listening Diary Prompts

	Prompts for listening diary	Individual variables
1.	How much did I understand the materials? What were the problems in understanding the materials (e.g., vocabulary, accent, translation, memory capacity and idioms)	Person knowledge (Metacognitive knowledge)
2.	What materials did I listen to in this week? (e.g., English movies, listening comprehension tests or exercises, dictations, and etcetera)	Task knowledge (Metacognitive knowledge)
3.	What were the strategies I usually use while listening? (e.g., mental translation, take notes, inferencing, guessing,	Strategic knowledge (Metacognitive

	elaboration and catch key words)	knowledge)
4.	What did I do to practice my listening after class? (e.g., enlarge the vocabulary, learn about pronunciation skills, listen to authentic English news, movies, or songs)	Task knowledge (Metacognitive knowledge)
5.	What is my goal of practicing listening?	Motivation
6.	What did I do to understand as much as possible? (e.g., recover my concentration when my mind wanders, encourage myself when nervous, give up or keep listening when I feel the listening materials are difficult)	Attention (Metacognitive knowledge)
7.	Did I pay more attention to details or general information of the listening materials?	Style preferences
8.	How is my listening recently? Did I make progress recently? Did I achieve my goals?	Evaluation (Metacognitive knowledge)
9.	What am I going to do with the listening in the following weeks?	Planning (Metacognitive knowledge)
10.	Are there any things that might boost or weaken my interests in practicing listening?	Motivation
11.	Did I make progress in reading, vocabulary, pronunciation skills, or grammar learning recently? Did these aspects contribute to my listening proficiency?	Aptitude

4.3.5 Procedures

Data collection for the current study consisted of the quantitative studies and longitudinal multiple-case studies, both of which were scheduled during the 2015 academic year. All the research sessions were conducted on the main campus of the participants' university. Table 4.4 summarises the arrangement of all the research sessions in detail.

Table 4.4 Arrangement of Research Sessions and Instruments Administered

Research session		Instruments & Time spent
Quantitative studies (Pre-test)	Session One (Mar., 2015)	1. Listening test of the CET 4 (30 minutes) 2. LSS (20 minutes)
		1. LLAMA aptitude test (35 minutes) 2. LST (10 minutes) 3. NRT (10 minutes)
		1. Listening test of the IELTS (30 minutes) 2. LMQ (8 minutes) 3. MALQ (7 minutes)
Multiple-case studies	Mar., 2015 ~ Dec., 2015	1. Listening test (30 minutes)

	Mar., 2015, June, 2015, Sep., 2015, Dec., 2015	<ol style="list-style-type: none"> 2. LST (10 minutes) 3. NRT (10 minutes) 4. LMQ (8 minutes) 5. MALQ (7 minutes) 6. LSS (20 minutes) 7. LLAMA aptitude test (35 minutes) 8. Semi-structured interview (30 minutes approximately) 9. Self-report listening diaries (untimed)
Quantitative studies (Post-test)	Session Two (Dec., 2015)	<ol style="list-style-type: none"> 1. Listening test of the CET 4 (30 minutes) 2. LSS (20 minutes)
		<ol style="list-style-type: none"> 1. LLAMA aptitude test (35 minutes) 2. LST (10 minutes) 3. NRT (10 minutes)
		<ol style="list-style-type: none"> 1. Listening test of the IELTS (30 minutes) 2. LMQ (8 minutes) 3. MALQ (7 minutes)

Note. LSS refers to the Learning Style Survey (Cohen et al., 2001). LST refers to the Listening Span Test. NRT refers to the Non-words Recognition Test. LMQ refers to the Listening Motivation Questionnaire. MALQ refers to the Metacognitive Awareness Questionnaire (Vandergrift et al., 2006). LLAMA refers to the language aptitude test (Meara, 2005).

The quantitative studies vary from the multiple-case studies in the arrangement of the data collection sessions, which are explained in following sections.

4.3.5.1 Arrangement for the quantitative studies

Prior to the quantitative studies, the signed consent forms (CFs) were sought from the 300 participants by an administrative staff from the College of Foreign Languages in TYUT. The quantitative studies were designed to collect large-scale data regarding participants' L2 listening proficiency and their LIDs variables. There were two sessions, namely, the pre- and the post-tests. The pre-test was conducted in March, 2015. In the first English class, with the help of the administrative staff, the researcher administered the first listening test of the CET 4 to the participants, which lasted about 30 minutes. After a 10-minute break, the learning style survey (LSS) questionnaire was distributed to participants for completion, which required about 15 minutes. During the second English class, participants were invited to complete the computer-based LLAMA language aptitude test in a computer laboratory, which required

approximately 35 minutes, including the 10 minutes introduction and 25 minutes to complete it. After a 10-minute break, in the same computer laboratory, the listening span test (LST) and the non-words recognition test (NRT) were conducted (10 minutes for each) with a 10-minute break in between. In the third English class, participants' listening proficiency was measured by the second listening test of the IELTS that lasted 30 minutes, followed with the Listening Motivation Questionnaire (LMQ) and the Metacognitive Awareness Listening Questionnaire (MALQ) that required 15 minutes altogether. Thus approximately 3 hours are required to finish all the tests in the quantitative studies. The post-test repeated the exactly same procedures for data collection in December, 2015.

4.3.5.2 Arrangement for the longitudinal multiple-case studies

The longitudinal multiple-case studies started from March, 2015, immediately after the pre-test of the quantitative studies, and lasted for one academic year. The ten students who volunteered to participate in the multiple-case studies were first invited to read the Participant Information Sheet (PIS) and then sign the Consent Form (CF) (see Appendix XIII). In addition to the pre- and the post-tests, the 10 participants completed the assessment task as a measure of their L2 listening proficiency every three weeks during the year, 12 times in total, which were all arranged and monitored by the researcher. For each of them, changes in regards to the five LIDs variables (i.e., language learning aptitude, WMC, listening motivation, metacognitive awareness and learning style preferences) are a focus of the study. These variables were measured with the same test and questionnaires on an additional two occasions in June and September, 2015, respectively, as shown in Table 4.4.

4.4 DATA PROCESSING AND ANALYSIS

The present study adopted a longitudinal mixed-methods design with data being collected through instruments designed to gather quantitative and qualitative data. Thus, data from the quantitative studies and the longitudinal multiple-case studies were analysed in different ways and will be presented separately.

4.4.1 Quantitative Analyses

4.4.1.1 Preparation

Data collected from the five tests and three questionnaires were screened and cleaned, and then were thoroughly examined in terms of missing responses, normality and homogeneity for multivariate analysis. Invalid data included participants' intentional mischief or apparent inaccurate responses, and were removed from the database. Missing data were examined via manual inspection first (Teng, 2016). Given that there were less than 3% missing values in this stage (Field, 2009), a list-wise measure was applied using Statistical Package for Social Sciences (SPSS) Version 23.0 to remove all incompletely cases from data analysis. This study took reference to skewness and kurtosis as measures of normality for multivariate analysis. Data are assumed to be normally distributed if the standardised skewness values are between 0 and ± 3.0 and standardised kurtosis values do not exceed ± 8.0 (Field, 2009). Homogeneity of variance was also examined by a Levene's test in this study because multivariate statistical measures (e.g., structural educational modelling and confirmatory factor analysis) require that the data meet the assumptions of homogeneous variances (Raykov & Marcoulides, 2008). Initial data imputation indicated that all quantitative data collected were normally distributed and demonstrated homogeneity of variance.

Accordingly, the quantitative data were subjected to paired samples *t* tests, confirmatory factor analysis (CFA), and structural equation modelling (SEM).

4.4.1.2 Paired samples *t* tests

The normal distribution of independent variable (i.e., the five LIDs variables) and dependent variable (i.e., listening test scores) were first examined. Bivariate scatterplots were checked and no outliers were found, indicating the linear combination of these variables. Thus, the assumptions for bivariate analysis were met as all these examinations indicated.

A series of paired samples *t* tests were applied to explore the possible changes of five LIDs variables and two listening proficiency scores of participants between the pre- and the post-tests. The *p* value was adjusted by Bonferroni correction to counteract the problem of multiple comparisons among seven groups (Armstrong, 2014). Thus, the *p* value that is lower than 0.007 was considered as significant. Cohen's *d* was reported as a way to reveal the effect size (small= 0.2; medium = 0.5; large = 0.8) (Cohen, 1988).

4.4.1.3 Confirmatory factor analyses (CFA)

Structural equation modelling (SEM) is regarded as a conservative and yet powerful approach that measures the degree and direction of correlations between variables by considering all correlations and covariances among all items in the data matrix simultaneously (Kline, 2016). It has been acknowledged that CFA conducted using SEM allows for a quantitative test of the theoretical model and a tighter specification of multiple hierarchies by utilising the factor patterns, correlation patterns, covariance patterns, and residual or error values within a data matrix (D. Kaplan, 2009). Thus, IBM SPSS AMOS computer program, Version 23.0 was employed to examine the factorial structure of the questionnaires and tests.

In the current study, the maximum likelihood (ML) estimation method was applied to evaluate the model fit. The CFA data were interpreted on the basis of several omnibus fit statistics to evaluate goodness-of-fit of the proposed models. In reference to model fit, this study used multiple fit indices that include absolute fit indices and incremental fit indices. Absolute fit indices determine the degree to which the proposed model predicts (fits) the observed covariance matrix (Ho, 2014, p. 424), and determine how well the *a priori* model fits, or reproduces the data (Hu & Bentler, 1999). Three absolute fit indices: the ratio of chi-square divided by the degree of freedom (χ^2/df), the Root Mean Square Error of Approximation (RMSEA) with its corresponding 90% confidence interval and the standardized root mean square residual (SRMR) were reported. Chi-square divided by the degree of freedom ($\chi^2/df \leq 2$ or 3) indicates the best fit with the non-significant *p* value to accept the null hypothesis that there is no significant difference between the model's implied variances and covariances and the observed variances and covariances (Schreiber, Nora, Stage, Barlow, & King, 2006). The RMSEA value below .06 to .08 indicate an acceptable model (Schreiber et al., 2006), and lower values indicate better fit (Ho, 2014). The SRMR is the square root of the discrepancy between the sample covariance matrix and the model covariance matrix. Values for the SRMR are equal to or less than .08 are generally indicative of acceptable model fit (Schreiber et al., 2006).

Incremental fit indices compare the chi-square for the proposed model to some baseline model, most often referred to as the null or independence model in which all of the variables are uncorrelated (Ho, 2014; Hu & Bentler, 1999). Two incremental fit indices were reported in this study: the Tucker-Lewis index (TLI) and the comparative fit index (CFI) (Ho, 2014). The TLI is also called the non-normed fit index or NNFI,

which analyses the discrepancy between the chi-squared value of the hypothesised model and the chi-squared value of the null model. The CFI analyses the model fit by examining the discrepancy between the data and the hypothesised model, while adjusting for the issues of sample size inherent in the chi-squared test of model fit and the normed fit index. Hu and Bentler (1999) suggested that $CFI \geq .95$, $TLI \geq .95$ indicate good model fit (Byrne, 2016; Schreiber et al., 2006). This study also referred to the value of Gamma hat as one fit index due to its being resistant to sample size, model complexity, and model misspecification (Fan & Sivo, 2007). The statistic of Gamma hat $\geq .90$ constitutes acceptable fit and $\geq .95$ indicates good fit to the data (Fan & Sivo, 2007).

4.4.1.4 Structural equation modelling (SEM)

Structural equation modelling (SEM) is adopted in the present study to analyse the data, results of which will address two of the research questions: the correlations among the five LIDs variables and predictive effects of these variables on L2 listening success. On one hand, a SEM model allows researchers to estimate both the links between the latent variables and their observed measures, and also the direct effects among the variables (Byrne, 2016), namely, the interrelations among the five LIDs variables in the current study. On the other hand, with SEM researchers can investigate the plausibility of a full latent variable model, which is defined as single proposed set of relationships among one or more independent variables and one or more dependent variables (Winke, 2013), that is, the potentials of each individual variable in accounting for the L2 listening success in this study.

4.4.2 Qualitative Analysis

The dynamic and complex nature of L2 listening development is illuminated through semi-structured interviews and self-report diaries from the 10 participants in the

multiple-case studies. Thematic analysis (TA) is adopted with a deductive approach to analyse the qualitative data from ten participants' semi-structured interviews and self-report diaries.

Thematic analysis (TA) is a widely-used qualitative data analysis method. It is a method for identifying, analysing and reporting patterns or themes within data. The purpose of TA is to identify patterns of meaning across a dataset that provides an answer to the research question being addressed (Braun & Clarke, 2006). Patterns are identified through a rigorous process of data familiarisation, data coding and theme development and revision. There are different ways that thematic analysis can be approached, and the deductive approach was conducted in the current research. A deductive thematic analysis would tend to be driven by the researcher's theoretical or analytic interest in the area, and is thus more explicitly analyst-driven. And the coding and theme development are directed by existing concepts or ideas (Braun & Clarke, 2006).

Qualitative research is iterative, using a non-linear, "zigzag" pattern: The researcher moves back and forth between data collection, data analysis and data interpretation depending on the emergent results. It is an on-going process involving continual reflection about the data, asking analytic questions, and writing memos throughout the study. Data collected from the interview and dairies were analysed according to the six steps provided by Creswell (2009, pp. 185–190).

- (1) Organise and prepare the data for analysis.
- (2) Read through all the data.

- (3) Begin detailed analysis with a coding process. Coding is the process of organizing the material into chunks or segments of text before bringing meaning to information, defined by Rossman and Ralls in 1988 (p. 171, cited in Creswell, 2009, p. 186).
- (4) Use the coding process to generate a description of the setting or people as well as categories or themes for analysis.
- (5) Advance how the description and themes will be presented in the qualitative narrative.
- (6) A final step in data analysis involves making an interpretation or meaning of the data.

Results from these qualitative materials are necessary complements to clarify the findings obtained from the quantitative studies. Thus, interpretations in qualitative research contributed to addressing the (b) questions which explores discrepancies among high- and low-level participants in terms of LIDs variables, and how these variables affect participants' L2 listening development.

4.5 ETHICAL CONSIDERATIONS

The researcher initially contacted the Dean and having obtained the permission from the Dean to contact EFL teachers and students. The aims of the study, the time commitment, participating requirement and any necessary information were fully described in PISs and CFs (See Appendices XI, XII, and XIII), and were approved by the University of Auckland Human Participate Ethics Committee in October, 2014 (Ref. 013063). For recruiting students, an advertisement (see Appendix XIV) with the researcher's personal information, the purpose of the research project, procedures, requirements, benefits, and data collection was circulated by teachers on behalf of the

researcher, and was also posted on notice boards in the campus and the university online bulletin board system. Students who were interested in participation obtained the PISs and CFs from their teachers and returned the CFs to a box in the College of Foreign Languages in the university. Those who were not selected as participants both in the quantitative studies and multiple-case studies received a thank-you letter (see Appendix XV).

4.6 CHAPTER SUMMARY

This chapter started with an overview followed by the presentation of research questions, and then a thorough explanation of the longitudinal mixed-methods approach in the current study. The third section presented participant information and a detailed description of research instruments, including the development and validation of measurements in the quantitative studies, and descriptions of qualitative instruments in the longitudinal multiple-case studies. The ensuing sections provided a thorough explanation of the data collection procedures and data analysis. Finally, the chapter reports that the present study was authorised with the approval for ethical considerations from the University of Auckland Human Participate Ethics Committee in October, 2014 (Ref. 013063).

CHAPTER 5 RESULTS OF THE QUANTITATIVE STUDIES

5.1 OVERVIEW

In this chapter, four research questions of the current study are addressed through analysis of data from the quantitative studies. The first research question focuses on the changes of participants' listening proficiency over time, which is reported through the paired samples *t* tests in section 5.2. The third research question concerns the development of, and changes in participants' learner individual differences (LIDs) variables, namely, language learning aptitude, working memory capacity (WMC), listening motivation, metacognitive awareness, and learning style preferences over the year. Paired samples *t* tests were administered, the results of which are presented in section 5.3. Structural equation modeling (SEM) results presented in section 5.4 provides answers to the fourth research question: What was the relationship between the five LIDs variables in L2 listening development? In addition, some LIDs variables are further analysed to investigate relationships among their sub components. Finally, a structural equation model appears in section 5.5 addresses the fifth research question that enquiries into the contribution of each LIDs variable to L2 listening development. Finally, the chapter ends with a summary.

5.2 CHANGES IN LEARNERS' L2 LISTENING PROFICIENCY OVER TIME

One of the objectives of the current study is to investigate L2 learners' listening proficiency and track its development. Participants' listening proficiencies were measured through two independent listening tests from the national CET 4 and the

IELTS 7. The two listening tests were distributed to the participants at the beginning (March, 2015) and at the end of the year (December, 2015), to track their listening development. Results were analysed through paired samples *t* tests with the *p* value adjusted by Bonferroni correction (Armstrong, 2014) to the significant level of .007 (see section 4.4.1.2). The total scores for CET 4 and IELTS 7 listening tests are 35 points and 40 points, respectively. All scores are converted to percentages for the convenience of comparison and presented in Table 5.1 below.

Table 5.1 Paired Samples *t* Tests Results for Participants' L2 Listening Proficiency Scores in the Pre- and Post- tests

L2 listening	Paired Differences		<i>t</i>	<i>d</i>	<i>df</i>	Sig. (2-tailed)
	M	SD				
Pre CET 4	50.54	16.87	8.02	1.79	291	.000
Post CET4	57.91	13.96				
Pre IELTS	29.14	16.68	8.93	1.61	291	.000
Post IELTS	35.64	13.83				

Note. M = Mean; SD = Standard Deviation

Results of paired samples *t* tests in Table 5.1 show that participants' achievement on both listening tests in the pre- and the post-tests are significantly different ($p = .000 < .007$). There is a significant increase in participants' listening performance on CET 4 from 50.54 points to 57.91 points ($t = 8.02, p = .000 < .007$), and on IELTS 7 from 29.14 points to 35.64 points ($t = 8.93, p = .000 < .007$). The Cohen's *d* statistics are estimated at 1.79 for CET 4 and 1.61 for IELTS 7 which are a large effect size based on Cohen's (1988) guidelines. Current results confirmed participants' better performance in the post-test, and also showed that participants made greater progress on the listening test of CET 4 than their performances on that of IELTS 7 during the year.

5.3 VARIATIONS IN PARTICIPANTS' LIDs VARIABLES

To determine whether there is any statistically significant difference in the learners' performance on the measures of LIDs variables between the pre- and the post-tests, the two sets of scores for the whole sample were compared by paired samples *t* tests with the *p* value adjusted by Bonferroni correction (Armstrong, 2014) to the significant level of .007 (see section 4.4.1.2). Results indicate significant differences in two LIDs variables over time: listening motivation and metacognitive awareness. No significant differences were found in participants' language learning aptitude, WMC and learning style preferences (see Table 5.2).

Table 5.2 Paired Samples *t* Tests Results for LIDs Variables in the Pre- and Post-tests

LIDs variables	Paired Differences		<i>t</i>	<i>d</i>	<i>df</i>	Sig. (2-tailed)
	M	SD				
Pre Listening motivation	2.89	0.53	4.43	0.84	291	.000
Post Listening motivation	3.25	0.29				
Pre Metacognitive awareness	3.43	0.47	5.87	0.93	291	.000
Post Metacognitive awareness	3.84	0.38				
Pre Working memory capacity	52.45	9.00	6.25	0.36	291	.008
Post Working memory capacity	56.14	11.61				
Pre Learning aptitude	51.18	13.96	4.04	0.11	291	.009
Post Learning aptitude	51.96	12.98				
Pre Learning style preferences	10.36	1.52	2.25	0.01	291	.025
Post Learning style preferences	10.38	1.46				

Note. LIDs = Learner Individual Differences; M = Mean; SD = Standard Deviation

Statistical results of paired samples *t* tests demonstrate significant increases in learners' listening motivation ($p = .000 < .007$) and metacognitive awareness ($p = .000 < .007$). The increases are confirmed by the large effect size of 0.84 and 0.93 respectively, shown as the Cohen's *d* in Table 5.2. On the contrary, no significant increases or decreases were detected between the two times measurements of participants' WMC

($p = .008 > .007$), language learning aptitude ($p = .009 > .007$) and learning style preferences ($p = .025 > .007$) although their mean values increased slightly from the pre- to the post-tests. The Cohen's d statistics of the three variables are 0.36, 0.11 and 0.01 respectively, which show small effect sizes ($d < .40$) according to Cohen (1988), confirming the no significant results as well. Detailed analysis and information on the variations of the five LIDs variables are illustrated thoroughly by the results of the longitudinal multiple-case studies.

5.4 CORRELATIONS BETWEEN LIDs VARIABLES

The present research aimed to investigate the relationships between the five LIDs variables. This section reports to what extent the five LIDs variables related to one another through structural equation modeling (SEM), prior to which this study applied confirmatory factor analysis (CFA) procedures to assess instruments as the initial stage in data analyses.

5.4.1 Results of CFA

In the current study, the instruments for data collection were fully developed on the basis of theoretical and empirical research. CFA of a measuring instrument is most appropriately applied to measurements that were developed, and their factor structures validated (Byrne, 2016). Thus, in testing for the validity of factorial structure for measurements of the five LIDs variables in this study, the CFA was applied to each measurement individually. Goodness-of-fit summary of CFA models are listed in Table 5.3 below.

Table 5.3 Goodness-of-Fit Statistics of CFA Results of LIDs Variables

LIDs Variables	χ^2/df	TLI	CFI	Gamma Hat	SRMR	RMSEA
Acceptable Value	≤ 2 or 3	$\geq .95$	$\geq .95$	$\geq .90$	$\leq .08$	$< .06$
Motivation	1.57	.956	.974	.094	.067	.044
Working memory	1.58	.961	.973	.096	.075	.053
Language aptitude	1.84	.952	.962	.091	.054	.059

Metacognitive awareness	1.75	.969	.984	.095	.063	.049
Learning style preferences	1.96	.950	.951	.091	.079	.056

Note. LIDs = Learner Individual Differences

Goodness-of-fit statistics in Table 5.3 indicate that the observed items in either questionnaires or tests collectively measured the latent constructs of the five LIDs variables to a high level of accuracy. In general, the subscales of these measuring instruments are considered to represent the five LIDs variables. All items (i.e., items of a questionnaire) comprising a particular subscale are therefore expected to load onto their related variables (Byrne, 2016). Thus, the latent constructs of these variables can be used in the five LIDs variables correlated model.

5.4.2 SEM of LIDs Variables

The five LIDs variables correlated model was constructed and is shown with the standardised coefficients in Figure 5.1. Goodness-of-fit statistics of the model are shown in Table 5.4, indicating the data fitted the model well and the model is good.

Table 5.4 *The Five LIDs Variables Correlated Model: Goodness-of-Fit Statistics*

	χ^2/df	TLI	CFI	Gamma Hat	SRMR	RMSEA
Acceptable Value	≤ 2 or 3	$\geq .95$	$\geq .95$	$\geq .90$	$\leq .08$	$< .06$
Model indicators	1.56	.966	.973	.094	.064	.054

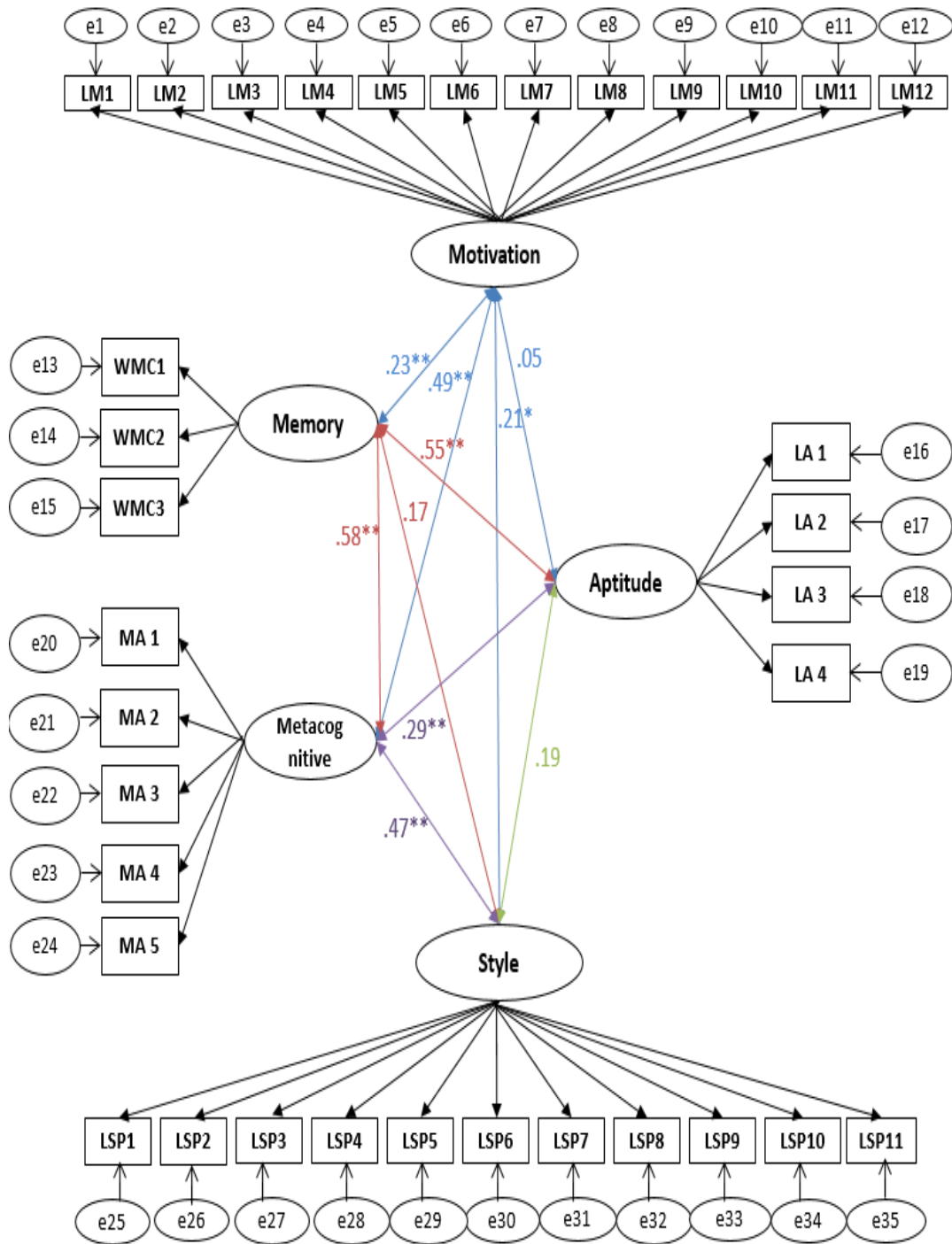


Figure 5.1 *The Five LIDs Variables Correlated Model*

Note. LIDs = Learner Individual Differences; LM = Listening Motivation; WMC = Working Memory Capacity; LA = Language Learning Aptitude; MA = Metacognitive Awareness; LSP = Listening Style Preferences.

Figure 5.1 illustrates the five LIDs variables are correlated with one another with different coefficients illustrating the magnitudes of their correlations. The significant correlations are summarised in Table 5.5.

Table 5.5 The Correlations between the Five LIDs Variables

LIDs Variables		Standard Coefficients	Estimate	C.R.	Sig. (2-tailed)
Memory	<--> Metacognitive	0.58	43.63	6.92	***
	<--> Aptitude	0.55	39.47	6.11	***
	<--> Motivation	0.49	33.54	5.65	***
Metacognitive	<--> Style	0.47	30.64	4.94	***
	<--> Aptitude	0.29	25.95	3.51	.013*
Aptitude	<--> Style	0.25	25.98	2.86	.016*
Motivation	<--> Memory	0.23	24.11	1.76	0.17
	<--> Style	0.21	23.78	1.45	.019*

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

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

LIDs = Learner Individual Differences; C.R. = Critical Ratio

The significant standard coefficients presented in Table 5.5 range from .21 between listening motivation and learning style preferences to .58 between WMC and metacognitive awareness, indicating the small to moderate magnitudes of correlations between the five LIDs variables. Among all pairs, WMC can be seen to be significantly correlated with metacognitive awareness ($r = .58, p < .001$), and language learning aptitude ($r = .55, p < .001$). Metacognitive awareness, in addition to WMC, are significantly related to both listening motivation ($r = .49, p < .001$) and learning style preferences ($r = .47, p < .001$). There are also relationships evident between the metacognitive awareness and language learning aptitude ($r = .29, p = .013$), language learning aptitude and learning style preferences ($r = .25, p = .016$), listening motivation and WMC ($r = .23, p = .017$), and listening motivation and learning style

preferences ($r = .21$, $p = .019$). No correlations were found between the rest LIDs variables.

Results obtained from the correlated model suggested that LIDs are a complex system in which the five variables correlated with one another to varying degrees. Thus, in following sections, correlation analyses were further conducted among components of those significantly correlated variables, aiming to provide more information for exemplifying the components interrelations of these variables. For better illustration, performances of some participants in the multiple-case studies are presented as examples.

5.4.3 WMC and other LIDs Variables

WMC is one of the important LIDs variables in L2 language development. The following sections will examine the extent to which WMC related to participants' metacognitive awareness and their language learning aptitude.

5.4.3.1 WMC and metacognitive awareness

WMC and metacognitive awareness were moderately and significantly correlated ($r = .58$, $p < .001$), which suggests that better WMC leads to greater use of strategies. Participants' WMC were assessed through two independent tests. One is the Listening Span Test (LST) which measures participants' capacity in information processing and storage (also known as short-term memory). The other is the Non-words Recognition Test (NRT) that evaluates participants' phonological short-term memory (PSTM). Participants' metacognitive awareness and perceived use of strategies were measured by the Metacognitive Awareness Listening Questionnaire (MALQ) which consisted of five distinctive aspects. Results in Table 5.6 show that four types of strategies are

significantly correlated with participants' WMC; except the strategy of mental translation.

Table 5.6 Correlations between WMC and Metacognitive Awareness

Items	Working memory capacity (WMC)		
	Information Processing	Short-term memory	Phonological short-term memory
Problem solving	.54**	.47*	.09
Sig. (2-tailed)	.000	.001	.138
Planning evaluation	.41*	.3*	.05
Sig. (2-tailed)	.000	.016	.370
Metacognitive Awareness Directed attention	.39*	.32*	.15**
Sig. (2-tailed)	.000	.000	.001
Person knowledge	.28**	.31**	.13*
Sig. (2-tailed)	.000	.000	.026
Mental translation	-.03	.02	-.01
Sig. (2-tailed)	.568	.755	.895

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

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

The data in Table 5.6 show that participants' three WMC aspects are significantly correlated with the strategies of problem solving, planning evaluation, directed attention, and person knowledge. Participants' capacities of information processing are significantly correlated with, and might be affected mainly by, their use of the strategy of problem solving ($r = .54, p < .001$), and the strategy of planning evaluation ($r = .47, p < .001$). The strategy of mental translation do not correlate with participants' WMC in terms of the three aspects, and even show a very small negative correlation with participants' WMC of information processing ($r = -.03, p = .568$) and phonological short-term memory ($r = -.01, p = .895$). On the basis of these results, the researcher speculates that there is a reciprocal relationship between participants' metacognitive awareness and their WMC.

5.4.3.2 WMC and language learning aptitude

WMC is significantly correlated with language learning aptitude ($r = .55, p < .001$) as shown in the correlated model (see Figure 5.1). Phonological short-term memory (PSTM), information processing and storage (i.e., short-term memory) are the three distinctive aspects of participants' WMC that were measured through the Non-words Recognition Test (NRT) and the Listening Span Test (LST). Participants' learning aptitude was evaluated through LLAMA with four aspects, namely, vocabulary learning, sound recognition, sound-symbol correspondence and grammatical inferencing. Table 5.7 shows that the components of WMC and language learning aptitude are significantly correlated and the magnitudes of the correlations varied.

Table 5.7 Correlations between WMC and Language Learning Aptitude

Items	Working memory capacity (WMC)		
	Short-term memory	Information Processing	Phonological short-term memory
Sound-symbol correspondence	.57**	.49**	.11
Sig. (2-tailed)	.000	.000	.029
Vocabulary learning	.48**	.36*	.09
LA Sig. (2-tailed)	.000	.003	.098
Sound recognition	.35*	.02	.43**
Sig. (2-tailed)	.002	.685	.000
Grammatical inferencing	.27	.24	-.03
Sig. (2-tailed)	.032	.078	.859

Note. LA=Language Learning Aptitude

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

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

Results presented in Table 5.7 demonstrate that two components of WMC (i.e., short-term memory and information processing) are significantly correlated with three aspects of language learning aptitude (i.e., sound-symbol correspondence, vocabulary learning and sound recognition). The strongest correlation are detected between the WMC component of short-term memory and aptitude component of sound-symbol correspondence ($r = .57, p < .01$); and followed by the WMC component of

information processing and aptitude component of sound-symbol correspondence ($r = .49, p < .01$). These two WMC components are also significantly correlated with the aptitude component of vocabulary learning ($r = .48, p < .01$; $r = .36, p < .05$). Significant correlations are also evident between the WMC component of phonological short-term memory and the aptitude component of sound recognition ($r = .43, p < .01$) as well as between the short-term memory and the aptitude component of sound recognition ($r = .35, p < .05$). The other components of WMC and language learning aptitude presented in Table 5.7 do not show any significant correlations.

In the multiple-case studies, participants' performance on WMC tests and language learning aptitude tasks were tracked and measured by the same instruments on four occasions during the academic year. In the process of data analysis, it is shown that the above significant component correlations of WMC and language learning aptitude were supported by the performance of the high-level group of participants in the multiple-case studies. Participant 03's results are selected as examples which are displayed in the diagram in Figure 5.2.

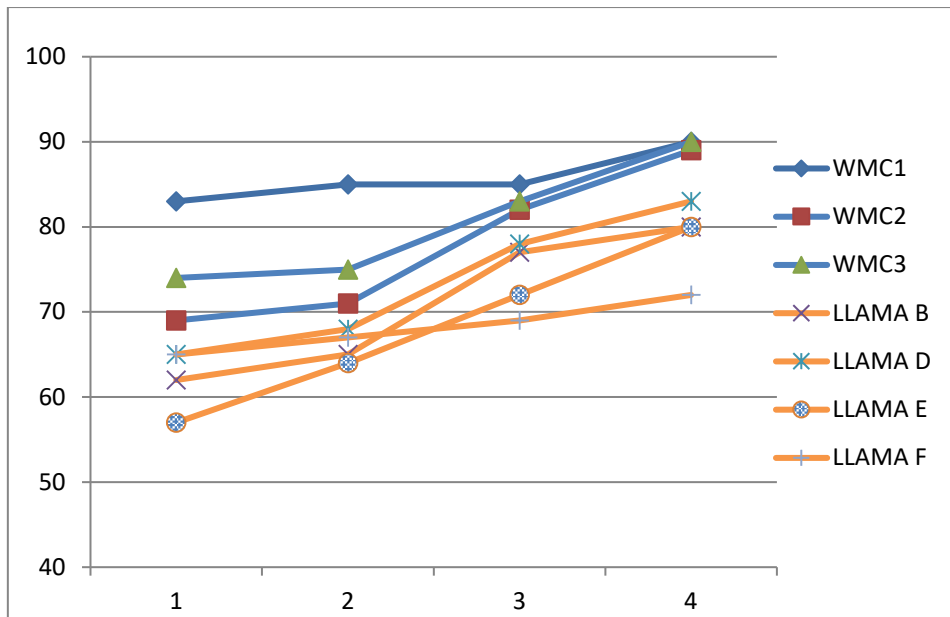


Figure 5.2 Participant 03's Achievement on WMC and LA Tasks

Note. WMC = Working Memory Capacity; LA = Language Learning Aptitude

Considerable improvements were detected in participant 03's four scores for WMC and language learning aptitude tasks as displayed in Figure 5.2. Participant 03 achieved close to the maximum score at each assessment time on phonological short-term memory (named as WMC1) with little variability. An increasing trend is detected on her scores on information processing (named as WMC 2) and short-term memory (named as WMC 3) as shown in Figure 5.2. There was a marked increase in Participant 03's scores after the second measurement. At about the same time, Participant 03 also made progress on three aspects of language learning aptitude, namely, vocabulary learning (LLAMA B), sound recognition (LLAMA D), and sound-symbol correspondence (LLAMA E) as illustrated in Figure 5.2. Little change was detected in her scores on grammatical inferencing (LLAMA F).

As can be seen in the line diagram, the scores of participant 03' information processing (WMC 2) and short-term memory (WMC 3) are 69 and 74 points in the

first measurement. Her scores increased consistently from the second measurement and reached to 89 and 90 points, respectively in the final test, the highest point during the year, reflecting her steady progress in WMC tests. Over the same period of time, progress was also detected in her language learning aptitude tasks. She made continuous improvement with her scores reaching 80 points at the fourth measurement point on the component of sound-symbol correspondence. Participant 03's scores also increased on other aptitude components as shown in Figure 5.2. Participant 03's performances on WMC tests and language learning aptitude tasks demonstrated a relatively parallel trend during the year, providing further indication of the significant correlations between WMC and language learning aptitude, as well as relationships between the components of the two variables. Thus, they appear to interact mutually to influence participants' L2 listening development.

5.4.4 Metacognitive Awareness and other LIDs Variables

Participants performed differently in the pre- and post-questionnaires of MALQ and LMQ (see section 5.3). Metacognitive awareness were found to be moderately and significantly correlated with listening motivation ($r = .49, p < .001$), and with the learning style preferences ($r = .47, p < .001$) (see Figure 5.1). Pairwise correlation analyses were conducted to examine the relationships between components of metacognitive awareness and listening motivation, as well as the correlations between components of metacognitive awareness and learning style preferences in the following sections.

5.4.4.1 Metacognitive awareness and listening motivation

Metacognitive awareness and motivation are considered as non-cognitive LIDs variables in L2 development, and have been reported as predictors of L2 listening success (Vandergrift & Baker, 2015; Vandergrift, 2005). As demonstrated in the

constructed model, listening motivation showed the strongest correlation with metacognitive awareness among the five LIDs variables ($r = .49, p < .001$). Thus, pairwise correlation analyses were conducted between the components of the two variables, that is between the 12 aspects of listening motivational and the five aspects of metacognitive awareness. The results are presented in Table 5.8 as below.

Table 5.8 Correlations between Metacognitive Awareness and Listening Motivation

LM factors	MA1	MA2	MA3	MA4	MA5
Competitive	.36**	.31**	-.09	.30**	.32**
Exam	.35**	.32**	-.08	.31**	.28**
Going abroad	.34**	.26**	-.01	.24*	.29**
Major study	.33**	.24*	-.03	.23**	.24**
Interests	.27**	.31**	-.05	.25**	.19*
Atmosphere	.23**	.26**	-.03	.18*	.23**
Self-effectiveness	.15*	.22**	-.06	.14*	.21**
Career	.12*	.13*	-.06	.17*	.14*
Determination	.17*	.11	-.05	.08	.09
Family-peer	.10	.12	-.06	.03	.09
Value	.09	.06	-.14*	.08	.07
Prevention	-.13*	-.18*	.01	-.14*	-.25**

Note. LM = Listening Motivation; MA = Metacognitive Awareness; MA1 = Problem solving; MA2 =planning evaluation; MA3 = mental translation; MA4 = person knowledge; MA 5=directed attention

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

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

Results in Table 5.8 show that among the five aspects of metacognitive awareness, the strategy of mental translation is minimally and negatively correlated with the entire 12 listening motivation factors, while the other four aspects of metacognitive awareness show significant correlations with some aspects of the listening motivation. This suggests that participants are mainly motivated by these factors (i.e., competitive, exam, going abroad and major study) to use strategies. In addition, these strategies show either no, or slightly negative correlations with the motivational factor of prevention which represents an unwillingness to learn. This indicates that the participants who have scored high in prevention have scored low in using strategies, or alternatively that those who have a low score in prevention have scored high in the use of these strategies. This result can be interpreted to show that those with negative

attitudes to learning to listen are unlikely to be strategy users. Further confirmation of the intertwined nature of metacognitive awareness and listening motivation will be explained with examples in the next chapter.

5.4.4.2 Metacognitive awareness and learning style preferences

The MALQ focuses on participants' metacognitive awareness and perceived use of strategies. Learning styles represent participants' preferences in certain 11 language learning situations, labeled as LSP 1 to LSP 11 in Figure 5.1 and in the following analysis. These two variables were shown to be significantly correlated ($r = .47, p < .001$) in the five LIDs variables correlated model in Figure 5.1. In order to exemplify the component correlations of the two variables, pairwise correlation analyses were arranged and results are presented in Table 5.9.

Table 5.9 Correlations between Metacognitive Awareness and Learning Style Preferences

		MA1	MA2	MA3	MA4	MA5
LSP1	Auditory	.24**	.25**	-.18**	.19**	.16**
	Visual	.13*	.07	-.06	.10	.17**
	Tactile	.05	.08	-.09	-.10	-.05
LSP2	Extroverted	.18**	.11	-.07	.13*	.16**
	Introverted	.08	.06	-.04	.05	.06
LSP3	Random	.20**	.15*	-.13*	.08	.10
	Concrete	.09	.07	.03	.03	.05
LSP4	Closure	.27**	.27**	-.17**	.19**	.21**
	Open	.02	.05	.09	.04	-.04
LSP5	Global	.15*	.14*	-.05	.13*	.15*
	Particular	.13*	.12*	-.02	.10	.11
LSP6	Synthesizing	.20**	.12*	-.08	.17**	.18**
	Analytic	.03	.10	-.12*	-.03	-.09
LSP7	Sharpener	.18**	.22**	-.11	.07	.14*
	Leveler	.08	-.02	-.08	.00	.02
LSP8	Deductive	.03	-.03	-.15*	-.01	.07
	Inductive	.01	-.01	-.03	.08	.12
LSP9	Field-I	.19**	.20**	-.09	.18**	.14*
	Field-D	-.02	-.06	-.07	-.08	.05
LSP10	Impulsive	.19**	.14*	.00	.34**	.19**
	Reflective	.16**	.15*	-.17**	.15*	.16**
LSP11	Metaphoric	.19**	.14*	-.08	.18**	.18**
	Literal	-.03	-.07	-.03	.01	.02

Note. . **Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed); LSP = Learning Style Preferences; MA = Metacognitive Awareness; MA1 = Problem solving; MA2 =planning evaluation; MA3 = mental translation; MA4 = person knowledge; MA 5=directed attention

Not surprisingly, inverse relationships were observed between the strategy of mental translation and nearly all types of learning style preferences. This result suggests that, whatever participants' learning style preferences are, the strategy of mental translation had minimally negative influence on participants' listening development. The 23 types of learning styles grouped within the 11 learning aspects (LSP 1 to LSP 11 in Table 5.8) had low correlations, to varying degrees, with the five types of strategies. Among which, however, significant correlations were detected between four of the strategies and participants' preferences on ways of receiving information (LSP 5, including the style of *Global* and *Particular*), methods of processing information (LSP 6, including the style of *Synthesizing* and *Analytic*), committing materials to memory (LSP 7, including the style of *Sharpeners* and *Levelers*), dealing with multiple inputs (LSP 9, including the style of *field-dependent* and *field-independent*) and preferences of response time (LSP 10, including the style of *Impulsive* and *Reflective*). Specifically, these particular types of learning styles correlated with each type of metacognitive strategy to varying degrees. For example, some participants in the multiple-case studies with *synthesizing* style of processing information (within LSP 6) reported they used more types of strategies (e.g., person knowledge, planning, directed attention and evaluation) than those with *analytic* style (e.g., planning and mental translation). Another example is participants who frequently used strategies tended to be those with *field-dependent* style, implying they can abstract materials, avoid distractions in the completion of the dual-tasks learning tasks (e.g., the Listening Span Test). These relationships will be explained further with examples in the next chapter.

5.4.5 Summary of Correlations between Five LIDs Variables

In this section, a model was constructed to illustrate correlations among the five LIDs variables, namely, language learning aptitude, WMC, listening motivation,

metacognitive awareness and learning style preferences over the year (see Figure 5.1). Results indicated that WMC significantly correlated with metacognitive awareness ($r = .58, p < .001$) and language learning aptitude ($r = .55, p < .001$). In order to obtain more information, further pairwise correlation analyses were conducted on the components of these individual variables. These analyses provided evidence of relationships between specific components of WMC and metacognitive awareness. In brief, participants' strategy using is related to their WMC. This result suggests that if listeners are better strategy users, they may benefit from using these strategies when completing WMC tests and develop better WMC. In addition, pairwise tests indicated that three aspects of participants' WMC were significantly correlated, to differing degrees, with the components of language learning aptitude. Performances of some participants in the multiple-case studies were provided to support the findings of the quantitative studies. For example, the significant relationships of participants' WMC and language learning aptitude were supported by Participant 03's scores from the multiple-case studies.

Additionally, metacognitive awareness were significantly correlated with listening motivation ($r = .49, p < .001$) and learning style preferences ($r = .47, p < .001$) as demonstrated in the constructed model. Correlation analyses were also conducted on components of these variables, indicating that participants' use of strategies was related to their listening motivation. This suggests that if participants are motivated by the aim of studying abroad, passing exams and being competitive in learning L2 listening, they are likely to use more types of strategies in the learning process. Similarly, participants' learning style preferences may influence their strategy using when dealing with different learning problems.

To sum up, participants' WMC was related to their level of language learning aptitude and metacognitive awareness. The metacognitive awareness were found to be further related to participants' listening motivation and learning style preferences. Therefore, it is assumed that a highly motivated listener would try to make good use of strategies in completing listening task. On one hand, participants' listening performances were influenced by their WMC and language learning aptitude; on the other hand, listening motivation might generate indirect effects on participants' WMC and language learning aptitude through their metacognitive awareness that were affected simultaneously by their learning style preferences. Interactive and complex associations were clearly identified in the constructed LIDs variables correlated model. How each LIDs variable affected L2 listening within this construct, and to what extent they might influence the development of L2 listening, is the major concern of the next research question.

5.5 CONTRIBUTIONS OF LIDs VARIABLES TO L2 LISTENING

The fourth research question asked whether the correlated five LIDs variables affect L2 listening and, if so, to what extent. Two models were constructed to investigate the predictive value of the five LIDs variables towards L2 listening achievement based on data that have been collected from the pre- and the post-tests and analysed through AMOS 23.0. The post-test model, with a better result of goodness-of-fit, is presented with findings in the following section.

5.5.1 The Predictive Value of Five LIDs Variables for L2 Listening

Firstly, goodness-of-fit statistics of the model (see Figure 5.3) are shown in Table 5.10, indicating the data fitted the model well and the model is good.

Table 5.10 *The Predictive Model of LIDs Variables for L2 Listening: Goodness-of-Fit Statistics*

	χ^2/df	TLI	CFI	Gamma Hat	SRMR	RMSEA
Acceptable Value	≤ 2 or 3	$\geq .95$	$\geq .95$	$\geq .90$	$\leq .08$	$< .06$
Model indicators	1.35	.978	.981	.094	.054	.032

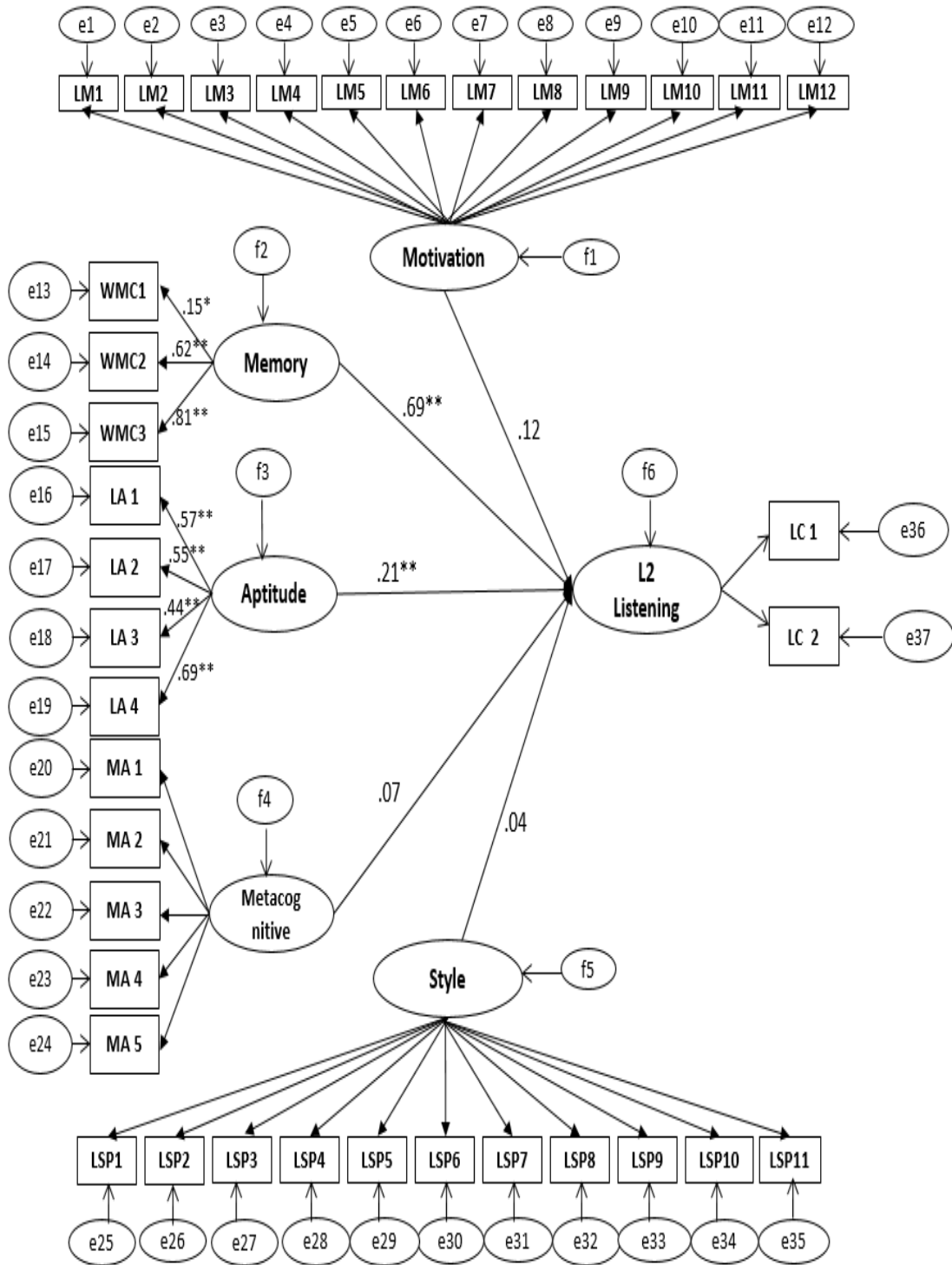


Figure 5.3 The Predictive Model of LIDs Variables for L2 Listening

Note. LIDs = Learner Individual Differences; LM = Listening Motivation; WMC = Working Memory Capacity; LA = Language Learning Aptitude; MA = Metacognitive Awareness; LSP = Listening Style Preferences.

The standard coefficients in Figure 5.3 reveal a clear structure: the five LIDs variables are not only related to L2 listening but also account for different amounts of variance in L2 listening. These are summarised in Table 5.11.

Table 5.11 *The Predictive Value of LIDs Variables for L2 Listening*

		LIDs Variables	Standard Coefficients	Estimate	C.R.	Sig. (2-tailed)
L2 Listening	<---	Memory	0.69	0.36	5.93	***
		Aptitude	0.21	0.11	2.68	***
		Motivation	0.12	0.08	1.87	.006*
		Metacognitive	0.07	0.06	1.00	.321
		Style	0.04	0.04	.66	.509

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

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

LIDs = Learner Individual Differences; C.R. = Critical Ratio

In the current model, five LIDs variables positively predict L2 listening proficiency, but only the variables of WMC and language learning aptitude show significant correlations with L2 listening and contribute to L2 listening success. The findings suggest that WMC is the most powerful predictor to L2 listening success, followed by language learning aptitude. The regression coefficient of each variable reveals how much the score for L2 listening is expected to increase when the score for the independent variable increases by 1 standard deviation (Field, 2013; Thayer, 1991). In the current model, for every additional increase in WMC, there is .69 standard deviations increase in L2 listening ($r = .69, p < .001$); for every additional increase in language learning aptitude, there is .21 standard deviations increase in L2 listening ($r = .21, p < .001$). The three remaining LIDs variables of listening motivation, metacognitive awareness and learning style preferences are neither significantly correlated with nor had significant effects on L2 listening success.

5.5.2 The Effects of WMC on L2 Listening

WMC was shown as the strongest predictor of L2 listening success. This section will explore the effects of WMC on L2 listening through investigating the WMC construct, the correlations of the WMC components with L2 listening, and presenting results of some high-level participants (i.e., Participant 01 and 03) who demonstrated a clear pattern of development towards high-levels of L2 listening proficiency in the multiple-case studies.

5.5.2.1 The WMC construct

The model in Figure 5.3 presents the construct of WMC in this study. WMC is composed of three independent sub-scales (i.e. components): short-term memory, information processing, and phonological short-term memory, shown as WMC1, WMC2, and WMC3 in the model. The regression coefficient of each component reveals how much the score for WMC is expected to increase when the score for the independent sub-scale increases by 1 standard deviation (Field, 2013; Thayer, 1991). In this model, tertiary level L2 listeners' WMC consists of high short-term memory (WMC 3) and information processing (WMC 2), and low phonological short-term memory (WMC 1). Short-term memory contributes the most to differences in WMC. Increases in short-term memory scores lead to major increases in WMC scores ($r = .81$, $p < .001$). It can be inferred that the more information participants could memorise in a short time, the better WMC participants might have. In addition, increases in information processing (WMC 2) may also lead to major increases in WMC scores ($r = .62$, $p < .001$). Finally, increases in phonological short-term memory contribute much smaller increases to WMC scores ($r = .15$, $p = .002$).

WMC was proved to contribute the most to L2 listening success (see Figure 5.3). Thus, it would appear that the major increases in L2 listening proficiency largely depended on the increases in WMC scores, and the increases in WMC scores mainly relied on the increases of its two components: short-term memory and information processing.

5.5.2.2 Correlations between WMC and L2 listening

The WMC construct was revealed in the previous section, but the relationships between WMC components and L2 listening were not clear yet. Thus, correlation analyses were conducted to examine the relationships between the three WMC components and L2 listening. Results showed that L2 listening correlated with the three WMC components to varying degrees as shown in Table 5.12.

Table 5.12 *Correlations between WMC and L2 Listening*

	Phonological short-term memory	Information processing	Short-term memory	WMC
L2 listening	.11	.51**	.65**	.66**
Sig. (2-tailed)	.078	.000	.000	.000

Note. WMC = working memory capacity

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

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

Results illustrated that L2 listening is significantly correlated with the WMC component of short-term memory ($r = .65, p < .001$), contributing the most to WMC scores (see section 5.5.2.1). It can be inferred that increases in participants' short-term memory scores lead to major increases in WMC scores as well as their L2 listening proficiency. Participants' WMC for information processing is also significantly correlated with L2 listening proficiency ($r = .51, p < .001$), suggesting a positive influence of information processing on L2 listening development. In contrast, the WMC component of phonological short-term memory is not correlated with L2 listening ($r = .11, p = .078$).

5.5.2.3 Influence of WMC on L2 listening with selected examples

The contributions of WMC components of short-term memory and information processing have been shown to the increases of WMC, and their significant correlations with L2 listening are reported above. Further evidence from participants in the multiple-case studies is reported here. Their WMC and L2 listening proficiency were measured four times in the year. The average growth in their WMC and L2 listening scores is presented in Figure 5.4. The four average scores were converted to percentage for the convenience of comparison.

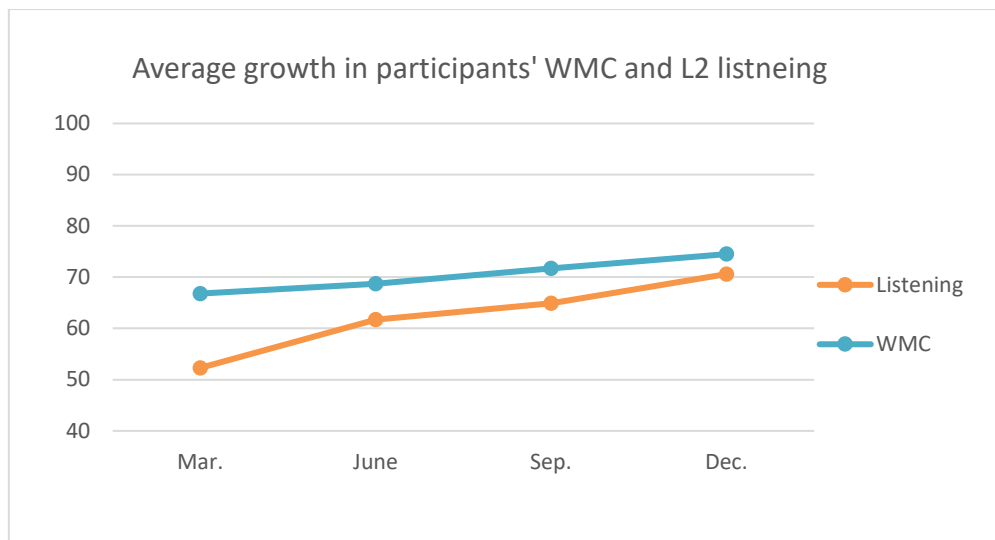


Figure 5.4 *The Average Growth in Participants' WMC and L2 Listening Scores*

Note. WMC = working memory capacity

The diagram shows that, on average, participants made progress, gained higher scores and demonstrated paralleled increasing pattern of development in listening and WMC scores during the year, especially the high-level participants 01 and 03. Therefore, their results from each of the four time points are selected as examples for illustration as shown in Figure 5.5.

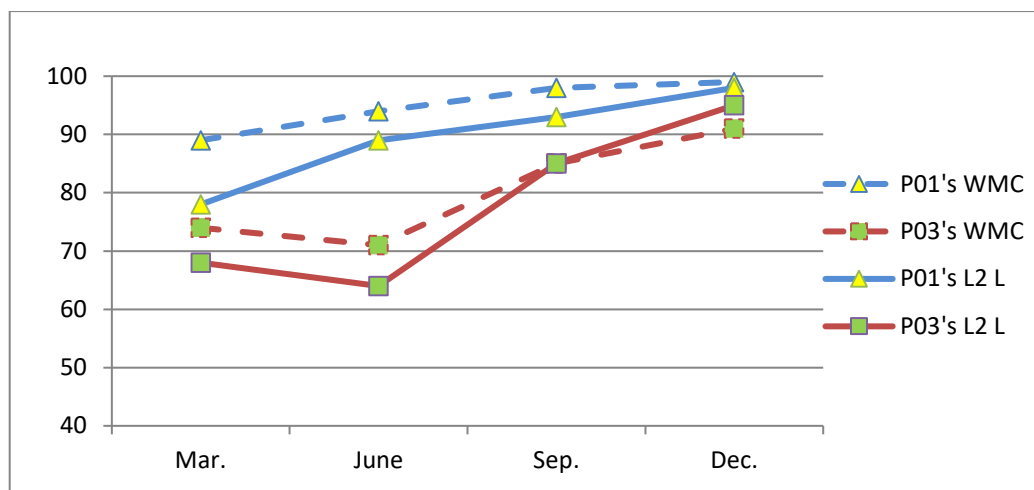


Figure 5.5 Participants 01's and 03's Scores of WMC and L2 Listening

Note. P 01 = Participant 01; P 03 = Participant 03; L2 L = L2 listening; WMC = working memory capacity

Figure 5.5 depicts the WMC scores of Participants 01 and 03 at each of the four measurement points. It can be seen from the diagram that Participant 01 experienced a steady development of WMC and L2 listening during the year. Participant 03's WMC and listening scores demonstrated a fluctuated trend during the year. Her listening score first decreased from 68 points in March to 64 points in June, then increased to 85 points in September, and finally reached 95 points at the end of the year. Results of these suggested that Participant 01 achieved higher scores consistently, while Participant 03 made greater progress on both tests. The gap between their performances was at the maximum in June and to the minimum in December, 2015. Thus, it can be inferred that the greater differences between participants' WMC performances are similar to differences in their L2 listening proficiency.

5.5.2.4 Summary of the effects of WMC on L2 listening

The current study examined, comprehensively, the WMC construct, correlations between its components and L2 listening development, as well as participants' ongoing performances with both WMC and L2 listening tests. Results suggested that

participants' L2 listening proficiency may develop with an outcome of increasing WMC performance, especially in terms of short-term memory and information processing. Participants' performance in the multiple-case studies provided evidence to support the significant correlations between WMC and L2 listening, thus adding to a prediction that an increase in WMC would lead to an increase in L2 listening success. Further detailed information will be provided with explanations in the next chapter when presenting qualitative outcomes.

5.5.3 The Effects of Language Learning Aptitude on L2 Listening

Figure 5.3 displays that for every increase in language learning aptitude, there is a .21 standard deviations increase in L2 listening ($r = .21, p < .001$). Language learning aptitude, arising from this study, is the second most powerful predictor of L2 listening proficiency. This section reports on the investigation into the effect of language learning aptitude on L2 listening from three aspects: the construct of language learning aptitude, its component relationships with L2 listening, and some high-level participants' results (i.e., Participant 02 and 03) from the multiple-case studies are presented as examples as they demonstrated a clear pattern of improvement.

5.5.3.1 The language learning aptitude construct

In the predictive model of LIDs variables on L2 listening (see Figure 5.3), language learning aptitude is composed of four distinctive components: vocabulary learning, sound recognition, sound-symbol correspondence and grammatical inferencing, represented as LA1, LA2, LA3 and LA4. These components contribute to participants' general language learning aptitude scores as measured by the LLAMA learning aptitude test. Results in the model show that language learning aptitude of current L2 Chinese listeners consists of high grammatical inferencing, moderate vocabulary learning and sound recognising abilities, and low sound-symbol matching capacity.

Increases in grammatical inferencing are related to large increases in aptitude scores ($r = .69, p < .001$); increases in vocabulary learning ($r = .57, p < .001$) and sound recognition ($r = .55, p < .001$) also lead to large increases in aptitude scores; and increases in sound-symbol correspondence lead to smaller increases in language learning aptitude scores ($r = .44, p < .001$).

5.5.3.2 Correlations between language learning aptitude and L2 listening

Correlation analyses were further conducted to explore to what extent the language learning aptitude components were related to L2 listening. Results are shown in Table 5.13.

Table 5.13 *Correlations between LA and L2 Listening*

	Vocabulary learning	Sound recognition	Sound-symbol correspondence	Grammatical inferencing	LA
L2 listening	.21**	.12*	.25**	.14*	.26**
Sig. (2-tailed)	.000	.040	.000	.015	.000

Note. LA = Language Learning Aptitude

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

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

Statistical results indicate that the four components of language learning aptitude demonstrate low but significant correlations with L2 listening, ranging from .12* between the aptitude component of sound recognition and L2 listening to .25** between the aptitude component of sound-symbol correspondence and L2 listening. These findings explain the overall low correlation between L2 listening and language learning aptitude may be due to the low correlations that aptitude components had with L2 listening. Thus, each additional increase in language learning aptitude lead to only .21 standard deviations increase in L2 listening as displayed in Figure 5.3. Hence, the low but significant correlations between L2 listening and the components of

language learning aptitude suggest that while aptitude has a relationship with L2 listening development, it is not a strong predictor of L2 listening success.

5.5.3.3 Influences of language learning aptitude on L2 listening with selected examples

Further evidence from the multiple-case studies is presented here. Participants' performances on language learning aptitude and listening tasks were measured at four occasions in the year. Their average growth in language learning aptitude and L2 listening is presented in Figure 5.6. The four average scores of language learning aptitude and L2 listening were converted to percentage for the convenience of comparison.

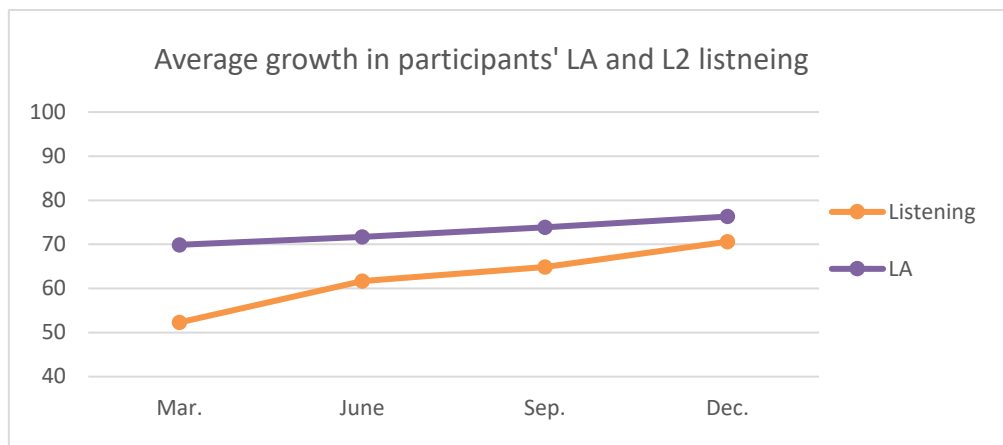


Figure 5.6 *The Average Growth in Participants' LA and L2 Listening Scores*

Note. LA = Language Learning Aptitude

The diagram depicts a relatively smooth development of participants' language learning aptitude performance, with a steady growth in participants' L2 listening proficiency. Performances of Participants 02 and 03 are selected and presented in Figure 5.7 as examples to provide more in-depth information.

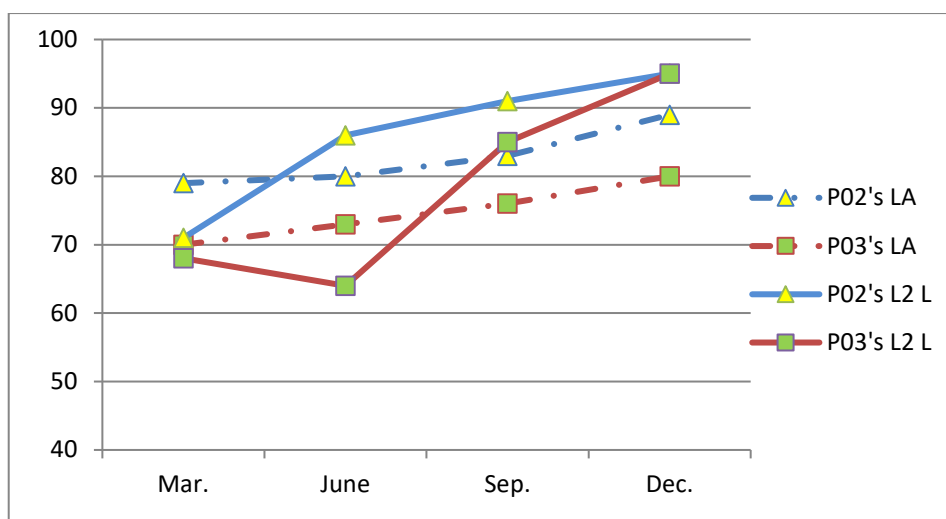


Figure 5.7 Participants 02's and 03's Performances on LA and L2 Listening

Note. P 02 = Participant 02; P 03 = Participant 03; L2 L = L2 listening; LA = Language Learning Aptitude

Figure 5.7 shows that both Participants 02 and 03 made progress on L2 listening, achieving higher scores in the last measurement. Neither Participant 02 nor Participant 03, however, showed significant changes on LLAMA learning aptitude tasks. Although Participant 02 outperformed Participant 03 at each measurement, there were no big differences between their scores on aptitude tasks during the year. While Participant 03's L2 listening score decreased to a minor degree after the first measurement. It increased to nearly 90 points in the third measurement, reaching its highest score at the end of the year. Thus, participants seemed to make a small but gradual improvement in language learning aptitude tasks but experienced a comparatively fluctuated learning process of L2 listening, particularly evident with Participant 03. These results suggested that these participants' L2 listening proficiency was not markedly influenced by their performances on language learning aptitude. This outcome differs from the parallel developing patterns participants demonstrated with WMC and L2 listening tasks (see section 5.5.2.3).

5.5.3.4 Summary of the effects of language learning aptitude on L2 listening

As demonstrated in the predictive model (see Figure 5.3), every one standard deviation increase in language learning aptitude lead to .21 increases in L2 listening. And, the four independent aptitude components contribute to the development of participants' language learning aptitude to varying degrees, reflecting the aptitude construct in this study. The low coefficients (see Table 5.13) suggest that individual aptitude components do not strongly correlate with L2 listening, which is consistent with the results of two of the high-level participants in the multiple-case studies. Thus, the findings suggest that only a small part of participants' L2 listening attainment can be explained by language learning aptitude.

5.5.4 Non-significant Effects

In addition to the cognitive variables of WMC and language learning aptitude, the other LIDs variables of listening motivation, metacognitive awareness and learning style preferences seem not to influence L2 listening development as shown in Figure 5.3. Although non-significant results are usually ignored in most studies in the field of L2 learning, there are two reasons they are worth considering in this study. Firstly, some statisticians contended that non-significant effects can be important, especially if they are contrary to previous research (Valentine & Cooper, 2003). Motivation and strategies, for example, were reported to be significant predictors of L2 learning success in previous findings (Dörnyei, 2001, 2005; Vandergrift & Baker, 2015; Vandergrift, 2003). Secondly, it makes sense to consider some of the non-significant effects in this study because the correlations among some of the independent LIDs variables (known as multi-collinearity) may have artificially reduced the significance of the effects of other variables (Winke, 2013). In the five LIDs variables correlated model (see Figure 5.1), for example, WMC is significantly correlated with

metacognitive awareness ($r = .58, p < .001$), and language learning aptitude ($r = .55, p < .001$). These correlated independent variables might explain the same parts of the variation in L2 listening (Thayer, 1991), rendering the significance of the independent effects of metacognitive awareness on L2 listening misleadingly small. In other words, the true significance of that part of the variation in L2 listening is, in effect, divided up among the correlated variables. Similarly, metacognitive awareness show moderate correlations with the listening motivation ($r = .49, p < .001$), and learning style preferences ($r = .47, p < .001$), possibly reducing the significance of the independent effects of listening motivation and learning style preferences on L2 listening as well.

5.6 CHAPTER SUMMARY

This chapter reported findings from the quantitative analysis of the data, contributing to answers for the four research questions of the current study. Firstly, participants' listening performances dramatically increased over time, performing better on the listening test of CET 4 than that of IELTS 7. Secondly, participants' data showed variations in two of the LIDs variables of listening motivation and metacognitive awareness over the year. No marked changes were found in the other variables of language learning aptitude, WMC, and learning style preferences. Thirdly, SEM results revealed that the five LIDs variables correlated although there were variations in the magnitude of correlations. Significant correlations were detected between WMC and metacognitive awareness ($r = .58, p < .001$), and language learning aptitude ($r = .55, p < .001$). Metacognitive awareness showed positive and moderate correlations with listening motivation ($r = .49, p < .001$) and learning style preferences ($r = .47, p < .001$). No significant correlations were observed between language learning aptitude and listening motivation. Pairwise correlation analyses were further conducted on components of the four pairs of significantly correlated LIDs variables (i.e., WMC and

metacognitive awareness; WMC and language learning aptitude; metacognitive awareness and listening motivation; metacognitive awareness and learning style preferences). Fourthly, a model was set to evaluate the conjectured causal relations between the five LIDs variables and L2 listening development. SEM results suggested that WMC had the greatest influence on L2 listening development, followed by language learning aptitude. The effects of these two LIDs variables were further explored through exploring their constructs, investigating the correlations of L2 listening with WMC components and aptitude components respectively, and presenting high-level group participants' data from the multiple-case studies as examples. Finally, SEM model results suggested that listening motivation, metacognitive awareness and learning style preferences were not major influence on L2 listening success.

Quantitative findings documented participants' listening proficiency, correlations among LIDs variables as well as their contribution to L2 listening. The next chapter with qualitative findings will provide in-depth information on developing patterns of LIDs variables, the interrelationships among them and how these variables mutually influence L2 listening development.

CHAPTER 6 RESULTS OF THE MULTIPLE-CASE STUDIES

6.1 OVERVIEW

In this chapter, results obtained from the longitudinal multiple-case studies are reported to provide in-depth information about participants' L2 listening development in relation to the five learner individual differences (LIDs) variables (i.e., language learning aptitude, working memory capacity (WMC), listening motivation, metacognitive awareness, and learning style preferences), and about the relationships of these variables in the context of L2 listening. Findings of the longitudinal multiple-case studies address these remaining questions: How did participants' L2 listening proficiency develop over time? What were the developing patterns of LIDs variables and how did these variables interrelate and affect the development of L2 listening? Participants' listening proficiency and WMC are described first followed by qualitative data from the semi-structured interviews and self-report diaries. This chapter concludes with a brief summary.

6.2 DATA PROCESSING

The L2 listening proficiency and WMC of participants in the multiple-case studies were measured by tests used in the quantitative studies during the 2015 academic year. Over this same period of time, semi-structured interviews were conducted on four occasions, and participants' self-report diaries were collected for analysis. Interviews (audio recorded) and the self-report diaries were transcribed and translated by the researcher.

Participants were divided into two groups on the basis of their listening scores. Those whose listening scores were 21 points and over (60% of correct answers out of the maximum score of 35 points) were grouped as High-level participants. Those who achieved less than 21 points were classified as Low-level participants.

6.3 PARTICIPANTS' L2 LISTENING PROFICIENCY

The ten participants completed a listening comprehension test of the CET 4 every three weeks. Average scores over three tests were presented at four points in time---- March 2015, June 2015, September 2015, and December 2015----for comparison and further analysis. Data from the High- and Low-level participants groups' listening comprehension tests are presented in Table 6.1. The overall maximum score for the listening test is 35 points.

Table 6.1 *Listening Scores of High- and Low-level Participants*

Participants	Listening scores (max=35)				
	March	June	September	December	
High-level	P 01	27	31	33	34
	P 02	25	30	32	33
	P 03	24	22	30	33
	P 04	24	30	30	30
	P 05	23	24	19	24
	Mean	24.6	27.4	28.8	30.8
Low-level	P 06	16	14	16	20
	P 07	12	18	16	20
	P 08	10	16	22	23
	P 09	7	15	12	12
	P 10	15	16	17	18
	Mean	12	15.8	16.6	18.6

High-level participants: On average, the listening scores of the High-level participants steadily increased from 24.6 points to 30.8 points over the year. Participant 01 continually achieved the highest score and made a 26% increase over the four sessions.

Participant 02’s listening scores improved 32% from 25 points to 33 points during the same period of time. The listening scores of Participant 03 and 04 showed a noticeable improvement with scores increasing 38% and 25% respectively. The listening scores of Participant 05 did not increase and, in the third session decreased to the lowest of 19 points before reverting to 24 points in the last session. Participants’ listening scores over the year are represented as line graphs in Figure 6.1, exhibiting a similar pattern in listening development with the exception of Participant 05.

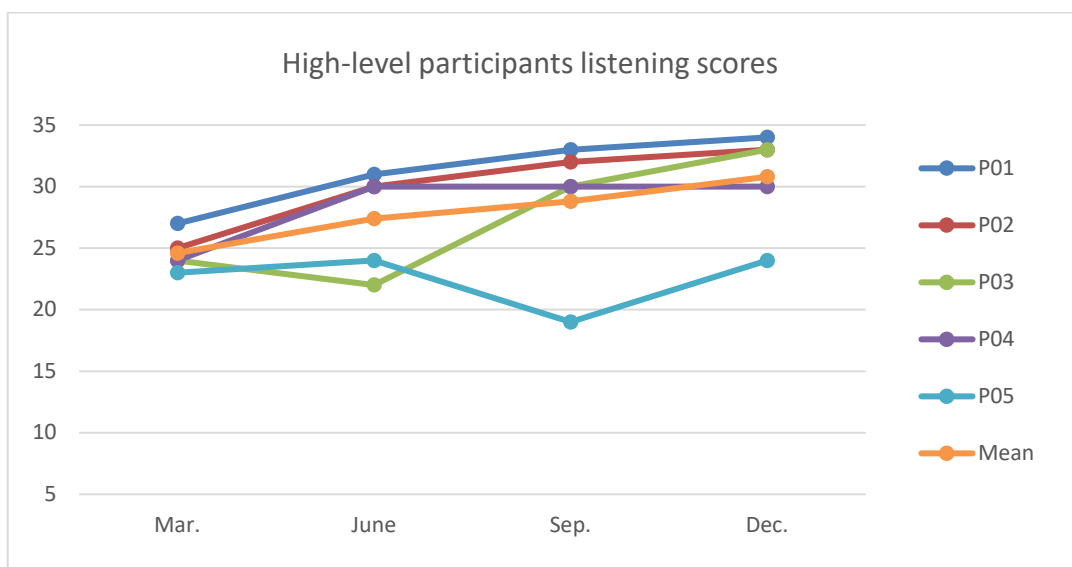


Figure 6.1 High-level Participants’ Listening Scores over the Year

Low-level participants: The average listening scores of Low-level participants increased from 12 points to 18.6 points over the year as presented in Table 6.1. Participant 08 made the greatest progress with her scores increasing from 10 points to 23 points, the highest score within the group in the fourth session. The listening scores of Participants 07 and 09 increased initially, followed by a decrease, and then an increase again, demonstrating an overall 67% and 71% growth respectively as presented in Table 6.1 and Figure 6.2. Participant 06’s listening test pattern was atypical for the group, showing an increase of 25% during the year, while the

performance of Participant 10 remained largely stable during the year. The listening test scores of the Low-level group are presented in line graphs as shown in Figure 6.2.

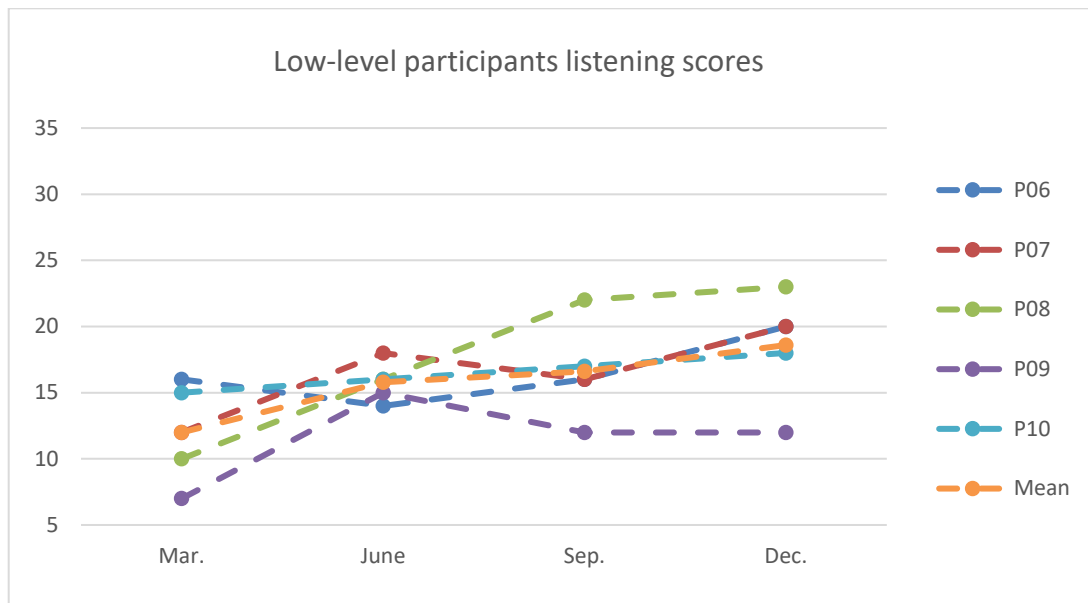


Figure 6.2 *Low-level Participants' Listening Scores over the Year*

From results reported above, it can be inferred that both High-level and Low-level participants made progress on L2 listening during the year. High-level participants' listening scores increased steadily and showed a common pattern in listening development, with one exception. Low-level participants' listening performance varied, although the scores they achieved were still low, some of them made substantial gains in L2 listening development.

6.4 DEVELOPING PATTERNS OF LIDs VARIABLES

In this section, participants' performances on WMC tests, changes in listening motivation and variations in metacognitive awareness are reported. Participants' reflections on their learning style preferences are also reported.

6.4.1 Participants' Performance on WMC Tests

Aiming to track the development and changes on participants' WMC, tests for WMC were administered to the ten participants at four time points: in March 2015, June 2015, September 2015, and December 2015. Table 6.2 displays the average WMC scores of the High-level and Low-level participants.

Table 6.2 WMC Scores of High- and Low-Level Participants

Participants		WMC scores (max=100)			
		March	June	September	December
High-level	P 01	89	94	98	99
	P 02	75	76	77	79
	P 03	74	71	85	91
	P 04	86	91	94	97
	P 05	72	73	71	74
	Mean	79.2	81	85	88
Low-level	P 06	63	66	67	70
	P 07	60	62	65	69
	P 08	54	55	58	60
	P 09	44	45	47	50
	P 10	51	54	55	56
	Mean	54.4	56.4	58.4	61

Note. WMC = Working Memory Capacity

High-level participants: The average scores for WMC tests of High-level participants increased steadily from 79.2 points to 88 points, demonstrating an almost 11% rise over the whole year. A substantial 23% growth was shown in Participant 03's WMC test scores, increasing from 74 points to 91 points over the year. WMC tests scores for Participants 02 and 05 were stable over the same period. The line graphs in Figure 6.3 demonstrate the changes in High-level participants' WMC test scores over the year.

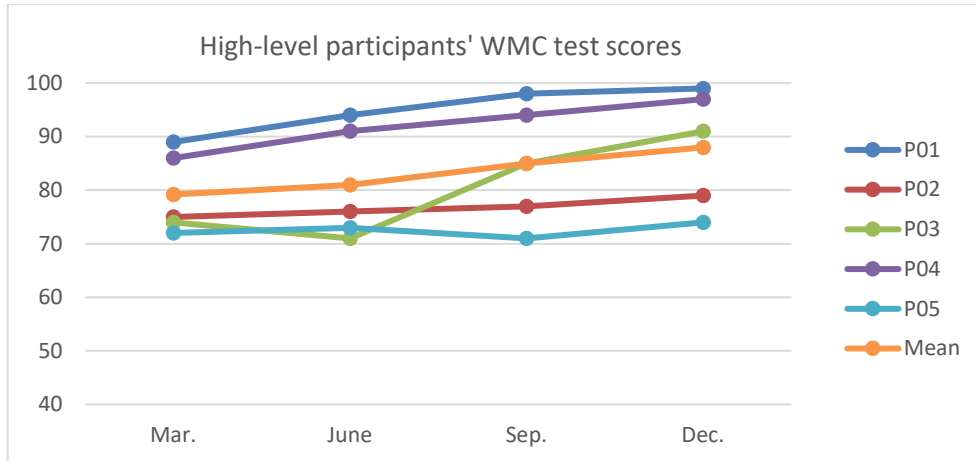


Figure 6.3 High-level Participants' WMC Test Scores

Low-level participants: A slight improvement in the average scores of Low-level participants was evident, increasing from 54.4 points to 61 points over the four sessions. Individual increases of 11%, 15%, 11%, 14% and 9% respectively were noted for Participants 05, 06, 07, 08, 09 and 10's WMC scores. It appears that their WMC remained more or less stable over this time. The line graphs as shown in Figure 6.4 are presented to demonstrate the changes in Low-level participants' WMC test scores over the year.

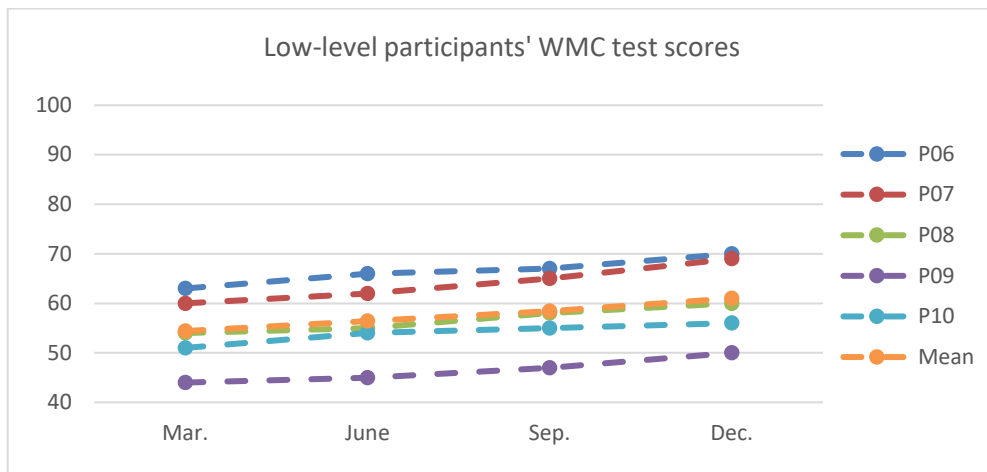


Figure 6.4 Low-level Participants' WMC Test Scores

The discrepancy between High- and Low-level L2 listeners' performances on WMC tests throughout the year can be identified in Figure 6.3 and 6.4 respectively. High-level participants, especially Participant 03, made substantial changes and greater gains in WMC test scores than the Low-level listeners. These results suggest that WMC relates to and might have powerful predictive value for L2 listening success, which is consistent with the previous findings from the quantitative studies (see section 5.5.2).

The observable changes in L2 listening and WMC test scores of L2 listeners were complemented by the qualitative analysis of participants' semi-structured interviews and self-report listening diaries, providing additional rich information about their L2 listening developing patterns. Results showed that High-level participants are distinct from their Low-level counterparts in terms of three major themes identified in their verbal and written reports: emergent awareness of the test, the dynamic development of L2 listening motivation, and variations in metacognitive strategy use. Excerpts taken from the ten participants' semi-structured interviews and self-report diaries are presented to illustrate the major themes identified. In each section, the transcribed and translated reports of participants are analysed and summarised.

6.4.2 Emergent Awareness of the Tests

Analysis of the participants' interviews and self-report diaries suggested that one of the causes for the inter-individual variance in L2 listening and WMC scores is awareness of the test. The following reports from some of the High-level L2 listeners indicate their emerging awareness of listening tasks and WMC tests which may have helped them ignore distracters and so achieve better listening results.

The listening comprehension test includes three types of task: short and long conversations, passages comprehension and spot dictation. It was apparent that the High-level participants gradually identified the requirements of the listening tasks. For example Participant 02 reported:

Table 6.3 Participant 02's Awareness of the Listening Tasks

	P 02
Sep., 2015	I thought answers to listening tasks can be detected from intonations and repetitions. I can check whether my understanding is correct or not in this way.
Dec., 2015	I have noticed that some questions concerned about the attitudes, and answers to these questions were related to speakers' denying, questioning or repetition of the provided information. Thus, I would pay more attention when there is a denying, questioning or repetition appearing. And then, check whether my understanding is correct or not. Benefiting from this, I would get the correct answers most of the time.

Participant 05 similarly reported:

Table 6.4 Participant 05's Awareness of the Listening Tasks

	P 05
June., 2015	According to my observation and experiences, there were certain numbers of questions that were designed to measure our knowledge of pronunciation, especially in the section with dictations. I would enhance my pronunciation knowledge to overcome this problem in my subsequent practice.
Dec., 2015	Synonyms frequently appeared in my recent listening exercises, for example, clear & clarity; fossils and rocks & geological evidence. I noticed them while listening, which helped me to understand the material and then get correct answers.

Over time High-level participants 02 and 05 gradually developed an understanding of the purpose of listening tasks. They became aware that listening tasks mainly measure knowledge of pronunciation, vocabulary and their semantic capability.

Participants' emergent awareness of the test is also evident in their reflections on the Non-words Recognition Test (NRT) designed to measure participants' phonological short-term memory (PSTM), a component of WMC. During the completion of the NRT, participants are required to distinguish whether the two non-words series were

presented in an identical or different sequence. Participant 01's reports are shown in Table 6.5.

Table 6.5 Participant 01's Awareness of the NRT

P 01	
Mar., 2015	They are not real English words? But they sound like real ones (<i>the strategy of evaluation</i>). I noticed that the vowels in some non-words are the same while others are different (<i>the strategy of directed attention and problem solving</i>). I tried to articulate, but it is a challenge for me to distinguish the sequences within a few seconds.
Dec., 2015	I thought this test is related to pronunciation when I did it for the first time (<i>the strategy of evaluation</i>). I noticed this time that the non-words lists were read in the same sequence if the vowels of the non-words are identical, and the sequence was different if the vowels are different (<i>the strategy of problem solving</i>).

Similarly, Participant 03 became aware of the test requirement and described it in her diary:

Table 6.6 Participant 03's Awareness of the NRT

P 03	
Mar., 2015	I thought some non-words were pronounced similarly but I was not sure (<i>the strategy of directed attention</i>). During the test, I tried to memorise as many non-words as I could, and then to judge the sequences (<i>the strategy of problems solving and evaluation</i>). But it was quite hard because there were so many non-words.
Sep., 2015	I thought this test was related to pronunciation, especially with vowels, right?
Dec., 2015	I memorised several non-words (e.g., vort, jorl, norb and mordge) that have the same vowel and I noticed that when they were pronounced for the first time. Then, I noticed that they were pronounced in the same order in the second time of presentation (<i>the strategy of evaluation, planning and problem solving</i>). Therefore, I believed if the non-words have the same vowels, the two words series would be pronounced in the same order, right?

Participant 04 also made similar comments:

Table 6.7 Participant 04's Awareness of the NRT

P 04	
Mar., 2015	The non-words sound like real English words (<i>the strategy of evaluation</i>), for example, the consonants and vowels were similar to real English words (<i>the strategy of problem solving</i>). But it was difficult to distinguish the sequence of the non-words list, because there were too many words to memorise.
Sep., 2015	Are there any patterns? I tried to memorise as many non-words as I could (<i>the strategy of problem solving</i>), and I guess non-words with same vowels were presented twice with identical sequences.
Dec., 2015	When the non-words series was read for the first time, I tried to repeat and memorise some of them (<i>the strategy of directed attention</i>). Then I checked when the series was read again. I found that non-words were pronounced in the same

sequence if they have the same vowels. And, if the non-words with different vowels, they were pronounced in the different order, which was distracting and made the task even more difficult (<i>the strategy of evaluation, planning and problem solving</i>).

Analysis of data indicated that, after the first time of measurement, Participants 01, 03 and 04 speculated that the Non-words Recognition Test (NRT) measured the knowledge of pronunciation. Their speculations were confirmed in the subsequent practices: in the second and the third session, for example, they became aware that the sequences of non-words series might relate to the vowels of non-words. The last entries in their self-report diaries confirmed that they were all able to identify why the sequences of non-words series were different, indicative of a gradual developing process of test awareness. It also observed that participants' use of strategies (e.g. planning, problem solving and evaluation) participated in the process of reflection and evaluation of the NRT test, which assisted participants to activate their phonological knowledge and enabled them to notice the phonological patterns of the non-words, and finally identify the sequences of the non-words series are related to the vowels of these non-words. This outcome is consistent with the moderated correlation between WMC and metacognitive awareness reported in Chapter 5 ($r = .58, p < .001$, see section 5.4.3.1). Instances of an awareness of listening span test processes, however, were rarely detected from Low-level participants' reports.

To summarise, the High-level L2 participants exhibited an emerging awareness of L2 listening and WMC tests whereas Low-level participants did not. Not only did High-level participants identify the phonological patterns of the test, but they also used strategies to activate relevant phonological, lexical and syntactic knowledge to achieve better performances. The use of strategies (e.g., planning, directed attention, problem

solving and evaluation) was evident in the High-level participants' reflections on the tests recorded in their self-report diaries, which led to their apparently developed test-awareness and better results on L2 listening tests and WMC tasks in comparison with the Low-level participants group.

6.4.3 The Dynamic Development of Listening Motivation

6.4.3.1 Changes in listening motivation factors

Listening motivation was always considered as a crucial variable in stimulating participants' listening development. To identify how listening motivation influenced the learning of L2 listening, reflections in the self-report diaries of participants in the multiple-case studies were analysed. Results of the quantitative studies had previously indicated variations in participants' ratings on the Listening Motivation Questionnaire (LMQ). Results also suggested that participants were motivated by different listening goals in developing L2 listening proficiency, for example, aiming to further their studies abroad, developing native-like language ability, passing exams and gaining higher scores. These goals were identified through participants' self-rating on the listening motivational factors of going abroad, interests, self-effectiveness and exams. The multiple-case studies participants' changes as recorded in their report diaries over the year are shown in Table 6.8.

Table 6.8 Participants' Changes in Listening Motivation over the Year

	March 15	June 15	September 15	December 15
P 01	To perfect myself. I want to go abroad and live in foreign countries if I have the opportunity.	For passing TOFEL, and I started to prepare it. I bought the TOFEL official guide and downloaded some other materials.	To complete more TOFEL tests and started to select foreign universities for postgraduate studies. I believed I made some progress for I scored higher in the TOFEL listening practices.	I kept practicing and felt better when doing TOFEL test recently. I will take the TOFEL test in Feb. 2016, and then to prepare for applications if I get the ideal results.
P 02	I want to use English like native speakers and enjoy English movies and songs without difficulty in understanding.	Still I want to use English fluently and specifically I want to enhance my listening and speaking.	Maybe travel around the world.	Travel or study abroad, and use English like Chinese one day.
P 03	I wish to have the opportunity of living or learning in a foreign country in which English is the official language. I also want to use English fluently and naturally	I held the idea of studying overseas after having attended a lecture, but I knew almost nothing about TOFEL test. Maybe I will take TOFEL courses during summer holidays.	I took TOFEL classes in summer holidays and learnt from professional teachers and did many exercises with my classmates. The teacher acknowledged my progress and encouraged me to further my postgraduate studies in America. I will work harder on TOFEL and pass it as soon as possible.	I tried my best to prepare for TOFEL test through doing listening tests, memorising vocabularies, and checking my progress through the previous TOFEL tests. Sometimes I asked my TOFEL teachers for help or shared my learning experiences or questions with my summer school classmates. I need more time to conquer it.
P 04	I want to make use of what I have learnt, and to be a good English speaker rather than a learner.	To practice my listening, speaking and pronunciation through doing dictation recently.	Continue with dictation practice and to enhance my reading ability at the same time.	I believe I made some progress because I can follow the authentic English movies and news recently. I will work hard on improving my English through more effective ways.
P 05	I wish to be a better listener.	To pass CET 4 firstly and to improve my overall English proficiency as well.	Work harder on English and gain higher scores.	To improve my listening and speaking, I want to enjoy English movies without the help of

				subtitles.
P 06	I learnt English for passing exams from primary school to university, so passing CET 4/6 is my aim of learning English now.	I have to pass CET 4 first so that I can attend CET 6 test. I have been doing regular listening practices these days because the test is approaching.	I passed CET 4! Then, I have to work hard and get ready for the CET 6.	I spent almost one hour practicing listening every day, and did the test to prepare for the CET 6. I wish I could pass it once.
P 07	Passing CET 4 is my first aim, and then passing CET 6 before graduation.	I did not practice frequently until two weeks ago. The CET 4 is on this weekend. I wish I could make it.	Emm...I did not pass last time. I should work harder on CET 4 and pass it in December.	I spent more time and made greater efforts three weeks ago. I will take CET 4 test again. Wish me good luck to pass it this time.
P 08	The most important is to pass CET 4 in this semester; I also wish to develop better English proficiency.	To improve my listening and pronunciation when doing CET 4 exercises. But it is difficult for me.	Aiming to pass the CET 4 test in December, so I will do more exercises in this semester.	I wish to pass CET 4 this time, and then to improve my overall English ability to get ready for the CET 6 test in the next year.
P 09	Pass examinations for graduation, first the CET 4, and then the CET 6.	Pass CET 4 test, of course, but I did not do many practices until recently. Hope I can pass it.	I passed it! It was not as difficult as I imagined. I will spend more time listening and learning English in this semester and tried to pass CET 6.	I started to prepare CET 6 test about one month ago. I did regular listening practices, and tried to enlarge my vocabulary size through reading. I believe I can pass it.
P 10	Passing exams motivates me the most because I am a student. I thought about going abroad if there is an opportunity, which requires passing higher level examinations, for example, IELTS or TOFEL.	Firstly, I have to pass CET 4 before having the chance of taking CET 6. I downloaded some materials and did previous CET 4 tests for preparation.	The next aim is to pass the CET 6, which is more difficult as I heard from others. I will try harder and work harder on it.	I hope I could pass CET 6 this time, if not, I have to take it again and spend more time on it.

Table 6.8 documents comments from both the High-level group (Participants 01, 02, 03, 04 and 05) and the Low-level group (Participants 06, 07, 08, 09 and 10 in shaded texts). It can be noted that the High-level group were motivated by listening motivational factors of going abroad, interests and self-effectiveness, with more evident development overtime. For example, Participant 01, in his first diary in March, 2015, said he aimed to study overseas; later, in his second diary entry in June, 2015, his aspiration had developed into preparing for the TOFEL test (e.g. *I bought and downloaded relevant TOFEL materials*); and in his September, 2015 diary entry he indicated that he planned to apply for a foreign university. While Participant 01's early expression of motivation was only a vague idea of going abroad, it became stronger and more concrete over the year.

A similar process can be detected from Participant 03's descriptions. She expressed her aim of living or studying in foreign countries in her first diary entry in March, 2015; by June after attending several lectures about overseas studies and her aspiration of going abroad was further evident through taking TOFEL training classes during the summer holiday; in September, she completed several TOFEL listening model tests; and her last diary entry (December, 2015) recorded her efforts to improve TOFEL listening performances (e.g., *enlarging the vocabulary size, enriching phonological knowledge*).

Participant 04 was an example who was stimulated by the motivational factor of self-effectiveness. In March, 2015, she described her aim of being a better language user; in her second and third reflections in June and September, she described how she practiced her listening and speaking ability through diction exercises and other

materials; and in December she confirmed her progress (e.g. *have less difficulty in understanding authentic listening materials*) in the last diary, noting her determination to continuing learning through further varied practices. The participants' descriptions and reflections imply that, driven by different motivational factors, they took specific actions to achieve their L2 listening goals. All the above participants were in the High-level L2 listener group who had demonstrated higher listening proficiency.

In contrast, Low-level group participants 06, 07, 08, 09 and 10 had similar goals, that is, they were mainly motivated by exams. They all emphasised passing the CET 4/6 tests throughout the year. CET 4 and CET 6 tests are administered twice in June and December each year, so Chinese tertiary level students are able to take the test several times until graduation but can only take the CET 6 test after passing the CET 4 test.

For example, Participant 06 stated in her first diary entry that passing exams motivated her to make efforts in L2 listening practice during the year. After passing CET 4 in September, her listening goal was to pass the subsequent exam, CET 6. Participant 07's reflections were similar on each of the four occasions; his initial learning goal was practicing L2 listening to pass CET 4. His subsequent entries in June, September and December reiterated the same goal. Participant 08's goal was also to pass CET 4 and to improve her English proficiency. This goal was repeated in her June diary entry at which time she admitted it was difficult for her to pass the CET 4 in June but that she wanted to complete it in December, 2015. From these Low-level L2 listeners' diary entries, it is apparent that passing CET 4 and CET 6 tests motivated their L2 listening practices and that they were less interested in participating in the listening

activities or using various materials in practicing listening than the High-level L2 listeners.

It can be concluded that High-level L2 listeners appeared to be motivated by a greater variety of factors (e.g., going abroad, interests, self-effective) than Low-level L2 listeners (e.g., exam, higher scores) when developing L2 listening. Specific actions and concrete steps to achieve their listening goals can be detected in High-level L2 listeners' reflections, as they realised their listening goals over the year. Low-level L2 listeners, however, were mainly motivated by passing exams rather than factors related to enhancing listening ability.

6.4.3.2 Effects of different listening motivations on participants' practicing time and types of listening materials

Participants not only differed in motivational factors, but also in the amount of time they spent on practicing L2 listening. Reports from High- and Low-level participants indicated that their daily practicing time varied from less than 30 minutes to more than 2 hours, which are coded as 1 = "less than 30 minutes"; 2 = "31 to 60 minutes"; 3 = "61-90 minutes"; 4 = "91-120 minutes", 5 = "more than 121 minutes".

Table 6.9 Participants' Daily Practicing Time on L2 Listening over the Year

Participants	Mar., 2015	June., 2015	Sep., 2015	Dec., 2015	
High-level	P 01	3	3	3	4
	P 02	3	4	4	4
	P 03	3	4	5	4
	P 04	3	4	4	5
	P 05	3	3	4	4
	Mean	3	3.6	4	4.2
Low-level	P 06	2	2	3	2
	P 07	1	1	2	2
	P 08	2	2	3	4
	P 09	1	1	2	2
	P 10	1	2	2	2
	Mean	1.4	1.6	2.4	2.4

It can be seen from Table 6.9 that the average practicing time of both groups increased throughout the year, but High-level participants (01, 02, 03, 04 and 05) spent more time on L2 listening every day, nearly twice that of their Low-level counterparts (06, 07, 08, 09 and 10). Differences were also observed between High- and Low-level participants in terms of the practice materials they adopted for L2 listening development, which were reported from their interviews and self-report diaries as presented in Table 6.10.

Table 6.10 Listening Materials that Participants Adopted over the Year

	March 2015	June 2015	September 2015	December 2015
P 01	I listened to English radio, speeches made by celebrities or English songs every day. I also do listening exercises online, for example, filling blanks for subtitles of English movies or lyrics of English songs	Sometimes I would listen to the original English fictions, literature works and watch episodes of English movies through mobile apps. For listening exercises, I use CET 4/6 model tests, TOFEL model tests and dictation material to practice.	Recently, I mainly used the TOFEL tests for practice, and downloaded many TOFEL model exercises online to practice.	TOFEL tests and listening to English songs.
P 02	I love English movies. I tried to follow and understand the movie through listening rather than relying on the subtitles. And I wrote down the idioms that were used in the movie.	Sometimes, I would practice listening though online materials or took online courses.	Online materials, English movies and CET 6 model tests.	English movies, CET 6 model tests and all those I practiced every day.
P 03	Except the tests exercises, I downloaded some mobile APPs to memorise new words or practice my pronunciations.	I downloaded an APP recently, which is for dubbing. I use it every day for listening and speaking practice.	I did many TOFEL online activities and model tests during summer holidays and downloaded many relevant materials to practice.	Mainly focused on TOFEL materials and also practice listening through dubbing with the APP.
P 04	I listened to the VOA and BBC news every morning and night. There are plenty of materials online that I downloaded for free and to practice my listening and reading ability	I would like to watch English movies during leisure time. My roommate recommended me an APP for dubbing. It is interesting and I practice listening with it.	Same as before, downloaded materials online to practice	CET 6 model tests and online materials.
P 05	I use the CET 4 model test frequently to practice. I also listen to English songs or news.	The exam is approaching; I did listening exercises by using the model tests of CET 4.	To be honest, I did not practice listening frequently during the holiday.	Model tests of CET 6
P 06	I listened to the materials from the textbook and practiced the CET 4 model tests.	Textbook materials and CET 4 model tests.	Textbook materials and CET 4 model tests.	Textbook exercises and CET 4 model tests.

P 07	I bought the original CET 4 model tests for practicing my listening, reading and writing.	CET 4 is approaching; I did CET model tests to prepare it.	Actually I did not practice listening recently.	I used the CET 4 model tests to practice.
P 08	The CET 4 model tests as well as my text book.	Mainly CET 4 tests recently	I practiced listening through CET 4 model tests these days.	Mainly the listening materials from CET 4 model tests.
P 09	Most of the time, I use the model test to practice listening	CET 4 model tests	I did not pass the CET 4 last semester, so I plan to do the model tests for practicing	I tried some online materials but they are difficult to me. I still practice listening with CET 4 model tests.
P 10	I seldom practice listening after class. Normally, I will do textbook materials	CET 4 model tests	Ehh...I did not practice listening during summer holiday. I planned to do CET 6 model exercises in this semester.	I used the textbook and CET 6 model materials for listening practice.

As can be seen from the Table 6.10, participants with High-level listening proficiency adopted more types of materials in developing L2 listening skills than the Low-level participants: these included English radio broadcasts, movies, songs and English literature, and TOFEL model tests were used by two participants (01 and 03) who planned to further their postgraduate studies in foreign countries. High-level L2 listeners also made good use of the internet and online learning materials. Some practiced L2 listening through mobile apps. Participant 04, for example, in her second diary entry, reported that she practiced her English listening and speaking skills with a mobile app named “English Fun Dubbing”, which provides excerpts from authentic English news, movies, talk shows, and songs that learners can practice L2 listening and imitate to practice spoken English. The Low-level participants, in contrast, reported that they relied mainly on listening textbook materials or practised CET 4 and CET 6 model listening tests. They also reported to practice L2 listening just before taking exams rather than practicing it every day (see Participants 07 and 10 as examples in Table 6.10).

6.4.4 Variations in Strategy Use

L2 listeners’ use of strategies is an important aspect of the current research. Participants’ metacognitive awareness and perceived use of strategies were measured by the Metacognitive Awareness Listening Questionnaire (MALQ) (Vandergrift et al., 2006) which contains 21 items grouped into five aspects: problem-solving; planning and evaluations; mental translation; person knowledge and directed attention. Although participants’ ratings on the MALQ increased (see Table 5.2), metacognitive awareness did not significantly predict L2 listening success in this study (see Figure 5.3). Nonetheless participants who were being tracked in the multiple-case studies appeared to use strategies for developing their L2 listening proficiency during the year.

The data gathered from the interviews and the self-report diaries, provided explanations for participants' strategy use.

6.4.4.1 L2 listeners' strategy use over the year

The MALQ questionnaire has 21 items and uses a 6-point Likert scale assessment with 1 representing "strongly disagree" to 6 representing "strongly agree". Participants' ratings of each of five aspects were averaged and are represented in Table 6.11 below.

Table 6.11 Participants' Strategy Use over the Year

Participants		Mar. 15	June 15	Sep. 15	Dec. 15
High-level	P 01	5	5	4	5
	P 02	5	5	5	5
	P 03	4	4	5	5.5
	P 04	5	5	5	5
	P 05	4	4	5	5
	Mean	4.6	4.6	4.8	5.1
Low-level	P 06	3	3	4	4
	P 07	3	4	4	3
	P 08	3	4	3	3
	P 09	3	3	4	4
	P 10	4	3	3	4
	Mean	3.2	3.4	3.6	3.6

It can be seen from Table 6.11 that both High- and Low-level participants' use of strategies increased during the year. The mean values of High-level participants' ratings are higher than those of Low-level participants, indicating greater overall strategy use by High-level participants. Participants' interviews and self-report diaries were analysed to investigate reasons for using strategies differently. Participant 05 reported:

I did not plan before listening until I benefited once when I was attending the listening test. Through reading listening questions, I guessed the topic of the listening material, which helped me to get the correct answer in the end. In addition, when I was watching English movies, I realised I could still follow the story on the basis of context even if the actors' speed is quick or there are many unfamiliar new words. Therefore, I tried to use the similar way in completing the listening tasks. --- (Participant 05, 2nd and 3rd interview, June - Sep., 2015).

It can be inferred from Participant 05's report that she gradually realised the efficiency of using strategies of planning, person knowledge and inferencing when comprehending listening materials and solving listening problems. Consequently, her use of strategies increased during the year. Stimulation from courses, teachers and peers also appeared to lead to an increase in participants' strategy use. Participant 03, for example, reported that attending summer TOFEL training classes had enhanced her knowledge and use of strategies.

Aiming to study abroad in the future, I attended a TOFEL training class during summer holidays and learnt many things that I did not know before. My TOFEL listening teacher recommended planning and preparing through going through questions before listening, then paying special attention to important details or keywords and finding correct answers based on the context. Besides he suggested us to find answers through noticing synonyms used in questions and materials; differences in articulators' tones and rhythms; repeated parts of materials. So I realised that it is not merely necessary to enlarge the vocabulary size, develop pronunciations awareness but also to make good use of these knowledge and strategies while listening. ---- (Participant 03, 3rd interview, Sep., 2015).

As she described above, the metacognitive strategy that her TOFEL teacher recommended was planning, which assisted her to identify specific information, to complete listening tasks and improve her listening proficiency. Thus, Participant 03 reported to use this type of strategy more frequently in September and afterwards than she did in March, and her listening was evidently increased.

Low-level participants, however, appeared to have less knowledge about and reported less frequent strategy use compared to their counterparts with high-level listening proficiency. For example, Participant 07 reported:

Strategies? I did not learn anything about it, and teachers did not mention or teach us about it. I relied on my experience to complete listening tasks, such as making a guess or translating listening materials. ---- (Participant 07, 1st, 2nd and 3rd interview, March - Sep., 2015).

Another example is Participant 10 who reported:

Translation is the most frequent method I used in completing listening tasks. I want to practice listening, but don't know how. ---- (Participant 10, 3rd and 4th interview, Sep., - Dec., 2015).

The next section reports how participants used strategies when completing listening tasks and solving listening problems in the listening process.

6.4.4.2 Participants' strategy use during listening comprehension

Participants' metacognitive awareness and perceived use of strategies were involved in the entire L2 listening process when completing each stage of the listening tasks. Generally, participants preferred to use different strategies at each stage of the task: before the listening materials were played; while the listening materials were playing, the most demanding stage for comprehension; and after the listening task concluded.

The interviews and self-report diaries revealed that participants' listening processes were consistently influenced by their uses of strategies. Further analysis identified both similarities and differences in High- and Low-level participants' strategy use. These will be discussed in the following paragraphs.

Firstly, in the stage of before the listening materials were played, the strategy of planning was preferred by most participants regardless of their level of listening proficiency. Through browsing the question items, participants were inclined to plan or make a guess about the contents of the material, and to try to "foresee" answers based on their existing knowledge. Some listeners with high listening proficiency stated:

I will go through questions very quickly to guess what will be talked about. Then I will plan in my mind for how I am going to listen. ---- (Participant 01, 1st diary, Mar., 2015). (Planning)

Before listening, I would read question items to derive the gist of the material. And then I have a goal in my mind while listening. For example, if there is a word “budget” in the question items, I would expect that numbers, the words of “discounts” or “bargaining” will appear in the material. ---- (Participant 02, 1st diary, Mar., 2015). (Planning)

If there is something that I am not sure before listening, I would use my existing knowledge to prepare. For example, there was a listening task related to planting and there were some new words new to me. I tried to guess the meaning of new words and follow the material through my previous experience of completing a similar listening task online. ---- (Participant 04, 1st diary, Mar., 2015). (Planning/problem solving)

Similarly, participants with low listening proficiency also preferred to read over questions before the listening materials were played:

Firstly, I will read questions through and then try to follow the material. ---- (Participant 06 (1st interview, Mar., 2015). (Planning)

Generally, I would infer the main idea of the listening material based on the provided question items. ---- (Participant 07, 1st diary, Mar., 2015). (Planning)

I get used to looking through question items before the material is played, but sometimes the interval time is limited. ---- (Participant 08, 1st diary, Mar., 2015). (Planning)

Although participants used the strategy of planning before the listening materials were played. High-level participants provided more details in how they used the strategy. An example they gave was to construct a structure for the current listening material based on their prior knowledge, or refer to previous listening experiences to activate their background knowledge of the topic. Thus, they found the strategy of planning would assist their further listening comprehension.

In the most demanding stage of a listening comprehension test, that is when listeners are required to comprehend, process, and analyse the provided information within a set period of time. Participants’ preference for and use of strategies varied according to their level of listening proficiency, which was especially true when participants were

encountering new words or other comprehending problems. Following are the reflections that High-level participants presented:

If there are new words or phrases, I use the words that I understand to guess the meaning of the new ones and try to infer its meaning based on the information provided by the context. For example, in one of the TOFEL listening materials I completed, I was quite nervous when I heard words of “carnivore” and “herbivore” because I never heard of them before and did not know their meaning. But I inferred their meaning later when I heard “meat-eating” and “vegetarian” several times in the following context. The context and synonymous are quite helpful. ---- (Participant 01, 1st diary, Mar., 2015). (Problem solving/person knowledge)

Similarly, participant 02 stated:

When I have difficulty in understanding the material, I would think back to everything else that I have heard, and to make a guess. If my guess is wrong, I would adjust my interpretation quickly and try to follow the material again. ---- (Participant 02, 1st diary, Mar., 2015). (Problem solving/person knowledge).

Participant 03 described her listening process:

Generally, I will try to get back with the material if I lose concentration due to new words. I would translate or guess the meaning based on the context. For example, I heard the word “infectious” in one listening task. I did not know its meaning while I was listening, but I guessed it is related to disease based on the meaning of “dosage” and “patient” that were mentioned in the context. ---- (Participant 03, 1st diary, Mar., 2015). (Directed attention/mental translation/problem solving)

Participant 04, another high-level listener reported:

I like to do listening exercises, especially the material with interesting topics. Most of the time, I track answers through associating the topic with my existed knowledge. As I listen, I periodically ask myself whether my comprehension is correct. If my mind wanders, I will try to get back right away. ---- (Participant 04, 1st diary, Mar., 2015). (Problem solving/person knowledge/directed attention/evaluation)

Low-level participants’ descriptions about their strategy use when engaged in this stage of the listening process included the following:

I tried to translate sentences and new words in my mind to understand the material. So sometimes I cannot follow the material because of translation. ---- (Participant 06, 1st diary, Mar., 2015). (Translation)

I find listening is much more difficult than reading and writing. The material is played only once, which makes it even harder. Mostly, I would translate the words and sentences I

heard and then make a guess. But it is easy for me to get lost because of translation. ---- (Participant 07, 1st diary, Mar., 2015). (Person knowledge/mental translation)

Participant 08 shared a similar view:

I tried to focus on the material while listening, but it is quite hard because the material is presented only once. I feel nervous while listening, especially when I have comprehending problems in tracking answers. This makes listening even more difficult to me. I cannot help but translating while listening. ---- (Participant 08, 1st diary, Mar., 2015). (Person knowledge/mental translation)

Participant 09, another low-level participant described:

The speed of the material is too fast to follow, and there are unfamiliar words. I relied on translation while listening. I feel frustrated if I did not follow the material or failed to get the answers. ---- (Participant 09, 1st diary, Mar., 2015). (Person knowledge/mental translation)

It can be inferred from the participants' descriptions above, that High-level participants were flexible in using strategies when listening to the materials. They benefited both from top-down or bottom-up processes to understand materials, and made use of a range of strategies such as directed attention, problems solving and person knowledge to solve problems, guess the meaning of new words base on the context and to complete the listening tasks. Low-level listeners, however, reported they were more easily "lost" due to the presentation speed or unfamiliar words in the material. Most Low-level listeners felt nervous when they were faced with unexpected listening problems, and reported relying mainly on the bottom-up process through using the cognitive strategy of mental translation to comprehend the material.

During the last stage of listening, namely, after the listening materials were played, an interval was provided for participants either to review what they had been listening or to prepare for subsequent listening tasks. Most participants reported they would start to

plan for the next listening tasks. Two listeners with high listening proficiency (Participants 01 and 04) reported more:

After completing the listening tasks, I would think back how I listened and how I completed the tasks. Especially, to think about the part I failed to understand. I would try to avoid the same mistakes next time. ---- (Participant 01, 1st, 3rd and 4th diary, Mar.-Dec., 2015) (Evaluation)

I would rethink about the materials, questions and tasks that I have just listened to, and to review my listening process and what I might do differently and better next time. ---- (Participant 04, 1st, 2nd, 3rd diary, Mar.-Sep., 2015). (Evaluation)

Participants 01 and 04 reported that they took the interval as an opportunity for reflection, not only as the end of the current task or the start of the subsequent one. Using the strategy of evaluation, Participants 01 and 04 summarised and evaluated their performances during the previous listening task. They would review what they have done, refer back to their prior knowledge and experience, ask themselves what they should, or should not do, in completing subsequent listening tasks, and what might be better ways of comprehending the listening materials. In all likelihood, the strategy of evaluation would lead to improved listening proficiency in the future.

The above descriptions and analyses provide evidence of participants' preference for, and use of strategies in completing listening tasks. It is apparent that both the High- and Low-level listeners relied on strategies, but how they used strategies varied at each stage of completing listening tasks. In summary, the High-level participants reported to either focus on main topic or detailed information, thus, appeared to rely on both the top-down and bottom-up processes in completing listening tasks. They also reported using strategies more flexibly than the Low-level listeners. It can be inferred, therefore, that these High-level participants are better strategy users of than their Low-level counterparts. High-level participants also appeared to be confident listeners with little

anxiety in completing listening tasks, and to moderate their focus when problems occur during listening. Conversely, Low-level participants preferred to concentrate on specific information while listening, seemed to rely more on the bottom-up listening process. They were likely to feel nervous and tended to give up when facing unfamiliar information or when they cannot follow the material.

6.4.4.3 Metacognitive awareness and learning style preferences

Data collected from the interviews and self-report diaries suggested that High-level L2 participants adopted a range of strategies (e.g. planning, problem solving, person knowledge and directed attention), whereas Low-level participants relied heavily on the strategy of mental translation. In this section, further analysis of the interviews and diaries suggested that participants' strategy use was related to their learning styles preferences, which corroborated the significant correlations between metacognitive awareness and learning style preferences ($r = .47, p < .001$) as the quantitative results indicated.

Excerpts selected from the interviews and diary reflections of both High-level participants (01, 02, and 03) and Low-level participants (06, 07, and 08) on their thinking as they used the strategy of planning are presented in Table 6.12.

Table 6.12 *Participants' Reflections on the Use of Strategy of Planning*

Style	HL	Q: What were you thinking as you used the strategy of planning?		LL	Style
Global	P01	Prepare myself for catching the gist and plan to jump over new phrases or words if I do not know them.	Think about the word I did not know in the provided question items.	P06	Particular
	P02	I was thinking about what the main idea would be.	Thinking about how to catch details in listening.	P07	
	P03	Thinking about the topic and what I know about it.	I was thinking about how to guess answers based on the key words.	P08	

Note. HL = High-level; LL = Low-level

As shown from Table 6.12, High-level listeners (e.g., Participants 01, 02 and 03) were thinking about the topic of the material and planned to identify the gist of the material. This implies that their attention is on the main idea before they focussed on the details, a characteristic of learners with *global learning style* (Cohen et al., 2001). By contrast, Low-level listeners (e.g., Participants 06, 07, and 08) were concerned about specific words and the details required to complete listening tasks, a characteristic of learners with the *particular learning style* (Cohen et al., 2001).

Another example identifies on what they were thinking as they used the strategies of problem solving and mental translation in seeking correct answers. Excerpts from some participants' reports are illustrated in Table 6.13.

Table 6.13 Participants' Reflections on the Use of Strategies of Problem Solving and Mental Translation

Style	HL	Q: What were you thinking as you used the strategies of problem solving and mental translation in seeking correct answers?		LL	Style
Synthesising	P 01	Think about how to infer the meaning of "carnivore" and "herbivore" through the context.	Think about the meaning of the specific words and details, and then translate them to understand the material	P 06	Analytic
	P 02	I have listened materials with similar topics before, I was thinking and recalling the similar information and trying to infer the answers.	Focused on words but my mind wandered and it was difficult to get my ideas together.	P 07	
	P 04	Think about how to pull ideas and details together to identify the similarities and then get the answers	Think about details and translate new words.	P 09	

Note. HL = High-level; LL = Low-level

High-level participants 01, 02 and 04 preferred to predict listening outcomes by relating the new information to the context or on the basis of their existing knowledge,

which are characteristics of a *synthesizing style* learner when processing information (Cohen et al., 2001). In contrast, Low-level participants 06, 07 and 09 reported that they were thinking about the specific information and details required to complete the listening tasks which may led to a reliance on the metacognitive strategy of mental translation. These are characteristics of an *analytic style* when processing information (Cohen et al., 2001).

Another example illustrated that participants' style preferences were related to their metacognitive awareness, was participants' responses to multiple inputs that were required in the completion of the dual-tasks. An example of a dual task is the Listening Span Test (LST) designed to measure participants' WMC in terms of information processing and short-term memory simultaneously. To complete the LST, participants were required to judge the semantic plausibility of sentences and to dictate the final word of each sentence at the same time. Faced with the multiple inputs of the dual task of LST, participants behaved differently and used different types of strategies as illustrated in Table 6.14.

Table 6.14 Participants' Reflections on Dealing with the Multiple Inputs

Style	HL	Q: What were you thinking as you faced with the multiple inputs and how did you manage to get answers?		LL	Style
FID	P 01	I judged the semantic plausibility of sentences while listening and wrote down the final words, relied on my memory. (person knowledge)	I can only focus on words or meaning, I cannot manage both at the same time. Mostly, I tried to write down the final words by repeating, translating and memorising them while listening. (mental translation)	P 06	FD
	P 02	Took notes and repeated after the sentence was read, then make judgement and write the final words. (problem solving/person knowledge)	I managed to judge meaning and dictate words at the same time for the group with only two or three sentences. For the other groups with more sentences, I cannot focus both on the meaning and words. I translated and wrote down final words only. (mental translation)	P 07	

	P 04	Wrote down final words quickly and recalled the meaning of sentences from memory and then to decide true or false. (problem solving)	Too difficult for me to focus on meaning and words within a few seconds. For the short sentences I judged meaning. For the long ones, I wrote down final words.	P 09	
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Note. HL = High-level; LL = Low-level; FID = Field-independent; FD = Field-dependent

The data in Table 6.14 suggests that High-level participants 01, 02 and 04 can abstract materials, avoid distractions and manage to judge the truth value of sentences as well as focus on specific words at the same time, demonstrating the characteristics of *field-independent* learners identified by Cohen et al. (2001). Low-level listeners 06, 07 and 09 tended to be *field-dependent* learners who processed the information in a more holistic or gestalt way (Cohen et al., 2001). They reported using the cognitive strategy of mental translation and noted their difficulty in focusing on semantic meaning of sentences and the specific words at the same time.

To summarise, when exposed to the same learning situations as described above, High-level participants demonstrated characteristics of the learning styles of *global*, *synthesising* and *field-dependent*, whereas Low-level participants' preferences reflected the learning styles of *particular*, *analytic* and *field-independent*. These differences in how the two groups of participants deal with information may influence their strategy use. For example, Participants 01, 02 and 04 appear to be *field-independent (FID)* learners who are capable of separating material from a given context even in the presence of distractions (Cohen et al., 2001). Thus, they scored higher in the dual task of the listening span test (LST). Results of these suggest that interactions between metacognitive awareness and learning style preferences should be considered when investigating possible influences of both metacognitive awareness and learning style preferences on L2 listening development.

6.5 CHAPTER SUMMARY

The chapter reported findings from the longitudinal multiple-case studies. These included data on the ten participants' L2 listening development as well as relationships between the LIDs variables associated with the development of listening proficiency. Current results confirmed that very similar learners with very similar English learning circumstances demonstrated variations in their L2 listening development (H. Chan et al., 2015). Thus, the ten participants were divided into two groups: High-level and Low-level groups based on their listening proficiency. Data from these groups demonstrated different patterns of L2 listening development with variations observed between High- and Low-level L2 listeners' listening results; performances on WMC test; the development of listening motivation; and their metacognitive awareness. To conclude, results in the multiple-case studies provided the researcher with in-depth information and evidence to better understand participants' L2 listening development and their differences in LIDs variables within the learning process.

CHAPTER 7 GENERAL DISCUSSIONS OF THE RESULTS

7.1 OVERVIEW

This chapter presents a general discussion of the results of the quantitative studies and the longitudinal multiple-case studies in relation to the five learner individual differences (LIDs) variables (i.e., language learning aptitude, working memory capacity (WMC), listening motivation, metacognitive awareness, and learning style preferences) and their contribution to participants' L2 listening development. The discussion will centre on relating the results to the previous empirical literature and relevant Complex Dynamic Systems Theory (CDST) characteristics. As a way of theorising the findings, the researcher will propose two diagrams that attempt to capture the LIDs construct and the dynamic nature of L2 listening development. A brief summary of the discussion concludes this chapter.

7.2 THE INTERCONNECTEDNESS OF LIDs

Significant on-going changes and complex interactions were detected among the five LIDs variables throughout the year, with further specific information gathered from L2 listeners' semi-structured interviews and self-report diaries. In this section, the complex interactions and the complicated evolving process of LIDs variables will be discussed first. A model then will be presented to exemplify the interconnected nature of participants' LIDs.

7.2.1 Complex Interrelations of LIDs Variables

7.2.1.1 Aptitude Complexes Hypothesis (ACH)

Results from this study have confirmed that WMC and language learning aptitude were correlated, interacted and also developed simultaneously within the L2 listening context. Positive and significant relationships were detected between participants' WMC and language learning aptitude ($r = .55, p < .001$) as obtained in previous studies of Yoshimura (2001) and Sáfár and Kormos (2008). Specifically, WMC components of short-term memory and information processing capacity are relevant to the aptitude components of sound-symbol correspondence and vocabulary learning (see section 5.4.3.2). These WMC components and language learning aptitude components were considered as the basic learning abilities. It was proposed that these basic abilities constitute the higher order aptitude complexes of memory for contingent speech (MCS) (i.e., the ability of incidental learning via oral context), namely the learning of L2 listening in the current study. These findings seem to be consistent with the Aptitude Complexes Hypothesis (ACH) (Robinson, 2002b, 2005; Richard E. Snow, 1987; Wen et al., 2017) which proposed that there is a progression from fundamental primary abilities to general capacities and to more specific language learning (see Figure 2.1). For example, in this study, it is argued that basic cognitive abilities such as participants' primary abilities (i.e., information processing, information storage, learning words and matching sounds with words) belong to the most deeply embedded and fundamental level in the framework of ACH. These primary abilities evolved as general capacities (i.e. WMC and language learning aptitude) that are in the outer level of ACH. Further, general capacities interacted and constituted the aptitude complexes in ACH, namely, the ability of incidental learning via oral content; and finally represent the least embedded level of ACH, which are the most real-world and specific

aspects of the actual performance of L2 learning, namely, the learning of L2 listening in the current study.

These findings depict an intricate picture of participants' cognitive abilities and emphasise the dynamic interactions between the two LIDs variables (i.e., WMC and language learning aptitude) as well as the associations among their components. In this study, L2 listeners might transfer their capacity and knowledge from WMC to the language learning aptitude when detecting sounds, then match sounds with correct symbols, and finally capture useful information when completing L2 listening tasks. Thus, findings from this study suggest that WMC and language learning aptitude are compatible as proposed by Winke (2013) and Yalçın (2016). And, further, it would be better to consider the important roles of learners' WMC along with their language learning aptitude in the process of language learning as suggested by Wen et al. (2017) and Yılmaz (2013). In addition, participants in the multiple-case studies made progress in the WMC tests and language learning aptitude tasks over the year. Moreover, the performance of participants who achieved higher test scores, in the multiple-case studies over the year, indicated their gradual understanding towards the tests. These results suggest they have an emerging awareness of their own WMC, which is consistent with the notion, argued by Dörnyei (2005) and Pawlak (2012a), that WMC and language learning aptitude are not 'cold' and fixed entities but are context-dependent and dynamic individual variables within the on-going complicated learning processes. These findings are consistent with Larsen-Freeman and Cameron's (2008a) suggestion that relating LIDs variables to the processes of language learning would assist to understand the tenets of the complex L2 learning system, in the current study, L2 listening system.

7.2.1.2 Directed Motivational Current (DMC)

Motivation, as a significant individual variability factor, was confirmed to function as a generating parameter, evolved and developed with other LIDs variables. It performed as a motivational drive to direct, stimulate and support participants' long-term L2 listening development during the year. The data in the current study provided evidence that participants were differentiated in L2 listening proficiency, varied in their learning starting points and were motivated by different motivational factors. L2 listeners also demonstrated discrepancies in their efforts to engage with the tasks, as well as time they spent and materials they adopted in completing the L2 listening assessment tasks. The system-wide changes in participants' listening motivation and outcomes demonstrate the complex and dynamic nature of listening motivation, which was proposed by Dörnyei et al. (2014, 2015; Muir & Dörnyei, 2013) as the Directed Motivational Current (DMC). It has the capacity to stimulate and support a long-term behaviour, such as learning L2 listening.

The salient facilitative structure of a DMC include four key elements, namely, generating parameters, behavioural routines, motivational currents, and positive emotionality (Dörnyei et al., 2014, 2015; Muir & Dörnyei, 2013) (for more see section 2.3.3.3.2). These are evident in the data from interviews and diaries. High-level L2 listeners appeared to be motivated by a wide range of motivational factors such as *working overseas, studying abroad, acquiring native-like English ability and being successful English users*, whereas low-level listeners mainly aimed at *passing the listening tests of CET 4 and CET 6*. These different listening goals served as participants' triggering stimuli or *generating parameters* that each participant's salient DMC structure started with, demonstrating the feature of goal/vision-orientedness of a

DMC. As the DMC structure proposed, being directed by different *generating parameters* (i.e. listening aims in this study), L2 listeners differed in the *behavioural routines* which are specific activities and exercises they might do regularly and frequently to achieve their listening aims. For High-level L2 listeners, the *behavioural routines* appeared to include activities such as preparing for the TOFEL test (e.g., Participants 01 and 03); attending training courses during summer holiday (e.g., Participant 03); watching authentic English movies (e.g., Participant 05), and consistently engaging in a range of listening activities (e.g., Participants 01, 02, 03, 04 and 05). Thus, these *behavioural routines* in their learning process constituted the *motivational currents* in the stream of their L2 listening development as described by Dörnyei et al. (2014, 2015; Muir & Dörnyei, 2013). The completion of these *motivational currents* marked the participants' progress and their subsequent listening learning process. For example, it would seem that the participants' successful completion of a series of sub-goals or *motivational currents* brought positive fulfillment and encouragement, which in turn may have assisted L2 listeners to sustain their regular listening activities until their final listening goals were achieved. This is the *positive emotionality* in the DMC (Dörnyei et al., 2014, 2015; Muir & Dörnyei, 2013).

Listening motivation has always been considered as a driving force to initiate the learning trajectories of L2 listening and provide a continuous impetus for L2 learners to sustain the time-consuming and sometimes tedious learning processes to succeed (Larsen-Freeman & Cameron, 2008a). Without sufficient motivation, even individual learners with remarkable capacities cannot achieve long-term goals (Dörnyei, 2005). Participant 05 in the multiple-case studies, for example, demonstrated higher listening

proficiency in the first measurement and was grouped in the High-level participants. Due to her low level of motivation during the learning process, her scores decreased in the following assessments and showed an atypical development pattern in L2 listening from other High-level participants.

In addition, the greater enthusiasm in developing L2 listening affects participants' WMC and language learning aptitude, as well as their metacognitive awareness as suggested by the relationships between the variables noted in section 6.4.3.2. Participants 01, 03 and 04 in the High-level group, for example, reported using a range of materials (*e.g., textbooks, online materials, mobile apps*) in developing L2 listening; and they are also sufficient and flexible strategy users at different stages of listening practices. Therefore, listening motivation as discussed here is a dynamic process with procedures which were well structured and represented by the DMC (Dörnyei et al., 2014, 2015; Larsen-Freeman, 2015b; Muir & Dörnyei, 2013). The DMC enabled the learning process that participants experienced in accomplishing their L2 listening aims to be tracked and observed in this study.

7.2.1.3 Dynamic Listening Strategy and Style System (DLSSS)

The remaining two LIDs variables examined in the current study are metacognitive awareness and learning style preferences. Participants, especially the High-level group, reported an increase in strategy use over the year. They demonstrated flexibility in deploying strategies at different stages of completing the listening comprehension tasks, which confirmed that listeners with higher listening proficiency are better strategy users as claimed earlier by Chang (2012) and Vandergrift (2003, 2007).

Secondly, learning style preferences were significantly correlated with metacognitive awareness ($r = .47, p < .001$) as has been reported previously (e.g., Carson & Longhini, 2002; Ehrman et al., 2003; Ehrman & Oxford, 1990; Ely & Pease-Alvarez, 1996; Oxford, 1990, 2001, 2003; Rossi-Le, 1995). Reports collected from the multiple-case studies further verified that High- and Low-level participants differed in their strategy use and in their preferences for learning styles, and that participants' strategy use appeared to be influenced by their learning style preferences in particular learning situations. For example, High-level L2 participants, who were effective strategy users when completing listening tasks, reported a preference for the learning styles of *global*, *synthesising* and *field-dependent*. They reported using different types of strategies (e.g. problem solving, directed attention, person knowledge and evaluation) to infer, elaborate and extract important information from the provided listening materials, and then complete listening tasks. The correlations between metacognitive awareness and learning style preferences identified in this study seem to confirm Reid's (1998) theory that learning styles are internally-based individual traits, not perceived or consciously used by language learners, while learning strategies are external skills and often used consciously by learners to facilitate their learning (e.g., Carson & Longhini, 2002; Ehrman & Oxford, 1990). Therefore, although no significant changes over time were detected in participants' learning style preferences in this study, the High- and Low-level participants appeared to have distinctive predispositions to process information, solve problems and deal with input information, thus demonstrating different learning style preferences. It would appear that learning style preferences may contribute in specific ways to the mastery of L2 listening by influencing participants' strategy use.

Findings in the current study appear to confirm that metacognitive awareness is a dynamic and ever-evolving system in the development of L2 listening, as proposed in previous research (Vandergrift & Goh, 2012; Zhang & Zhang, 2013); and reveal that metacognitive awareness interact with learning style preferences during the learning process of L2 listening. Thus, the development and association of these two LIDs variables have been grouped as a dynamic listening strategy and style system (DLSSS) in this study.

7.2.2 Conceptualisation of Learner Individual Differences (LIDs)

LIDs have been traditionally divided into cognitive, affective, and personality-related factors by Gardner (1985). Recent conceptualisation of LIDs in SLA research, however, considers these three dimensions of students' characteristics inter-related and dynamically interacting with one another (Dörnyei, 2010a). This was confirmed by the structural equation modeling (SEM) results in the current study which indicated that cognitive variables (i.e., WMC and language learning aptitude) and non-cognitive variables (i.e., listening motivation, metacognitive awareness, and learning style preferences) were correlated to varying degrees. In addition, data from the interviews and diaries provided evidence of the developing patterns of these LIDs variables in the learning process of L2 listening development. This section proposes a model, on the basis of their complex interactions previously discussed, to conceptualise that LIDs is an intertwined construct with the interacting variables. This concept is presented in Figure 7.1.

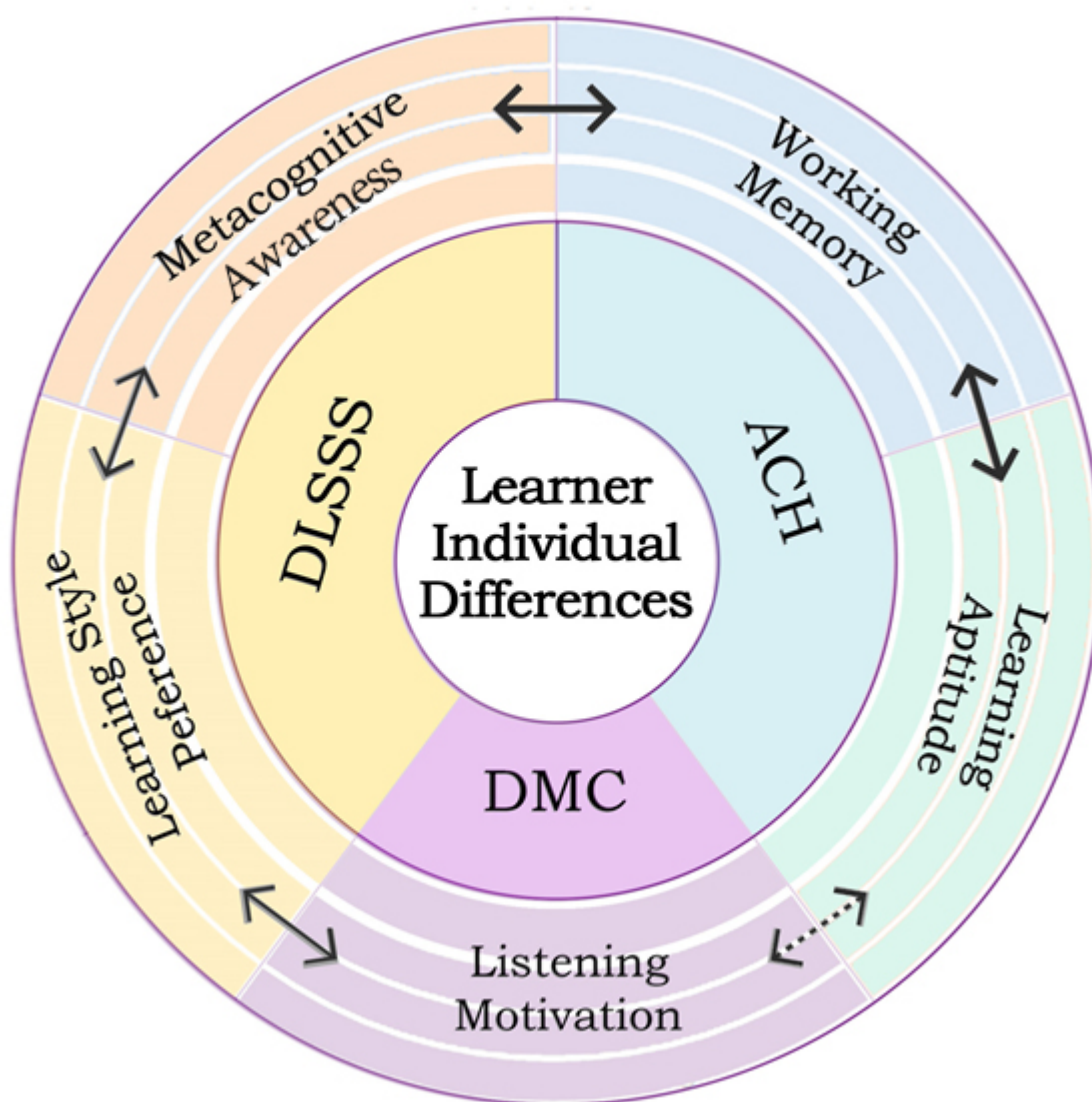


Figure 7.1 *Conceptualisation of Learner Individual Differences (LIDs)*

Note. ACH = Aptitude Complexes Hypothesis (Robinson, 2002b, 2005); DMC = Dynamic Motivational Currents (Dörnyei et al., 2014, 2015; Muir & Dörnyei, 2013); DLSSS = Dynamic Listening Strategy and Style System

This model consists of three circles, in which the five individual variables are represented in the outer circle represented by five different colours. The three components in the middle circle stand for the higher level of individual variability that evolves from the development and complex interactions of the five individual LIDs variables. LIDs, as the overarching construct of these associated variables, are highlighted in the middle circle of the diagram.

In the outer circle, the different types of double-sided arrows represent the variations in the magnitudes of correlations among these variables. For example, arrows in bold continuous lines indicate the strongest correlation (i.e. WMC and metacognitive awareness; WMC and language learning aptitude), arrows in continuous line signify the moderate correlations (i.e. metacognitive awareness and learning style preferences; listening motivation and metacognitive awareness; learning style preferences and listening motivation), and arrows in dotted line represent weak associations (i.e., listening motivation and language learning aptitude).

The three components in the middle circle, the Aptitude Complexes Hypothesis (ACH) (Robinson, 2002b, 2005); the Directed Motivational Current (DMC) (Dörnyei et al., 2014, 2015; Larsen-Freeman, 2015b); and the dynamic listening strategy and style system (DLSSS) as proposed in this study, are developed on the basis of the potential changes, development and complex interactions of the five LIDs variables (see section 7.2.1). The ACH stems from WMC and language learning aptitude; the DMC develops from the listening motivation; and the DLSSS arises from metacognitive awareness and learning style preferences. The colours of the ACH, DMC and the DLSSS, blue, purple and yellow, indicate the LIDs variables from which they stem.

Finally, LIDs at the heart of the diagram, demonstrates that LIDs can be viewed as an overarching construct and an interconnected and complex system (Aronin & Bawardi, 2012; De Bot & Larsen-Freeman, 2011; Nizgorodcew, 2012; Pawlak, 2012a; Van Geert, 2003) in which the five LIDs variables are related and interact within the L2 listening context. The impact of these variables on the development of participant's L2 listening success will be discussed in the following section.

7.3 CONTRIBUTIONS OF LIDs VARIABLES TO L2 LISTENING DEVELOPMENT

The findings of this study confirm L2 listening as a series of situated events and as an embodied action. L2 listening not only develops individually but also interacts with the above discussed LIDs variables which evolve together as a complex dynamic system as proposed by Larsen-Freeman and Cameron (2008a). This section will discuss the roles that LIDs variables appear to play in the L2 listening process in relation to previous research.

7.3.1 Working Memory Capacity and L2 Listening Development

The robust role of WMC in L2 listening comprehension is certainly the most important finding of this study, which is congruent with the previous findings that WMC plays a key role in foreign language acquisition (e.g., Mackey et al., 2002; J. N. Williams & Lovatt, 2003). Results obtained from the multiple-case studies confirmed that listeners with better WMC developed higher L2 listening proficiency during the year, which extends the findings of the limited number of studies which have successfully observed the effects of WMC on L2 listening. Firstly, this may be due to efficient WMC ensuring the participants' capacity to process and memorise input information simultaneously within a few seconds. Better WMC, thus, would enable L2 listeners to notice and detect crucial information from the provided listening materials through freeing up necessary attentional resources that would otherwise be tied up in processing incoming material (Hummel, 2009; Sawyer & Ranta, 2001). Another possible explanation of the powerful predictive value of WMC on L2 listening is that WMC is an individual construct in predicting L2 learning success instead of being considered as an element of a language learning aptitude construct as argued by Winke (2013).

Secondly, WMC, in this study, was investigated directly with L2 listening rather than with overall L2 learning success in which other aspects of L2 learning are included (e.g. reading, writing and speaking). Furthermore, the WMC tasks in this study were designed and measured in L2 rather than in L1. The L2 Listening Span Test seemed to be more directly related to L2 listening comprehension, and the effects of WMC on participants' performances on linguistic tasks were stronger in L2 than in L1 as found by Miyake and Friedman (1998). Geva and Ryan (1993) also found correlations between L2 WMC and L2 reading. Gu and Wang (2007) noted that a limitation of their study was that WMC had been measured in L1 rather than in L2. The relationship of both L1 and L2 WMC (through the Reading Span Test) with L2 reading comprehension was measured by Alptekin et al. (2010) who concluded that only L2 WMC had a meaningful relationship with L2 reading comprehension. This might originate from the neurostructure of our brain in learning languages. A learner's different brain areas are activated in processing L1 and L2 language, especially for learning a language after an early age (Stowe & Sabourin, 2005). Stowe and Sabourin also argued that L1 language tasks activate the corresponding L1 language learning areas, whereas L2 language tasks initiate the equivalent L2 language learning areas in our brain. In other words, if learners' WMC was assessed through an auditory or visual L1 Digit Span Test, L1 knowledge would be activated leading to the strong correlations of WMC with L1 performance rather than L2 performance, as in earlier studies. Therefore, it is more appropriate to conduct WMC measurements (e.g., the Listening Span Test, Digit Span Task, and Non-words Recognition Test) in participants' L2 when investigating the relationship between WMC and L2 learning.

Thirdly, although a number of studies have investigated the power of WMC in predicting L2 learning success, either in L1 or L2, many failed to detect the contribution of WMC to L2 learning success (e.g., Andringa, Olsthoorn, Van Beuningen, Schoonen, & Hulstijn, 2012; Kormos & Sáfár, 2008). A possible reason for this omission might be the choice of instruments. WMC is determined by the components of short-term memory and information processing as its construct revealed in section 5.5.2.1. The components were measured separately by simple WMC measurements or in combination by complex WMC measurements. Simple short-term storage capacity is typically measured by the number or span of unrelated digits, or words that can be recalled, known as simple WMC measurements (Juffs & Harrington, 2011; Van den Noort et al., 2006). For example, Andringa et al. (2012) have measured the WMC through the Digit Span Task and have identified a weak relationship ($r = .32$) between WMC and non-native speaker' L2 listening comprehension ability. An even more tenuous relationship ($r = .09$) was identified between WMC and L2 listening performance in the study of Kormos and Sáfár (2008).

Complex WMC measures differ from the simple span test and make simultaneous demands on WMC of short-term memory and information processing (Colom, Rebollo, et al., 2006; Juffs & Harrington, 2011). The best known complex WMC test includes the Reading Span Test (RST) (Daneman & Carpenter, 1980) and the Listening Span Test (LST). The RST was widely used in many previous studies (e.g., Adams & Guillot, 2008; Cheung, 1996; Leiser, 2007; Papagno, 1995; Walter, 2008). It has proved to be effective in measuring L1 and L2 WMC in the studies of Miyake and Friedman (1998) and Leiser (2007); analysing Chinese L2 learners' learning capacity

for plausibility information by Dussias and Piñar (2010), and in influencing beginning Spanish learners' reading comprehension ability in Leiser's (2007) study.

The LST is a modified audio version of the RST (Wen, 2016). In the current study, the LST was used, as in Winke's (2013) study, which investigated the effects of WMC on L2 learners' language proficiency in terms of speaking, listening and reading. While both studies identified a relationship, the current study found a stronger correlation between WMC and L2 listening success. The complex WMC measurement of the LST in the current study was associated with the finding that learners with higher WMC achieved better results than learners with lower WMC. The present study was designed with a specific focus on participants' L2 listening proficiency, which is also the focus of the complex WMC measurement of the L2 LST. Thus, the strong correlation may have been more readily identified between participants' WMC and L2 listening proficiency ($r = .69, p < .001$) in this study. Therefore, the complex WMC measures seem to be more efficient than the simple WMC measures in evaluating learners' WMC in language learning studies with different research interests as argued by Juffs and Harrington (2011).

Moreover, WMC components also demonstrated significant relationships with L2 listening, for example, the short-term memory showed the strongest correlation with L2 listening ($r = .65, p < .001$), followed by the WMC component of information processing capacity and L2 listening success ($r = .51, p < .001$) (see section 5.5.2). It can thus be argued that the highly significant correlation of WMC components with L2 listening confirms the role of WMC in influencing L2 listening development.

7.3.2 Language Learning Aptitude and L2 Listening Development

Language learning aptitude has been shown to be related to learners' overall language proficiency (e.g., Bylund, Abrahamsson, & Hytlenstam, 2010; Hummel, 2009; Winke, 2005, 2013), learners' L2 speaking ability (Ehrman & Oxford, 1995) and learners' grammatical rule awareness (Robinson, 1997). Many studies have confirmed that language learning aptitude, representing learners' cognitive abilities, was correlated with the cognitive demands of different L2 skills (Robinson, 2002b). In the current study, however, language learning aptitude had only a low correlation with L2 listening success ($r = .21, p < .001$). Although unexpected, this finding can be explained as the language learning aptitude construct seems to involve different abilities as claimed by Yalcin et al. (2016). They stated that the ability of matching sounds with symbols (measured by LLAMA E sound-symbol correspondence) involves the processing of auditory input. Thus, L2 listening tasks probably lead to involvement of this aptitude component, namely, the ability of matching sounds with symbols. This component has shown that it serves as a predictor of L2 listening development in this study, suggesting that the ability to relate sounds with written symbols is crucial in completing listening tasks.

The sound-symbol correspondence, a component of language learning aptitude was also found to be significantly connected with participants' WMC, especially the WMC components of short-term memory ($r = .57, p < .001$) and information processing ($r = .49, p < .001$). Results like these seem to agree with Yoshimura's (2001) argument that language learning aptitude is not only related to WMC but also correlated with its components. Data from performances of participants in the multiple-case studies further confirmed the complex interplay between these two variables, and their

influences on L2 listening proficiency (see section 5.5.2.3 and section 5.5.3.3). Thus, L2 listeners with better WMC, in the current study, appeared to use working memory knowledge to facilitate their language learning aptitude, especially the aptitude component of sound-symbol correspondence. It can be argued that L2 listening development of the participants in this study was facilitated by the mutual development and interaction of WMC and language learning aptitude.

Wen et al. (2017) proposed that the Aptitude Complexes Hypothesis (ACH) is an acquisition-based approach, which successfully identifies the dynamic interactions between aptitude profiles and task features. Thus, specific aptitude abilities are probably appropriate at different stages of learning (Robinson, 2005, 2007), as the language learning environment is dynamic and changing. Larsen-Freeman and Cameron (2008a), furthermore, have suggested that the learning environment rather than the language learning aptitude is responsible for much of the learning that takes place. The influence of the learning environment was evident in this study in the data from the interviews and diaries. Results of these indicate that L2 listeners' actions in the learning environment, the amount of time they spent outside of class learning, and other personal reactions and choices of what to focus on appear, ultimately, to affect the listening outcomes.

7.3.3 The Directed Motivational Current and L2 Listening Development

In the current study, statistical results suggested that listening motivation had tenuous effect on L2 listening proficiency. At tertiary level education in China, L2 listening receives less attention compared to other language skills (e.g. L2 reading and writing), which may account for participants' low motivation in developing listening skills as argued by Chang (2012). Another possible reason, as Winke (2013) reported, could be

that multi-collinearity of variables, that is the correlations and interactions of participants' listening motivation with other variables (e.g. metacognitive awareness and WMC) in the learning process, diminished the contribution of listening motivation to L2 listening success. In addition, in contrast to participants' regular classroom listening practice (i.e., teacher-centred, slow-paced, sufficient in time and pauses for listeners to verify comprehension), the listening comprehension tests in this study are fast, with non-words being used, and with few opportunities for participants to verify their understanding. It is possible that, although participants are highly motivated to perform well in listening tasks, they may have been constrained by a number of factors such as unfamiliarity with the listening tasks, insufficient background knowledge, or limited vocabulary size. Participants' actual class marks (not available to the researcher for ethical reasons) may have had a stronger relationship with their L2 listening motivation than the results of this study.

Although listening motivation was found to be less effective in predicting L2 listening success, differences were observed in L2 listeners' listening motivation over the year, through the longitudinal multiple-case studies. Results suggested that the ebb and flow of motivation appeared to influence L2 listeners' learning processes and, ultimately, affect their L2 listening achievements. Patterns of listening motivation in this study appeared to be consistent with the newly conceptualised motivational framework developed by Dörnyei et al., namely, the DMC from the CDST perspective (Dörnyei et al., 2014, 2015; Larsen-Freeman, 2015a; Muir & Dörnyei, 2013). Results of the multiple-case studies in this study suggested that participants' long-term listening goals were the initial conditions (De Bot & Larsen-Freeman, 2011; Verspoor, 2015) and were considered as the *generating parameters* that launched the DMC structure

(Dörnyei et al., 2015). Participants had varied long-term listening goals (*e.g.*, *Participant 03 with the aim of studying abroad*), which motivated them to develop their L2 listening capacity through setting specialised different *proxy targets* or *sub-goals* (*e.g.*, *preparing for TEFOL test reported by Participant 03*) in the daily listening practices. The successful completion of these activities marks progress in achieving the *proxy targets* or *sub-goals*. Participants' success in these *proxy targets* or *sub-goals* of the learning process, encourage, and lead to the subsequent learning of L2 listening following the affirmative feedback from achieving more different *proxy targets* or *sub-goals* (*e.g.*, *in Table 6.8, Participant 03 expressed the determination of passing TOFEL in her reports in September*). In other words, the *proxy targets* or *sub-goals* divide participants' long-term progression in L2 listening into “digestible chunks”. In this respect, the process of undertaking these various steps becomes *behavioural routines* which do not need participants' ongoing volitional control (*e.g.*, *Participant 03 did model test every day and completed various listening activities via mobile apps as described in Table 6.10*). The successful completion of *behavioural routines* marks participants' progress in learning L2 listening and, more importantly, fuels further action until participants' long-term listening goals are achieved. Therefore, the existence of *behavioural routines* is the key feature of the DMC structure. Moreover, participants with different listening goals at the initial stage recorded a vastly different experience in developing L2 listening skills, and reached different levels of L2 listening success, all of which would have been determined by the dynamically evolved listening *motivational currents* within the framework of a DMC (Dörnyei et al., 2014, 2015; Muir & Dörnyei, 2013).

Finally, similar to the study of Yashima and Arano (2015), results in the current study suggest that learners' microgenetic learning experiences interact with contextual challenges through focusing on the dynamics of motivational development. Thus, researching L2 motivation from the CDST perspective shows great potential for helping to explain the enigma of why some participants continue to learn while others do not, and to explore the complexity and dynamics of motivation to learn an L2 (Valsiner, 2008; Yashima & Arano, 2015).

7.3.4 Metacognitive Awareness and L2 Listening Development

Previous research has argued that participants' metacognitive awareness and perceived use of strategies facilitate L2 learning (Ehrman & Leaver, 2003; Goh, 2008; Vandergrift et al., 2006), and contributes to L2 listening success (e.g., Chang, 2012; Cross, 2010; Dong, 2016; Goh & Taib, 2006; Goh, 2008; Graham, Santos, & Vanderplank, 2008; Huang, 2005; Vandergrift & Baker, 2015; Vandergrift & Goh, 2012; Zhang & Goh, 2006). In the current study, however, it was found that metacognitive awareness and L2 listening development were not correlated.

As metacognitive awareness were confirmed to be significantly correlated with other LIDs variables, such as WMC, language learning aptitude and listening motivation, an explanation for the non-significant result may be the effect of multi-collinearity. Among these variables, WMC and language learning aptitude were confirmed as influential variables for L2 listening success in this study. Thus, the same parts of the variation in L2 listening might be explained and predicted by WMC and language learning aptitude, which may have artificially reduced the effects of strategies on L2 listening success and made its significance in L2 listening development misleadingly small, as similarly reported by Winke (2013).

Although the correlations between metacognitive awareness and L2 listening development were non-significant, participants in the multiple-case studies, especially the case for High-level participants, reported that they used various strategies (*e.g. as planning, directed attention and evaluation*) more frequently at different stages when completing listening tasks. In contrast, less skilled listeners relied mainly on the strategy of *mental translation* in completing different listening tasks, which should be avoided according to the recommendation of Vandergrift et al. (2006). Results of this study confirmed Vandergrift and Goh's (2012) statement that proficient listeners are able to control and regulate the comprehension processes through using various strategies. Similar findings have already been reported by previous literature from studies that were designed to examine the relation between strategy use and listening proficiency (*e.g.*, Chang, 2012; Graham & Macaro, 2008; Vandergrift & Tafaghodtari, 2010; Vandergrift, 2003; Yang, 2003; Zhang, 2002). Vandergrift (2003) stated that participants who are better strategy users would most likely be better L2 listeners. He recommended that L2 listening proficiency could be enhanced through their better perceived use of strategies.

7.3.5 Learning Style Preferences and L2 Listening Development

Learning style preferences, concerned with natural, habitual and preferred methods or ways of absorbing, processing, and retaining new information and skills (Kinsella, 1995), usually develop but without dramatic or significant changes. This was the case in the present study as none of the participants exhibited any obvious change or showed different tendencies in their learning style preferences in the completion of various L2 listening activities during the academic year. In addition, no direct effects of learning style preferences on L2 listening success were detected in this study.

Learning style preferences, however, might influence L2 listening development indirectly through participants' strategy use because the two variables were moderately and significantly correlated ($r = .47, p < .001$). Some types of learning style preferences were shown to be related to participants' metacognitive awareness in the multiple-case studies. For example, listeners with better listening proficiency tended to be *global, synthesising* and *field-independent* learners who switched strategies to assist their listening process, whereas the less skilled listeners tended to be more *particular, analytic* and *field-dependent* listeners who were less flexible in using strategies when completing different listening tasks. As a relationship between learning styles and strategies has been reported in a number of earlier studies (e.g., Brown, 1994; Carson & Longhini, 2002; Ehrman & Oxford, 1990; Littlemore, 2001), it is not surprising that with certain learning styles, listeners in this study, preferred particular types of strategies. The differential between High- and Low-level participants in the learning style preferences is a field for future investigation into more effective learning styles in L2 listening development.

7.3.6 Summary of the Contributions of LIDs Variables to L2 Listening

Development

The significant correlations between L2 listening and WMC and language learning aptitude in this study suggest that these were the only two LIDs variables that make significant contributions to L2 listening success. Similar outcomes have been reported in previous research (e.g., Granena & Long, 2013; Kormos & Sáfár, 2008; Yalçın et al., 2016; Yilmaz, 2013; Yoshimura, 2001). Although the other three LIDs variables (i.e., listening motivation, metacognitive awareness and learning style preferences) were not detected as significant predictors to L2 listening in the statistical results of the structural equation modelling, their roles in L2 listening development were evident

in the longitudinal multiple-case studies. Firstly, listening motivation was identified as the newly developed motivational framework of the DMC, and appeared to have dynamically developed and directed participants' L2 listening development. Secondly, L2 listeners demonstrated variations, and on-going changes in metacognitive awareness, which significantly correlated with and affected by their listening motivation and learning style preferences. Finally, on the basis of the significant correlations and interactions with metacognitive awareness, learning style preferences were found to be likely to influence participants' L2 listening proficiency indirectly through their strategy use.

7.4 THE DYNAMIC NATURE OF L2 LISTENING DEVELOPMENT

Listening comprehension is a key component of language acquisition. As such a major foundation for success in language immersion programs (Vandergrift & Baker, 2015), L2 listening has been viewed not only as a standard aspect of L2 general proficiency assessments but also a crucial element of course-specific achievements at various levels of education (Gu et al., 2009). In this study, the dynamic nature of L2 listening was conceptualised as a model to account for the dynamic process of L2 listening development as well as its interactions with a number of listeners' LIDs variables (Figure 7.2). Within this model, the current situation-specific features of the Chinese EFL context were also included.

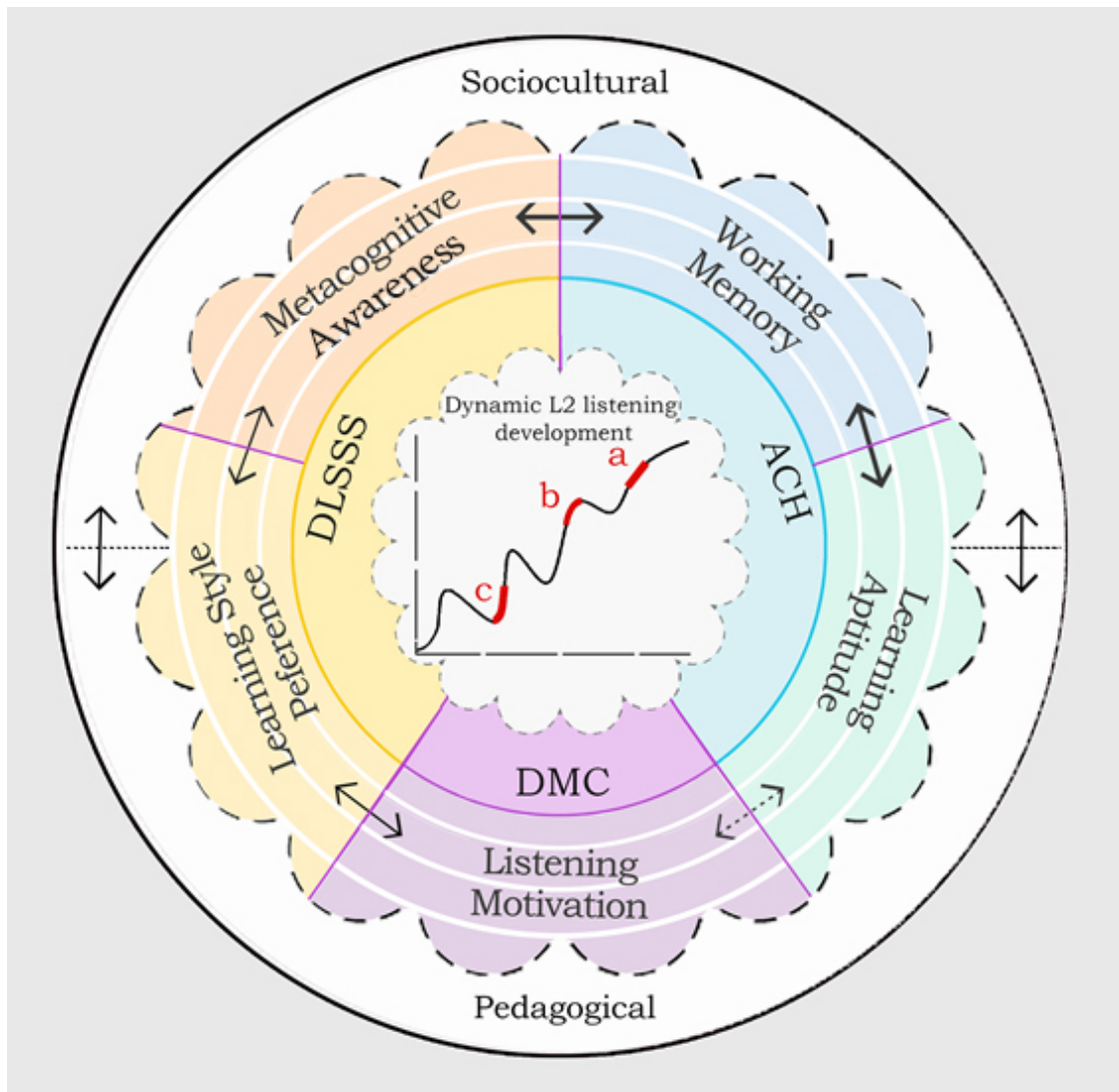


Figure 7.2 Model of Dynamic L2 Listening Development

Note. ACH = Aptitude Complexes Hypothesis (Robinson, 2002b, 2005); DMC = Dynamic Motivational Currents (Dörnyei et al., 2014, 2015; Muir & Dörnyei, 2013); DLSSS = Dynamic Listening Strategy and Style System

In the schematic representation of the model (Figure 7.2), there are three circles differentiated by the bubble dotted outlines. The inner circle with a white background represents the open and complex dynamic system of L2 listening development. The middle circle has double layers and typifies the variations of the five LIDs variables, which is modified on the basis of the conceptualisation of LIDs (see Figure 7.1). The outer circle symbolises the situational forces from the specific socio-cultural and

pedagogical contexts in which the learners conduct the L2 listening activities. Within the innermost circle:

- the curved line with upward and downward fluctuations represents the non-linear developmental trajectories of the L2 learners' listening proficiency;
- the line with highlighted red segments a, b and c represents the variability of participants' listening proficiency;
- the bubble dotted outline of the inner circle indicates the interactions between L2 listening and the LIDs variables;
- the inwards points of the bubble dotted circle symbolise the effects of LIDs variables on L2 listening development;
- the outwards arc lines of the bubble dotted circle represent influences that L2 listening demonstrated to LIDs variables (e.g., see section 6.4.2 for participants' emerging test awareness).

The double layered middle circle is the modified conceptualisation of LIDs that have been presented and discussed in section 7.2.2 (see Figure 7.1). There are three dynamic systems of the Aptitude Complexes Hypothesis (ACH) (Robinson, 2002b, 2005); the Directed Motivational Current (DMC) (Dörnyei et al., 2014, 2015; Larsen-Freeman, 2015b); and the dynamic listening strategy and style system (DLSSS) differentiated by colours of blue, purple and yellow in the first layer. The development of ACH is on the basis of constant development and interactions of cognitive variables of WMC and language learning aptitude in the second layer. The DMC develops from listening motivation, also represented by the colour of purple. The DLSSS stems from the two LIDs variables of metacognitive awareness and learning style preferences and their interrelations in this study. Additionally, there are different bidirectional arrows

which exemplify the interactions between the adjacent two variables in the second layer, that is:

- the arrow in the dotted line signifies a tenuous connection between LIDs variables (i.e., listening motivation and language learning aptitude);
- arrows in the continuous lines indicate strong interactions (i.e., metacognitive awareness and learning style preferences; learning style preferences and listening motivation);
- arrows in the bolded continuous lines demonstrate the strongest correlations (i.e., WMC and language learning aptitude, WMC and metacognitive awareness).

The two layers of the middle circle represent the associations between LIDs variables, and their evolutions to the higher level systems of ACH, DMC and DLSSS. This confirms that LIDs is an intertwined construct with interconnected variables which can be viewed as a complex system from the CDST perspective (Aronin & Bawardi, 2012; Niżegorodcew, 2012; Pawlak, 2012a).

Finally, the outer circle represents the learning situational forces of L2 listening, which include the socio-cultural and pedagogical contexts. They are divided by the dotted lines placed at the left and right part of the outer circle, and their consistent interactions within the L2 listening context are illustrated by the bidirectional arrows. The bubble dotted circle represents the multiple interactions between the middle circle and the outer circle, namely, the internal individual variability and the external situational forces.

On the basis of the development and interactions within and between the three layers, the dynamic and complex nature of L2 listening is conceptualised as a Model of Dynamic L2 Listening Development applied in this study from the CDST perspective. Features of CDST that the current model demonstrates include the non-linearity and variability of L2 listening, complex interactions between internal and external resources, and the dynamic changes of the complex L2 listening system. These will be discussed in detail in the following sections.

7.4.1 Non-linearity and Variability of L2 Listening Development

Listeners' L2 listening proficiency as depicted in the inner circle in the diagram, demonstrates a growing pattern with fluctuations rather than consistent increases throughout the year. The non-linearity in L2 listening development may be due to the complex internal and external influences on L2 listening developed within the dynamic learning processes. The internal influences refer to the variations and interactions of the five LIDs variables that appear directly or indirectly to affect L2 listening. The external influences include the situational forces from the socio-cultural and pedagogical contexts that facilitate participants' L2 listening development through interacting with LIDs variables. Thus, the development of L2 listening appeared to be influenced by the concurrent effects of internal and external forces in the learning process. This differs from simply the sum of the effects of all these forces as proposed by Van Geert (2003).

Data from longitudinal multiple-case studies demonstrated that five LIDs variables showed various developing patterns in the learning process of L2 listening. As it is difficult to represent visually the multi-layered construct and interactions among various aspects of L2 listening development within the two-dimensional diagram as

shown in Figure 7.2, the curved line, with rising and falling trends, is used to depict the non-linear development of L2 listening over the year. In addition, the three red line segments distributed along the curved line graphically represent the individual participants' listening variability.

Individual learning variability is a salient feature in language learning and development that has been empirically documented in the literature (e.g., Bell, 2009; Larsen-Freeman, 2006c; Norbert Schmitt & Meara, 1997). CDST views individual variability as emergent properties arising spontaneously out of the complex interactions within learner's psycholinguistic system, the continuing multitudinous contextual influences, and his/her own orientation and intentionality (H. Chan et al., 2015; Hou, 2017; Zheng, 2011). In Figure 7.2, some of the line segments (a and b) are placed at the top of the curve, indicating that while the participants' listening proficiency is developed to a higher level, it is still undergoing some dramatic changes, or a phase shift. As identified in the multiple-case studies, participants at these two stages show greater interest in, and attention to, developing better listening capacity. For example, Participants 01, 02 and 04, with high-level listening proficiency performed consistently better and achieved higher grades than other L2 listeners over the year (see Figure 6.1). Thus, their listening proficiency can be represented by the line segment "a", indicating they probably had reached the higher level of listening competence. In contrast, Participants 03 and 05 also demonstrated high-level listening proficiency but experienced more steps or greater fluctuation in their listening motivation, metacognitive awareness, and the WMC before reaching the higher-level in L2 listening development. Thus, their listening proficiency can be represented by

the line segment “b”, indicating they experienced more stages (i.e., attainment or attrition) before reaching a higher level of L2 listening development.

The line segment “c” is placed at the bottom in the valley in the diagram, indicating that the learners’ listening proficiency development may have stalled or be developing slowly at a lower level. The five Low-level L2 participants (i.e., participant 05, 06, 07, 08, 09 and 10) in the multiple-case studies are examples. Their fluctuating performances on L2 listening tasks and LIDs variables suggest they were experiencing difficulty in achieving L2 listening success. When they failed to pass exams they became less motivated, expressing boredom or anxiety, leading to their listening development stalling, namely, an “attractor state” as described in a number of studies (e.g., De Bot & Larsen-Freeman, 2011; Hiver, 2013, 2015; Hou, 2017; Van Geert, 2003; Waninge, 2015). Their listening proficiency development may “rest” there until re-ignited by forces from outside the dynamic system of L2 listening. In the present study, the five Low-level participants were encouraged to continue with the learning by their achievements on L2 listening tasks, the influence of LIDs variables and the interrelations between these variables and the socio-cultural and pedagogical context. Thus, once they were motivated again, they continued with the learning of L2 listening and developed from “attractor state” towards the “repellor state” as proposed by De Bot and Larsen-Freeman (2011) (see section 2.2.2). Finally, line segments are used in the diagram rather than dots to illustrate more readily that L2 listening development involves ever-growing dynamic process, rather than fixed points without divergences.

As discussed above, individual variability existed among L2 listeners. Listeners are likely to go through different stages in their L2 listening development and establish

their own learning patterns. Thus, the Model of Dynamic L2 Listening Development captures and characterises the collective tendency that different individual L2 listeners have demonstrated in the non-linear L2 listening development in this study.

7.4.2 Complex Interactions between Internal and External Resources

The current model also addresses the continuous interplay between the internal and external resources on which the dynamic L2 listening system depends. The constant change of L2 listening was largely dependent on the internal organisation and reorganisation of the LIDs, and also through their interactions with the environment, namely, the situational forces from the pedagogical and socio-cultural contexts proposed by De Bot and Larsen-Freeman (2011).

Firstly, a complex interaction exists between the external forces of the socio-cultural and pedagogical contexts which mutually interact. The relationship is represented by the bidirectional arrows in the diagram (see Figure 7.2). In the contemporary Chinese tertiary English language learning context, listening seems to be paramount for the tertiary education system but marginalised in use in real-life situations. For example, university graduates' L2 listening scores and certificates of the College English Test Band 4 & 6 (CET 4 & CET 6) play more important roles in the actual career development than their authentic listening ability (Shen & Zhang, 2016) with L2 listening seldom used in the real-world working environment. Thus, the majority of L2 listeners at tertiary level are mainly motivated to pass exams when engaged in L2 listening learning. Once they have passed the tests and obtained the certificates, most L2 listeners are likely to be less motivated to further improve their L2 listening capacity. This test-driven learning situation probably discourages the L2 listeners to continue with L2 listening development.

Moreover, passing exams and achieving certificates are also aims of most teachers of listening, thus, most teaching of L2 listening takes the form of teaching to the test in China. Teachers prefer to demonstrate a model test of CET 4 or CET 6 in the listening classes and assess L2 learners' listening comprehension, rather than focus on the ways for L2 learners could achieve listening success (Goh, 2010; Graham, Santos, & Vanderplank, 2011) or to provide L2 listeners with systematic knowledge of strategies, pronunciation and vocabulary for L2 listening development. With the large size of classes in China (approximately 40-50 students), it is impossible for teachers to provide individual feedback on participants' listening performances other than general comments. L2 listeners do not obtain sufficient feedback (e.g., phonological, lexical and strategic knowledge) after the completion of listening tasks, or have opportunities to understand the role of LIDs variables in L2 listening development. Consequently, L2 listeners appear to view learning of listening only as a means to enable them to proceed through the educational system, rather than as a tool for communicating in L2. This phenomenon helps to explain how the pedagogical context of L2 listening in a university is influenced by the socio-cultural context in the society. As discussed in section 1.2.2, pedagogical listening practices neither provide sufficient attention to nor systematic training or intervention for L2 listening development, which is far from the listening goals at the tertiary level envisaged by the Chinese Ministry of Education (MoE). Even if the national syllabus guidelines had enabled the curriculum to be implemented in the College English program in which the current participants were enrolled, the influence may have been weak. This is a field in which further research is required.

Therefore, the L2 listeners' learning experience and understanding of the pedagogical and socio-cultural contexts appear to influence listening variability, as illustrated by the bubble dotted lines between the middle and outer circle in the diagram in Figure 7.2. On one hand, in the pedagogical and socio-cultural context of the current study as discussed earlier, the majority of listeners engaged in explicit and test-driven listening activities rather than activities focused on enhancing their authentic listening capacities. Therefore, instead of establishing long-term listening goals, most of them preferred the goals of achieving higher listening grades and passing College English Test Band 4 (CET 4) and then Band 6 (CET 6). With the test-oriented conditions in L2 listening development, the low-level participants practiced listening intensively when the exams were approaching. They had little knowledge of their own characteristics in terms of WMC, language learning aptitude, metacognitive awareness or exploring their learning style preferences to support their learning. Insufficient knowledge about themselves in terms of these LIDs variables further predicts their low-level L2 listening proficiency.

On the other hand, however, a number of High-level participants developed and enhanced their L2 listening ability with the aim of studying abroad in the current socio-cultural context. The goal of studying overseas appears to have had a major influence not only on promoting listeners' independent listening development, but also on enhancing their LIDs variables. For example, participants who had similar long-term goals of studying overseas reported developing effective routines of enhancing L2 listening: they engaged in regular listening practices every day; practiced L2 listening via various materials (e.g., English movies, English news, on-line English quiz and games and mobile apps); and completed dictation practices by using short

articles or movie subtitles, to enlarge WMC and lexical knowledge as suggested by Cai (2013) and Marzban (2014). Furthermore, participants with high-level listening proficiency attended various extracurricular activities, classes or seminars which provided authentic environments for listeners to enlarge their socio-cultural information and background knowledge, ultimately, to facilitate their listening proficiency. Evidence of these as motivators for their learning of listening indicates the activation of participants' LIDs system as demonstrated in the middle circle in Figure 7.2. The system-wide changes or shifts within the LIDs system activate and enhance the L2 listening development, and ultimately lead to participants' higher and greater L2 listening competence. In this sense, the socio-cultural context probably determines, to a large extent, learners' pedagogical experiences of listening, their employment of various available resources to facilitate the learning of L2 listening, and ultimately the trajectories of L2 listening development.

Thus, on the basis of the different influences of the participants' situated experiences of learning and using L2 listening in the pedagogical and socio-cultural contexts, the ramifications of differences between High- and Low- level listeners' development of the internal LIDs system are illustrated. Finally, it can be concluded that L2 listening reorganises itself as a result of internal development, which is constantly changing and interacting with the external resources in the learning context (De Bot & Larsen-Freeman, 2011; Van Geert, 2008).

7.4.3 Dynamic Changes of the Complex L2 Listening System

Dynamic changes are at the heart of CDST (Larsen-Freeman & Cameron, 2008a; Larsen-Freeman, 2015a). As indicated, the dynamic L2 listening system emerges from its non-linear reorganisation; it interacts with the internal interconnected system of

LIDs, and demonstrates the continuous multidimensional interplay with the external resources in the context in which the learning of L2 listening is conducted. Such interconnections and interplays reflect the feature of complete interconnectedness and openness of a complex dynamic system (De Bot & Larsen-Freeman, 2011; De Bot et al., 2007b). Thus, the final point the present diagram (in Figure 7.2) represents is the constant state of flux which is an integral part, and a major property of, a dynamic system composed of multiple interrelated systems (De Bot & Larsen-Freeman, 2011; De Bot et al., 2007b, 2005; Larsen-Freeman & Cameron, 2008a; Mercer, 2016).

In the present study of dynamic L2 listening development, the researcher conceptualises the internal LIDs system as incorporating cognitive and non-cognitive variables, while considering the pedagogical and socio-cultural contexts as the external system of situational forces. L2 listening develops dynamically and is affected by both the internal and external systems. But the effects of the internal and external system on L2 listening is more than their sum due to the interconnectedness of all the external and internal resources (Mason, 2008), which are also dynamically and constantly changing throughout the on-going listening development.

Moreover, given the interdependence of the various components of the system, changes in one aspect can lead to changes in other aspects, and even across the whole system in ways that are not entirely predictable (De Bot & Larsen-Freeman, 2011; De Bot et al., 2007b). For example, the present model identified possible control parameters within the system of LIDs, namely, the cognitive variables of WMC and language learning aptitude. Participants' growth in WMC could empower participants to enhance their phonological learning ability and assist them further with L2 listening

tasks. These two cognitive variables are grounded in learners' experience of applying strategies while listening. Therefore, if participants use strategies more frequently, there is a possibility that their WMC will be enhanced. Also, participants' metacognitive awareness was affected by their listening motivation and learning style preferences. Thus, interactions among these variables represent the development of L2 listeners' internal system of LIDs, based on which, L2 listeners' listening proficiency developed gradually. Thus, variations of individual variables may cause system-wide changes of L2 listening development.

It needs to be noted that sometimes change could be dramatic and sudden while at other times it could be gradual and subtle, depending on the individual variables. For example, participants would be frustrated if they did not realise their sub listening goals, hence, their listening motivation would be less effective in facilitating further L2 listening development. In this sense, participants' L2 listening seems to develop slowly and can be viewed as reaching to an "attractor state". But instead of reaching to a fixed end state of the development, or even stabilisation, the temporary "attractor states" of L2 listening or even stabilisation may well reflect "boundlessness of potentiality" (Larsen-Freeman, 2006b, p. 198) in further development. Results from the current work suggest that, due to participants' enthusiasm towards L2 listening as well as the perseverance they demonstrated in the learning process, listening motivation showed the potential to be an important generating parameter in influencing L2 listening success in the long term. Over the course of development, L2 listeners' listening proficiency might increase, fluctuate, or maintain its equilibrium, retaining its overall state in a process known as dramatic stability (Larsen-Freeman &

Cameron, 2008a), and ultimately achieve L2 listening success through constant interactions with other systems.

Another integral characteristic of the dynamic L2 listening system is that it is not fully self-contained. This means one system is usually part of, or simultaneously subsumed by, other systems. Accordingly, it is actually impossible to comprehend an entire system with set boundaries because interdependencies are almost infinite and boundaries among systems are blurry rather than absolute (Byrne & Callaghan, 2014). For example, the five LIDs variables evolved into higher level constructs of the Aptitude Complexes Hypothesis (ACH) (Robinson, 2002b, 2005), the Directed Motivational Current (Dörnyei, et al., 2014, 2015; Larsen-Freeman, 2015b; Muir & Dörnyei, 2013) and the dynamic listening strategy and style system (DLSSS) as proposed in the current study. This grouping manifests as repeating similar patterns which existed between the basic individual variables and the higher level constructs, representing the corresponding characteristics across different levels of the LIDs, but within the entire complex and dynamic system of LIDs (Larsen-Freeman & Cameron, 2008a; Mercer, 2016).

In conclusion, an end state is never achieved in the dynamic evolving L2 listening system. The system itself, and its relevant internal and external systems, are all constantly dynamic in nature, and all develop in a continually emerging manner. In other words, each L2 listener experienced on-going states through interacting with the internal LIDs system, and the external system of situational forces from pedagogical and socio-cultural contexts along a trajectory of learning of L2 listening. Changes in any of the internal and external systems potentially could lead to changes in the entire

L2 listening system. In this sense, the past state of the system probably defines the present state of the system, and is likely to determine the future trajectories of the system (Mercer, 2016, p. 19). Thus, temporality and dynamism are fundamental to the system.

To sum up, the current Model of Dynamic L2 Listening Development accommodates the non-linear development of L2 listening, visualises the changes and interactions of LIDs variables and multifarious situational influences. The non-linearity and individual variability observed in L2 listeners' listening developmental patterns are seen as stemming from the complex and dynamic interactions among these forces (Mercer, 2016).

7.5 CHAPTER SUMMARY

This chapter mainly focused on the dynamic nature of LIDs and L2 listening. The interconnectedness of LIDs variables was first discussed in relation to previous literature in terms of their dynamic development and the complex interactions. These were further conceptualised as a model to illustrate and clarify the overarching system of LIDs. The contributions that each LIDs variable generated on L2 listening development were then identified, discussed and compared with previous studies from the aspects of empirical findings and data collection instruments. Finally, the Model of Dynamic L2 Listening Development was proposed and presented in Figure 7.2 to visualise the dynamic nature of L2 listening development and its complex interactions with relevant internal and external forces. This model accounts for the whole process that a L2 listener experiences, as an entire complex dynamic system. The nature and prominent CDST characteristics of the dynamic L2 listening system were further discussed in relation to the non-linearity and variability of L2 listening development,

and the multidimensional complex interactions between the internal and the external systems. Hence, the complex, dynamic and non-linear system of L2 listening development was heightened, in the end representing and clarifying the vital properties that CDST demonstrated. Contributions of the present study will be addressed in the next chapter with suggestions and directions for future research on L2 listening from the CDST perspective.

CHAPTER 8 CONCLUSIONS

8.1 OVERVIEW

This chapter opens with a succinct summary which briefly reiterates key findings of the present study. Then, a discussion of the study's contributions and implications is provided, in regard to learner individual differences (LIDs), and the role of Complex Dynamic Systems Theory (CDST) in L2 listening development. Recommendations for future research are discussed on the basis of limitations of this study. The chapter ends with a succinct conclusion.

8.2 SUMMARY OF THE FINDINGS

This thesis reports a study on L2 listening development that adopted CDST as the theoretical framework. It reviews CDST and its application to interpreting L2 development, especially to that of L2 listening development, and the influence of LIDs variables on L2 listening development. Based on the results and discussion presented in earlier chapters, it can be concluded that:

- 1) L2 listening development is a complex, non-linear and dynamic process involving L2 listeners' linguistic, social, cognitive, and emotional systems.
- 2) LIDs variables associated with L2 learners not only develop individually, but also interact among themselves and, potentially, evolve into higher-level individual constructs which influence L2 listening development to different extents.
- 3) Application of CDST provides an appropriate theoretical and methodological foundation for researching L2 listening development and learners' LIDs.

8.3 CONTRIBUTIONS AND IMPLICATIONS OF THE STUDY

Findings of the present study build on and contribute to our existing theoretical, methodological and pedagogical knowledge of L2 development. The contributions are in three areas: Theoretical, methodological and pedagogical. They are outlined in the following sections.

8.3.1 Theoretical Contributions and Implications

Theoretical contributions and implications are drawn from the findings of the present study in terms of LIDs, and the application of CDST to the understanding of L2 development.

8.3.1.1 Learner Individual Differences (LIDs)

The theoretical contribution of the present study lies first in revealing the LIDs through an examination of the role of individual learners' personal characteristics, namely, their LIDs variables (i.e., language learning aptitude, WMC, listening motivation, metacognitive awareness and learning style preferences) in L2 listening development. The current study constructed the five LIDs variables and their evolution within a framework with the CDST feature of complete interconnectedness (De Bot & Larsen-Freeman, 2011; Larsen-Freeman, 2012, 2015a).

My conceptualisation of LIDs in this study is presented in Figure 7.1 (see section 7.2.2). Results confirmed a shift from the traditional theoretical understanding of LIDs as stable traits towards the idea of considering LIDs as a complex dynamic system, which has the characteristics of an emergent property (N. C. Ellis, 2008; Larsen-Freeman, 2006c). That is, higher-level properties are regarded as arising from the interaction of lower-level components. Thus, the Aptitude Complexes Hypothesis

(ACH) (Robinson, 2002b, 2005), the Directed Motivational Current (DMC) (Dörnyei et al., 2014, 2015; Muir & Dörnyei, 2013), and the dynamic listening strategy and style system (DLSSS), as proposed in this study, are considered as higher-level emergent properties on the basis of the evolution, and interaction, of the five basic LIDs variables. Any change in a variable within the L2 listening context could lead to changes in other variables and, all these changes eventually lead to the system-wide changes in the complex system of LIDs (Dörnyei, 2005; Larsen-Freeman & Cameron, 2008a). Thus, researching LIDs in L2 listening development from the CDST perspective offers researchers valuable insights into understanding the intertwined connections of LIDs variables as proposed by Nizhegorodcew (2012). It has been recommended that the traditional theoretical LIDs paradigms are reassessed and restructured in the light of the latest development of CDST (Aronin & Bawardi, 2012).

8.3.1.2 Application of CDST in L2 development

CDST is receiving increasing attention in accounting for the non-linearity and irregularity of L2 learning and development. The notion of L2 development as a complex and dynamic process has been widely acknowledged in the field of applied linguistics (AL). However, “most studies on language acquisition are still placed within a theoretical framework working with static or linear presuppositions” (Jessner, 2008, p. 270), and research based specifically on CDST is “a relatively uncharted territory” (Dörnyei, 2009d, p. 108). Until recently, most discussion has been at a conceptual level and only a handful of empirical L2 development studies have been conducted to substantiate the claims and concepts proposed by CDST (e.g., Bell, 2009; Churchill, 2008; Larsen-Freeman, 2006a; Macintyre & Legatto, 2011; Polat & Kim, 2014; Spoelman & Verspoor, 2010). The present study’s examination of L2 listening development from this theoretical stance is thus among the first attempts to apply

CDST to L2 listening development. Through the lens of CDST, L2 listening was analysed as dynamic interactions of multi-level subsystems and parameters. Individual learners in the multiple-case studies were considered as systems, each of which has unique characteristics and experiences that interact with the environment and organise themselves within their own learning patterns. The Model of Dynamic L2 Listening Development, as a way of theorising the findings, is grounded firmly in the empirical findings of this study. The model addresses the interconnectedness of LIDs, the variability, dynamic changes and non-linearity of L2 listening, issues which have not been examined fully together in previous studies in the field of L2 development. This powerful theoretical perspective of CDST enabled the examination of the three aspects of L2 learning closely that is, to show how L2 listeners as systems, their LIDs as internal systems, and the learning context as external systems adapt to each other as an overall complex system of L2 listening development over different time scales. This study has enhanced our understanding of CDST and confirmed its application to future L2 development studies.

8.3.2 Methodological Contributions and Implications

The study also makes a methodological contribution. Although there have not yet been any specific research method templates to guide L2 development research from the CDST perspective (Dörnyei, 2009d), Larsen-Freeman and Cameron (2008a, 2008b) proposed a complexity thought model that comprised a series of steps:

- 1) identifying the different components of the system; 2) identifying the timescales and levels of social and human organisation on which the system operates; 3) describing the relationship between and among components; 4) describing how the system and context adapt to each other; and 5) describing the dynamics of the system. (Zheng, 2011, p. 314)

Though by no means exhaustively, the current study generally followed these steps in providing a model for future research on L2 development from the CDST perspective by using a longitudinal mixed-methods design. This study used a quantitative approach in contrast to most of the previous CDST studies which have mainly used a qualitative design. Although most CDST scholars have considered quantitative approaches to be ineffective in revealing the dynamic nature of L2 development, this study initially gathered large-scale data to provide comprehensive background information via quantitative studies. It then employed structural equation modeling (SEM) to explore potential correlations of LIDs variables and their contribution to L2 listening development, which has validated the effectiveness of applying CDST in researching L2 listening development. This study also constructed a qualitative model (i.e., Model of Dynamic L2 Listening Development) to account for the dynamic L2 listening development in the longitudinal multiple-case studies.

Findings of the present research also suggest that collecting data over an extended period is essential in tracking the development of L2 learners' listening capacity. Thus, future studies on L2 development are recommended to employ a longitudinal mixed-methods design with a quantitative large-scale data base of L2 learning to provide comprehensive background information about participants; and to include longitudinal multiple-case studies to track the on-going changes and complex nature of certain L2 learning aspects with illustrative or specific information. Using a mixed-method research design for future studies on L2 development has the potential to provide a rich background as well as a thorough understanding of the dynamic nature of L2 learning from the CDST perspective.

8.3.3 Pedagogical Implications

The findings of the present study suggest a number of pedagogical implications for Chinese learners and teachers of foreign languages or other students and teachers in similar contexts.

Firstly, the present findings revealed that participants' listening proficiency generally developed in a non-linear way and was influenced by a number of LIDs variables, especially learners' WMC and language learning aptitude. It was observed that these variables interacted mutually and demonstrated complex interactions within the situational context. On the basis of the current findings, it is suggested that teachers should pay more attention to participants' LIDs variables (i.e., WMC, language learning aptitude, dimensions of listening motivation, metacognitive awareness and preferences for learning styles) when conducting listening activities. Learners, with the assistance of their language teachers, could be made aware of the role of such variables, pay greater attention to their own strengths and needs and access available information and resources to enhance their learning. In addition, teachers could assist language learners to enrich their phonological, lexical and strategy knowledge by providing explanations or relevant tasks, and by employing a range of classroom techniques to develop a pleasant learning context for L2 listening development.

Secondly, WMC was found to be influential in facilitating L2 learners' listening proficiency. Therefore, WMC needs to be developed in order to support the process of L2 listening development. Suggestions for teachers to enhance learners' WMC include providing L2 learners with the dual-task activities, such as dubbing and dictation. Such activities, which require L2 learners to rely on memory of phonological or syntactic

knowledge, can strengthen participants' WMC as demonstrated by previous studies (e.g., Cai, 2013; Kiany & Shiramiry, 2002; Kuo, 2010; Leeming & Wong, 2016; Marzban, 2014; Rahimi, 2008). These activities have also been shown to support the development of learners' capability of decoding and parsing of information (Rost, 2005) which can contribute to their listening comprehension ability.

Finally, from the CDST perspective, instruction cannot determine a learner's learning path and therefore teachers are suggested to create an environment in which an optimal learning path for each individual learner can be accomplished (Verspoor, 2017). L2 language teachers are also encouraged to provide learners with sufficient individual feedback and to maximise opportunities for listeners to engage in authentic listening activities as well as focus on test completion.

8.4 LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The present study was designed to investigate participants' dynamic L2 listening development and the LIDs, and to explore correlations among five LIDs variables and their contribution to L2 listening success. The outcomes of the study should be interpreted taking into account inherent limitations of the current study, and in considerations of recommendations for future research.

Firstly, the generalisability of the present findings is restricted to one university context because of the scope of the study, and because the differences between High- and Low-level participants' L2 listening proficiency and LIDs variables were addressed only in the longitudinal multiple-case studies. Proficiency levels of the 300 participants who completed the quantitative studies were not available because it was

not possible to obtain ethical approval to access them. Further research is needed to address the dynamic flow of L2 learners' LIDs variables, learning experiences of L2 listening in a large-scale study.

Another limitation due to the limited scope of the current study was that five LIDs variables were identified in the learning process of L2 listening. Future studies need to have a more comprehensive focus on L2 learners' LIDs, for example, by including more variables, besides the five variables that were addressed in this study, when investigating L2 listening development. The cognitive variables of WMC and language learning aptitude were confirmed to be effective in predicting L2 listening success in this study. Future studies could build on these findings to investigate to what extent the WMC and language learning aptitude influence L2 learners' listening development when considered in relation to a range of different LIDs variables.

Thirdly, this study tempted to compute the five LIDs variables through SEM, which might have been methodologically challenging, because the five LIDs variables would have to be conflated in order to subject them to SEM. The current study was designed from a learner-oriented perspective, thus, the lack of consideration of teachers, instructions, and the teaching context might limit the scope of a CDST design in the quantitative section.

Finally, due to certain pragmatic considerations, the present study could not track the participants for more than one academic year. Thus, future research using mixed-methods design over a longer period of investigation is recommended. Moreover, participants were recalling their responses to previous questionnaires or listening tasks

at interviews and self-report diaries, the time interval may have rendered this recall problematic. Participants may not provide sufficient, or reliable, information for a researcher to track participants' subtle and dynamic changes during their L2 listening performances. To address this, the adoption of think-aloud protocols to allow for richer details and real-time reflections to be recorded is also recommended.

Participants in this study were engaged in preparation for the College English Test, Band 4 and Band 6 (CET 4 and CET 6). Given that the researcher, before designing the research, had expected the reliability of the listening results might be affected because participants probably have come across some of the target listening tasks in their self-initiated learning. So the researcher had selected various tasks from a large number of CET 4 & CET 6 listening model tests, and this limitation probably did not occur to any great degree. Nevertheless, it is a possibility that must be acknowledged and should be noted for future studies on L2 listening development.

8.5 CONCLUSION

The present study is one of the few studies, using a longitudinal mixed-methods design, to examine L2 listening progression. It is also among the first to examine comprehensively cognitive and non-cognitive LIDs variables with Chinese EFL learners' listening development, in their specific L2 learning context, from the CDST perspective. Although the results of this study cannot be extrapolated to L2 listeners other than the tertiary level context of the study in China, it is hypothesised that CDST could probe into the complex learning process of L2 listening and reveal the dynamic nature of L2 development.

REFERENCES

- Adams, A.-M., & Guillot, K. (2008). Working memory and writing in bilingual students. *International Journal of Applied Linguistics*, 156, 13–28.
- Alptekin, C., & Gülcan, E. (2010). The role of L1 and L2 working memory in literal and inferential comprehension in L2 reading. *Journal of Research in Reading*, 33(2), 206–219.
- Anderson, J. R. (1983). *The architecture of cognition*. Cambridge, MA: Harvard University Press.
- Anderson, J. R. (1995). *Cognitive psychology and its implications* (4th ed.). New York, NY: Freeman.
- Anderson, N. J. (2002). The role of metacognition in second language teaching and learning. *ERIC Digests*, 1–7.
- Anderson, N. J. (2005). L2 learning strategies. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (pp. 757–772). Mahwah, NJ: Erlbaum.
- Andringa, S., Olsthoorn, N., Van Beuningen, C., Schoonen, R., & Hulstijn, J. (2012). Determinants of success in native and non-native listening comprehension: An individual differences approach. *Language Learning*, 62(s2), 49–78.
- Armstrong, R. A. (2014). When to use the Bonferroni correction. *Ophthalmic & Physiological Optics*, 34(5), 502–508.
- Aronin, L., & Bawardi, B. (2012). Individual differences in the light of new linguistic dispensation. In M. Pawlak (Ed.), *New perspectives on individual differences in language learning and teaching* (pp. 15–32). New York, NY: Springer.

- Bacon, S. M. (1992). The relationship between gender, comprehension, processing strategies, and cognitive and affective response in foreign language listening. *Modern Language Journal*, 76(2), 160–178.
- Baddeley, A. (1996). Exploring the central executive. *The Quarterly Journal of Experimental Psychology Section A*, 49(1), 5–28.
- Baddeley, A. (2000). The episodic buffer: a new component of working memory? *Trends in Cognitive Sciences*, 4(11), 417–423.
- Baddeley, A. D., & Hitch, G. (1974). Working memory. *Psychology of Learning and Motivation*, 8, 47–89.
- Baddeley, A., Gathercole, S. E., & Papagno, C. (1998). The phonological loop as a language learning device. *Psychological Review*, 105(1), 158–173.
- Bailey, P., Onwuegbuzie, A. J., & Daley, C. E. (2000). Using learning style to predict foreign language achievement at the college level. *System*, 28(1), 115–133.
- Bell, H. (2009). The messy little details: A longitudinal case study of the emerging lexicon. In T. Fitzpatrick & A. Barfield (Eds.), *Lexical processing in second language learners: Papers and perspective in honor of Paul Meara* (pp. 111–127). Clevedon, England: Multilingual Matters.
- Belz, J., & Kinginger, C. (2002). The cross-linguistic development of address form use in telecollaborative language learning: Two case studies. *Canadian Modern Language Review*, 59(2), 189–214.
- Bembenutty, H., & Karabenick, S. A. (2004). Inherent association between academic delay of gratification, future time perspective, and self-regulated learning. *Educational Psychology Review*, 16(1), 35–57.
- Botwinick, J., & Storandt, M. (1974). *Memory, related functions and age*. Oxford,

- England: Charles C. Thomas.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- Brown, H. D. (1994). *Teaching by principles*. Englewood Cliffs, NJ: Prentice Hall.
- Brown, H. D. (2000). *Principles of language learning and teaching* (4th ed.). New York, NY: Longman.
- Brownian, C. P., & Goldsteint, L. (1990). Gestural specification using dynamically-defined articulatory structures. *Haskins Laboratories Status Report on Speech Research*, SR-103/104, 95–110.
- Buck, G. (2001). *Assessing listening*. Cambridge, England: Cambridge University Press.
- Bulté, B., & Housen, A. (2014). Conceptualizing and measuring short-term changes in L2 writing complexity. *Journal of Second Language Writing*, 26, 42–65.
- Bylund, E., Abrahamsson, N., & Hyltenstam, K. (2010). The role of language aptitude in first language attrition: The case of pre-pubescent attriters. *Applied Linguistics*, 31(3), 443–464.
- Byrne, B. M. (2016). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (3rd ed.). New York, NY: Routledge.
- Byrne, D., & Callaghan, G. (2014). *Complexity theory and the social sciences: The state of the art*. New York, NY: Routledge.
- Byrne, J. P. (1996). *Cognitive development and learning in instructional contexts*. Boston, PA: Allyn & Bacon.
- Cai, H. (2013). Partial dictation as a measure of EFL listening proficiency: Evidence

- from confirmatory factor analysis. *Language Testing*, 30(2), 177–199.
- Carroll, J. B., & Sapon, S. M. (1959). *Modern language aptitude test*. New York, NY: The Psychological Corporation.
- Carson, J. G., & Longhini, A. (2002). Focusing on learning styles and strategies: A diary study in an immersion setting. *Language Learning*, 52(2), 401–438.
- Chamot, A. U. (2005). Language learning strategy instruction: Current issues and research. *Annual Review of Applied Linguistics*, 25, 112–130.
- Chan, H., Verspoor, M., & Vahtrick, L. (2015). Dynamic development in speaking versus writing in identical twins. *Language Learning*, 65(2), 298–325.
- Chan, L., Dörnyei, Z., & Henry, A. (2015). Learner archetypes and signature dynamics in the language classroom: A retrodictive qualitative modelling approach to studying L2 motivation. In Z. Dörnyei, A. Henry, & P. D. MacIntyre (Eds.), *Motivational dynamics in language learning* (pp. 238–259). Bristol, England: Multilingual Matters.
- Chang, L. (2012). *Investigating the relationships between Chinese university EFL learners' metacognitive listening strategies and their comprehension and incidental vocabulary acquisition from listening tasks* (Doctoral dissertation). University of Auckland, New Zealand. Retrieved from <https://researchspace.auckland.ac.nz/docs/uoa-docs/rights.htm>
- Chang, P., Hao, M., & Zhang, L. J. (2016). Effect of metacognitive instruction on Chinese university EFL students' use of listening strategies and their listening styles. *Foreign Language World*, 36(3), 81–88.
- Cheung, H. (1996). Nonword span as a unique predictor of second-language vocabulary language. *Developmental Psychology*, 32(5), 863–873.

- Churchill, E. (2008). A dynamic systems account of learning a word: From ecology to form relations. *Applied Linguistics*, 29(3), 339–358.
- Cohen, A. D. (2003). The learner's side of foreign language learning: Where do styles, strategies, and tasks meet? *International Review of Applied Linguistics in Language Teaching*, 41(4), 279–291.
- Cohen, A. D. (2014). *Strategies in learning and using a second language* (2nd ed.). New York, NY: Routledge.
- Cohen, A. D., & Dörnyei, Z. (2002). Focus on the language learner: Motivation, styles, and strategies. In N. Schmitt (Ed.), *An introduction to applied linguistics* (pp. 170–190). London, England: Arnold.
- Cohen, A. D., & Macaro, E. (Eds.). (2007). *Language learner strategies: Thirty years of research and practice*. Oxford, England: Oxford University Press.
- Cohen, A. D., Oxford, R. L., & Chi, J. C. (2001). *Learning style survey*. Minneapolis, MN: Center for Advanced Research on Language Acquisition, University of Minnesota.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Colom, R., Rebollo, I., Abad, F. J., & Shih, P. C. (2006). Complex span tasks, simple span tasks, and cognitive abilities: A reanalysis of key studies. *Memory & Cognition*, 34(1), 158–171.
- Colom, R., Shih, P. C., Flores-Mendoza, C., & Quiroga, M. Á. (2006). The real relationship between short-term memory and working memory. *Memory*, 14(7), 804–813.
- Conway, A. R. A., Kane, M. J., Bunting, M. F., Hambrick, D. Z., Wilhelm, O., &

- Engle, R. W. (2005). Working memory span tasks: A methodological review and user's guide. *Psychonomic Bulletin & Review*, 12(5), 769–786.
- Cook, V. (2013). *Second language learning and language teaching* (4th ed.). New York, NY: Routledge.
- Cooper, D. L. (1999). *Linguistic attractors: The cognitive dynamics of language acquisition and change*. Philadelphia, PA: Benjamins.
- Costa, A. L. (Ed.). (2001). *Developing minds: A resource book for teaching thinking* (3rd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.
- Cotterall, S., & Murray, G. (2009). Enhancing metacognitive knowledge: Structure, affordances and self. *System*, 37, 34–45.
- Craik, F. I. M. (1986). A functional account of age differences in memory. In F. Klix & H. Hagendorf (Eds.), *Human memory and cognitive capabilities* (pp. 409–421). Amsterdam: North Holland.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.
- Cross, J. (2010). Raising L2 listeners' metacognitive awareness: A sociocultural theory perspective. *Language Awareness*, 19(4), 281–297.
- Csikszentmihalyi, M. (1988). Introduction. In M. Csikszentmihalyi & I. S. Csikszentmihalyi (Eds.), *Optimal experience: Psychological studies of flow in consciousness* (pp. 3–14). Cambridge, England: Cambridge University Press.

- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper & Row.
- Dai, Y. (2010). *Individual cognitive differences in second language acquisition: The relationships among language aptitude, working memory and the acquisition of comprehensive language knowledge and syntactic rules* (Doctoral dissertation). Shanghai International Studies University, Shanghai, China. Retrieved from China Doctoral Dissertaions Full-text Database
- Daneman, M., & Carpenter, P. A. (1980). Individual differences in working memory and reading. *Journal of Verbal Learning and Verbal Behaviour*, 19(4), 450–466.
- De Bot, K. (2008). Introduction: Second language development as a dynamic process. *Modern Language Journal*, 92(2), 166–178.
- De Bot, K., & Larsen-Freeman, D. (2011). Researching second language development from a dynamic systems theory perspective. In M. Verspoor, K. De Bot, & W. Lowie (Eds.), *A dynamic approach to second language development: Methods and techniques* (pp. 5–23). Philadelphia, PA: Benjamins.
- De Bot, K., Lowie, W., & Verspoor, M. (2007a). A dynamic systems theory approach to second language acquisition. *Bilingualism: Language and Cognition*, 10(1), 7–21.
- De Bot, K., Lowie, W., & Verspoor, M. (2007b). A dynamic view as a complementary perspective. *Bilingualism: Language and Cognition*, 10(1), 51–55.
- De Bot, K., Lowie, W., & Vespoor, M. (2005). *Second language acquisition: An advanced resource book*. New York, NY: Routledge.
- De Guerrero, M. C. M., & Villamil, O. S. (2000). Activating the ZPD: Mutual scaffolding in L2 peer revision. *Modern Language Journal*, 84(1), 51–68.

- Dong, J. (2016). A dynamic systems theory approach to development of listening strategy use and listening performance. *System*, 63, 149–165.
- Dörnyei, Z. (1994). Motivation and motivating in the foreign language classroom. *Modern Language Journal*, 78(3), 273–284.
- Dörnyei, Z. (2000). Motivation in action: Towards a process-oriented conceptualisation of student motivation. *British Journal of Educational Psychology*, 70(4), 519–538.
- Dörnyei, Z. (2001). *Motivational strategies in the language classroom*. Cambridge, England: Cambridge University Press.
- Dörnyei, Z. (2005). *The psychology of the language learner: Individual differences in second language acquisition*. Mahwah, NJ: Erlbaum.
- Dörnyei, Z. (2007). *Research methods in applied linguistics: Quantitative, qualitative, and mixed methodologies*. Oxford, England: Oxford University Press.
- Dörnyei, Z. (2009a). Individual differences: Interplay of learner characteristics and learning environment. *Language Learning*, 59(Suppl. 1), 230–248.
- Dörnyei, Z. (2009b). Motivation and the vision of knowing a second language. In B. Beaven (Ed.), *IATEFL 2008: Exeter conference selections* (pp. 16–22). Canterbury, England: IATEFL.
- Dörnyei, Z. (2009c). The L2 motivational self system. In Z. Dörnyei & E. Ushioda (Eds.), *Motivation, language identity and the L2 self* (pp. 9–42). Bristol, England: Multilingual Matters.
- Dörnyei, Z. (2009d). *The psychology of second language acquisition*. Oxford, England: Oxford University Press.

- Dörnyei, Z. (2010a). Researching motivation: From integrativeness to the ideal L2 self. In S. Hunston & D. Oakey (Eds.), *Introducing applied linguistics: Concepts and skills* (pp. 74–83). London, England: Routledge.
- Dörnyei, Z. (2010b). The relationship between language aptitude and language learning motivation: Individual differences from a dynamic systems perspective. In E. Macaro (Ed.), *Continuum companion to second language acquisition* (pp. 247–267). London, England: Continuum.
- Dörnyei, Z. (2014). Researching complex dynamic systems: “Retrodictive qualitative modelling” in the language classroom. *Language Teaching*, 47(1), 80–91.
- Dörnyei, Z. (2017). Conceptualizing learner characteristics in a complex, dynamic world. In L. Ortega & Z. Han (Eds.), *Complexity theory and language development: In celebration of Diane Larsen-Freeman* (pp. 79–96). Philadelphia, PA: Benjamins.
- Dörnyei, Z., Ibrahim, Z., & Muir, C. (2015). Directed motivational currents: Regulating complex dynamic systems through motivational surges. In Z. Dörnyei, A. Henry, & P. D. MacIntyre (Eds.), *Motivational dynamics in language learning* (pp. 95–105). Bristol, England: Multilingual Matters.
- Dörnyei, Z., MacIntyre, P. D., & Henry, A. (2015). Introduction: Applying complex dynamic systems principles to empirical research on L2 motivation. In Z. Dörnyei, A. Henry, & P. D. MacIntyre (Eds.), *Motivational dynamics in language learning* (pp. 1–7). Bristol, England: Multilingual Matters.
- Dörnyei, Z., Muir, C., & Ibrahim, Z. (2014). Directed motivational currents: Emergising language learning by creating intense motivational pathways. In D. Lasagabaster, A. Doiz, & Juan Manuel Sierra (Eds.), *Motivation and foreign*

- language learning: From theory to practice* (pp. 9–29). Philadelphia, PA: Benjamins.
- Dörnyei, Z., & Otto, I. (1998). Motivation in action: A process model of L2 motivation. *Working Papers in Applied Linguistics*, 4, 43–69.
- Dörnyei, Z., & Skehan, P. (2003). Individual differences in second language learning. In C. J. Doughty & M. H. Long (Eds.), *The handbook of second language acquisition* (pp. 589–630). Oxford, England: Blackwell.
- Duff, P. (2008). *Case study research in applied linguistics*. New York, NY: Erlbaum.
- Dunlosky, J., & Lipko, A. R. (2007). Metacomprehension: A brief history and how to improve its accuracy. *Current Directions in Psychological Science*, 16, 228–232.
- Dussias, P. E., & Piñar, P. (2010). Effects of reading span and plausibility in the reanalysis of the wh-gaps by Chinese-English second language speakers. *Second Language Research*, 26(4), 443–472.
- Ehrman, M. E. (1996). *Understanding second language learning difficulties*. Thousand Oaks, CA: Sage.
- Ehrman, M. E. (2001). Bringing learning strategies to the student: The FSI language learning consultation service. In J. E. Atatis & A.-H. Tan (Eds.), *Georgetown University round table on language and linguistics (GURT) 1999* (pp. 41–58). Washington, DC: Georgetown University Press.
- Ehrman, M. E., & Leaver, B. L. (2003). Cognitive styles in the service of language learning. *System*, 31(3), 393–415.
- Ehrman, M. E., Leaver, B. L., & Oxford, R. L. (2003). A brief overview of individual differences in second language learning. *System*, 31, 313–330.

- Ehrman, M. E., & Oxford, R. L. (1990). Adult language learning styles and strategies in an intensive training setting. *Modern Language Journal*, 54(3), 311–327.
- Ehrman, M. E., & Oxford, R. L. (1995). Cognition plus: Correlates of language learning success. *Modern Language Journal*, 79(1), 67–89.
- Ellis, N. C. (1996). Working memory in the acquisition of vocabulary and syntax: Putting language in good order. *The Quarterly Journal of Experimental Psychology Section A*, 49(1), 234–250.
- Ellis, N. C. (2008). The dynamics of second language emergence: Cycles of language use, language change, and language acquisition. *Modern Language Journal*, 92, 232–249.
- Ellis, N. C., & Larsen-Freeman, D. (2006). Language emergence: Implications for applied linguistics-Introduction to the special issue. *Applied Linguistics*, 27(4), 558–589.
- Ellis, R. (2004). Individual differences in language learning. In C. Elder & A. Davies (Eds.), *Handbook of applied linguistics*. Oxford, England: Blackwell.
- Ellis, R. (2008). *The study of second language acquisition* (2nd ed.). Oxford, England: Oxford University Press.
- Elman, J. L. (1999). The emergence of language: A conspiracy theory. In B. MacWhinney (Ed.), *The emergence of language* (pp. 1–27). Mahwah, NJ: Erlbaum.
- Ely, C. M., & Pease-Alvarez, L. (1996). Learning styles and strategies in ESOL: Introduction to the special issue. *TESOL Journal*, 6(1), 5.
- Engle, R. W. (2007). Working memory: The mind is richer than the models. In H. L. Roediger, Y. Dudai, & S. M. Fitzpatrick (Eds.), *Science of memory: Concepts* (pp.

- 159–164). Oxford, England: Oxford University Press.
- Fan, X., & Sivo, S. A. (2007). Sensitivity of fit indices to model misspecification and model types. *Multivariate Behavioral Research*, 42(3), 509–529.
- Felser, C., & Roberts, L. (2007). Processing wh-dependencies in a second language: A cross-modal priming study. *Second Language Research*, 23(1), 9–36.
- Field, A. (2009). *Discovering statistics using SPSS: (and sex, drugs and rock “n” roll)* (3rd ed.). London, England: Sage.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). London, England: Sage.
- Field, J. (2003). Promoting perception: Lexical segmentation in L2 listening. *ELT Journal*, 57(4), 325–334.
- Field, J. (2008). *Listening in the language classroom*. Cambridge, UK: Cambridge University Press.
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. *American Psychologist*, 34, 906–911.
- Flavell, J. H. (1985). *Cognitive development*. Englewood Cliffs, NJ: Prentice Hall.
- Flowerdew, J., & Miller, L. (1992). Student perceptions, problems and strategies in second language lecture comprehension. *RELC Journal*, 23(2), 60–80.
- Fortkamp, M. B. M. (2000). *Working memory capacity and L2 speech production: An exploratory study* (Doctoral dissertation). Universidade Federal de Santa Catarina, Brazil. Retrieved from <http://repositorio.ufsc.br/xmlui/handle/123456789/78287>
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education*. New York, NY: McGraw Hill.

- French, L. M., & O'Brien, I. (2008). Phonological memory and children's second language grammar learning. *Applied Psycholinguistics*, 29(03), 463–487.
- Gao, X. (2010). To be or not to be “part of them”: Micropolitical challenges in mainland Chinese students' learning of English in a multilingual university. *TESOL Quarterly*, 44(2), 274–294.
- Gardner, R. C. (1985). *Social psychology and second language learning : The role of attitudes and motivation*. London, England: Arnold.
- Gardner, R. C., & Lambert, W. E. (1972). *Attitudes and motivation in second language learning*. Rowley, MA: Newbury House.
- Gass, S. M., & Selinker, L. (2008). *Second language acquisition: An introductory course* (3rd ed.). New York, NY: Routledge.
- Gathercole, S. E. (2006). Nonword repetition and word learning the nature of the relationship. *Applied Psycholinguistics*, 27, 513–543.
- Gathercole, S. E., Alloway, T. P., Willis, C., & Adams, A.-M. (2006). Working memory in children with reading disabilities. *Journal of Experimental Child Psychology*, 93(3), 265–281.
- Gathercole, S. E., Pickering, S. J., Hall, M., & Peaker, S. M. (2001). Dissociable lexical and phonological influences on serial recognition and serial recall. *The Quarterly Journal of Experimental Psychology Section A*, 54(1), 1–30.
- Gathercole, S. E., Tiffany, C., Briscoe, J., Thorn, A., & Team, T. A. (2005). Developmental consequences of poor phonological short-term memory function in childhood: A longitudinal study. *Journal of Child Psychology and Psychiatry*, 46(6), 598–611.
- Geva, E., & Ryan, E. B. (1993). Linguistic and cognitive correlates of academic skills

- in first and second languages. *Language Learning*, 431(1), 5–42.
- Goh, C. C. M. (1997). Metacognitive awareness and second language listeners. *ELT Journal*, 51(4), 361–369.
- Goh, C. C. M. (2000). A cognitive perspective on language learners' listening comprehension problems. *System*, 28(1), 55–75.
- Goh, C. C. M. (2002). Exploring listening comprehension tactics and their interaction patterns. *System*, 30(2), 185–206.
- Goh, C. C. M. (2008). Metacognitive instruction for second language listening development: Theory, practice and research implications. *RELC Journal*, 39(2), 188–213.
- Goh, C. C. M. (2010). Listening as process: Learning activities for self-appraisal and self-regulation. In N. Harwood (Ed.), *English language teaching materials: Theory and practice* (pp. 179–206). Cambridge, England: Cambridge University Press.
- Goh, C. C. M., & Taib, Y. (2006). Metacognitive instruction in listening for young learners. *ELT Journal*, 60(3), 222–232.
- Gong, W., Zhang, D., Zhang, L. J., Kiss, T., & Ang-tay, M. Y. (2011). Socio-psychological factors and strategy use in Singaporean school children's English literacy learning. *Reflections on English Language Teaching*, 10(1), 1–24.
- Gourgey, A. F. (1998). Metacognition in basic skills instruction. *Instructional Science*, 26, 81–96.
- Graham, S. (2006). Listening comprehension: The learners' perspective. *System*, 34(2), 165–182.

- Graham, S. (2017). Research into practice: Listening strategies in an instructed classroom setting. *Language Teaching*, 50(01), 107–119.
- Graham, S., & Macaro, E. (2008). Strategy instruction in listening for lower-intermediate learners of French. *Language Learning*, 58(4), 747–783.
- Graham, S., Santos, D., & Vanderplank, R. (2008). Listening comprehension and strategy use: A longitudinal exploration. *Listening*, 36(1), 52–68.
- Graham, S., Santos, D., & Vanderplank, R. (2011). Exploring the relationship between listening development and strategy use. *Language Teaching Research*, 15(4), 435–456.
- Granena, G. (2013). Cognitive aptitudes for second language learning and the LLAMA language aptitude test. In G. Granena & M. Long (Eds.), *Sensitive periods, language aptitude and ultimate L2 attainment* (Vol. 35, pp. 105–129). Philadelphia, PA: Benjamins.
- Granena, G., & Long, M. (Eds.). (2013). *Sensitive periods, language aptitude, and ultimate L2 attainment*. Philadelphia, PA: Benjamins.
- Grenfell, M., & Macaro, E. (2007). Language learner strategies: Claims and critiques. In E. Macaro & A. D. Cohen (Eds.), *Language learner strategies: Thirty years of research and practice*. Oxford, England: Oxford University Press.
- Grigornko, E. L., & Sternberg, R. J. (2000). A theory-based approach to the measurement of foreign language learning ability: The Canal-F theory and test. *Modern Language Journal*, 84(3), 390–405.
- Gu, M. (2009). *The discursive construction of second language learners' motivation: A multi-level perspective*. New York, NY: Lang.
- Gu, S., & Wang, T. (2007). Study on the relationship between working memory and

- EFL listening comprehension. *CELEA Journal (Bimonthly)*, 30(6), 46–56.
- Gu, Y., Hu, G., & Zhang, L. J. (2009). Listening strategies of Singaporean primary pupils. In R. E. Silver, C. C. M. Goh, & L. Alsagoff (Eds.), *Language learning in new English contexts: Studies of acquisition and development* (pp. 55–74). London, England: Continuum.
- Gu, Y., Hu, G., Zhang, L. J., & Bai, R. (2011). *Strategy-based instruction in English language teaching: Focusing on reading and writing strategies*. Beijing: Foreign Language Teaching and Research Press.
- Hampson, S. E., & Colman, A. M. (1994). Introduction. In S. E. Hampson & A. M. Colman (Eds.), *Individual differences and personality* (pp. ix–xiv). Harlow, England: Longman.
- Harklau, L. (2008). Developing qualitative longitudinal case studies of advanced language learners. In L. Ortega & H. Byrnes (Eds.), *The longitudinal study of advanced L2 capacities* (pp. 23–35). New York, NY: Routledge.
- Harley, B., & Hart, D. (2002). Age, aptitude, and second language learning on a bilingual exchange. In P. Robinson (Ed.), *Individual differences and instructed language learning* (pp. 301–330). Philadelphia, PA: Benjamins.
- He, Z. (2005). An experimental study on meta-cognitive strategy training in listening class. *Media in Foreign Language Instruction*, 02, 56–61.
- Hermann-Brennecke, G. (1991). Language learning strategies. *System*, 19(3), 323–325.
- Hiver, P. (2013). The interplay of possible language teacher selves in professional development choices. *Language Teaching Research*, 17(2), 210–227.
- Hiver, P. (2015). Attractor states. In Z. Dörnyei, P. D. MacIntyre, & A. Henry (Eds.), *Motivation dynamics in language learning* (pp. 20–28). Bristol, England:

Multilingual Matters.

- Ho, R. (2014). *Handbook of univariate and multivariate data analysis with IBM SPSS* (2nd ed.). New York, NY: Taylor & Francis.
- Hou, J. (2017). *The dynamics of English writing development in advanced Chinese learners* (Doctoral dissertation). Univeristy of Groningen, the Netherlands.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55.
- Hu, Y. (2015). Effects of listening process models on listening comprehension and recall: An empirical study from the perspective of cognitive psychology. *Foreign Language World*, 1, 32–39.
- Huang, J. (2005). Challenges of academic listening in English: Reports by Chinese students. *College Student Journal*, 39(3), 553–569.
- Hummel, K. M. (2009). Aptitude, phonological memory, and second language proficiency in nonnovice adult learners. *Applied Psycholinguistics*, 30(2), 225–249.
- Järvelä, S. (2001). Shifting research on motivation and cognition to an integrated approach on learning and motivation in context. In S. Järvelä & S. Volet (Eds.), *Motivation in learning contexts: Theoretical advances and methodological implications* (pp. 3–14). London, England: Pergamon/Elsevier.
- Jessner, U. (2008). A DST model of multilingualism and the role of metalinguistic awareness. *Modern Language Journal*, 92(2), 270–283.
- Ji, K. (2002). Metacognitive strategy training in EFL learning. *Foreign Language World*, 03, 20–26.

- Johnson, K. (1997). *Language teaching and skill learning*. Oxford, England: Blackwell.
- Johnson, K. (2001). *An introduction to foreign language learning and teaching*. Harlow, England: Longman.
- Juffs, A. (2004). Representation, processing and working memory in a second language. *Transactions of the Philological Society*, 102(2), 199–225.
- Juffs, A., & Harrington, M. (2011). Aspects of working memory in L2 learning. *Language Teaching: Surveys and Studies*, 44(2), 137–166.
- Kaplan, D. (2009). *Structural equation modeling: Foundations and extensions*. Thousand Oaks, CA: Sage.
- Kauffman, D. F., & Husman, J. (2004). Effects of time perspective on student motivation: Introduction to a special issue. *Educational Psychology Review*, 16(1), 1–7.
- Kiany, G. R., & Shiramiry, E. (2002). The effect of frequent dictation on the listening comprehension ability of elementary EFL learners. *TESL Canada Journal*, 20(1), 57–63.
- Kim, D., & Hall, J. K. (2002). The role of an interactive book reading program in the development of second language pragmatic competence. *Modern Language Journal*, 86(3), 332–348.
- King, J. (Ed.). (2016). *The dynamic interplay between context and the language learner*. London, England: Palgrave Macmillan.
- Kinsella, K. (1995). Understanding and empowering diverse learners in ESL classrooms. In J. Reid (Ed.), *Learning styles in the ESL/EFL classroom* (pp. 170–194). Boston, MA: Heinle & Heinle.

- Kiss, C., & Nikolov, M. (2005). Developing, piloting, and validating an instrument to measure young learners' aptitude. *Language Learning*, 55(1), 99–150.
- Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). New York, NY: The Guilford Press.
- Kolb, D. A. (2015). *Experiential learning: Experience as the source of learning and development* (2nd ed.). Upper Saddle River, NJ: Pearson Education, Inc.
- Kolb, D. A., Boyatzis, R. E., & Mainemelis, C. (2001). Experiential learning theory: Previous research and new directions. In R. J. Sternberg & L.-F. Zhang (Eds.), *Perspectives on thinking, learning and cognitive styles*. New York, NY: Routledge.
- Kong, W., & Li, Q. (2008). A study of the relationship between use of metacognitive and cognitive strategies and L2 English proficiency. *Modern Foreign Languages*, 02, 173–184.
- Kormos, J. (2013). New conceptualizations of language aptitude in second language attainment. In G. Granena & M. Long (Eds.), *Sensitive periods, language aptitude and ultimate L2 attainment* (pp. 131–152). Philadelphia, PA: Benjamins.
- Kormos, J., & Sáfár, A. (2008). Phonological short-term memory, working memory and foreign language performance in intensive language learning. *Bilingualism: Language and Cognition*, 11(2), 261–271.
- Kormos, J., & Trebits, A. (2012). The role of task complexity, modality, and aptitude in narrative task performance. *Language Learning*, 62(2), 439–472.
- Kuo, Y. (2010). Using partial dictation of an English teaching radio program to enhance EFL Learners' listening comprehension. *Asian EFL Journal*, 47, 1–26.
- Larsen-Freeman, D. (1997). Chaos/complexity science and second language

- acquisition. *Applied Linguistics*, 18(2), 141–165.
- Larsen-Freeman, D. (2002). Language acquisition and language use from a chaos/complexity theory perspective. In C. Kramsch (Ed.), *Language acquisition and language socialization* (pp. 33–46). London, England: Continuum.
- Larsen-Freeman, D. (2006a). Functional grammar: On the value and limitations of dependability, inference, and generalizability. In M. Chalhoub-Deville, C. Chapelle, & P. Duff (Eds.), *Generalizability in applied linguistics: Multiple perspectives* (pp. 115–133). Philadelphia, PA: Benjamins.
- Larsen-Freeman, D. (2006b). Second language acquisition and the issue of fossilization: There is no end, and there is no state. In Z. H. Han & T. Odlin (Eds.), *Studies of fossilization in second language acquisition* (pp. 189–200). Clevedon, England: Multilingual Matters.
- Larsen-Freeman, D. (2006c). The emergence of complexity, fluency, and accuracy in the oral and written production of five Chinese learners of English. *Applied Linguistics*, 27, 590–619.
- Larsen-Freeman, D. (2010). The dynamic co-adaptation of cognitive and social views: A complexity theory perspective. In R. Batstone (Ed.), *Sociocognitive perspectives on language use and language learning* (pp. 40–53). Oxford, England: Oxford University Press.
- Larsen-Freeman, D. (2012). Complex, dynamic systems: A new transdisciplinary theme for applied linguistics? *Language Teaching*, 45(2), 202–214.
- Larsen-Freeman, D. (2015a). Saying what we mean: Making a case for “language acquisition” to become “language development.” *Language Teaching*, 48(4), 491–505.

- Larsen-Freeman, D. (2015b). Ten “lessons” from complex dynamic systems theory: What is on offer. In Z. Dörnyei, A. Henry, & P. D. MacIntyre (Eds.), *Motivational dynamics in language learning* (pp. 1–11). Bristol, England: Multilingual Matters.
- Larsen-Freeman, D. (2017). Complexity theory: The lessons continue. In L. Ortega & Z. Han (Eds.), *Complexity theory and language development: In celebration of Diane Larsen-Freeman* (pp. 11–50). Philadelphia, PA: Benjamins.
- Larsen-Freeman, D., & Cameron, L. (2008a). *Complex systems and applied linguistics*. Oxford, England: Oxford University Press.
- Larsen-Freeman, D., & Cameron, L. (2008b). Research methodology on language development from a complex systems perspective. *Modern Language Journal*, 92(2), 200–213.
- Latham, G. P., & Locke, E. A. (1991). Self-regulation through goal setting. *Organizational Behavior and Human Decision Processes*, 50(2), 212–247.
- Latham, G. P., & Seijts, G. H. (1999). The effects of proximal and distal goals on performance on a moderately complex task. *Journal of Organizational Behavior*, 20(4), 421–429.
- Lee, Y. S., & Chen, H. C. (2005). The effect of mnemonic training upon the working memory capacity. *Bulletin of Educational Psychology*, 37, 41–59.
- Leeming, P., & Wong, A. (2016). Using dictation to measure language proficiency. *Papers in Language Testing and Assessment*, 5(2), 1–25.
- Leeser, M. J. (2007). Learner-based factors in L2 reading comprehension and processing grammatical form: Topic familiarity and working memory. *Language Learning*, 57(2), 229–270.

- Littlemore, J. (2001). An empirical study of the relationship between cognitive style and the use of communication strategy. *Applied Linguistics*, 22(2), 241–265.
- Long, D. R. (1990). What you don't know can't help you. *Studies in Second Language Acquisition*, 12, 65–80.
- Lowie, W. (2017). Methodological considerations in complex dynamic theory approaches to second language development research. In L. Ortega & Z. Han (Eds.), *Complexity theory and language development: In celebration of Diane Larsen-Freeman* (pp. 123–141). Philadelphia, PA: Benjamins.
- Lynch, T. (2002). Listening: Questions of level. In R. Kaplan (Ed.), *Oxford handbook of applied linguistics* (pp. 39–48). Oxford, England: Oxford University Press.
- Macaro, E. (2006). Strategies for language learning and for language use: Revising the theoretical framework. *Modern Language Journal*, 90(3), 320–337.
- Macaro, E., Graham, S., & Vanderplank, R. (2007). A review of listening strategies: Focus on sources of knowledge and on success. In A. D. Cohen & E. Macaro (Eds.), *Language learner strategies: Thirty years of research and practice* (pp. 165–185). Oxford, England: Oxford University Press.
- MacDonald, M. C., & Christiansen, M. H. (2002). Reassessing working memory: Comment on Just and Carpenter (1992) and Waters and Caplan (1996). *Psychological Review*, 109(1), 35–54.
- Macintyre, P. D., & Legatto, J. J. (2011). A dynamic system approach to willingness to communicate: Developing an idiodynamic method to capture rapidly changing affect. *Applied Linguistics*, 32(2), 149–171.
- Mackey, A., Adams, R., Stafford, C., & Winke, P. (2010). Exploring the relationship between modified output and working memory capacity. *American Association of*

- Applied Linguistics*, 60(3), 501–533.
- Mackey, A., Philp, J., Egi, T., Fujii, A., & Tatsumi, T. (2002). Individual differences in working memory, noticing of interactional feedback and L2 development. In P. Robinson (Ed.), *Individual differences and instructed language learning* (Vol. 2, pp. 181–209). Philadelphia, PA: Benjamins.
- MacWhinney, B. (1998). Models of the emergence of language. *Annual Review of Psychology*, 49(1), 199–227.
- MacWhinney, B. (2005). The emergence of linguistic form in time. *Connection Science*, 17(3-4), 191–211.
- Mareschal, C. (2007). *Student perceptions of a self-regulatory approach to second language listening comprehension development* (Doctoral dissertation). University of Ottawa, Canada. Retrieved from uOttawa Theses
- Martin, K. I., Ellis, N. C., & Martin, K. (2012). The roles of phonological short-term memory and working memory in L2 grammar and vocabulary learning. *Studies in Second Language Acquisition*, 34, 379–413.
- Marzban, A. (2014). The effect of teaching paragraph structure rules on Iranian intermediate EFL learners' reading comprehension ability. *International Research Journal of Applied and Basic Sciences*, 4(2), 387–394.
- Mason, M. (2008). What is complexity theory and what are its implications for educational change? *Educational Philosophy and Theory*, 40(1), 35–49.
- McCafferty, S. G. (2002). Gesture and creating zones of proximal development for second language learning. *Modern Language Journal*, 86(2), 192–203.
- McClelland, J. L., & Rumelhart, D. E. (Eds.). (1986). *Parallel distributed processing: Explorations in the microstructure of cognition*. Cambridge, MA: The MIT Press.

- Meara, P. (2005). *LLAMA language aptitude test*. Swansea, England: Lognostics.
- Menezes, V. (2013). Second language acquisition: Reconciling theories. *Open Journal of Applied Sciences*, 3, 404–412.
- Mercer, S. (2011). Understanding learner agency as a complex dynamic system. *System*, 39(4), 427–436.
- Mercer, S. (2016). The context within me: L2 self as a complex dynamic system. In J. King (Ed.), *The dynamic interplay between context and the language learner* (pp. 11–18). London, England: Palgrave Macmillan.
- Ministry of Education of the People's Republic of China. (2007). *College English Curriculum Requirements*. Beijing, China: Foreign Language Teaching and Research Press.
- Miyake, A., & Friedman, N. P. (1998). Individual differences in second language proficiency: Working memory as language aptitude. In A. F. Healy & L. E. Bourne (Eds.), *Foreign language learning: Psycholinguistic studies on training and retention* (pp. 339–364). Mahwah, NJ: Erlbaum.
- Miyake, A., & Shah, P. (Eds.). (1999). *Models of working memory: Mechanisms of maintenance and executive control*. Cambridge, England: Cambridge University Press.
- Muir, C., & Dörnyei, Z. (2013). Directed motivational currents: Using vision to create effective motivational pathways. *Studies in Second Language Learning and Teaching*, 3(3), 357–375.
- Murphy, J. M. (1985). *An investigation into the listening strategies of ESL college students*. ERIC.
- Murray, G., Gao, X., & Lamb, T. (Eds.). (2011). *Identity, motivation and autonomy in*

- language learning*. Bristol, England: Multilingual Matters.
- Naiman, N., Fröhlich, M., Stern, H. H., & Todesco, A. (1996). *The good language learner*. Clevedon, England: Multilingual Matters.
- Nation, I. S. P., & Newton, J. (2009). *Teaching ESL/EFL listening and speaking*. New York, NY: Routledge.
- Neale, B., & Flowerdew, J. (2003). Time, texture and childhood: The contours of longitudinal qualitative research. *International Journal of Social Research Methodology*, 6(3), 189–199.
- Nikoopour, J., Moakhar, R. K., & Esfandiari, N. (2017). The impact of explicit integrated strategies instruction on IELTS applicants' listening comprehension. *Journal of Language Teaching and Research*, 8(4), 774–781.
- Nizęgorodcew, A. (2012). L2 learners' individual differences and the changing SLA perspective. In M. Pawlak (Ed.), *New perspectives on individual differences in language learning and teaching* (pp. 3–13). New York, NY: Springer.
- O'Brien, I., Segalowitz, N., & Collentine, J. (2006). Phonological memory and lexical, narrative, and grammatical skills in second language oral production by adult learners. *Applied Psycholinguistics*, 27, 377–402.
- O'Malley, J. M., & Chamot, A. U. (1990). *Learning strategies in second language acquisition*. Cambridge, England: Cambridge University Press.
- O'Malley, J. M., Chamot, A. U., & Küpper, L. (1989). Listening comprehension strategies in second language acquisition. *Applied Linguistics*, 10(4), 418–437.
- O'Malley, J. M., Chamot, A. U., Russo, R. P., & Küpper, L. (1985). Learning strategy applications with students of English as a second language. *TESOL Quarterly*, 19(3), 557–584.

- Oberauer, K., Süß, H.-M., Wilhelm, O., & Wittman, W. W. (2003). The multiple faces of working memory. *Intelligence*, 31(2), 167–193.
- Ortega, L., & Byrnes, H. (2008). The longitudinal study of advanced L2 capacities: An introduction. In L. Ortega & H. Byrnes (Eds.), *The longitudinal study of advanced L2 capacities* (pp. 3–20). New York, NY: Routledge.
- Ortega, L., & Iberri-Shea, G. (2005). Longitudinal research in second language acquisition: Recent trends and future directions. *Annual Review of Applied Linguistics*, 25, 26–45.
- Oxford, R. L. (1990). *Language learning strategies: What every teacher should know*. Boston, MA: Heinle & Heinle.
- Oxford, R. L. (1995). Style analysis survey (SAS). In J. Reid (Ed.), *Learning styles in the ESL/EFL classroom* (pp. 208–215). Boston, MA: Heinle & Heinle.
- Oxford, R. L. (2001). Language learning styles and strategies. In M. Celce-Murcia (Ed.), *Teaching English as a second or foreign language* (3rd ed., pp. 359–366). Boston, MA: Heinle & Heinle.
- Oxford, R. L. (2003). Language learning styles and strategies: An overview. *Learning Styles & Strategies/Oxford, GALA*, 1–25.
- Oxford, R. L. (2011). *Teaching and researching language learning strategies*. White Plains, NY: Longman.
- Oxford, R. L., & Anderson, N. J. (1995). State of the art: A cross-cultural view of learning styles. *Language Teaching*, 28(04), 201–215.
- Oxford, R. L., & Ehrman, M. E. (1995). Adults' language learning strategies in an intensive foreign language program in the United States. *System*, 23(3), 359–386.

- Oxford, R. L., & Lavine, R. Z. (1992). Teacher-student style wars in the language classroom: Research insights and suggestions. *ADFL Bulletin*, 23(2), 38–45.
- Papagno, C. (1995). Verbal short-term memory and vocabulary learning in polyglots. *The Quarterly Journal of Experimental Psychology Section A*, 48(1), 98–107.
- Parry, T. S., & Child, J. R. (1990). Preliminary investigation of the relationship between VORD, MLAT and Language Proficiency. In T. S. Parry & C. W. Stansfield (Eds.), *Language aptitude reconsidered* (pp. 30–66). Englewood Cliffs, NJ: Prentice-Hall.
- Pawlak, M. (2012a). Individual differences in language learning and teaching: Achievements, prospects and challenges. In M. Pawlak (Ed.), *New perspectives on individual differences in language learning and teaching* (pp. xix–xlvi). New York, NY: Springer.
- Pawlak, M. (Ed.). (2012b). *New perspectives on individual differences in language learning and teaching*. New York, NY: Springer.
- Pellegrini, A. D. (1996). *Observing children in their natural worlds: A methodological primer*. Mahwah, NJ: Erlbaum.
- Petersen, C. R., & Al-Haik, A. R. (1976). The development of the defense language aptitude battery (DLAB). *Educational and Psychological Measurement*, 36(2), 369–380.
- Pimsleur, P. (1966). *Pimsleur language aptitude battery (PLAB)*. New York, NY: The Psychological Corporation.
- Platt, E., & Brooks, F. (2002). Task engagement: A turning point in foreign language development. *Language Learning*, 52(2), 365–400.
- Plaza-Pust, C. (2008). Dynamic systems theory and universal grammar: Holding up a

- turbulent mirror to development in grammars. *Modern Language Journal*, 92(2), 250–269.
- Polat, B., & Kim, Y. (2014). Dynamics of complexity and accuracy: A longitudinal case study of advanced untutored development. *Applied Linguistics*, 35(2), 184–207.
- Qiu, A., & Huang, J. (2012). The effects of dynamic image schema on ESL students' systematic improvement of listening comprehension: A dynamic system theory perspective. *International Journal of Learning and Development*, 2(1), 241–254.
- Rahimi, M. (2008). Using dictation to measure language proficiency. *The Asian EFL Journal*, 10(1), 33–47.
- Raykov, T., & Marcoulides, G. a. (2008). *An introduction to applied multivariate analysis*. New York, NY: Routledge.
- Rayner, S. G. (2000). Reconstructing style differences in thinking and learning: Profiling learning performance. In P. Robinson (Ed.), *International perspectives on individual differences* (Vol. 1, pp. 115–180). Philadelphia, PA: Benjamins.
- Reid, J. M. (1987). The learning style preferences of ESL students. *TESOL Quarterly*, 21, 87–111.
- Reid, J. M. (Ed.). (1995). *Learning styles in the ESL/EFL classroom*. Boston, MA: Heinle & Heinle.
- Reid, J. M. (1998). *Understanding learning styles in the second language classroom*. Upper Saddle River, NJ: Prentice-Hall.
- Riding, R. (1991). *Cognitive styles analysis*. Birmingham, England: Learning and Training Technology.

- Rigney, J. W. (1978). Learning strategies: A theoretical perspective. In F. Harold & J. O'Neil (Eds.), *Learning strategies* (pp. 165–205). New York, NY: Academic.
- Robinson, P. (1997). Individual differences and the fundamental similarity of implicit and explicit adult second language learning. *Language Learning*, 47(1), 45–99.
- Robinson, P. (Ed.). (2002a). *Individual differences and instructed language learning*. Philadelphia, PA: Benjamins.
- Robinson, P. (2002b). Learning conditions, aptitude complexes, and SLA: A framework for research and pedagogy. In P. Robinson (Ed.), *Individual differences and instructed language learning* (pp. 113–133). Philadelphia, PA: Benjamins.
- Robinson, P. (2005). Aptitude and second language acquisition. *Annual Review of Applied Linguistics*, 25, 46–73.
- Robinson, P. (2007). Aptitudes, abilities, contexts, and practice. In R. M. DeKeyser (Ed.), *Practice in a second language: Perspectives from applied linguistics and cognitive psychology* (pp. 256–286). Cambridge, England: Cambridge University Press.
- Rose, H. (2012). Reconceptualizing strategic learning in the face of self-regulation: Throwing language learning strategies out with the bathwater. *Applied Linguistics*, 33(1), 92–98.
- Rossi-Le, L. (1995). Learning styles and strategies in adult immigrant ESL students. In J. Reid (Ed.), *Learning styles in the ESL/EFL classroom* (pp. 118–125). Boston, MA: Heinle & Heinle.
- Rost, M. (2005). L2 listening. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (pp. 503–527). Mahwah, NJ: Erlbaum.

- Rost, M. (2013). *Teaching and researching: Listening* (2nd ed.). New York, NY: Routledge.
- Rost, M. (2014). Listening in a multilingual world: The challenges of second language (L2) listening. *International Journal of Listening*, 28(3), 131–148.
- Rubin, J. (1975). What the good language learner can teach us. *TESOL Quarterly*, 9(1), 41–51.
- Rueckl, J. G. (2002). The dynamics of visual word recognition. *Ecological Psychology*, 14(1-2), 5–19.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78.
- Sáfár, A., & Kormos, J. (2008). Revisiting problems with foreign language aptitude. *International Review of Applied Linguistics in Language Teaching*, 46(2), 113–136.
- Sasaki, M. (1996). *Second language proficiency, foreign language aptitude, and intelligence: Quantitative and qualitative analyses*. New York, NY: Lang.
- Sawyer, M., & Ranta, L. (2001). Aptitude, individual differences, and instructional design. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 319–353). Cambridge, England: Cambridge University Press.
- Schmitt, N., & Meara, P. (1997). Researching vocabulary through a word knowledge framework. *Studies in Second Language Acquisition*, 20, 17–36.
- Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results : A review. *The Journal of Educational Research*, 99(6), 323–338.

- Seliger, H. W., & Shohamy, E. G. (1989). *Second language research methods*. Oxford, England: Oxford University Press.
- Service, E., Simola, M., Metsänheimo, O., & Maury, S. (2002). Bilingual working memory span is affected by language skill. *European Journal of Cognitive Psychology, 14*(3), 383–408.
- Shah, P., & Miyake, A. (1996). The separability of working memory resources for spatial thinking and language processing: An individual differences approach. *Journal of Experimental Psychology: General, 125*(1), 4–27.
- Shen, Y., & Zhang, L. J. (2016). Investigating the relationship between metacognition and EFL listening of postgraduate non-English majors: A multiple regression analysis. *Foreign Language Research, 3*, 45–52.
- Shi, Y. (2009). Review of the metacognitive research abroad on second language listening. *Foreign Language World, 1*, 57–63.
- Skehan, P. (1989). *Individual differences in second-language learning*. London, England: Arnold.
- Skehan, P. (1998). *A cognitive approach to language learning*. Oxford, England: Oxford University Press.
- Smidt, E., & Hegelheimer, V. (2004). Effects of online academic lectures on ELS listening comprehension, incidental vocabulary acquisition, and strategy use. *Computer Assisted Language Learning, 17*(5), 517–556.
- Snow, R. E. (1987). Aptitude complexes. In R. E. Snow & M. J. Farr (Eds.), *Aptitude, learning and instruction* (pp. 11–34). Hillsdale, NJ: Erlbaum.
- Snow, R. E. (1992). Aptitude theory: Yesterday, today, and tomorrow. *Educational Psychologist, 27*, 5–32.

- Snow, R. E. (1994). Abilities in academic tasks. In R. J. Sternberg & R. K. Wagner (Eds.), *Mind in context: Interactionist perspectives on human intelligence* (pp. 3–37). Cambridge, England: Cambridge University Press.
- Snow, R. E., Corno, L., & Jackson, D. N. (1996). Individual differences in affective and conative functions. In D. C. Berliner & R. C. Calfee (Eds.), *Handbook of educational psychology* (pp. 243–310). New York, NY: Macmillan.
- Speciale, G., Ellis, N. C., & Bywater, T. (2004). Phonological sequence learning and short-term store capacity determine second language vocabulary acquisition. *Applied Psycholinguistics*, 25(2), 293–321.
- Spoelman, M., & Verspoor, M. (2010). Dynamic patterns in development of accuracy and complexity: A longitudinal case study in the acquisition of Finnish. *Applied Linguistics*, 31(4), 532–553.
- Stake, & E., R. (2005). Qualitative case studies. In D. Norman & L. Yvonna (Eds.), *The Sage handbook of qualitative research* (3rd ed., pp. 443–466). Thousand Oaks, CA: Sage.
- Sternberg, R. J. (1998). Metacognition, abilities, and developing expertise: What makes an expert student? *Instructional Science*, 26, 127–140.
- Sternberg, R. J., & Grigorenko, E. (2002). *Dynamic testing: The nature and measurement of learning potential*. Cambridge, England: Cambridge University Press.
- Stowe, L. a, & Sabourin, L. (2005). Imaging the processing of a second language: Effects of maturation and proficiency on the neural processes involved. *International Review of Applied Linguistics in Language Teaching*, 43(4), 329–353.

- Taguchi, T., Magid, M., & Papi, M. (2009). The L2 motivational self system among Japanese, Chinese and Iranian learners of English: A comparative study. In Z. Dörnyei & E. Ushioda (Eds.), *Motivation, language identity and the L2 self* (pp. 66–97). Bristol, England: Multilingual Matters.
- Teng, L. (2016). *Fostering strategic second-language writers: A study of Chinese English-as-a-foreign-language (EFL) writers' self-regulated learning strategies, self-efficacy and motivational beliefs* (Doctoral dissertation). University of Auckland, New Zealand. Retrieved from <https://researchspace.auckland.ac.nz/docs/uoa-docs/rights.htm>
- Thayer, J. (1991). Interpretation of standardized regression coefficients in multiple regression. ERIC Document Reproduction Service No. ED 334208.
- Thelen, E., & Smith, L. B. (1994). *A dynamic systems approach to the development of cognition and action*. Cambridge, England: The MIT Press.
- Turley-Ames, K. J., & Whitfield, M. M. (2003). Strategy training and working memory task performance. *Journal of Memory and Language*, 49(4), 446–468.
- Ushioda, E. (2009). A person-in-context relational view of emergent motivation, self and identity. In Z. Dörnyei & E. Ushioda (Eds.), *Motivation, language identity and the L2 self* (pp. 215–228). Bristol, England: Multilingual Matters.
- Ushioda, E., & Dörnyei, Z. (2012). Motivation. In S. M. Gass & A. Mackey (Eds.), *The Routledge handbook of second language acquisition* (pp. 396–409). New York, NY: Routledge.
- Valentine, J., & Cooper, H. (2003). *Effect size substantive interpretation guidelines: Issues in the interpretation of effect sizes*. Washington, DC: What Works Clearinghouse.

- Valsiner, J. (2008). Culture in minds and societies: Foundations of cultural psychology. *Sociological Bulletin*, 57(2), 300–302.
- Van den Noort, M. W. M. L., Bosch, P., & Hugdahi, K. (2006). Foreign language proficiency and working memory capacity. *European Psychologist*, 11, 289–296.
- Van Geert, P. (1991). A dynamic systems model of cognitive and language growth. *Psychological Review*, 98(1), 3–53.
- Van Geert, P. (1995). Growth dynamics in development. In R. Port & T. van Gelder (Eds.), *Mind as motion: Explorations in the dynamics of cognition* (pp. 313–337). Cambridge, MA: The MIT Press.
- Van Geert, P. (2003). Dynamic systems approaches and modeling of developmental processes. In J. Valsiner & K. Connolly (Eds.), *Handbook of developmental psychology* (pp. 640–672). London, England: Sage.
- Van Geert, P. (2008). The dynamic systems approach in the study of L1 and L2 acquisition: An introduction. *Modern Language Journal*, 92(2), 179–199.
- Van Geert, P., Savelsbergh, G., & Van der Mass, H. (1997). Transitions and non-linear dynamics in developmental psychology. In G. Savelsbergh, H. Van der Mass, & P. Van Geert (Eds.), *Non-linear developmental processes* (pp. xi–xx). Amsterdam, The Netherlands: Royal Nederlandse Academy of Arts and Sciences.
- Van Lieshout, P. H. H. M. (2004). Dynamical systems theory and its application in speech. In B. Maassen, R. Kent, P. H. H. M. Van Lieshout, & W. Hulstijn (Eds.), *Speech motor control: In normal and disordered speech* (pp. 51–82). Oxford, England: Oxford University Press.
- Vandergrift, L. (1997a). The Cinderella of communication strategies: Reception strategies in interactive listening. *Modern Language Journal*, 81(4), 494–505.

- Vandergrift, L. (1997b). The comprehension strategies of second language (French) listeners: A descriptive study. *Foreign Language Annals*, 30(3), 387–409.
- Vandergrift, L. (2003). Orchestrating strategy use: Toward a model of the skilled second language listener. *Language Learning*, 53(3), 463–496.
- Vandergrift, L. (2005). Relationships among motivation orientations, metacognitive awareness and proficiency in L2 listening. *Applied Linguistics*, 26(1), 70–89.
- Vandergrift, L. (2007). Recent developments in second and foreign language listening comprehension research. *Language Teaching*, 40(3), 191–210.
- Vandergrift, L., & Baker, S. (2015). Learner variables in second language listening comprehension: An exploratory path analysis. *Language Learning*, 65(2), 390–416.
- Vandergrift, L., & Goh, C. C. M. (2012). *Teaching and learning second language listening: Metacognition in action*. New York, NY: Routledge.
- Vandergrift, L., Goh, C. C. M., Mareschal, C. J., & Tafaghodtari, M. H. (2006). The metacognitive awareness listening questionnaire: Development and validation. *Language Learning*, 56(3), 431–462.
- Vandergrift, L., & Tafaghodtari, M. H. (2010). Teaching L2 learners how to listen does make a difference: An empirical study. *Language Learning*, 60(2), 470–497.
- Verspoor, M. (2015). Initial conditions. In Z. Dörnyei, P. D. MacIntyre, & A. Henry (Eds.), *Motivation dynamics in language learning* (pp. 38–46). Bristol, England: Multilingual Matters.
- Verspoor, M. (2017). Complex dynamic systems theory and L2 pedagogy: Lessons to be learned. In L. Ortega & Z. Han (Eds.), *Complexity theory and language development: In celebration of Diane Larsen-Freeman* (pp. 143–162).

Philadelphia, PA: Benjamins.

Verspoor, M., De Bot, K., & Lowie, W. (Eds.). (2011). *A dynamic approach to second language development: Methods and techniques*. Philadelphia, PA: Benjamins.

Verspoor, M., Lowie, W., Chan, H., & Vahtrick, L. (2017). Linguistic complexity in second language development : variability and variation at advanced stages. *Recherches En Didactique Des Langues et Des Cultures Les Cahiers de l'Acedle*, 14(1), 1–27.

Verspoor, M., Lowie, W., & Dijk, M. Van. (2008). Variability in second language development from a dynamic systems perspective. *Modern Language Journal*, 92(2), 214–231.

Verspoor, M., Schmid, M. S., & Xu, X. (2012). A dynamic usage based perspective on L2 writing. *Journal of Second Language Writing*, 21(3), 239–263.

Verspoor, M., & Smiskova, H. (2012). Foreign language writing development from a dynamic usage based perspective. In R. Manchón (Ed.), *L2 writing development: Multiple perspectives* (pp. 17–46). Berlin: Walter de Gruyter.

Walter, C. (2004). Transfer of reading comprehension skills to L2 is linked to mental representations of text and to L2 working memory. *Applied Linguistics*, 25(3), 315–339.

Walter, C. (2008). Phonology in second language reading: Not an optional extra. *TESOL Quarterly*, 42(3), 455–474.

Waninge, F. (2015). Motivation, emotion and cognition: Attractor states in the classroom. In Z. Dörnyei, P. D. MacIntyre, & A. Henry (Eds.), *Motivation dynamics in language learning*. Bristol, England: Multilingual Matters.

Wen, Z. (2016). *Working memory and second language learning: Towards an*

- integrated approach*. Bristol, England: Multilingual Matters.
- Wen, Z., Biedroń, A., & Skehan, P. (2017). Foreign language aptitude theory: Yesterday, today and tomorrow. *Language Teaching*, 50(1), 1–31.
- Wenden, A. L. (1986). What do second-language learners know about their language learning? A second look at retrospective accounts. *Applied Linguistics*, 7(2), 186–201.
- Wenden, A. L. (1991). *Learner strategies for learner autonomy*. London, England: Prentice Hall.
- Wenden, A. L. (1998). Metacognitive knowledge and language learning. *Applied Linguistics*, 19(4), 515–537.
- Wenden, A. L., & Rubin, J. (1987). *Learner strategies in language learning*. Englewood Cliffs, NJ: Prentice Hall.
- Willing, K. (1987). *Learning styles and adult migrant education*. Adelaide: National Curriculum Resource Center.
- Williams, J. N., & Lovatt, P. (2003). Phonological memory and rule learning. *Language Learning*, 53(1), 67–121.
- Williams, M., & Burden, R. L. (1997). *Psychology for language teachers*. Cambridge, England: Cambridge University Press.
- Winke, P. (2005). *Individual differences in adult Chinese second language acquisition: The relationships among aptitude, memory and strategies for learning* (Doctoral dissertation). Georgetown University, Washington, D. C., United States of America. Retrieved from International Linguistics Community Online
- Winke, P. (2013). An investigation into second language aptitude for advanced

- chinese language learning. *Modern Language Journal*, 97(1), 109–130.
- Wintergerst, A. C., DeCapua, A., & Itzen, R. C. (2001). The construct validity of one learning styles instrument. *System*, 29, 385–403.
- Wintergerst, A. C., Decapua, A., & Verna, M. A. (2003). Conceptualizing learning style modalities for ESL/EFL students. *System*, 31, 85–106.
- Witkin, H. A., Oltman, P. K., Raskin, E., & Karp, S. A. (1971). *A manual for the embedded figures test*. Palo Alto: California Consulting Psychology Press.
- Xu, J., & Li, B. (2009). College students' listening styles and their effect on students' performance in text listening comprehension. *Foreign Language Teaching and Research (Bimonthly)*, 41(3), 186–192.
- Yalçın, Ş., Çeçen, S., & Erçetin, G. (2016). The relationship between aptitude and working memory: An instructed SLA context. *Language Awareness*, 25(1-2), 144–158.
- Yang, J. (2003). Meta-cognitive strategy training in listening class. *Foreign Language Education*, 04, 65–69.
- Yang, X., & Ding, R. (2004). Dimensions of college students' motivation for English listening and their relationships to listening activity. *Modern Foreign Languages (Quarterly)*, 27(3), 311–318.
- Yashima, T., & Arano, K. (2015). Understanding EFL learners' motivational dynamics: A three-level model from a dynamic systems and sociocultural perspective. In Z. Dörnyei, A. Henry, & P. D. MacIntyre (Eds.), *Motivational dynamics in language learning* (pp. 285–314). Bristol, England: Multilingual Matters.
- Yilmaz, Y. (2013). Relative effects of explicit and implicit feedback: The role of

- working memory capacity and language analytic ability. *Applied Linguistics*, 34(3), 344–368.
- Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Los Angeles: Sage.
- Yoshimura, Y. (2001). The role of working memory in language aptitude. In X. Bonch-Bruевич, W. J. Crawford, J. Hellermann, C. Higgins, & H. Nguyen (Eds.), *The past, present and future of second language research: Selected proceedings of the 2000 second language research forum* (pp. 144–163). Somerville, MA: Cascadilla Press.
- You, C., & Chan, L. (2015). The dynamics of L2 imagery in future motivational self-guides. In Z. Dörnyei, P. D. MacIntyre, & A. Henry (Eds.), *Motivation dynamics in language learning* (pp. 397–418). Bristol, England: Multilingual Matters.
- Zhang, D. (2002). *Singaporean students' metacognitive knowledge about learning English oral skills* (Unpublished MA-by-Research thesis). Nanyang Technological University, Singapore.
- Zhang, D., & Goh, C. C. M. (2006). Strategy knowledge and perceived strategy use: Singaporean students' awareness of listening and speaking strategies. *Language Awareness*, 15(3), 199–219.
- Zhang, L. J. (2001). Awareness in reading: EFL students' metacognitive knowledge of reading strategies in an acquisition-poor environment. *Language Awareness*, 10(4), 268–288.
- Zhang, L. J. (2008). Making a case for skills/strategies-based instruction for L2 listening development. *Reflections on English Language Teaching*, 7, 99–109.
- Zhang, L. J. (2010). A dynamic metacognitive systems account of Chinese university

- students' knowledge about EFL reading. *TESOL Quarterly*, 44(2), 320–353.
- Zhang, L. J. (2016). A dynamic metacognitive systems perspective on language learner autonomy. In R. Barnard & L. Li (Eds.), *Language learner autonomy: Teachers' beliefs and practices in East Asian contexts* (pp. 150–166). Phnom Penh, Cambodia: IDP Education Cambodia.
- Zhang, L. J., Aryadoust, V., & Zhang, D. (2016). Taking stock of the effects of strategies-based instruction on writing in Chinese and English in Singapore primary school. In R. E. Silver & W. D. Okhorst-Heng (Eds.), *Quadrilingual education in Singapore: Pedagogical innovation in language education* (pp. 103–126). New York, NY: Springer.
- Zhang, L. J., & Liu, Y. (2015). A corpus-based study of lexical coverage and density in college English textbooks. *Foreign Language Education in China (Quarterly)*, 8(1), 42–50.
- Zhang, L. J., & Xiao, Y. (2006). Language learning strategies, motivation and EFL proficiency: A study of Chinese tertiary-level non-English majors. *Asian Englishes*, 9(2), 20–47.
- Zhang, L. J., & Zhang, D. (2013). Thinking metacognitively about metacognition in second and foreign language learning, teaching, and research: Toward a dynamic metacognitive systems perspective. *Contemporary Foreign Language Studies*, 12, 111–121.
- Zhang, L. J., & Zhang, D. (2018). Metacognition in TESOL theory and practice. In J. I. Lontas (Ed.), *The TESOL encyclopedia in English language teaching*. Malden, MA: Wiley.
- Zhang, Y., & Yu, C. (2015). An investigation into the listening metacognitive

awareness among EFL learners of different English proficiency. *Contemporary Foreign Language Studies*, 1, 32–38.

Zheng, Y. (2011). *Vocabulary knowledge development of Chinese learners of English in China : a longitudinal multiple-case study of eight university students* (Doctoral dissertation). University of Hong Kong, Hongkong SAR, China.
Retrieved from The HKU Scholars Hub

Zheng, Y., & Cheng, L. (2008). Test review: College English Test (CET) in China. *Language Testing*, 25(3), 408–417.

Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable, individual-differences metric. *Journal of Personality and Social Psychology*, 77(6), 1271–1288.

APPENDICES

Appendix I: Listening Motivation Questionnaire

Major: **Class:** **Code:**

The purpose of this inventory is to find out more about yourself as a listener. Following are a number of statements with which some people agree and others disagree. Please indicate your opinion after each statement by checking the box that describes your agreement. The categories are:

1= Strongly Disagree; 2=Disagree; 3=Partly Agree; 4=Agree; 5=Strongly Agree

- 1. I want to be an English listening expert.
- 2. I practice my listening for travelling abroad in the future.
- 3. I like watching English movies and listening to English songs.
- 4. I am confident in improving my listening.
- 5. My listening is better than others.
- 6. I always talk about the listening with other people.
- 7. My major requires higher listening ability.
- 8. I do not want to listen to the materials that I cannot understand.
- 9. Pass exam is more important than the English listening lesson.
- 10. I practice my listening for the convenience of seeking jobs.
- 11. I practice listening to get higher scores in the exam.
- 12. My parents encourage me to practice my listening as much as possible.
- 13. I want to be able to answer listening questions that other students cannot.
- 14. I do listening practice for studying abroad in the future.
- 15. I like English tones and pronunciation.
- 16. I determine to overcome difficulties as long as I can improve my listening ability.
- 17. I can understand most English listening program.
- 18. I communicate more with those who love practicing their listening.
- 19. I want to understand the English lectures in my major field.
- 20. I do not like complicated listening practice.
- 21. It is important to me to practice listening well since English is a useful communication tool worldwide now.
- 22. My future career maybe requires high capacity in English listening.
- 23. I must practice my listening in order to pass CET4/6
- 24. I study listening because my close friends think it is important.
- 25. I wish to be one of those who can communicate in English fluently.
- 26. I want to immigrant to other countries so that I practice listening.
- 27. I am interested in learning English listening.
- 28. I do not want to practice listening even if the materials are interesting.
- 29. I like listening to some difficult listening materials.
- 30. I am favour in our listening materials.
- 31. I hope to communicate with foreign experts in my major field.
- 32. English listening class is boring to me.
- 33. Listening is important to me because an educated person is supposed to be able to understand besides read and write.

- ___ 34. Listening study is important to me, because I may need it later for job.
- ___ 35. I practice listening in order to good results in IELTS or TOEFL listening tests.
- ___ 36. Listening is necessary because the people I respect think that I should do so.
- ___ 37. I feel happy when my teacher praised me about my listening ability.
- ___ 38. I practice my listening in order to work in foreign countries.
- ___ 39. Listening to English programs is really interesting to me.
- ___ 40. I plan to give up because listening is too difficult.
- ___ 41. I got lost when I am listening to foreign programs.
- ___ 42. I enjoy our listening classes.
- ___ 43. I hope to understand the major-related programs on the internet.
- ___ 44. I would rather spend my time on writing or reading rather than listening.
- ___ 45. Listening is important to me because it is one of the significant aspects of overall good English proficiency.
- ___ 46. Good listening ability would enable me to work globally.
- ___ 47. Other classmates will respect and admire me if I am good at listening.
- ___ 48. I am happy when my classmates said my listening is good.
- ___ 49. With a high level of listening proficiency I will be able to get promotion in my future career.

Thanks for your cooperation!

听力学习动机调查问卷

专业: _____ 班级: _____ 编码: _____

亲爱的同学:

你好! 以下内容是关于听力学习动机的调查, 主要帮助你了解自己学习听力的不同目的。请根据你的真实情况选择对应的数字

1: 完全不同意 2: 不同意 3: 部分同意 4: 同意 5: 完全同意

- ___1. 我想成为英语听力高手。
- ___2. 我练习听力是为了将来出国旅游。
- ___3. 我喜欢看英文电影, 听英文歌曲。
- ___4. 我对提高听力很有信心。
- ___5. 我的英语听力比其他人好。
- ___6. 我常与爱练听力的同学交往。
- ___7. 我的专业对我的英语听力要求高。
- ___8. 我不想听听不懂的材料。
- ___9. 考试过关比英语听力课重要。
- ___10. 我练习英语听力是为了将来找工作方便。
- ___11. 我练习听力是为了提高考试成绩。
- ___12. 我父母经常鼓励我练好英语听力。
- ___13. 我希望能回答其他人答不出的听力问题。
- ___14. 我练习听力是为了将来出国学习。
- ___15. 我喜欢英语语音语调。
- ___16. 只要能提高听力, 我决心克服困难。
- ___17. 我能听懂很多英语广播节目。
- ___18. 我常和喜欢练习听力的人交流。
- ___19. 我希望能听懂我所学专业的英文讲座。
- ___20. 我不太喜欢做太繁琐的听力练习。
- ___21. 练好英语听力对我很重要, 因为现在英语是全球通用的语言。
- ___22. 我将来的工作可能对英语听力要求较高。
- ___23. 为了四/六级考试过关, 我必须练习听力。
- ___24. 我学习英语听力是因为我的好朋友认为它很重要。
- ___25. 我希望成为能够用英语熟练交流的人之一。
- ___26. 我练习听力是因为我想移民国外。
- ___27. 我对听力学习感兴趣。
- ___28. 听力材料再有趣, 我也不想练习听力。
- ___29. 我喜欢听有难度的材料。
- ___30. 我很喜欢我们的听力教材。
- ___31. 我希望能与我所学专业的外国专家交流。
- ___32. 我觉得英语听力课很枯燥。
- ___33. 听力对我很重要, 因为一个受过良好教育的人不仅读写好, 听力也要好。
- ___34. 英语听力对我很重要, 我将来需要靠它找工作。
- ___35. 我练习英语听力是为了提高雅思/托福听力部分的成绩。
- ___36. 我认为学习英语听力很有必要, 因为我尊敬的人(如老师, 朋友)认为我应该学好它。
- ___37. 当老师表扬我的听力能力时, 我感到高兴。
- ___38. 我练习听力是为了将来出国工作。
- ___39. 收听英语节目对我而言非常有趣。
- ___40. 英语听力太难, 所以我打算放弃。
- ___41. 收听英语节目使我感到茫然。

- ___42. 我很喜欢英语听力课。
- ___43. 学习英语听力因为我希望能听懂网上和我所学专业相关的节目。
- ___44. 我更愿意花时间学习英语阅读和写作而不是听力。
- ___45. 我认为好的听力水平可以代表一个人的整体英语水平高。
- ___46. 好的听力水平可以帮助我在全球各地工作。
- ___47. 如果我的听力好，其他同学会很佩服我。
- ___48. 当其他同学说我的听力好时，我感到高兴。
- ___49. 如果我的英语听力水平好，我在将来的工作中更容易升职。

感谢你的配合！

Appendix II: Metacognitive Awareness Listening Questionnaire

Major: **Class:** **Code:**

The purpose of this inventory is to help you discover strategies that can help you master English listening. Tick the number which best shows your level of agreement with the statement at the present time. The categories are:

1=Strongly Disagree; 2=Disagree; 3=Slightly Disagree; 4=Partly Agree; 5=Agree; 6=Strongly Agree

- ___1. Before I start to listen, I have a plan in my head for how I am going to listen.
- ___2. I focus harder on the text when I have trouble understanding.
- ___3. I find that listening in English is more difficult than reading, speaking or writing in English.
- ___4. I translate in my head as I listen.
- ___5. I use the words I understand to guess the meaning of the words I don't understand.
- ___6. When my mind wanders, I recover my concentration right away.
- ___7. As I listen, I compare what I understand with what I know about the topic.
- ___8. I feel that listening comprehension is a challenge for me.
- ___9. I use my experience and knowledge to help me understand.
- ___10. Before listening, I think of similar texts that I may have listened to.
- ___11. I translate key words as I listen.
- ___12. I try to get back on track when I lose concentration.
- ___13. As I listen, I quickly adjust my interpretation if I realise that it is not correct.
- ___14. After listening, I think back to how I listened, and about what I might do differently next time.
- ___15. I don't feel nervous when I listen to English.
- ___16. When I have difficulty understanding what I hear, I give up and stop listening.
- ___17. I use the general idea of the text to help me guess the meaning of the words that I don't understand.
- ___18. I translate word by words as I listen.
- ___19. When I guess the meaning of a word, I think back to everything else that I have heard, to see if my guess makes sense.
- ___20. As I listen, I periodically ask myself if I am satisfied with my level of comprehension.
- ___21. I have a goal in mind as I listen.

Thanks for your cooperation!

听力元认知意识问卷

专业: _____ 班级: _____ 编码: _____

亲爱的同学:

你好! 以下内容是关于听力元认知意识的调查, 主要帮助你了解自己在听力过程中所使用的策略并且更好提高听力成绩。请根据你的真实情况选择对应的数字。

1: 完全不同意 2: 不同意 3: 部分不同意 4: 部分同意 5: 同意 6: 完全同意

- ___ 1. 听之前, 我在头脑中对即将开始的听力活动进行计划。
- ___ 2. 当我听不太明白的时候, 我会对文章更加集中注意力。
- ___ 3. 我感觉在英语中听力比其他几项(说、读、写)都难。
- ___ 4. 听时我在头脑中翻译。
- ___ 5. 我用已知词汇去推断不认识的词义。
- ___ 6. 当走神时, 我能够马上恢复我的注意力。
- ___ 7. 我把所听到的内容同自己对本话题的已知知识进行比较。
- ___ 8. 我感觉英语听力对我是个挑战。
- ___ 9. 我会通过自己的经历和已知知识帮助自己理解听力材料。
- ___ 10. 听之前, 我回想以往听过的类似文章。
- ___ 11. 听时我在头脑中把关键词翻译成汉语。
- ___ 12. 当我发现注意力分散时, 我努力回到所听内容上来。
- ___ 13. 意识到自己的理解不对时, 我迅速调整自己的理解。
- ___ 14. 听之后, 我回想自己听的过程, 并思考下次再听的时候会在哪里使用不同的方式或做哪些改变。
- ___ 15. 我在听英语听力时并不感觉紧张。
- ___ 16. 当我听不懂时, 我就放弃, 不再听了。
- ___ 17. 我利用文章的大意帮助自己推断生词的含义。
- ___ 18. 听听力时, 我在头脑中逐字翻译。
- ___ 19. 我通过回想前面听到的内容, 来帮助自己确认现在所猜测的词汇意义是否准确。
- ___ 20. 听的过程中, 我会间歇性地问自己是否满意当前的理解程度。
- ___ 21. 我在听听力时头脑中有目标。

感谢你的配合!

Appendix III: Learning Style Survey

Major: Class: Code:

The Learning Style Survey is designed to assess your general approach to learning. It does not predict your behavior in every instance, but it is a clear indication of your overall style preferences. For each item, circle the response that represents your approach. Complete all items. There are 11 major activities representing 12 different aspects of your learning style. When you read the statements, try to think about what you usually do when learning. It typically takes about 30 minutes to complete the survey. Do not spend too much time on any item—indicate your immediate feeling and move on to the next item. For each item, circle your response:

- 0 = Never**
- 1 = Rarely**
- 2 = Sometimes**
- 3 = Often**
- 4 = Always**

Part 1: HOW I USE MY PHYSICAL SENSES

- | | | | | | |
|---|-----------------|---|---|---|---|
| 1. I remember something better if I write it down. | 0 | 1 | 2 | 3 | 4 |
| 2. I take detailed notes during lectures. | 0 | 1 | 2 | 3 | 4 |
| 3. When I listen, I visualize pictures, numbers, or words in my head. | 0 | 1 | 2 | 3 | 4 |
| 4. I prefer to learn with TV or video rather than other media. | 0 | 1 | 2 | 3 | 4 |
| 5. I use color-coding to help me as I learn or work. | 0 | 1 | 2 | 3 | 4 |
| 6. I need written directions for tasks. | 0 | 1 | 2 | 3 | 4 |
| 7. I have to look at people to understand what they say. | 0 | 1 | 2 | 3 | 4 |
| 8. I understand lectures better when professors write on the board. | 0 | 1 | 2 | 3 | 4 |
| 9. Charts, diagrams, and maps help me understand what someone says. | 0 | 1 | 2 | 3 | 4 |
| 10. I remember peoples' faces but not their names. | 0 | 1 | 2 | 3 | 4 |
| | A - Total _____ | | | | |
| 11. I remember things better if I discuss them with someone. | 0 | 1 | 2 | 3 | 4 |
| 12. I prefer to learn by listening to a lecture rather than reading. | 0 | 1 | 2 | 3 | 4 |

- 13. I need oral directions for a task. 0 1 2 3 4
- 14. Background sound helps me think. 0 1 2 3 4
- 15. I like to listen to music when I study or work. 0 1 2 3 4
- 16. I can understand what people say even when I cannot see them. 0 1 2 3 4
- 17. I remember peoples' names but not their faces. 0 1 2 3 4
- 18. I easily remember jokes that I hear. 0 1 2 3 4
- 19. I can identify people by their voices (e.g., on the phone). 0 1 2 3 4
- 20. When I turn on the TV, I listen to the sound more than I watch the screen. 0 1 2 3 4

B - Total _____

- 21. I prefer to start doing things rather than checking the directions first. 0 1 2 3 4
- 22. I need frequent breaks when I work or study. 0 1 2 3 4
- 23. I need to eat something when I read or study. 0 1 2 3 4
- 24. If I have a choice between sitting and standing, I'd rather stand. 0 1 2 3 4
- 25. I get nervous when I sit still too long. 0 1 2 3 4
- 26. I think better when I move around (e.g., pacing or tapping my feet). 0 1 2 3 4
- 27. I play with or bite on my pens during lectures. 0 1 2 3 4
- 28. Manipulating objects helps me to remember what someone says. 0 1 2 3 4
- 29. I move my hands when I speak. 0 1 2 3 4
- 30. I draw lots of pictures (doodles) in my notebook during lectures. 0 1 2 3 4

C - Total _____

Part 2: HOW I EXPOSE MYSELF TO LEARNING SITUATIONS

- 1. I learn better when I work or study with others than by myself. 0 1 2 3 4
- 2. I meet new people easily by jumping into the conversation. 0 1 2 3 4
- 3. I learn better in the classroom than with a private tutor. 0 1 2 3 4

- 4. It is easy for me to approach strangers. 0 1 2 3 4
- 5. Interacting with lots of people gives me energy. 0 1 2 3 4
- 6. I experience things first and then try to understand them. 0 1 2 3 4

A - Total _____

- 7. I am energized by the inner world (what I'm thinking inside). 0 1 2 3 4
- 8. I prefer individual or one-on-one games and activities. 0 1 2 3 4
- 9. I have a few interests, and I concentrate deeply on them. 0 1 2 3 4
- 10. After working in a large group, I am exhausted. 0 1 2 3 4
- 11. When I am in a large group, I tend to keep silent and listen. 0 1 2 3 4
- 12. I want to understand something well before I try it. 0 1 2 3 4

B - Total _____

Part 3: HOW I HANDLE POSSIBILITIES

- 1. I have a creative imagination. 0 1 2 3 4
- 2. I try to find many options and possibilities for why something happens. 0 1 2 3 4
- 3. I plan carefully for future events. 0 1 2 3 4
- 4. I like to discover things myself rather than have everything explained to me. 0 1 2 3 4
- 5. I add many original ideas during class discussions. 0 1 2 3 4
- 6. I am open-minded to new suggestions from my peers. 0 1 2 3 4

A - Total _____

- 7. I focus on a situation as it is rather than thinking about how it could be. 0 1 2 3 4

8. I read instruction manuals (e.g., for computers or VCRs) before using the device. 0 1 2 3 4
9. I trust concrete facts instead of new, untested ideas. 0 1 2 3 4
10. I prefer things presented in a step-by-step way. 0 1 2 3 4
11. I dislike it if my classmate changes the plan for our project. 0 1 2 3 4
12. I follow directions carefully. 0 1 2 3 4

B - Total _____

Part 4: HOW I DEAL WITH AMBIGUITY AND WITH DEADLINES

1. I like to plan language study sessions carefully and do lessons on time or early. 0 1 2 3 4
2. My notes, handouts, and other school materials are carefully organized. 0 1 2 3 4
3. I like to be certain about what things mean in a target language. 0 1 2 3 4
4. I like to know how rules are applied and why. 0 1 2 3 4

A - Total _____

5. I let deadlines slide if I'm involved in other things. 0 1 2 3 4
6. I let things pile up on my desk to be organized eventually. 0 1 2 3 4
7. I don't worry about comprehending everything. 0 1 2 3 4
8. I don't feel the need to come to rapid conclusions about a topic. 0 1 2 3 4

B - Total _____

Part 5: HOW I RECEIVE INFORMATION

1. I prefer short and simple answers rather than long explanations. 0 1 2 3 4
2. I ignore details that do not seem relevant. 0 1 2 3 4
3. It is easy for me to see the overall plan or big picture. 0 1 2 3 4

4. I get the main idea, and that's enough for me. 0 1 2 3 4
5. When I tell an old story, I tend to forget lots of specific details. 0 1 2 3 4

A - Total _____

6. I need very specific examples in order to understand fully. 0 1 2 3 4
7. I pay attention to specific facts or information. 0 1 2 3 4
8. I'm good at catching new phrases or words when I hear them. 0 1 2 3 4
9. I enjoy activities where I fill in the blank with missing words I hear. 0 1 2 3 4
10. When I try to tell a joke, I remember details but forget the punch line. 0 1 2 3 4

B - Total _____

Part 6: HOW I FURTHER PROCESS INFORMATION

1. I can summarise information easily. 0 1 2 3 4
2. I can quickly paraphrase what other people say. 0 1 2 3 4
3. When I create an outline, I consider the key points first. 0 1 2 3 4
4. I enjoy activities where I have to pull ideas together. 0 1 2 3 4
5. By looking at the whole situation, I can easily understand someone. 0 1 2 3 4

A - Total _____

6. I have a hard time understanding when I don't know every word. 0 1 2 3 4
7. When I tell a story or explain something, it takes a long time. 0 1 2 3 4
8. I like to focus on grammar rules. 0 1 2 3 4
9. I'm good at solving complicated mysteries and puzzles. 0 1 2 3 4
10. I am good at noticing even the smallest details involved in a task. 0 1 2 3 4

B - Total _____

Part 7: HOW I COMMIT MATERIAL TO MEMORY

1. I try to pay attention to all the features of new material as I learn. 0 1 2 3 4
2. When I memorize different bits of language material, I can retrieve these bits easily—as if I had stored them in separate slots in my brain. 0 1 2 3 4
3. As I learn new material in the target language, I make fine distinctions among speech sounds, grammatical forms, and words and phrases. 0 1 2 3 4

A - Total _____

4. When learning new information, I may clump together data by eliminating or reducing differences and focusing on similarities. 0 1 2 3 4
5. I ignore distinctions that would make what I say more accurate in the given context. 0 1 2 3 4
6. Similar memories become blurred in my mind; I merge new learning experiences with previous ones. 0 1 2 3 4

B - Total _____

Part 8: HOW I DEAL WITH LANGUAGE RULES

1. I like to go from general patterns to the specific examples in learning a target language. 0 1 2 3 4
2. I like to start with rules and theories rather than specific examples. 0 1 2 3 4
3. I like to begin with generalizations and then find experiences that relate to those generalizations. 0 1 2 3 4

A - Total _____

4. I like to learn rules of language indirectly by being exposed to examples of grammatical structures and other language features. 0 1 2 3 4
5. I don't really care if I hear a rule stated since I don't remember rules very well anyway. 0 1 2 3 4
6. I figure out rules based on the way I see language forms behaving over time. 0 1 2 3 4

B - Total _____

Part 9: HOW IDEAL WITH MULTIPLE INPUTS

1. I can separate out the relevant and important information in a given context even when distracting information is present. 0 1 2 3 4
2. When I produce an oral or written message in the target language, I make sure that all the grammatical structures are in agreement with each other. 0 1 2 3 4
3. I not only attend to grammar but check for appropriate levels of formality and politeness. 0 1 2 3 4

A - Total _____

4. When speaking or writing, I feel that focusing on grammar is less important than paying attention to the content of the message. 0 1 2 3 4
5. It is a challenge for me to both focus on communication in speech or writing while at the same time paying attention to grammatical agreement (e.g., person, number, tense, or gender). 0 1 2 3 4
6. When I am using lengthy sentences in a target language, I get distracted and neglect aspects of grammar and style. 0 1 2 3 4

B - Total _____

Part 10: HOW IDEAL WITH RESPONSE TIME

1. I react quickly in language situations. 0 1 2 3 4
2. I go with my instincts in the target language. 0 1 2 3 4
3. I jump in, see what happens, and make corrections if needed. 0 1 2 3 4

A - Total _____

4. I need to think things through before speaking or writing. 0 1 2 3 4
5. I like to look before I leap when determining what to say or write in a target language. 0 1 2 3 4
6. I attempt to find supporting material in my mind before I set about producing language. 0 1 2 3 4

B - Total _____

Part 11: HOW LITERALLY I TAKE REALITY

- | | |
|---|-----------|
| 1. I find that building metaphors in my mind helps me deal with language (e.g. viewing the language like a machine with component parts that can be disassembled) | 0 1 2 3 4 |
| 2. I learn things through metaphors and associations with other things. I find that stories and examples help me learn.. | 0 1 2 3 4 |

A - Total _____

- | | |
|---|-----------|
| 3. I take learning language literally and don't deal in metaphors. | 0 1 2 3 4 |
| 4. I take things at face value, so I like language material that says what it means directly. | 0 1 2 3 4 |

B - Total _____

Thanks for your cooperation!

语言学习风格问卷

专业: _____ 班级: _____ 编码: _____

这份学习风格问卷调查是用来评定你一般的学习方法,它并不能在每个方面预测你的行为,但它能清楚地表明你的整体风格倾向。请依该叙述符合你实际情况的程度来作答。请务必每一题都作答。此调查包括十一种主要活动,他们代表你学习风格的不同方面。当你读这些题目时,试着想想学习外语时你通常会做什么。每个题目不要花太多时间。

请在每一题目后圈出你的选项:

- 0=我从来不会这样做
- 1=我很少这样做
- 2=我有时会这样做
- 3=我经常这样做
- 4=我总是这样做

一、如何用身体感官来学习

- | | | | | | |
|-----------------------------|---|---|---|---|---|
| 1.如果把事情写下来,我会记得较清楚 | 0 | 1 | 2 | 3 | 4 |
| 2.上课时,我会详细记笔记 | 0 | 1 | 2 | 3 | 4 |
| 3.我在听材料的时候,脑海中会浮现图片,数字或字词 | 0 | 1 | 2 | 3 | 4 |
| 4.与其它媒体相比,我较喜欢借助录像带或电视来学习英文 | 0 | 1 | 2 | 3 | 4 |
| 5.用不同的颜色标示重点,有助于我学习英文 | 0 | 1 | 2 | 3 | 4 |
| 6.对要做的练习或活动,我需要书面的解释说明 | 0 | 1 | 2 | 3 | 4 |
| 7.面对面的交流能让我更容易了解对方要表达的意思 | 0 | 1 | 2 | 3 | 4 |
| 8.老师把教学内容写在黑板上有助与我的理解 | 0 | 1 | 2 | 3 | 4 |
| 9.表格,图画,地图有助于我理解对方所说的 | 0 | 1 | 2 | 3 | 4 |
| 10.我更容易记住人们的面孔而不是他们的名字 | 0 | 1 | 2 | 3 | 4 |

A 一总计 _____

- | | | | | | |
|--------------------------------|---|---|---|---|---|
| 11.通过与同学讨论,我对所学内容记得更清楚 | 0 | 1 | 2 | 3 | 4 |
| 12.学习英文时,我比较喜欢听老师讲课,而不喜欢自己来阅读 | 0 | 1 | 2 | 3 | 4 |
| 13.对指定的作业或活动,我需要口头说明才能完全理解 | 0 | 1 | 2 | 3 | 4 |
| 14.四周有声音时,我依旧可以集中精神思考 | 0 | 1 | 2 | 3 | 4 |
| 15.我喜欢边听音乐边看书,不受干扰而且效果好 | 0 | 1 | 2 | 3 | 4 |
| 16.即使看不到说话的人,我仍然可以通过听来理解他所说的内容 | 0 | 1 | 2 | 3 | 4 |
| 17.对新的朋友,我更容易记住他们的名字而非相貌 | 0 | 1 | 2 | 3 | 4 |
| 18.我很容易记得听过的笑话 | 0 | 1 | 2 | 3 | 4 |
| 19.我可以通过听声音辨认说话者是谁(比如打电话时) | 0 | 1 | 2 | 3 | 4 |
| 20.当我打开电视时,我多半是听声音而非看屏幕 | 0 | 1 | 2 | 3 | 4 |

B 一总计 _____

- | | | | | | |
|-----------------------------|---|---|---|---|---|
| 21.我一般会先动手做事情而不愿先详读注意说明 | 0 | 1 | 2 | 3 | 4 |
| 22.学习时,我经常需要休息片刻 | 0 | 1 | 2 | 3 | 4 |
| 23.我在学习的时候喜欢吃点东西 | 0 | 1 | 2 | 3 | 4 |
| 24.如果在坐和站之间做选择,我宁愿站着 | 0 | 1 | 2 | 3 | 4 |
| 25.坐得太久,我会感到不耐烦的 | 0 | 1 | 2 | 3 | 4 |
| 26.动一动,我可以想得更清楚(比如习惯性抖腿) | 0 | 1 | 2 | 3 | 4 |
| 27.听课过程中,我会不自觉的玩或啃手中的笔 | 0 | 1 | 2 | 3 | 4 |
| 28.实际动手做东西有助于我记住别人所说的内容 | 0 | 1 | 2 | 3 | 4 |
| 29.我在说话时会使用手势 | 0 | 1 | 2 | 3 | 4 |
| 30.听课过程中,我会在笔记本上画很多图片(乱写乱画) | 0 | 1 | 2 | 3 | 4 |

C 一总计 _____

二、我如何使自己置身于学习环境

- | | | | | | |
|------------------------|---|---|---|---|---|
| 1.与别人一起学习要比独自学习效果好 | 0 | 1 | 2 | 3 | 4 |
| 2.通过加入谈话,我很容易结识新朋友 | 0 | 1 | 2 | 3 | 4 |
| 3.我在教室学习要比和私人教师在一起学得更好 | 0 | 1 | 2 | 3 | 4 |
| 4.对我来说,我不害怕接近陌生人 | 0 | 1 | 2 | 3 | 4 |
| 5.和许多人交往使我更有活力 | 0 | 1 | 2 | 3 | 4 |
| 6.我先去体验一些事情,然后试着去了解他们 | 0 | 1 | 2 | 3 | 4 |

A 一总计_____

- | | | | | | |
|-------------------------|---|---|---|---|---|
| 7.我由内(内心所想的)而外的充满活力 | 0 | 1 | 2 | 3 | 4 |
| 8.我喜欢个人的或一对一的游戏或活动 | 0 | 1 | 2 | 3 | 4 |
| 9.我有一些爱好并非常专注于他们 | 0 | 1 | 2 | 3 | 4 |
| 10.在人多的团体中学习结束后,我感到精疲力竭 | 0 | 1 | 2 | 3 | 4 |
| 11.在人多的团体中,我会保持沉默或只是倾听 | 0 | 1 | 2 | 3 | 4 |
| 12.在尝试某件事情之前,我想要先充分地了解它 | 0 | 1 | 2 | 3 | 4 |

B 一总计_____

三、我如何处理可能的事物

- | | | | | | |
|-----------------------------|---|---|---|---|---|
| 1.我有创造性的想象力 | 0 | 1 | 2 | 3 | 4 |
| 2.对于某件事情发生的原因,我试着寻求多种选择和可能性 | 0 | 1 | 2 | 3 | 4 |
| 3.我会仔细地计划未来的事情 | 0 | 1 | 2 | 3 | 4 |
| 4.我更喜欢自己去发现事情真相,而非等待别人解释 | 0 | 1 | 2 | 3 | 4 |
| 5.在课堂讨论中,我会补充许多独到的见解 | 0 | 1 | 2 | 3 | 4 |
| 6.我愿意接受同学提出的新建议 | 0 | 1 | 2 | 3 | 4 |

A 一总计_____

- | | | | | | |
|------------------------------|---|---|---|---|---|
| 7.我更关注事件本身,而不是考虑它可能会怎么样 | 0 | 1 | 2 | 3 | 4 |
| 8.我在使用某种设备(比如电脑或录像机)之前会阅读说明书 | 0 | 1 | 2 | 3 | 4 |
| 9.我相信具体的事实而不是一些新的未经检验的观点 | 0 | 1 | 2 | 3 | 4 |
| 10.我喜欢按照一步一步的程序来说明或做事情 | 0 | 1 | 2 | 3 | 4 |
| 11.对已经决定好的课题,我不太喜欢同学们改变计划 | 0 | 1 | 2 | 3 | 4 |
| 12.我认真按说明来做事情 | 0 | 1 | 2 | 3 | 4 |

B 一总计_____

四、我如何处理歧义(不止一种意思)和截止日期(最后期限)

- | | | | | | |
|----------------------------|---|---|---|---|---|
| 1.我喜欢认真计划英语学习时间并按时或提早做功课 | 0 | 1 | 2 | 3 | 4 |
| 2.我的笔记,讲义,和其它学习材料都整理得有条不紊 | 0 | 1 | 2 | 3 | 4 |
| 3.遇到新事物时,我喜欢搞清楚它在英语中的确切含义 | 0 | 1 | 2 | 3 | 4 |
| 4.我喜欢搞清楚英语语法是如何用的以及为什么会这样用 | 0 | 1 | 2 | 3 | 4 |

A 一总计_____

- | | | | | | |
|------------------------|---|---|---|---|---|
| 5.有时我会因为忙于其他事情而错过了截止日期 | 0 | 1 | 2 | 3 | 4 |
| 6.我一般会把东西堆在桌子上最后再整理 | 0 | 1 | 2 | 3 | 4 |
| 7.我不担心去理解所有细节的东西 | 0 | 1 | 2 | 3 | 4 |
| 8.我认为不需要对一个话题做出仓促的结论 | 0 | 1 | 2 | 3 | 4 |

B 一总计_____

五、我怎样接受信息

- | | | | | | |
|-----------------------|---|---|---|---|---|
| 1.我喜欢简短的答案而不是冗长的解释 | 0 | 1 | 2 | 3 | 4 |
| 2.我会忽略那些看似无关的细节 | 0 | 1 | 2 | 3 | 4 |
| 3.我可以很容易领悟到事情的整体计划或轮廓 | 0 | 1 | 2 | 3 | 4 |
| 4.对我而言,掌握一件事情的大意就足够了 | 0 | 1 | 2 | 3 | 4 |

5.当讲述一个过去的故事时我会忘了许多具体的细节 0 1 2 3 4
A一总计_____

6.为充分理解某个事物我需要非常具体的例子 0 1 2 3 4

7.我关注具体的事实或细节信息 0 1 2 3 4

8.当听到新的短语或词汇时,我能辨别出来并且能很好的理解他们 0 1 2 3 4

9.我非常喜欢做填空类的听力练习 0 1 2 3 4

10.当我试着讲一个笑话时,我会只记住细节而忘了笑话中画龙点睛的妙语
0 1 2 3 4
B一总计_____

六、我怎样进一步处理信息

1.我善于总结,能够轻松概括信息 0 1 2 3 4

2.我可以很容易的领会或转述别人所说的话 0 1 2 3 4

3.我写概要时首先会考虑关键信息或要点 0 1 2 3 4

4.我喜欢参与那些需要调动所有想法或总结性的活动 0 1 2 3 4

5.通过考虑大体的情形,我可以很容易了解一个人 0 1 2 3 4
A一总计_____

6.如果不清楚每个词的含义时,我会出现理解上的困难 0 1 2 3 4

7.我讲故事或解释什么东西时需要花很长时间 0 1 2 3 4

8.我喜欢关注语法规则 0 1 2 3 4

9.我善于解决复杂的疑难问题 0 1 2 3 4

10.对于某些学习任务,我善于发现并关注最细小的细节
0 1 2 3 4
B一总计_____

七、我怎么记忆学习材料

1.学习时我会试着注意新的学习资料的所有特征 0 1 2 3 4

2.在记忆语言材料的不同的细小部分时,我能轻松地回想起这些细小部分——就像它早已储存在大脑的不同部位 0 1 2 3 4

3.在学习新语言写成的材料时,我能很好的辨别不同的语音,语法形式,词汇和短语
0 1 2 3 4
A一总计_____

4.在新信息的学习过程中,我会把资料综合起来消除或减少差异而注意相似之处
0 1 2 3 4

5.在特定的上下文中,我不会把那些会使我的表达更准确的区别放在心上
0 1 2 3 4

6.相似的记忆会在我的脑袋里变得模糊不清,我会把新的学习经历和旧的融合在一起
0 1 2 3 4
B一总计_____

八、我如何处理语言规则

1.在英语学习中,我喜欢老师从介绍知识点到列举具体例子的顺序进行
0 1 2 3 4

2.我喜欢从规则和理论开始学习而不是具体的例子 0 1 2 3 4

3.学习时,我喜欢先概括性的了解知识,然后再具体尝试与之相关的练习
0 1 2 3 4
A一总计_____

4.我喜欢通过接触语法结构的实例和其他语言特征来间接学习语言规则
0 1 2 3 4

- 5.我不是很在意老师讲述的语法规则，因为我对语言规则记得不是很好 0 1 2 3 4
- 6.在学习英语时，我通过不断的观察出现的语言形式来归纳语法规则 0 1 2 3 4
- B一总计_____

九、我怎么处理多种输入的信息

- 1.即使有干扰信息，我也能在特定的上下文中找出相关的重要信息 0 1 2 3 4
- 2.当用英语口语或书面输出信息时，我要确保所有的语法结构相互一致 0 1 2 3 4
- 3.我不仅会注意语法而且会检查语言形式和礼貌的适合程度 0 1 2 3 4
- A一总计_____

- 4.在用英语说话或写作的时候，我如果关注语法就会忽略文章本身的内容 0 1 2 3 4
- 5.对我而言，既要注意言语和写作中的交流与此同时还要注意语法的一致(比如人称，时态，或单复数)，这对我来说是一种挑战 0 1 2 3 4
- 6.当我用英语写长句子时，我会因为分心而忽略语法和文体风格的各个方面 0 1 2 3 4
- B一总计_____

十、我如何处理反应时间

- 1.在语言情境中我反应很快 0 1 2 3 4
- 2.我凭直觉学习英语 0 1 2 3 4
- 3.我进入语言情境后，会根据情况在需要时做些修改 0 1 2 3 4
- A一总计_____
- 4.一般在说或写之前，我需要先仔细考虑问题 0 1 2 3 4
- 5.在用英语要说什么或写什么的时候，我喜欢慎思而后行 0 1 2 3 4
- 6.在准备用英语说或写之前，我会尝试在脑海里搜寻一些例子 0 1 2 3 4
- B一总计_____

十一、我如何正确看待现实

- 1.我发现在心里构建隐喻有助于我处理语言(比如:把语言看作可以分解成不同部件的机器 0 1 2 3 4
- 2.我通过隐喻以及与其他事物产生联系学习英语。我发现故事和例子有助于我学习英语 0 1 2 3 4
- A一总计_____
- 3.我按字面意思学习语言，而不会依赖于隐喻和联想 0 1 2 3 4
- 4.我相信事物的本来样子，因此我喜欢那些直接表述其含义的语言材料 0 1 2 3 4
- B一总计_____

感谢你的配合!

Appendix IV: LLAMA Chinese Manual

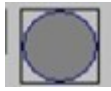
LLAMA 学能测试说明

1. LLAMA 测试顺序 B-D-E-F


2. 测试结束后，成绩将自动保存在每个文件夹的 txt 文件中，请创建一个以你名字命名的新文件夹并将 BDEF 四个文件夹中的 txt 文件复制在这个新文件夹中发送给你的老师。非常感谢。

LLAMA B: 词汇测试

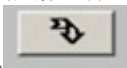
1. 请在   处填写你的名字，在  选择测试的年份（2014），点击  计时开始

2.  为计时标志，在 2 分钟内，记住尽可能多的物品名称，可以重复点击，但不可以做笔记

3. 记忆时间到

4. 点击 ，测试开始

5. 屏幕中央出现物品名称，你的任务是根据名称选择正确的物品，正确提示 ding, 错误提示 beep


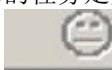
6. 出现最后成绩（成绩自动保存）点击  结束当前测试。



LLAMA D: 辨音测试

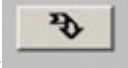
1. 请在   处填写你的名字，点击  计时开始

2. 你将听到 10 个单词（非母语），仔细听并尽可能记住，只读一遍

3. 结束后，这 10 个单词将和其他单词混在一起再次播放，你的任务是判断哪个单词是之前听到过的，听到过的点击  笑脸，没听到过的点击  哭脸，点击中间

 继续听下一个单词

4. 正确提示 ding, 错误提示 beep

6. 出现最后成绩（成绩自动保存）点击  结束当前测试。



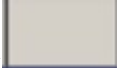
LLAMA E: 音形搭配测试

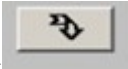
1. 请在   处填写你的名字，点击  计时开始

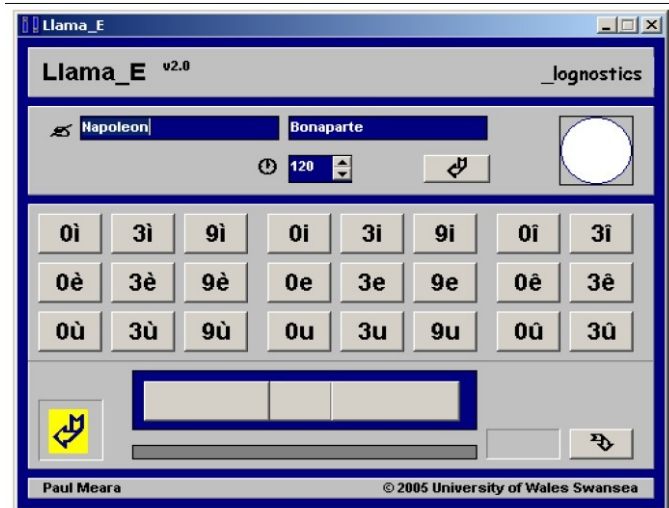


2. 为计时标志，请在 2 分钟内学习不同拼写的发音，点击任一拼写你会听到对应的发音，在 2 分钟内记住尽可能多的拼写以及他们的发音，可以做笔记

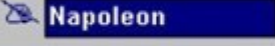




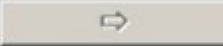
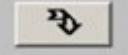
3. 听到 bleep 表示时间结束

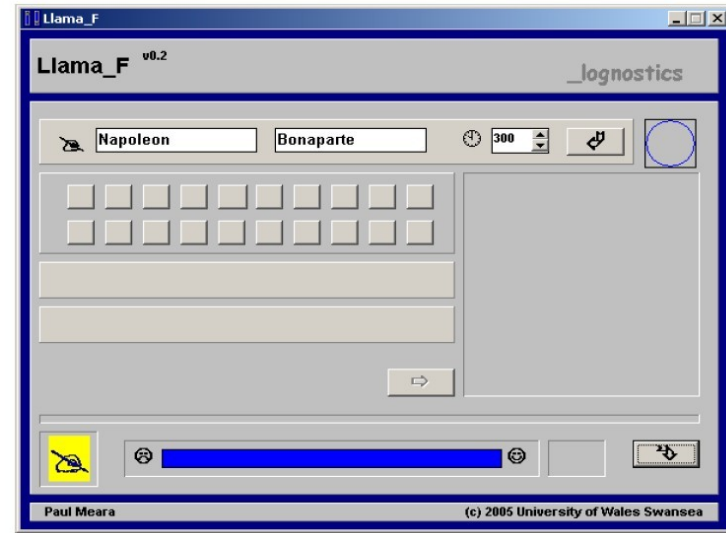
4. 测试开始，点击位于中间的  方框，你将听到一个单词，该单词的发音包括之前学习过的任何一个音，同时屏幕会出现两个单词，两个单词中只有一个包含你之前学习过的任一发音，将其选出即为正确（如，你听到 goodbye，左面词是 well，右面词是 good day，即选择 good day，测试并非英语），选择正确提示 ding，错误提示 beep

6. 出现最后成绩（成绩自动保存）点击  结束当前测试。



LLAMA F: 语法学习测试

1. 请在   处填写你的名字，点击  计时开始
2.  为计时标志，5 分钟内，点击屏幕上的按钮 ，新语言的语法将会以一幅图以及一句短句的形式解释，在五分钟内尽量通过图片和所给短句掌握这门新语言的语法，可以做笔记。
3. 听到 bleep, 表示时间结束
4. 测试开始，屏幕会出现一幅图片（可能在之前的学习过程中见过也有可能没见过），同时屏幕会出现两个短句，其中一个语法正确，另一个有明显语法错误，选出你认为语法正确的一句。
正确 ding, 错误 beep, 点击  继续
6. 出现最后成绩（成绩自动保存）点击  结束当前测试。



Appendix V: Listening Span Test

Directions:

You are going to hear 12 sets of sentences. Each set consists of two, three, four or five sentences. Listen to each set, you need to judge whether it is “True” or “False” according to the meaning of each sentence and write down the final word of each sentence on the answer sheet, irrespective of the order. There will be a signal tone between each set. All the sentences will be read only once. Firstly, please complete the practice session before the formal test session.

Practice session:

A:

1. New York is the capital city of Germany.
2. Harry Potter was originally written by Shakespeare.

B:

3. Most of the earth is covered by water.
4. Obama is a world famous athlete.
5. Autumn comes after summer.

C:

6. Video games are quite popular in slums.
7. Red represents fortune and happiness in China.
8. Teenagers are too young to go to school.
9. He held the book out to the woman.

Now, please get ready for the test session.

Test session:

1:

1. Guilin is a really attractive and beautiful place.
2. During the 2008 Olympic Games, many foreigners came to Beijing.
3. It is true that all animals need a job.

2:

4. In China, 4 is known as a lucky number.
5. In the forest, the tiger is often known as the king.
6. We should always help those in desperate need.
7. When we are tired, we shouldn't have a good rest.
8. Yao Ming is well-known both in China and America.

3:

9. The book caused considerable damage to the church.
10. One always feels happy when getting gifts from one's family members.
11. Driving too fast on the road is really dangerous behaviour.
12. Travelling by train is much faster than by plane.

4:

13. Staying in bed all day is a good habit.
14. As the capital of China, Beijing is a big city.

5:

15. Caught in terribly heavy rain, they had a good time.
16. In China, more and more people celebrate Christmas Day.
17. High school students often stay at home on Mondays.
18. Reading books can make you a knowledgeable person.

6:

19. The Eiffel Tower is a symbol of France.

20. A month is often made up of five weeks.
21. Cats and mice can always be good friends.

7:

22. The horse raced very slowly and won the gold medal.
23. University students are not allowed to cheat in exams.
24. In Taiyuan, the night is longer than the day in winter.
25. Fish is a kind of animal that lives in the forest.
26. Computers are very helpful for college students' study.

8:

27. Traditionally, Chinese people have moon cakes during the Spring Festival.
28. Honest people always lie to their beloved parents.
29. When someone can't hear you, you should raise your voice.
30. When we get ill, we often go to hospital.

9:

31. Watching foreign movies is an effective way to understand foreign cultures.
32. In the morning, the beautiful sun rises in the west.

10:

33. The children go to school, so it is Sunday today.
34. Thieves are always good for the development of our society.
35. He wants to find something to eat in the kitchen.

11:

36. Green is the favourite colour for everyone in the world.
37. The secret of most champions' success is laziness.
38. Shouting loudly in public places is good manners.
39. A student should memorise what he/she has learnt in class.
40. Reading in the sunlight is good for our eyes.

12:

41. Playing sports is very good for our health.
42. Passing exams is very important to most Chinese students.

工作记忆广度测试答题纸

专业:_____ 班级:_____ 编码:_____

亲爱的同学:

你好。在接下来的测试中,你将听到 12 组句子, 每组包含 2-5 句不等的句子。请仔细听每组句子, 并根据常识判读每句话是否正确, 在答题纸对应的括号内填“T”(表正确)或“F”(表错误)。在每组句子播放结束后, 请将每句最后一个单词写在横线上, 可以不按顺序写。每两组句子间会播放提示音, 所有句子只读一次。首先完成下面的练习部分。

练习组:

A: 1 () 2 ()

B: 3 () 4 () 5 ()

C: 6 () 7 () 8 () 9 ()

测试组:

1:

1 () 2 () 3 ()

2:

4 () 5 () 6 () 7 () 8 ()

3:

9 () 10 () 11 () 12 ()

4:

13 () 14 ()

5:

15 () 16 () 17 () 18 ()

6:

19 () 20 () 21 ()

7:

22 () 23 () 24 () 25 () 26 ()

8:

27 () 28 () 29 () 30 ()

9:

31 () 32 ()

10:

33 () 34 () 35 ()

11:

36 () 37 () 38 () 39 () 40 ()

12:

41 () 42 ()

Appendix VI: Non-words Recognition Test

Directions:

You are going to hear 24 pairs of sequences of English non-words. The length of each sequence was gradually increased across the pairs within the range of 4 to 7 non-word syllable length. Listen to each pair of sequences and judge whether the order of non-words in both sequences is the same or different. Check “√” (represents same) or “×” (represent different) in the corresponding brackets on the answer sheet. Firstly, please complete the practice session before the formal test session.

P.S. I highlight the pairs that are in same sequence.

Practice session:

1- mab / kig / bon / vop
mab / kig / bon / vop

2- jeck / neb / tud / mab / leed
-jeck / tud / neb / mab / leed

3 -pib / teeg / cug / jep / koog / vam
-pib / teeg / cug / jep / vam / koog

4-teef / sheel / meach / jawn / pim / poob / jatt
teef / sheel / meach / jawn / pim / poob / jatt

Now, please get ready for the test session.

Test session:

Four words:

1. boodge / cheem / dac / gell
boodge / dac / cheem / gell

2. barg / jarm / darp / lart
barg / jarm / darp / lart

3. vop / shok / chorg / zon
vop / shok / chorg / zon

4. keem / bov / chell / derp
bov / keem / chell / derp

5. bick / meach / nid / tidge
bick / meach / nid / tidge

6. borp / chut / gool / jick
borp / chut / jick / gool

Five words:

7. chool / goot / joop / poob / noom
chool / goot / joop / poob / noom

8. tudge / bup / chud / zun / cug
tudge / bup / chud / zun / cug

9. leem / bordge / cuk / dach / noog
leem / cuk / bordge / dach / noog

10. maf / vood / jarn / wub / tep
vood / maf / jarn / wub / tep

11. deech / jeeg / teef / meep / neeb
deech / jeeg / teef / meep / neeb

12. koll / chig/ jatt / mern / peeb
koll / chig / mern / jatt / peeb

Six words:

13. vabe / koom / narl / nif / mup / chordge
koom / vabe / narl / nif / mup / chordge

14. gerch / veet/ bek / jup / fal / norg
gerch / veet/ bek / jup / norg / fal

15. fet / jeck / chen / sheg / meb / tep
fet / jeck / chen / sheg / meb / tep

16. toock / pab / nerg / lidge / varl / chorn
toock / pab / lidge / nerg / varl / chorn

17. nool / shoom / loog / poodge / toock
nool / shoom / loog / poodge / toock

18. nerge / jert / cherl / kerm / derb / gerp
nerge / jert / cherl / kerm / derb / gerp

Seven words:

19. pag / vam / shal / chaf / tath / ladge / dac
pag / vam / shal / chaf / tath / ladge / dac

20. mup / zib / toosh / charn / horm / vaf / jeel
mup / zib / charn / horm / toosh / vaf / jeel

21. kerp / larm / didge / seb / cheel / worsh / nuf
didge / kerp / larm / seb / cheel / worsh / nuf

22. jert / cherp / gerb / lerm / herv / derk / werf
jert / cherp / gerb / lerm / herv / derk / werf

23. neeb / vem / tud / lerf / jooch / morb / fal
neeb / vem / tud / lerf / morb / fal / jooch

24. vort / jorl / norb/ mordge / lork / morf / chorg
vort / jorl / norb/ mordge / lork / morf / chorg

英语假词测试答题纸

专业:_____ 班级:_____ 编码:_____

亲爱的同学:

你好。接下来你将听到 24 组包含 4-7 个非英语单词不等的单词序列, 每对包含 2 个序列。请仔细听每组中的 2 个单词序列中的非英语单词顺序是否一致, 并在下列括号内画√(表一致)或×(表不一致)。音中的单词均不是真正的英语单词(不需考虑单词意义)。首先完成下面的练习部分。

练习组:

1() 2() 3() 4()

测试组:

1() 2() 3() 4() 5()

6() 7() 8() 9() 10()

11() 12() 13() 14() 15()

16() 17() 18() 19() 20()

21() 22() 23() 24()

Appendix VII: Listening Proficiency Test One

Major: **Class:** **Code:**

Section A

Directions: In this section, you will hear 8 short conversations and 2 long conversations. At the end of each conversation, one or more questions will be asked about what was said. Both the conversation and the questions will be spoken only once. After each question there will be a pause. During the pause, you must read the four choices marked A), B), C) and D), and decide which is the best answer, Then mark the corresponding letter on Answer Sheet 1 with a single line through the centre.

1. A) Go to a place he has visited B) Make her own arrangements
 C) Consult a travel agent D) Join in a package tour
2. A) They are on a long trip by car B) They are stuck in a traffic jam
 C) They are used to getting up early D) They are tired of eating out at night
3. A) He is a person difficult to deal with B) He dislikes any formal gathering
 C) He is unwilling to speak in public D) He often keeps a distance from others
4. A) Work in another department B) Pursue further education
 C) Recruit graduate students D) Take an administrative job
5. A) He would not be available to start the job in time
 B) He is not quite qualified for the art director position
 C) He would like to leave some more time for himself
 D) He will get his application letter ready before May1
6. A) Cleaner B) Porter C) Mechanic D) Salesman
7. A) Request one or two roommates to do the cleaning.
 B) Help Laura with her term paper due this weekend.
 C) Get Laura to clean the apartment herself this time.
 D) Ask Laura to put off the cleaning until another week.
8. A) A problem caused by the construction.
 B) An accident that occurred on the bridge.
 C) The building project they are working on.
 D) The public transportation conditions.

Questions 9 to 11 are based on the conversation you have heard.

9. A) To look for a job as a salesperson.
 B) To have a talk with Miss Thompson.
 C) To place an order for some products.
 D) To complain about a faulty appliance.
10. A) The person in charge is not in the office.
 B) The supplies are out of stock for the moment.

- C) They failed to reach an agreement on the price.
 - D) The company is re-cataloguing the items.
11. A) 0743, 12536 extension 15.
 B) 0734, 38750 extension 15.
 C) 0734, 21653 extension 51.
 D) 0734, 62135 extension 51.

Questions 12 to 15 are based on the conversation you have just heard.

12. A) Since he found a girlfriend. B) Since he took to heavy smoking.
 C) Since he began to exercise regularly. D) Since he started to live on his own.
13. A) He is getting too fat. B) He smokes too much
 C) He doesn't eat vegetables. D) He doesn't look well at all.
14. A) They are overweight for their age. B) They are respectful to their parents
 C) They are still in their early twenties. D) They dislike doing physical exercise.
15. A) To quit smoking. B) To find a girlfriend
 C) To reduce his weight. D) To follow her advice.

Section B

Directions: In this section, you will hear 3 short passages. At the end of each passage, you will hear some questions. Both the passage and the questions will be spoken only once. After you hear a question, you must choose the best answer from the four choices marked A), B), C) and D). Then mark the corresponding letter on Answer Sheet 1 with a single line through the centre.

Passage One

Questions 16 to 19 are based on the passage you have just heard.

16. A) They have destroyed several small towns.
 B) They will soon spread to San Francisco.
 C) They have injured many residents.
 D) They are burning out of control.
17. A) They have been hospitalized.
 B) They have got skin problems.
 C) They were choked by the thick smoke.
 D) They were poisoned by the burning chemicals.
18. A) It failed because of a sudden rocket explosion.
 B) It has been re-scheduled for a midday takeoff.
 C) It has been canceled due to technical problems.
 D) It was delayed for eleven hours and thirty minutes.
19. A) They made frequent long-distance calls to each other.
 B) They illegally used government computers in New Jersey.
 C) They were found to be smarter than computer specialists.
 D) They were arrested for stealing government information.

Passage Two

Questions 20 to 22 are based on the passage you have just heard.

20. A) Peaceful. B) Considerate. C) Generous. D) Cooperative
21. A) Someone dumped the clothes left in the washer and dryer.
B) Someone broke the washer and dryer by overloading them.
C) Mindy Lance's laundry blocked the way to the laundry room.
D) Mindy Lance's threatened to take revenge on her neighbors.
22. A) Asking the neighborhood committee for help.
B) Limiting the amount of laundry for each wash.
C) Informing the building manager of the matter.
D) Installing a few more washers and dryers.

Passage Three

Questions 23 to 25 are based on the passage you have just heard.

23. A) She is both a popular and a highly respected author.
B) She is the most loved African novelist of all times.
C) She is the most influential author since the 1930's.
D) She is the first writer to focus on the fate of slaves.
24. A) The Book Critics Circle Award.
B) The Pulitzer Prize for fiction
C) The Nobel Prize for literature.
D) The National Book Award.
25. A) She is a relative of Morrison's.
B) She is a skilled storyteller.
C) She is a slave from Africa.
D) She is a black woman

Section C

Directions: In this section, you will hear a passage three times. When the passage is read for the first time, you should listen carefully for its general idea. When the passage is read for the second time, you are required to fill in the blanks with the exact words you have just heard. Finally, when the passage is read for the third time, you should check what you have written.

Many college students today own personal computer that cost anywhere from \$1,000 to perhaps \$5,000 or more. (26) _____, it is not uncommon for them to purchase (27) _____ costing another several hundred dollars. Twenty years ago, computers were (28) _____, but they were very large and extremely expensive. Few, if any, (29) _____ purchased computers for home use. Over the years, the price of the "guts" of a computer---its memory---has declined to less than a thousandth of the price per unit of memory that prevailed twenty years ago. This is the main reason why computers cost so much less today than they used to. Moreover, (30) _____ improvements have made it possible to (31) _____ memory circuitry that is small enough to fit into the portable personal computers that many of us own and use. (32)

_____, as the price of computation has declined the average consumer and business have spent more on purchasing computers.

(33)_____, improved agricultural technology, hybrid (杂交) seeds, (34) _____ animal breeding, and so on have vastly increased the amount of output a typical farmer can produce. The prices of goods such as meats and grains have fallen sharply relative to the prices of most other goods and services. As agricultural prices have fallen, many households have decreased their total expenses on food. Even though the (35) _____ of a product purchased generally increases when its price falls, total expenses on it may decline.

Appendix VIII: Listening Proficiency Test Two

Major: **Class:** **Code:**

SECTION 1 *Questions 1-10*

Questions 1-5

Complete the notes below.

Write **NO MORE THAN THREE WORDS** for each answer.

Transport from Airport to Milton	
<i>Example</i>	<i>Answer</i>
Distance:	<u>147</u> miles

Options:

- Car hire
 - don't want to drive
- **1**
 - expensive
- Greyhound bus
 - \$15 single, \$27.50 return
 - direct to the **2**
 - long **3**
- Airport Shuttle
 - **4** Service
 - every 2 hours
 - \$35 single, \$65 return
 - need to **5**

Questions 6-10

Complete the booking form below.

Write **ONE WORD AND/OR A NUMBER** for each other.

AIRPORT SHUTTLE BOOKING FORM			
To:	Milton		
Date:	6	No. of passengers:	One
Bus Time:	7pm	Type of tickets:	Single
Name:	Janet 8		
Flight No:	9	From:	London Heathrow
Address in Milton:	Vacation Motel 24, Kitchener Street		
Fare:	\$35		
Credit Card No.:	(visa) 10		

SECTION 3 Questions 21-30

Questions 21-23

Complete the notes below.

Write **ONE WORD ONLY** for each answer.

DIFFERENCES BETWEEN INDIVIDUALS IN THE
WORKPLACE
Individuals bring different:
<ul style="list-style-type: none">• ideas• 21• Learning experiences
Work behaviour differences are due to:
<ul style="list-style-type: none">• Personality• 22
Effects of diversity on companies:
<i>Advantage:</i> diversity develops 23
<i>Disadvantage:</i> diversity can cause conflict

Questions 24-27

Choose the correct letter, **A**, **B** or **C**.

24. Janice thinks that employers should encourage workers who are
 - A. potential leaders.
 - B. open to new ideas.
 - C. good at teamwork.
25. Janice suggests that managers may find it difficult to
 - A. form successful groups.
 - B. balance conflicting needs.
 - C. deal with uncooperative workers.
26. Janice believes employers should look for job applicants who
 - A. can think independently.
 - B. will obey the system.
 - C. can solve problems.
27. Janice believes managers should
 - A. demonstrate good behaviour.
 - B. encourage co-operation early on.
 - C. increase financial incentives.

Questions 28-30

Complete the sentences below.

Write **ONE WORD ONLY** for each answer.

28. All managers need to understand their employees and recognise their company's
29. When managing change, increasing the company'smay be more important than employee satisfaction.
30. During periods of change, managers may have to cope with increased amounts of

SECTION 4 Questions 31-40

Questions 31-35

Complete the notes below.

Write **ONE WORD ONLY** for each answer.

SEMINAR ON ROCK ART

Preparation for fieldwork trip to Namibia in **31**

Rock art in Namibia may be

- paintings
- engravings

Earliest explanation of engravings of animal footprints

They were used to help **32** learn about tracking.

But:

- Why are the tacks usually **33** ?
- Why are some engravings realistic and other unrealistic?
- Why are the unrealistic animals sometimes half **34** ?

More recent explanation:

Wise men may have been trying to control wild animals with **35**

Comment:

Earlier explanation was due to scholars over-generalising from their experience of a different culture.

Questions 36-40

Complete the sentences below.

Write **ONE WORD ONLY** for each answer

36. If you look at a site from a, you reduce visitor pressure.

37. To camp on a site may be disrespectful to people from that

38. Undiscovered material may be damaged by

39. You should avoid or tracing rock art as it is so fragile.

40. In general, your aim is to leave the site

Appendix IX: Semi-structured Interview Guides

访谈问题

	<i>Interview questions</i>	<i>Knowledge</i>
1.	Why do you want to learn and practice your listening? 为什么想要提高自己的听力?	Motivation
2.	What do you think of your listening ability compared with your other English skills (reading, writing, and speaking)? 和你的其他英语能力（阅读，写作和口语）相比，你认为自己的听力水平如何?	Person knowledge
3.	Do you have any difficulties in doing listening comprehension tasks? If so, in what way do you solve the problems? 在进行听力理解练习时你会遇到困难和问题?你会如何解决他们?	Person knowledge Task knowledge
4.	You have finished two listening tests. Did you pay attention to main ideas or details? Which type of test is easier for you? 在刚刚听完了的听力练习中，你更关注材料大意还是细节?哪一种类型的题目对你而言更容易?	Task knowledge Strategic knowledge
5.	What are the factors that may influence your listening performance when you are doing listening practice? (e.g., pronunciation, speed rate, vocabulary and topic) 在完成听力练习时，你认为自己的听力会受到哪些因素的影响?（如：发音，语速，词汇，内容等）	Task knowledge
6.	Did you feel nervous when listening? Do you have this feeling in your daily listening practice? Are there any special ways you use to relieve your emotional tension, e.g., deep breath or remind yourself to relax? 刚才在完成听力练习时你感到紧张了吗?平时进行听力练习时你会紧张吗?如果感到紧张的话，你一般采取什么方式缓解呢?（比如：深呼吸，提醒自己放松等）	Person knowledge
7.	What do you usually do to practice your listening after class? What kind of materials do you usually use? 在课堂之外你是如何练习听力的?一般会用什么听力材料?	Task knowledge
8.	When you were given the listening tests, what did you do first? 当拿到听力测试材料时，你首先会做什么?	Planning
9.	Did you translate while listening? Do you benefit or suffer from translation while listening? 在听听力的过程中你会在脑中翻译听到的内容吗?你的听力水平是受益于还是受限于翻译呢?	Mental translation
10.	If you cannot follow the listening material, what do you usually do (e.g., give up or try to catch up)? 当跟不上正在进行的听力材料时，你会怎么做?（放弃?努力跟上?）	Directed attention
11.	Do you have any special aims of practicing listening recently (e.g., exams, interests)? 在现阶段的听力学习中，你有什么特殊的目标吗?（比如：为考试而学习听力，对听力感兴趣等等）	Motivation
12.	How do you evaluate your listening recently? Did you make progress? Why do you think so? 就现阶段你如何评价自己的听力水平?相比之前你的听力水平有提高吗（表现在哪些方面）?为什么这样觉得?	Evaluation
13.	Did your teacher teach you any listening strategies or skills? Do you believe listening strategies can help you improve your listening proficiency? 你的老师在平时的课堂中有教授类似听力策略，技巧之类的知识吗?你认为这些方法可以帮助你提高听力吗?	Strategic knowledge Person knowledge

Appendix X Listening Diary Prompts

日记提要

	Prompts for listening diary	Individual variables
1.	How much did I understand the materials? What were the problems in understanding the materials (e.g., vocabulary, accent, translation, memory capacity and idioms) 对听力材料我能理解多少？在理解材料过程中我遇到的问题是什么？（比如：生词，口音，在头脑中翻译，记不住太多内容，材料中的俚语或俗语等等）	Person knowledge (Metacognitive knowledge)
2.	What materials did I listen to in this week? (e.g., English movies, listening comprehension tests or exercises, dictations, and etcetera) 在过去的这周中我通过哪些材料练习了听力？（英文电影，听力测试练习，听写练习等等）	Task knowledge (Metacognitive knowledge)
3.	What were the strategies I usually use while listening? (e.g., mental translation, take notes, inferencing, guessing, elaboration and catch key words) 我在听力过程中常用的方法有哪些？（在头脑中翻译，记笔记，推断，猜测，联想，抓关键词等）	Strategic knowledge (Metacognitive knowledge)
4.	What did I do to practice my listening after class? (e.g., enlarge the vocabulary, learn about pronunciation skills, listen to authentic English news, movies, or songs) 在课下我通过以下方法提高听力，如扩大词汇量，学习并纠正自己的发音，听英文原声新闻，歌曲，看无字幕原声电影等等。	Task knowledge (Metacognitive knowledge)
5.	What is my goal of practicing listening? 促使我努力练习听力的原因和目标是什么？	Motivation
6.	What did I do to understand as much as possible? (e.g., recover my concentration when my mind wanders, encourage myself when nervous, keep listening when I feel the listening materials are difficult) 为了能够理解更多的听力材料，我采取以下方法（如当听力走神时，提醒自己回到听力材料上；当感到紧张时鼓励自己来放松；即使感觉困难也尽量跟上正在进行的听力材料，等等）	Attention (Metacognitive knowledge)
7.	Did I pay more attention to details or general information of the listening materials? 在进行听力练习时，我更多的关注于材料细节还是材料的主旨大意？	Style preferences
8.	How is my listening recently? Did I make progress recently? Did I achieve my goals? 我的听力水平最近如何，在哪些方面有进步？有没有完成自己的听力学习目标？	Evaluation (Metacognitive knowledge)
9.	What am I going to do with the listening in the following weeks? 接下来的听力学习中我的计划和目标是什么？	Planning (Metacognitive knowledge)
10.	Are there any things that might boost or weaken my interests in practicing listening? 最近有哪些事情或人增进或减弱了我对听力练习的兴趣和热情吗？	Motivation
11.	Did I make progress in reading, vocabulary, pronunciation skills, or grammar learning recently? Did these aspects contribute to my listening proficiency? 最近的英语学习中，我有没有在阅读，词汇，语音技巧或者语法学习等方面取得进步？这些方面的进步对我的听力水平有促进作用吗？	Aptitude

Appendix XI: Participant Information Sheet and Consent Form for Dean

PARTICIPANT INFORMATION SHEET

(Dean)

Project Title: A Complex Dynamic Systems Theory Perspective on Learner Individual Differences in Second Language Listening Development

Researcher: Pengyun Chang

Researcher introduction

My name is Pengyun Chang, a PhD candidate in the School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland. I am conducting research on a complex dynamic systems theory perspective on learner individual differences in second language listening development.

Project description and invitation

This proposed study aims to explore the development of second language (L2) listening as shown in various relating to learner individual differences (LIDs) within the framework of Complex Dynamic System Theory (CDST). As the first part of this project, the quantitative studies aim to investigate 1) the development of Chinese students' L2 listening proficiency and their LIDs; 2) the overall correlations between five LIDs variables, including language learning aptitude, the dimension of listening motivation, metacognitive awareness, working memory capacity (WMC) and learning style preferences; and 3) the dynamic development of each LIDs variable and its contribution to L2 listening proficiency. This part will involve around 300 university undergraduates. The listening proficiency test and a series of LIDs tests such as, a computer-based language aptitude test, a listening span test, and a non-word recognition test will be administered to them. They will also be invited to answer three questionnaires (listening motivation, metacognitive awareness and learning style preferences). All the tests and questionnaires will be conducted two times within a year. Based on the quantitative data, longitudinal multiple-case studies are designed to investigate the developing patterns of LIDs variables and how they interrelate and affect students' listening proficiency. Around 8 volunteers will be selected from the 300 participants based on a random sampling technique to be the final participants in the multiple-case studies. Interviews will be conducted four times (at the beginning, in the middle, and at the end of the year). Listening diaries are to be collected from the participants every three weeks to track the on-going development of L2 listeners' listening proficiency. I would like to invite undergraduate students to participate in this

research. Your permission for me to contact them and for the relevant information to be distributed is being sought.

Teacher involvement

For recruitment of participants, teachers (administrative staff, or secretary or equivalent of the department) will be involved in providing research information, that is, advertisements, Participant Information Sheets (PISs) and Consent Forms (CFs) to students who are interested in participating in this proposed research.

Student involvement

All around 300 participants will be asked to first fill in a personal information form, and then take the tests and questionnaires within several days. All the tests would be conducted two times in the same procedure within a year (at the beginning and the end of the year). It may take several days to collect all the data from the 300 participants because they may not attend to the research at the same time because of different class timetables. The CFs will be signed by all participants beforehand to agree not disclose any information tested in the tests and questionnaires.

In the first English class, participants are invited to complete the first listening test which will take approximately 30 minutes. After a 10-minute break, the questionnaire for learning style preferences will be distributed, which will last for about 15-20 minutes. In the second English class, participants are invited to complete the computer-based LLAMA language aptitude test in a computer laboratory, which required approximately 35 minutes, including the 10 minutes introduction and 25 minutes to complete it. After a 10-minute break, the listening span test and the non-word recognition test will be conducted, with a 10-minute break in between, in the same computer laboratory with 10 minutes respectively. In the third English class, the second listening proficiency test will be administered, which requires 30 minutes. After a 10 minute break, participants are invited to complete two questionnaires for listening motivation and metacognitive awareness, which require 15 minutes altogether. Thus, approximately 3 hours are required to finish all the tests in the quantitative studies.

In the longitudinal multiple-case studies, volunteers from the 300 participants will be separated into two groups according to listening proficiency. Around 8 volunteers will be selected based on a random sampling technique to be the final participants in the multiple-case studies. They will be interviewed four times individually (after the completion of the quantitative studies). Generally, 30 minutes will be needed to complete the interview each time. But it may be less or more than 30 minutes regarding participants' responses and willingness to communicate. Participants are given the freedom to choose the place where they want to be interviewed. Eight participants are invited to report on their listening processes every three weeks within the whole research period (an academic year). There is no time and word limitation for

completing their listening diaries, they can spend as much time as they like. They are required to write with the guidance of the prompts provided by the researcher. Besides, they are also encouraged to report anything they want to share or anything that is related to learning how to listen. Finally, interviews and diaries will be recorded, translated and then analysed in detail in relation to LIDs.

300 participants' benefits for participation in the quantitative studies will include detailed feedback on how to improve listening proficiency as L2 learners. They will also be provided with a thank-you letter. Eight participants in the case study will be paid 100 yuan for their participation. The researcher is also willing to provide help and explanation on how to listen to those who are interested but who are not selected as participants in this current research.

Faculty involvement

Your permission and cooperation are the prerequisite of conducting this project. I am requesting your permission to get access to administrative staff or secretary and students. Initially, I am seeking your consent to approach administrative staff or secretary on your behalf and attend a faculty meeting to explain the research to administrative staff or secretary and get help from them to spread the research information to students and deliver the PISs, the advertisement, and the CFs. Later I will return to collect these forms from your site. Secondly, I would like to request the use of classrooms and a/several language lab(s) for the quantitative studies. All the procedures will be discussed in detail with potential participants. I would also like to get your assurance that participation or non-participation will not affect teachers' or students' career, future employment, grade, and academic performance in any way. Additionally, I would like to give my assurance that those who do not participate will not be disadvantaged in any way. And they are welcomed to contact me if they wish to get more information on this project.

Data storage/retention/destruction/future use

Hard copy data (i.e., students' answer sheets, questionnaires, diaries, students' PISs, their CFs, etc.) will be securely stored in a locked cabinet at the University of Auckland and electronic data (i.e., the recorded interviews) will be stored on the researcher's computer, which is password protected. After six years, all hard copy data will be shredded and the digital information will be deleted permanently. The data collected from the research will be used for the researcher's PhD thesis at the University of Auckland, and may be used for academic publications, and conference presentations. As a way of showing appreciation to the Dean of the College of Foreign Languages, the researcher is happy to offer you a copy of the full thesis if you wish to have one. If participants want a summary of the research, he/she can indicate this on the consent form, and I will send a summary to him/her.

Right to withdraw from participation

Once involved, participants are entitled to withdrawal at any time of the study or demand for returning or deletion of any data provided by them at any time before 1st May, 2015 without having to give a reason. They have the right not to answer any specific question in the questionnaires, interviews and turn off the recorder at any stage of the interview. The Dean will be required to give an assurance that participation or withdrawal will not affect the normal courses, grade, or relationship with the faculty.

Anonymity and confidentiality

Approximately 300 participants are expected in the quantitative studies. In case of more students are willing to participate, codes with numbers ranging from 001 to 330 will be provided. The researcher will provide a list with 2 columns. Codes with numbers ranging from 001 to 330 will be in the left column. A blank column is provided on the right side of the list. Before entering the laboratory, participants will be allowed to choose a code and fill in the corresponding blank in the right column with their student ID number. Each number can be chosen only once. The number will be crossed off from the list once it is picked by a participant. Participants for the quantitative studies will be asked to write down their codes on the questionnaires and the answer sheets, which can only be recognised by themselves and the researcher. This information list will be kept separately from the data and will only be known to the researcher. The anonymity of non-participants in group situations will be preserved and participants who decline to join may choose to return a blank questionnaire. Confidentiality is assured. Information of the university and the faculty will be disguised. If the information participants provide is reported/published, pseudonyms or the unique identification name will be used to protect their identity. No identifying information and data collected from the research will be disclosed to a third party.

About eight participants are invited to take part in longitudinal multiple-case studies. Interviews will be conducted four times individually at the beginning, in the middle and at the end of the year. Anonymity cannot be guaranteed due to the nature of interview. But participants will be interviewed individually with the researcher, their identities will only be known to the researcher. Listening diaries are to be collected from the participants every three weeks to track the on-going development of second listeners' listening proficiency. The researcher will identify them by the unique code they selected in the quantitative studies. Participants are invited to hand in their diaries either in person with the researcher or through e-mail. No identifying information will be disclosed to a third party. Confidentiality is assured. If the information participants provide is reported/published, pseudonyms or the unique identification code will be used to protect their identity. No identifying information and data collected from the research will be disclosed to a third party.

Thank you for taking the time to read this information sheet. If you have any inquiries or questions, please do not hesitate to contact me or my supervisors.

Yours sincerely,
Pengyun Chang

Contact details

Researcher	Main supervisor	Co-supervisor
Pengyun Chang School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. p.chang@auckland.ac.nz Ph: +64 09 373 7599 ext. 84194 <u>Local contact in China</u> Ph:+86 13834537632	Professor Lawrence Jun Zhang Associate Dean International Strategic Engagement, School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. lj.zhang@auckland.ac.nz Ph: +64 9 6238899 ext: 48750	Professor Judy Parr Head of the School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. jm.parr@auckland.ac.nz Ph: +64 09 623 8899 ext: 88998.

You may also contact the head of the School of Curriculum and Pedagogy, Professor Judy Parr by jm.parr@auckland.ac.nz or +64 09 623 8899 ext. 88998.

For any queries regarding ethical concerns, you may contact the Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Office of the Vice Chancellor, Private Bag 92019, Auckland, 1142. Telephone: 09 373-7599 ext. 83711.

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 28 OCTOBER 2014 for (3) YEARS, REFERENCE NUMBER 013063.

CONSENT FORM

(Dean)

(THIS FORM WILL BE HELD FOR A PERIOD OF 6 YEARS)

Project title: A Complex Dynamic Systems Theory Perspective on Learner Individual Differences in Second Language Listening Development

Researcher: Pengyun Chang

I have read the Participant Information Sheet, and understood the nature of the research and why I have been asked for consent. I have had the opportunity to ask questions and have them answered satisfactorily.

- I agree to provide research sites.
- I agree to allow the researcher to join a faculty meeting to explain the research.
- I agree to circulate the research information to administrative staff or secretary.
- I agree to allow administrative staff or secretary to help with this research.
- I agree to allow undergraduate students to join this research.
- I understand that participation is voluntary.
- I assure that participation, non-participation or withdrawal will not affect career, employment, grade, academic performance, and relationship with the faculty.
- I understand that student participants will be asked to write a unique identification code, which can only be recognised by themselves on questionnaires and a pseudonym on all items involved.
- I understand that recordings will be made of participants in the case study, but only with their consent.
- I understand that participants' recordings may be transcribed by the researcher, but the recordings and the transcriptions will only be accessible to the researcher and will not be disclosed to any third party.
- I understand that hard copies and digital data will be stored separately and securely for a period of six years and then destroyed.
- I understand that the data collected from the research will be used for the researcher's PhD thesis at the University of Auckland, and may be used for academic publications, and conference presentations.
- I understand that if the information provided by participants is reported/published, anonymity is assured and pseudonyms will be used to protect their identity.

- I understand that the information about the university and faculty will be disguised.
- I understand that no identifying information will be disclosed to a third party or the public.
- I wish to receive a copy of the research findings.

I therefore give my informed consent for the research project (“A Complex Dynamic Systems Theory Perspective on Learner Individual Differences in Second Language Listening Development”) to be carried out in my faculty and give permission for you to approach the EFL teachers in my faculty to request their assistance in organising this research.

Name: _____
E-mail address: _____
Signature: _____
Date: _____

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 28 OCTOBER 2014 for (3) YEARS, REFERENCE NUMBER 013063.

Appendix XII: Participant Information Sheet and Consent Form for Participants in the Quantitative Studies

PARTICIPANT INFORMATION SHEET

(Students of the quantitative studies)

Project Title: A Complex Dynamic Systems Theory Perspective on Learner Individual Differences in Second Language Listening Development

Researcher: Pengyun Chang

Researcher introduction

My name is Pengyun Chang, a PhD candidate in the School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland. I am conducting research on a complex dynamic systems theory perspective on learner individual differences in second language listening development.

Project description and invitation

This proposed study aims to explore the development of second language (L2) listening as shown in various relating to learner individual differences (LIDs) within the framework of Complex Dynamic System Theory (CDST). LIDs variables refer to different capacities of each human being. Each one is supposed to be correlated with the listening proficiency. As the first part of this project, the quantitative studies aim to investigate 1) the development of your L2 listening proficiency and LIDs; 2) the overall correlations between your LIDs variables, including language learning aptitude (which is related to your learning ability), the dimension of listening motivation (what motivates you to study listening), metacognitive awareness (your knowledge and perceived use of strategies), working memory capacity (WMC, the capacity of your memory) and learning style preferences (your unique preferences in learning); and 3) the dynamic development of each LIDs variable and its contribution to your listening proficiency, as measured by listening proficiency tests at the beginning, in the middle and at the end of a year. Quantitative studies will involve around 300 university undergraduates. The listening proficiency test and a series of LIDs tests such as, a computer-based language aptitude test, a listening span test, and a non-word recognition test will be administered. You will also be invited to answer three questionnaires (listening motivation, metacognitive awareness and learning style preferences). All the tests and questionnaires will be conducted two times within a year.

Project Procedures

You will be asked to first fill in a personal information form, and then take the tests and questionnaires within several days. All the tests would be conducted two times in accordance with your class schedules in the same procedure within a year (at the beginning and the end of the year). In the first English class, you are invited to complete the first listening test which will take approximately 30 minutes. After a 10-minute break, the questionnaire for learning style preferences will be distributed to you, which will last for about 15-20 minutes. In the second English class, you are invited to complete the computer-based LLAMA language aptitude test in a computer laboratory, which required approximately 35 minutes, including the 10 minutes introduction and 25 minutes to complete it. After a 10-minute break, the listening span test and the non-word recognition test will be conducted, with a 10-minute break in between, in the same computer laboratory with 10 minutes respectively. In the third English class, the second listening proficiency test will be administered, which requires 30 minutes. After a 10 minute break, you are invited to complete two questionnaires for listening motivation and metacognitive awareness, which requires 15 minutes altogether. Thus, approximately 3 hours are required to finish all the tests in the quantitative studies.

For all the tests conducted in the quantitative studies, you are required to listen to the introduction and explanation provided by the researcher carefully, and complete practice session if needed (the listening span test and the non-word recognition test). Then you are invited to complete the test individually. Three questionnaires will be distributed to all of you. Briefings on the questionnaires will be provided. You are expected to provide authentic answers to each question without discussing with others.

Your benefits for participation in the quantitative studies include detailed feedback on how to improve listening proficiency as L2 learners. You will also be provided with a thank-you letter.

Data storage/retention/destruction/future use

Hard copy data (i.e., your answer sheets, questionnaires, your information form and the consent form, etc.) will be securely stored in a locked cabinet at the University of Auckland and electronic data will be stored on the researcher's computer, which is password protected. After six years, all hard copy data will be shredded and the digital information will be deleted permanently. The data collected from the research will be used for my PhD thesis at the University of Auckland, and may be used for academic publications, and conference presentations. If you want a summary of the research, you can indicate this on the CF, and I will send a summary to you.

Right to withdraw from participation

Once involved, you are entitled to withdrawal at any time of the study or demand for returning or deletion of any data provided by you at any time before 1st May, 2015 without having to give a reason. You have the right not to answer any specific question

in the questionnaires. The Dean will be required to give an assurance that your participation or withdrawal will not affect the normal courses, grade, or relationship with the faculty.

Anonymity and confidentiality

Approximately 300 participants are expected in the quantitative studies. In case of more students are willing to participate, codes with numbers ranging from 001 to 330 will be provided. The researcher will provide a list with 2 columns. Codes with numbers ranging from 001 to 330 will be in the left column. A blank column is provided on the right side of the list. Before entering the laboratory, you are allowed to choose a code and fill in the corresponding blank in the right column with your student ID number. Each number can be chosen only once. The number will be crossed off from the list once it is picked by a participant. You are required to write down your code on the questionnaires and the answer sheets, which can only be recognised by yourself and the researcher. This information will be kept separately from the data and will only be known to the researcher. The anonymity of non-participants in group situations will be preserved and participants who decline to join may choose to return a blank questionnaire. Confidentiality is assured. Information of the university and the faculty will be disguised. If the information you provide is reported/published, pseudonyms or the unique identification name will be used to protect your identity. No identifying information and data collected from the research will be disclosed to a third party.

Thank you for taking the time to read this information sheet. If you have any inquiries or questions, please do not hesitate to contact me or my supervisors.

Yours sincerely,
Pengyun Chang

Contact details

Researcher	Main supervisor	Co-supervisor
Pengyun Chang School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. p.chang@auckland.ac.nz Ph: +64 09 373 7599 ext. 84194 Local contact in China Ph:+86 13834537632	Professor Lawrence Jun Zhang Associate Dean International Strategic Engagement, School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. lj.zhang@auckland.ac.nz Ph: +64 9 6238899 ext: 48750	Professor Judy Parr Head of the School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. jm.parr@auckland.ac.nz Ph: +64 09 623 8899 ext: 88998.

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You may also contact the head of the School of Curriculum and Pedagogy, Professor Judy Parr by jm.parr@auckland.ac.nz or +64 09 623 8899 ext. 88998.

For any queries regarding ethical concerns, you may contact the Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Office of the Vice Chancellor, Private Bag 92019, Auckland, 1142. Telephone: 09 373-7599 ext. 83711.

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 28 OCTOBER 2014 for (3) YEARS, REFERENCE NUMBER 013063.

CONSENT FORM

(Students of the quantitative studies)

(THIS FORM WILL BE HELD FOR A PERIOD OF 6 YEARS)

Project title: A Complex Dynamic Systems Theory Perspective on Learner Individual Differences in Second Language Listening Development

Researcher: Pengyun Chang

I have read the Participant Information Sheet, and understood the nature of the research and why I have been selected. I have had the opportunity to ask questions and have them answered to my satisfaction.

- I agree to take part in this research.
- I understand that I am free to withdraw participation at any time, and to withdraw any data traceable to me up to before 1st May, 2015.
- I wish / do not wish to receive the summary of findings.
- I agree to not disclose anything tested in the tests and questionnaires.
- I understand that data will be kept for 6 years, after which they will be destroyed.
- I wish to receive a copy of the research findings by email.

Name: _____

E-mail address: _____

Signature: _____

Date: _____

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 28 OCTOBER 2014 for (3) YEARS, REFERENCE NUMBER 013063.

Appendix XIII: Participant Information Sheet and Consent Form for Participants in the Longitudinal Multiple-case Studies

PARTICIPANT INFORMATION SHEET

(Students of the longitudinal multiple-case studies)

Project Title: A Complex Dynamic Systems Theory Perspective on Learner Individual Differences in Second Language Listening Development

Researcher: Pengyun Chang

Researcher introduction

My name is Pengyun Chang, a PhD candidate in the School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland. I am conducting research on a complex dynamic systems theory perspective on learner individual differences in second language listening development.

Project description and invitation

This proposed study aims to explore the development of second language (L2) listening as shown in various relating to learner individual differences (LIDs) within the framework of Complex Dynamic System Theory (CDST). As the second part of the current project, the longitudinal multiple-case studies are designed to investigate the developing patterns of your LIDs variables and how they interrelate and affect your listening proficiency. Therefore, interviews will be conducted four times (at the beginning, in the middle, and at the end of the year). Listening diaries are to be collected from you every three weeks to track the on-going development of your listening proficiency.

Project Procedures

In order to explore the developing patterns of your LIDs variables and how do they affect your L2 listening proficiency in the whole year, I really welcome and encourage all of you to participate in this case study, which is the second part of my research. Please contact me either in person or by email after the completion of the quantitative studies within two weeks. You will be separated into two groups according to your listening proficiency. Finally, around eight volunteers will be selected based on a random sampling technique to be the final participants in longitudinal multiple-case studies. Interviews and listening diaries will be recorded, translated and then analysed in detail in relation to LIDs.

The final eight participants selected for the case study will be interviewed four times individually (at the beginning, in the middle and at the end of the year). Generally, 30

minutes will be needed to complete the interview each time. But it may be less or more than 30 minutes regarding your response and willingness to communicate. You can choose the place where you want to be interviewed. Permission will be sought from you initially. Once you indicate your willingness for the interview to be recorded, you are invited to sign the consent form (CF). You have the right not to answer any question in the interview and turn off the recorder at any stage of the interview. Interviews will begin with your self-report on listening studies. Then, the researcher will explain LIDs variables (language learning aptitude, working memory capacity, listening motivation, metacognitive awareness and learning style preferences) one by one to you, followed with a relevant question. You are encouraged to provide your understanding about this question. The whole interview will be recorded based on the CF that you will be requested to sign. After completing the interview, full right is given to you if you want to make any revisions about your recorded interviews. You are also invited to report on your listening processes every three weeks within the whole research period (an academic year). There is no time and word limitation for completing your listening diaries, you can spend as much time as you like. You are required to write with the guidance of the prompts provided by the researcher. Besides, you are also encouraged to report anything you want to share or anything that is related to learning how to listen. Finally, interviews and diaries will be recorded, translated and then analysed in detail in relation to LIDs.

As the final 8 participants, you will be paid 100 yuan for your participation in longitudinal multiple-case studies. I am also willing to provide help and explanation on how to listen to those who are interested but who are not selected as participants in the case study.

Data storage/retention/destruction/future use

Hard copy data (i.e., your diaries, your personal information form, your consent form, etc.) will be securely stored in a locked cabinet at the University of Auckland and electronic data (i.e., the recorded interviews) will be stored on my computer, which is password protected. After six years, all hard copy data will be shredded and the digital information will be deleted permanently. The data collected will be used for my PhD thesis at the University of Auckland, and may be used for academic publications, and conference presentations. If you want a summary of the research, you can indicate this on the consent form, and I will send a summary to you.

Right to withdraw from participation

Once involved, you are entitled to withdrawal at any time of the study or demand for returning or deletion of any data provided by you at any time before 1st May, 2015 without having to give a reason. You have the right not to answer any specific question in interviews and turn off the recorder at any stage of the interview. The Dean will be required to give an assurance that your participation or withdrawal will not affect the normal courses, grade, or relationship with the faculty.

Anonymity and confidentiality

Anonymity cannot be guaranteed due to the nature of interview. But you will be interviewed individually with the researcher. Your identities will only be known to the researcher. Listening diaries are to be collected from you every three weeks to track the on-going development of listening proficiency. You are invited to hand in your diaries either in person or through e-mail. You will be identified by the unique code you selected in the quantitative studies. No identifying information will be disclosed to a third party. Confidentiality is assured. If the information you provide is reported/published, pseudonyms or the unique identification code will be used to protect your identity.

Thank you for taking the time to read this information sheet. If you have any inquiries or questions, please do not hesitate to contact me or my supervisors.

Yours sincerely,
Pengyun Chang

Contact details

Researcher	Main supervisor	Co-supervisor
Pengyun Chang School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. p.chang@auckland.ac.nz Ph: +64 09 373 7599 ext. 84194 <u>Local contact in China</u> Ph:+86 13834537632	Professor Lawrence Jun Zhang Associate Dean International Strategic Engagement, School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. lj.zhang@auckland.ac.nz Ph: +64 9 6238899 ext: 48750	Professor Judy Parr Head of the School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. jm.parr@auckland.ac.nz Ph: +64 09 623 8899 ext: 88998.

You may also contact the head of the School of Curriculum and Pedagogy, Professor Judy Parr by jm.parr@auckland.ac.nz or +64 09 623 8899 ext. 88998.

For any queries regarding ethical concerns, you may contact the Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Office of the Vice Chancellor, Private Bag 92019, Auckland, 1142. Telephone: 09 373-7599 ext. 83711.

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 28 OCTOBER 2014 for (3) YEARS, REFERENCE NUMBER 013063.

CONSENT FORM

(Students of the longitudinal multiple-case studies)

(THIS FORM WILL BE HELD FOR A PERIOD OF 6 YEARS)

Project title: A Complex Dynamic Systems Theory Perspective on Learner Individual Differences in Second Language Listening Development

Researcher: Pengyun Chang

I have read the Participant Information Sheet, and understood the nature of the research and why I have been selected. I have had the opportunity to ask questions and have them answered to my satisfaction.

- I agree to take part in this research.
- I understand that I am free to withdraw participation at any time, and to withdraw any data traceable to me up to before 1st May, 2015.
- I agree / do not agree to be audio taped.
- I wish / do not wish to have my tapes returned to me.
- I wish / do not wish to receive the summary of findings.
- I agree to not disclose anything tested in the tests and questionnaires.
- I understand that data will be kept for 6 years, after which they will be destroyed.
- I wish to receive a copy of the research findings.

Name: _____

E-mail address: _____

Signature: _____

Date: _____

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Appendix XIV: Advertisement

Get a free chance to improve your English listening!

Dear undergraduate students:

If you are eager to improve your English listening and in particular are interested in your listening processes and problems, the following research project offers the best opportunity for you.

Here is the information about the research:

My name is Pengyun Chang, a PhD candidate at the School of Curriculum and Pedagogy, Faculty of Education and Social Work, University of Auckland. I am conducting research on Chinese university students' listening to English as a foreign language. By this advertisement, I invite you to join the project. This project and this advertisement have been approved by The University of Auckland Human Participants Ethics Committee.

Basically, there are two parts in this project. In the first part of the project, 300 participants are needed. Each of you will be required to do listening exercises in English, take a series of learner individual differences (LIDs) tests, and answer several questions in questionnaires. All your personal information will be protected. After completing the first part of this study, the second part of this study is designed to explore your listening processes and methods after listening classes. Those who are willing to participate for the second part of the project can contact the researcher in person or by email. As the participants in this part, you will be interviewed four times individually (at the beginning, in the middle, and at the end of the year). Listening diaries are to be collected from you every three weeks to track the on-going development of your listening proficiency.

Your benefits for participation in the first part of the project will include detailed feedback on how to improve listening proficiency as second language learners. Those participate in the second part of this study will be paid 100 yuan ultimately. I am also willing to provide help and explanation on how to listen to those who are interested but who are not selected as participants in the case study.

You are cordially invited to join my PhD research and your participation is highly appreciated. I have initially contacted your university, and gained permission to ask for your involvement. If you have any inquiries or questions, please do not hesitate to contact me for more information and participation methods by sending email to p.chang@auckland.ac.nz. I am looking forward to your participation.

Yours sincerely,
Pengyun Chang

Contact details

Researcher	Main supervisor	Co-supervisor
Pengyun Chang School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. p.chang@auckland.ac.nz Ph: +64 09 373 7599 ext. 84194 <u>Local contact in China</u> Ph:+86 13834537632	Professor Lawrence Jun Zhang Associate Dean International Strategic Engagement, School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. lj.zhang@auckland.ac.nz Ph: +64 9 6238899 ext: 48750	Professor Judy Parr Head of the School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. jm.parr@auckland.ac.nz Ph: +64 09 623 8899 ext: 88998.

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Appendix XV: Thank you letter

Thank-you letter

Dear participants:

Thank you very much for your interest and agreement to join this research. Due to sufficiency of recruitment, I am sorry to inform you that you are not chosen in this research. This is a random selection. Everyone has an equal chance and there is no bias and unfairness in the process of selection.

Your intention to participate has been highly appreciated.

If you have any doubts or questions, please write to p.chang@auckland.ac.nz. I will be pleased to answer them.

Yours sincerely,

Pengyun Chang

Contact details

Researcher	Main supervisor	Co-supervisor
Pengyun Chang School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. p.chang@auckland.ac.nz Ph: +64 09 373 7599 ext. 84194 <u>Local contact in China</u> Ph:+86 13834537632	Professor Lawrence Jun Zhang Associate Dean International Strategic Engagement, School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. lj.zhang@auckland.ac.nz Ph: +64 9 6238899 ext: 48750	Professor Judy Parr Head of the School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland Gate 3, 74 Epsom Ave, Auckland. jm.parr@auckland.ac.nz Ph: +64 09 623 8899 ext: 88998.

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