EFL LISTENING COMPREHENSION, COGNITIVE AND METACOGNITIVE STRATEGIES AND WORKING MEMORY

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ABSTRACT

The purpose of this study is to compare the pedagogic efficiency of two methods for teaching listening comprehension: the *cognitive strategy-based instruction method* (CSBM) and the *metacognitive strategy-based instruction method* (MetSBM).
Both instruction methods are inspired by cognitive linguistics. While CSBM is a traditional and well-established method for teaching listening comprehension in an EFL context, MetSBM is a relatively recent method.

Additionally, this study aims to evaluate the way in which three co-variables – *vocabulary knowledge, word recognition and working memory* – contribute to individual differences in listening comprehension. The subjects of this study, 44 female students studying on an intensive English programme at the University of Sharjah in the United Arab Emirates (UAE), were placed in two groups and taught a range of listening comprehension strategies, in accordance with the MSBM and the mainstream CSBM.

In order to assess the pedagogical value of both methods, a listening comprehension test (LCT) was used as a pre- and post-test. An adapted Metacognitive Awareness Listening Questionnaire (MALQ) was additionally used to measure the degree of the participants' metacognitive awareness in relation to their listening comprehension abilities. As for the co-variables, four pre- and post-tests were conducted: the Vocabulary Knowledge Test (VKK1) and (VKK2) to measure the students' vocabulary knowledge, the Aural Word Recognition (AWR) test to measure the participants' ability to recognise words in a spoken passage, the Orthographic Word Recognition (OWR) test to gauge the students' ability in recognising written words and finally a Working Memory Span (WMS) test to measure the participants' WM capacities while listening for comprehension.

The results of the post LCT suggest that the newer MetSBM approach is more effective for teaching and learning how to listen for comprehension than the traditional CSBM. Similarly, MetSBM had a greater impact in raising metacognitive awareness among the participants of the experimental group in relation to their comprehension abilities. In total, my results show that six variables come into play in the experimental participants' listening comprehension: Aural Word Recognition (AWR), MALQ Planning/Evaluation, Orthographic Word Recognition (OWR), MALQ Problem-solving, MALQ Directed Attention, and Working Memory (WM). With regard to the control participants, four variables were involved with their listening comprehension: Aural Word Recognition, Working Memory, decrease in MALQ Mental Translation, and MALQ Person Knowledge.

In the light of these findings, a number of recommendations to teachers, material developers and researchers are provided.

My study contributes to the field of listening comprehension in an Arab context, a setting that has so far received little attention. It reveals how listening comprehension has so far been treated in the English syllabuses directed at UAE learners. In addition, it equips English teachers with feasible ways of teaching listening comprehension more efficiently, thereby improving the learners' ability to apply both cognitive and metacognitive strategies more easily. In addition, the present study helps material developers to include metacognitive strategies as well as word recognition-based activities in their listening comprehension materials. Finally, and importantly, my study addresses some of the pitfalls of previous studies on teaching listening strategies within the framework of cognitive linguistics.

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LIST OF ABBREVIATIONS

AWR = Aural Word Recognition
AWRT = Aural Word Recognition Test
BICS = Basic International Communication Skills
BNC = British National Corpus
CALP = Cognitive/Academic Language Proficiency
CANCODE = Cambridge and Nottingham Corpus of Discourse
CEFR = Common European Framework of Reference
CLA = Communication Language Ability
CSBM = Cognitive Strategy-Based Method
CUP = Common Underlying Proficiency
EFL = English as a Foreign Language
ESL = English as a Second Language
IELTS = International English Language Testing System

VKK1 = 1st Thousand Words

VKK2 = 2nd Thousand Words

L1 = First Language

L2 = Second Language

LCT = Listening Comprehension Test

MALQ = Metacognitive Awareness Listening Questionnaire

MetSBM = Metacognitive Strategy-Based Method

NLs = Native Listeners

NNLs = Non-Native Listeners

OQPT = Oxford Quick Placement Test

OWR = OrthographicWord Recognition

OWRT = Orthographic Word Recognition Test

SLA = Second Language Acquisition

STM = Short-Term Memory

TOEFL= Test of English as a Foreign Language

UAE = United Arab Emirates

VLT = Vocabulary Level Test

WM = Working Memory

WMST = Working Memory Span Test

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CHAPTER 1 INTRODUCTION

1.1 Statement of the Problem

Teaching listeningcomprehensionto second language (L2) learners has changed considerably over the last few decades, yet learners still struggle with the task of language learning. L2 learners continue to face challenges inside and outside the classroom as they try to improve their listening comprehension abilities (Vandergrift &Goh, 2012). Listening is a highly complex skill, involving both linguistic and non-linguistic knowledge. Linguistic knowledge includes phonology, vocabulary, syntax, semantics, discourse and pragmatics (Buck, 2001). Phonology facilitates the segmentation process. Vocabulary allows the listener to recognise words and phrases. Syntax helps listeners to recognise phrases and clauses – as parts of the cohesive and coherent aspects of a passage – and then inflect them (Celce& Olshtain, 2000). Both syntax and semantics allow listeners to interpret sentences (Anderson, 1995). Discourse knowledge facilitates the understanding of text organisation. Finally, pragmatics helps listeners to construct the implied or contextual meaning of an utterance (Rost, 2002). Non-linguistic knowledge, on the other hand, consists of knowledge about the topic, the context, as well as general knowledge of the world and how it works (Anderson, 2005; Buck, 2001).

Further complexity with regard to listening arises from the way in which the type of knowledge outlined above is applied to the incoming sound. Indeed, the processing of different types of knowledge does not occur in a fixed linear way. Instead, various types of processing can occur simultaneously, or at any convenient sequence (Buck, 2001). Thus, for instance, syntactic knowledge might be applied to recognise words, or knowledge of the context might be used to interpret the meaning (Buck, 2001). In other words, listening is the result of an interaction between a number of information sources, including the acoustic input and the different types of linguistic knowledge outlined above.

Equally critical is the gap that exists between the interests of second language research and classroom practitioners (Berne, 1998). Research does not always translate into practice and despite the fact that researchers advocate that consciousness or a metacognitive awareness-raising approach to listening comprehension instruction contributes to listening comprehension, many new EFL textbooks still advocate a traditional approach to listening (Vandergrift & Goh, 2012).

The present research aims to apply insights from cognitive linguistics – in particular from metacognition – to the teaching of listening comprehension as an attempt to bridge the gap mentioned above.

1.2 Significance of the study

By researching the applicability and effectiveness of metacognitive strategies in listening comprehension instruction, the study aims to change the way in which listening comprehension is approached in the classroom.

First, I will attempt to provide teachers with methods that can be used in the teaching of listening. Second, I will attempt to show that metacognitive strategies, previously considered too demanding to apply, can, in fact, be grasped and applied to listening comprehension activities. The anticipated findings of the research may lead to the inclusion of activities that are based not only on cognitive strategies, but also on the metacognitive ones that are relevant to the teaching of listening comprehension in the UAE and other comparable EFL contexts.

1.3 Overview of the chapters

The study consists of seven chapters divided into two main parts. The first concerns the theoretical basis of the thesis (chapters 2 and 3) and the second part is concerned with the experimental study (chapters 4 to 7).

In **chapter 2**, some of the theoretical aspects of my thesis are investigated. In the first section, I will focus on the definition of listening comprehension, shed light on three models of listening comprehension related to the present study and show the importance of listening comprehension both for communication and foreign language learning. In section 2.2, vocabulary knowledge will be elaborated on, including its importance, aspects and relationship with listening comprehension. Section 2.3 deals with four aspects related to the present study: the characteristics of word recognition and its importance for listening comprehension, Anderson’s (1995) model of listening comprehension with relation to word recognition,knowledge sources of aural word recognition; summaries of four studies investigating the relationship between word recognition and listening comprehensionand obstacles to aural word recognition in L2 listening comprehension.

Section 2.4deals with the definition of working memory and its importance for cognitive psychology in general and language learning in particular, sheds light on the differences between working memory and short-term memory and concludes with providing summaries of two studies investigating the relationship between working memory and EFL listening comprehension. In section2.5, an overview of the major approaches and methods that have been used to teach listening comprehension will be discussed. Finally, section 2.6 deals with the impact of L1 listening comprehension on L2 listening comprehension.

Chapter 3, section 3.1, discusses the definition of language learning strategies, their types and importance. In section 3.2, the first type of language learning strategies, namely cognitive strategies, will be explored by providing their definition, types and importance. Section 3.3 deals with the second type of language learning strategies: metacognitive strategies, by providing their definition, types and importance. In addition, this section deals with the importance of metacognitive knowledge, its components and concludes with the importance of metacognitive strategies for listening comprehension. In section 3.4, the relationship between language learning strategies and language teaching will be explored by giving their history in brief, shedding light on embedded and explicit language strategy training and relating language learning strategies to listening comprehension. Finally, section 3.5 discusses the factors that affect language learning strategies.

Chapter 4 deals with methodology: I will define the treatment and elaborate on the two methods of instruction in accordance with which the listening comprehension strategies were delivered to the experimental and control groups. I will also elaborate on the sample lessons designed for the treatment. Subsequently, I will discuss the pilot study, the study's pre-and post-treatment instruments and other issues pertinent to the present study. Finally, I will provide an explanationof the study stages and explore the methods of data analysis.

Chapter 5 examines the results of the study. I will analyse the data collected from the study tests and the questionnaire, report on the main study findings and compare the figures obtained by the experimental and control groups.

Chapter 6 discusses the general hypothesis and research questions of the study in the light of my findings. More precisely, I will verify whether my data confirm or refute the original hypothesis. I will try to evaluate the extent to which the experimental participants succeed in implementing the metacognitive strategies taught in the listening comprehension activities and check whether there are other variables which could be used as predictors of listening comprehension.

Chapter 7 presents the conclusions of the thesis.In this chapter, the main findings are highlighted and the pedagogical implications are discussed. In addition, the limitations of the study will be discussed.

CHAPTER 2 KEY CONCEPTS IN L2 ACQUISITION AND COGNITIVE LINGUISTICS

This chapter deals with the literature pertinent to the theoretical aspects of my study. Section 2.1 deals with the key concepts and central issues of listening comprehension and sections 2.2, 2.3 and 2.4 investigate the predictors of listening comprehension in the present study, namely vocabulary knowledge, word recognition and working memory, respectively. Section 2.5 deals with the impact of L1 listening comprehension on L2 listening comprehension. Finally, section 2.6explores the different approaches to teaching listening.

2.1 Second Language Acquisition: Key Concepts and Central Issues

This section focuses particularly on SLA key concepts and central issues relating to the core area of this research. The first part of this section deals with the definition and construct of listening comprehension. The last two parts explore the models of the listening process and the importance of listening, respectively.

2.1.1 Definition of listening comprehension

Although the literature on listening provides a variety of definitions, many researchers (e.g., Buck, 2001; Lynch & Mendelsohn, 2002; O'Malley et al., 1989; Richards et al., 1992; Vandergrift, 1999) agree that listening is an active *process*. According to Buck (2001), for instance, listening comprehension is an active process of constructing meaning and this is performed by applying knowledge to the incoming sounds. Gary (1978) describes listening as an active process in which students' listening competence can be expanded by orally giving them non-verbal tasks to carry out. Lynch and Mendelsohn (2002) claim that listening comprehension consists of a variety of related processes comprising oral word recognition, perception of intonation patterns and interpretation of the relevance of what is being said to the current topic. Finally, for O'Malley and colleagues (1989), what makes listening an *active* process is that listeners focus on selected aspects of the aural input and construct meaning by relating what they hear to their prior knowledge. From these elaborations on the active aspect of the listening process, we can also infer that the listening process is *complex* (Anderson, 2005; Buck, 2001; Vandergrift, 1999).

While the above researchers focus on the active process of listening comprehension, others define listening comprehension in a general way. Rost's (2002) description of the construct of listening comprehension, for instance, is characterised by four *orientations* or perspectives:*receptive, constructive, collaborative,* and *transformative*. Rost (2002) elaborates on these perspectives as follows: listening is receptive as it involves receiving the speaker's speech. Listening is constructive as it involves constructing meaning and presenting it. Listening is collaborative as in real-life situations, listeners negotiate meaning with speakers. Finally, listening is transformative as it involves "creating meaning involvement, imagination and empathy" (p. 3).

To conclude, this broad picture of listening comprehension with its complex and active nature constitutes the definition adopted in the present study. Such a definition of listening comprehension requires researchers and practitioners to define and apply appropriate models of listening processing.
This leads toa discussion of the major models of the listening process pertinent to the present study.

2.1.2 Models of the listening process

In this section, the three most widely known models of the listening processare reviewed(Flowerdew & Miller, 2005), namely the *bottom-up* model, the *top-down* model and the *interactive* model.

The bottom-up model

The term *bottom-up* itself implies that in order to understand a message, listeners begin with the text itself (Johnson, 2001). In other words, the basis for understanding a message is the incoming input (Richards, 2008). According to this model, listeners build understanding by beginning with individual sounds, or phonemes (the smallest units of the acoustic message). These units are then combined into words to make up phrases, clauses and sentences. Finally, sentences are combined to generate ideas and concepts and establish relationships between them. According to this model, listeners apply the different knowledge necessary in the listening process in a *serial* and *hierarchical* way (Flowerdew & Miller, 2005).

The top-down model

The term *top-down* implies that the starting point in constructing meaning from the input is the listener's mind (Johnson, 2001). In other words, top-down processing allows listeners to construct (Nunan, 2002; Richards, 2008), reconstruct, or create meaning from the speaker's message(Rost, 2001; Rowlands, 2005). Thus, top-down is a *concept-drivenprocessing* model (Johnson, 2001) as opposed to bottom-up which is a *data-driven processing* model (Richards, 2008). The components that contribute to top-down processing in facilitating the construction, reconstruction or creation of the speaker's message are context and prior knowledge. Context implies that top-down processes are based on listeners' expectations (Rost, 2001, 2006; Peterson, 2001; Richards, 2008; Rowlands, 2005). Prior knowledge, as defined by Vandergrift and Gogh (2012), is "all conceptual and life experiences that language learners have acquired and are available for comprehension purposes" (p. 65).

This leads to the third model of the listening process: the interactive model.

The interactive model

It is important to note that although the interactive model established by Rumelhart (1973) was developed within the context of reading, it applies equally well to listening comprehension (Flowerdew & Miller, 2005) as both skills are receptive and share many characteristics. For more information about the similarities between listening and reading, see section (3.3.1).According to Rumelhart (1973), what makes the listening process interactive is that language is processed simultaneously at different levels. In addition, this *parallel processing* allows the interaction of various types of knowledge, namely phonology, syntax, semantics and pragmatics (Flowerdew & Miller, 2005).

To sum up, since listening is a complex and active process, it requires an interactive model that includes both bottom-up and top-down processes working simultaneously. This allows listening to regain its legitimacy as a skill similar to the other three.

2.1.3 The importance of listening

There is no communication without listening (Brown, 2001; Peterson, 2001; Richards, 2008; Rost, 2001). Gary (1978) argues that there are four dimensions to the importance of listening: the cognitive, utility, efficiency and affective dimensions.

Regarding the cognitive dimension, L2 listening plays a crucial role in the language process (Vandergrift, 1999) since listening provides learners with the input and data they receive throughout their language learning process (Rivers, 1981). Brown (2001) advocates that in the reception of the L2 language input, learners internalise the linguistic information necessary to produce language. With regard to the importance of the input provided by L2 listening, Peterson (1991) argues that L2 learners benefit from such an input in all their learning stages: beginning, intermediate and advanced levels.

Foreign language learners need listening as a receptive skill more than as a speaking skill (Gary, 1978; Richards, 2008; Rivers, 1981; Vandergrift, 1999). There are many reasons for the primacy of listening. First, since listening now constitutes a core component of language proficiency tests, it is an essential skill for university entrance exams (Richards, 2008). When learners believe in the utility of listening, they are motivated to carry out a variety of activities such as listening to the radio, watching television and reading (Gary, 1978). Finally, adults spend about 40% to 50% of communication time listening, 25% to 30% speaking, 11% to 16% reading, and about 9% writing (Rivers, 1984).

Concerning the efficiency of listening, research shows that language teaching and learning should start with listening comprehension. One of the reasons for this is stated by Peterson (2001) who argues that "no other type of language input is as easy to process as spoken language; received through listening" (p. 106). In other words, exposure to listening before starting to produce language allows learners to learn more meaningful language used earlier in the course since learners can utilise all the limited attention resources of short-term memory (STM) to concentrate on meaning. This facilitates the acquisition of other skills (Vandergrift, 1999).

Finally, regarding the psychological or, specifically, the affective importance of listening, Gary (1978) and Vandergrift (1999) have shown that exposure to listening prior to language production reduces pressure on learners. Postponing L2 production until a later stage of the learning process makes learners feel relaxed, stress-free and less embarrassed, which promotes their concentration on the L2 language input and leads to much more effective language learning. To emphasise the affective importance of an initial focus on listening in the learning process, Gary (1978) adds that even an apparently *simple* production task such as mere mimicry requires considerable effort in addition to that necessitated by decoding. Thus, enabling learners to feel relaxed allows them to promote their listening skills and internalise the rules facilitating the acquisition of other skills, as well as enhancing their motivation to learn (Vandergrift, 1999).

Listening is therefore,an essential skill that plays a manifold role: communicative, cognitive, linguistic, pedagogical, academic and psychological.

To sum up this section, listening is a complex and active skill whose role is essential in many aspects of language learning.

An aspect of the complexity of the listening skill is the complexity of 'bottom-up' processing which, as outlined above, includes a variety of linguistic knowledge. In this respect, the following section discusses the role of vocabulary knowledge andmore precisely it sheds light on one of the roles of vocabulary knowledge as a major predictor of L2 listening comprehension.

2.2 Vocabulary Knowledge as a Predictor of Listening Comprehension

The present section is central to this study as it deals with vocabulary knowledge – an independent variable and predictor of comprehension, in general, and listening comprehension, in particular.

2.2.1 Vocabulary knowledge

I begin by discussing the importance of vocabulary knowledge followed by anelaboration on two of its aspects, namely breadth or size, and depth.

The importance of vocabulary knowledge

Vocabulary knowledge has regained its importance in language teaching and learning (Henriksen, 1999; Koda, 2005; Mukaro, 2005; Vermeer, 2001). This growing interest in vocabulary knowledge has two major elements. First, vocabulary is now recognised as a component of language proficiency (Vermeer, 2001). Vermeer (2001) considers knowledge of words as the most important factor in language proficiency and school success. A major reason for this is the close relationship between vocabulary and comprehension (Koda, 2005; Vermeer, 2001). Koda (2005) argues that the knowledge of individual word meanings is a key factor in successful comprehension of meaning. Words, according to Vermeer (2001), are the carriers of meaning. Therefore, without knowledge of words, understanding sentences or texts is not possible. This means that vocabulary and comprehension are mutually interdependent (Koda, 2005). Second, research in vocabulary acquisition has established itself as a central focus for language acquisition research (Henriksen, 1999). Moreover, in the last two decades, research in second language vocabulary acquisition has received considerable attention (Mukaro, 2005).

Aspects of vocabulary knowledge

This section deals with two major aspects of vocabulary knowledge: breadth or size, and depth.

1. Breadth of vocabulary knowledge

Researchers define breadth or size of vocabulary knowledge as the number of words that a learner knows or for which the learner knows at least some of the significant aspects of meaning (Anderson & Freeboy, 1981; Gass & Selinker,2008; Nassaji, 2004;Nation, 2001; Vermeer, 2001). Research into L2 vocabulary size has become a significant area in second language acquisition (Read, 2004; Zareva, et al., 2005). In this respect, Meara (1996a) notes that:

> the basic dimension of lexical competence is size. All other things being equal, learners with big vocabularies are more proficient in a wide range of language skills than learners with smaller vocabularies, and there is some evidence to support the view that vocabulary skills make a significant contribution to almost all aspects of L2 proficiency. (p. 37)

In other words, vocabulary size has a strong relationship with language proficiency. Researchers have shown that the size of vocabulary knowledge plays a significant role in comprehension (Gass & Selinker, 2008).

Equally important, knowledge of the first three-thousand word lists (K1, K2, K3) isthe highest predictor of L2 listening comprehension(Matthews & Cheng, 2015). Matthews and Chang argue that familiarity with these three lists in general, and K1 and K2 in particular, enables L2 learners to become more effective in recognising high frequency words from speech.

2. Depth of vocabulary knowledge

There is a general consensus that depth of vocabulary implies quality (Anderson & Freeboy, 1981; Read, 1993; Stæhr, 2009; Meara, 1996; Nassaji, 2000). There is also a general consensus that a major characteristic of the depth of vocabulary knowledge is its complexity and multi-dimensionality (Vermeer, 2001). In other words, depth of vocabulary knowledge embodies different dimensions. These dimensions are thematic, phonological, morphological, conceptual and sociolinguistic (Vermeer, 2001). Richards (1976) provides the following assumptions concerning what it means to know a word.

1. Knowing a word means knowing the degree of probability of encountering that word in speech or print. For many words, we also "know" the sort of words most likely to be found associated with the word.
2. Knowing a word implies knowing the limitations imposed on the use of the word according to variations of function and situation.
3. Knowing a word means knowing the syntactic aspects associated with that word according to variations of function and situation.
4. Knowing a word entails knowledge of the underlying form of a word and the derivations that can be made from it.
5. Knowing a word entails knowledge of the network of associations between that word and the words in language.
6. Knowing a word means knowing the semantic value of a word.
7. Knowing a word means knowing many of the different meanings associated with the word. (pp. 78-83)

Thus, knowing a word is "a multi-faceted task for language users" (Meara,1996a, p. 46). To conclude this section, vocabulary knowledge – size and depth – is essential for language proficiency, as it is directly associated with language comprehension.In addition, the size and breadth of vocabulary knowledge determine learners' language proficiency.

In order to emphasise the impact of vocabulary knowledge on language comprehension, the following section summarises some studies conducted on one aspect of language comprehension, namely listening comprehension.

2.2.2 Relationship between vocabulary knowledge and listening comprehension

The present section focuses on the summaries of three studies investigating the impact of vocabulary knowledge onlistening comprehension. The first study is selected because it investigates the relationship between vocabulary knowledge and listening comprehension from four different aspects. Two of these aspects: familiar vocabulary and listening comprehension and threshold vocabulary size are related to the present study. The second study is summarised because it is relatively recent and some of its results illustrate the impact of vocabulary size and depth of vocabulary knowledge on listening comprehension outlined in section 2.2.1 in the present study. As for the third study, it is selected because it investigates the impact of the second 1,000 word list on L2 listening. In the present study, the vocabulary level test (VLT) includes both the first and second 1,000 word lists. That would allow me to compare the impact of the second 1,000 word list in the present study with that of the same list used in the summarised one.

Study 1: Second language lexical knowledge and listening comprehension

In a study that focused exclusively on the relationship between vocabulary knowledge and L2 listening comprehension, Bonk (2000) tested 59 Japanese university students of English with various levels of L2 proficiency, ranging from low intermediate to advanced level (TOEFL scores of approximately 400-580). Bonk's aim was to investigate the interaction between lexical knowledge and listening comprehension in a second language. The study examined four major aspects. First, it investigated whether there was a correlation between the listening comprehension scores and the amount of familiar lexis as a predictor of listening comprehension. Second, Bonk wanted to find out if there were significant differences between the dictation scores, as associated with *Good* and *Inferior* comprehension. Third, the study investigated whether there was a threshold percentage of familiarity-lexis resulting in *inferior*- comprehension among the majority of the participants. Finally, Bonk wanted to find out whether the low, middle and advanced L2 listening comprehension participants performed similarly on comprehension tasks at similar levels of known text-lexis percentages.

The participants listened to four comprehension passages of increasing lexical difficulty and were tested using L1 recall protocols to test comprehension and dictation to test lexical familiarity. The study showed that, overall, the higher dictation scores had better comprehension on the recall measures, which implied that successful listening comprehension depended on vocabulary knowledge. Nevertheless, the participants managed to attain good comprehension scores even though their lexical scores on the vocabulary test were as low as 60% of the overall score. It is important to note that the study did not point to a particular lexical threshold for achieving a good comprehension score across all participants as was hypothesised in one of the research questions.

Study 2: Vocabulary knowledge and advanced listening comprehension in English as a foreign language

A more recent study (Stæhr, 2009) showed more impressive evidence (Vandergrift & Goh, 2012) of the relationship between listening comprehension and vocabulary knowledge. Stæhr's study investigated the contribution of the breadth and depth of vocabulary knowledge to advanced L2 learners' listening comprehension. More specifically, the study examined the extent to which vocabulary knowledge, size and depth is associated with listening comprehension. The study also estimated the size of vocabulary needed for adequate listening comprehension. The participants were 115 Danish EFL learners who were first-year students of English studying at a business school. Three tests were administered to all the participants: a listening comprehension test, a vocabulary size test, and a vocabulary knowledge test. Vocabulary size contributed much more to listening comprehension success than vocabulary depth, suggesting that vocabulary size is the basic component of vocabulary knowledge. Moreover, the results suggested that a lexical coverage of 80% is needed for coping with texts.

Another dimension that listening research has shown is the size and quality of vocabulary required for listening comprehension processing. Two studies, Adolphs and Schmitt's (2003) and Nation's (2006) are summarised in this respect.

Study 3: Lexical coverage of spoken discourse

In their study, Adolphs and Schmitt (2003) sought to discoverwhether there was a vocabulary threshold necessary to understand any spoken discourse. Their aim was to verify whether the 2,000 word family coverage figure from the Schonell and colleagues' (1956) corpus would be confirmed by a similar analysis of the newer and more representative Cambridge and Nottingham Corpus of Discourse (CANCODE) corpus. In order to do this, Adolphs and Schmitt replicated the Schonell and colleagues' (1956) word count analysis, but used the CANCODE corpus rather than the Schonell and colleagues' (1956) limited corpus (512,645 words). The procedure consisted of two stages. In the first stage, they analysed the CANCODE corpus and found that 2,000 word families covered only about 95% of general spoken discourse. In the second stage, Adolphs and Schmitt analysed both the British National Corpus and the CANCODE data. The analyses showed that the lower coverage for the analysis was based on word forms rather than word families. More precisely, the speakers of English needed approximately 5,000 individual words in order to achieve the 96% coverage figure which was realized by almost 3,000 word families. Adolphs and Schmitt concluded that a greater vocabulary size was necessary in order to establish an everyday spoken discourse, implying that more emphasis on vocabulary development was required as part of oral/aural improvement.

To conclude this section, vocabulary knowledge, particularly its size, is a predictor of L2 listening comprehension. It allows L2 learners to maintain the balance between the bottom-up processes for lower order ideas, on the one hand, and the top-down processes for higher order ideas, on the other. In addition, a vocabulary size that includes a variety of word types is a prerequisite for L2 listening comprehension.

Since familiarity with L2 vocabulary has been proven to contribute to L2 listening comprehension, the present study investigates whether or not word recognition predicts L2 listening comprehension. Thus, the following section deals with thispredictor of L2 listening comprehension.

2.3 Word Recognition as a Predictor of Listening Comprehension

This section deals with the contribution of word recognition to listening comprehension. The first part of this section deals with the characteristics of word recognition – orthographic word recognition (OWR) and aural word recognition (AWR) - and its importance for listening comprehension with relation to word recognition. The second part outlines Anderson's (1995) model of listening comprehension. The third part investigatesthe types of knowledge sources of word recognition. The fourth part summarises four studies pertinent to aural word recognition and the final part outlines the main obstacles to aural word recognition.

2.3.1 Characteristics of word recognition and their importance for listening comprehension

a. Orthographic word recognition

Penke and Schrader (2008) define written or visual word recognition as “the ability to efficiently decode printed words” (p. 167). It involves two cognitive abilities: a phonological component and an orthographic one (Rumsey et al., 1997). The phonological component is defined as “the ability to use the speech code to store and retrieve information […], a process involved in the ‘sounding out’ of words” (Rumsey et al., 1997, p.167). The orthographic component is defined in a less explicit and less consistent way. Olson and colleagues (1990), for instance, define it as “the process whereby one gains access to the lexical representation of printed words without phonological mediation” (p. 167). Shaywitz and colleagues (1995) define the orthographic component as the ability of “operationaliz[ing] with tasks requiring visual feature analysis” (p. 167). Vellutino and colleagues (1994) define the orthographic component as “a coding ability that depends heavily on both visual analysis and linguistic patterns, e.g., letter-sound in variances, sequential dependencies, structural redundancies [and] letter position frequencies” (p. 167).

These definitions show that there is a controversial issue regarding whether or not orthographic word recognition includes both a phonological and an orthographic component.

Despite this controversy, there is evidence in the literature (e.g., Rumsey et al., 1997) that orthographic word recognition includes both components. Thus, the following part deals with the role of these two components.

i. The role of phonology in visual word recognition

Although the role of phonology in visual word recognition still remains unclear and research has led to conflicting results, there is evidence in the literature that word phonology impacts visual or orthographic word recognition(Penke & Schrader, 2008). In addition, backward masking experiments in which a target word is quickly presented and then followed by a pseudo-word mask enabledbetter identification of the target than graphemically unrelated control masks (Penke & Schrader, 2008). Moreover, semantic decision tasks have shown that phonology influences visual word recognition (c.f. Orden, 1987).However, other researchers (e.g., Juel et al., 1986; Nation & Snowling, 2004), argue that while developing a basic level of phonological sensitivity can certainly be beneficial, efficient word recognition and successful comprehension of texts require more than mapping sounds to letter strings. This implies that although phonology plays a role in orthographic word recognition, this role is limited.

ii. The role of orthographic knowledge in visual word recognition

According to Perfetti (1985), orthographic knowledge refers to "the knowledge a reader has about permissible letter patterns" (p. 47). Consistent with this, Vellutino and colleagues (1994) define the term with more specification: orthographic knowledge suggests "the ability to represent the unique array of letters but define a printed word, as well as the general attributes of the writing system such as segmentation dependencies, structural redundancies, and letter position frequencies" (p. 314). Based on this definition, orthographic knowledge can be categorised into two main types: word-specific orthographic knowledge and general orthographic knowledge (Hagiliassis et al., 2006; Vellutino et al., 1994).

Hagiliassis and colleagues (2006) define word-specific orthographic knowledge as "the knowledge of the unique arrays of letters that define printed words" (p. 236). Apel (2011) refers to word-specific orthographic knowledge as "mental graphemic representations (MGRs) (p. 591) and defines it as "the stored mental representations of specific written words or word parts" (p. 591). According to Apel (2011), MGRs knowledge allows individuals with a clear mental image of a particular word to write and read the word correctly. Word-specific knowledge relates to real words that children have just learned to identify and can be measured "using choice tasks in which one word is a real word (e.g., rain, rane)" (p. 739).

Hagiliassis and colleagues (2006) define general orthographic knowledge as "awareness of the general attributes of the writing system, such as sequential dependencies, structural redundancies and letter position frequencies" (p. 237). According to Loveall and colleagues (2013), general orthographic knowledge relates to individuals' sensitivity to legal and probable letter combinations. It is measured by "using choice tasks in which neither choice is a real word" (p. 739).

The impact of orthographic knowledge is most obvious in tasks requiring the recognition of exception words. According to Ricketts and colleagues (2008), students' poor underlying orthographic skills could be manifested by their difficulty with identifying exception words such as 'colonel,' 'yacht,' and 'plead'. Exception words as such are problematic, as they are irregular with respect to the common grapheme-phoneme correspondences. If students are unfamiliar with those words, they can easily misidentify them. Therefore, orthographic knowledge allows learners to spell exception words in full and avoid misidentification (Hagiliassis et al., 2006).

Similarly, orthographic knowledge is obvious in tasks requiring the recognition of homophones. Recognising homophones relies substantially on orthographic knowledge during which phonological awareness only plays a minimal role (Scholes, 1988). Lack of orthographic knowledge can cause readers to interpret homophones such as 'bare/bear,' 'won/one,' and 'sea/see' interchangeably as they sound alike. Therefore, in order for students to accurately access the meaning of homophones, they need to learn the specific letter order that defines the target word (Scholes, 1998)

iii. The role of orthographic information inspoken language processing

The role of orthographic information in spoken language processing has elicited increasing interest in the field of speech perception. Nevertheless, there is still considerable debate about how precisely orthographic knowledge impacts spoken word recognition. The point of divergence of the models in taking the influence of orthographic knowledge into account is the lexical activation in the occurrence of the *orthographic consistency effect* (Pattamadilok et al., 2007). In this regard, there are two major models: *the interactive activation model* (Ferrand &Grainger, 1996; Grainger & Ferrand, 1994; Ziegler & Ferrand, 1998) and *the partially autonomous interactive account*(Morais et al., 1997).

In accordance with the *interactive activation mode*, the evidence for orthographic influence in auditory word recognition has been confirmed in many studies (e.g., Ziegler & Ferrand, 1998). Ziegler and Ferrand (1998) applied an auditory lexical decision in which they presented listeners with two types of words: inconsistent words, which contained phonological rhymes that had ambiguous spellings and consistent words, which contained phonological rhymes that had unambiguous spellings.The results of the study showed that inconsistent words gave rise to longer reaction times (RTs) and more errors than did consistent words. According to the two researchers, this effect suggests that word spelling is activated during auditory processing and that it affects spoken word recognition, hence the *orthographic consistency effect*. The two researchers added that, according to this effect, lexical decision is slower for words which include a rhyme that can be spelled in several ways than for words including a rhyme that can be spelled in only one way.

With regard to the *partially interactive account*, orthographic effects only arise when lexical representations are activated (Pattamadilok et al., 2007). In other words, a robust orthographic consistency effect is observed only in lexical decisions (and in this task only words, not on non-words) or when shadowing or when responses are made contingent upon a formal criterion (Ventura et al., 2004).

Despite the increasing number of studies that confirm the impact of orthographic knowledge on spoken language processing, certain researchers (Pattamadilok et al., 2007) deny such an impact. They argue that:

> since speech has primacy over written language, written language processing is considered as an additional system that may capitalize on existing phonological representations. (p. 507)

and therefore it is most unlikely that certain representations have any significant impact on spoken word recognition.

Although the impact of orthographic knowledge on spoken word recognition seems to be a controversial issue, evidence in the literature confirms such an impact.
To conclude this section, visual word recognition requires not only phonological knowledge, but mainly orthographic knowledge, including word-specific orthographic knowledge and general orthographic knowledge. In addition, although research has confirmed the impact of orthographic word knowledge on L2 spoken word processing, this impact is still debatable.

In this respect, the present study investigates the impact of orthographic word recognition on L2 listening comprehension as a contribution to the above discussion.

In addition to the impact of orthographic word recognition, the present study investigates the impact of aural word recognition on L2 listening comprehension. The following section sheds light on this impact.

b. Aural word recognition

Importance of aural word recognition for listening comprehension

Word recognition in fluent speech is the basis of spoken language comprehension as it is central to the decoding process (Broersma & Cutler, 2008; Cross, 2009a; McQueen, 2007). It is only by recognising the words we hear that we can recover the speaker's full intentions (i.e., that they are selling car insurance not carriage clocks). The fact that each single sentence that we hear emanates from an unlimited set of potential sentences, could make it impossible to fathom what speakers mean by trying to recognise their utterances as wholes. However, utterances are produced from a limited set of words that, for fluent speakers of a language, will usually already be stored in long-term memory. For this reason, speakers' messages must be decoded via the recognition of their parts (McQueen, 2007). Moreover, it is via the recognition of particular tokens in the speech signals as instances of specific lexical types that grammatical and semantic knowledge about those words is retrieved and deployed in listening comprehension (McQueen, 2007).

This aspect of aural word recognition is elaborated by Anderson (1995), as discussed below.

2.3.2 Anderson's (1995) model of listening comprehension with relation to word recognition

In my study, the data relating to word recognition are analysed and presented within a cognitive model of language comprehension proposed by Anderson (1995). This model provides an elaborate framework of listening comprehension. What it adds to the interaction between top-down and bottom-up processing in the context of word recognition is that it divides the listening process into three stages: perception, parsing and utilisation. Consequently, this model may provide us with a more insightful perspective on the listening comprehension process and listening instruction as these three stages are considered as three sub-skills of the listening process.

Perceptual processing is the encoding of the acoustic message. In listening, this process involves segmenting the phonemes from the continuous speech stream (Anderson, 1995). During this phase, listeners attend closely to the input by using bottom-up processing to recognise the different sound categories (phonemes) of the language as well as pauses and acoustic emphases and retain these in the acoustic memory. To decode the incoming speech, listeners attend to the text and to the exclusion of other sounds in the environment, note similarities, pauses and acoustic emphases relevant to the particular language and then group these according to the categories of the identified language. Subsequently, a phonemic representation of what is retained is passed on for parsing (Anderson, 1995).

During the parsing phase, meaningful mental representations are formed from words. To do this, listeners parse the phonemic representations retained in memory and begin to activate word candidates. They use the parsed speech to retrieve potential word candidates from long-term memory, based on cues such as word onsets, perceptual saliences and phonetic conventions – rules that apply to the sequencing of phonemes. These cues allow listeners to create propositions (abstract representations of ideas) in order to hold a meaning-based representation of these words involving memory as the new input is processed. This mental representation is related to the existing knowledge stored in the long-term memory as propositions or schemata during the third phase – utilisation (Anderson, 1995).

In utilisation, listeners relate the resulting meaningful units to the information sources in long-term memory in order to interpret the intended or implied meanings. Utilisation primarily involves top-down processing of the parsed speech. Listeners use information from outside the linguistic input to interpret what they have retained (the parsed speech). To do this, they use pragmatic and prior-knowledge (stored as schema in the long-term memory) and any relevant information in the listening context. In other words, listeners may make all types of inferences that allow them to interpret the spoken input (Anderson, 1995).

Figure 2.1 illustrates Anderson’s (1995) model of listening comprehension that can provide further insights into how listeners construct meaning.

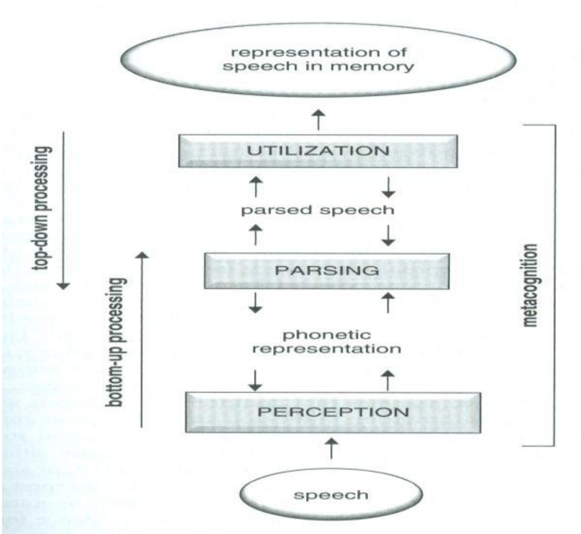


Figure 2.1. Cognitive processes in L2 listening and their interrelationships. Reprinted from *Teaching and Learning Second Language: Metacognition in Action (p. 17), by* L. Vandergrift and C. M. M. Goh, 2012, London: Routledge. Copyright 2012 by Taylors & Francis. Reprinted with permission.

To elaborate on the above figure, the following section deals with the knowledge sources required by L2 listeners to perceive, parse and utilise the information they hear in the spoken input.

2.3.3 Knowledge sources of aural word recognition

This section focuses on the types of knowledge involved in the three stages of aural word recognition outlined above, namely perception, parsing and utilization.

a. Types of knowledge involved in perception

The perception of a spoken message requires five main types of linguistic knowledge: phonological, syntactic, semantic, pragmatic and kinesic (Flowerdew & Miller, 2005). This section focuses on phonological knowledge in particular, as the four other types of linguistic knowledge are applied at the other stages of the listening process. Flowerdew and Miller (2005) define the phonological system as “the complex set of rules that determine the pronunciation of connected speech” (p. 33). Research also suggests that there are five components of phonological knowledge: knowledge about the phonemes, stress, tone groups, assimilation and elision (Flowerdew & Miller, 2005).

Anderson (1995) defines a phoneme as “the minimal unit of speech that can result in a difference in the spoken message” (p. 56). Flowerdew and Miller (2005) define a phoneme as “the smallest unit of sound that can distinguish two words” (p. 30). In other words, a phoneme is the smallest meaningful unit of sound that determines the meaning of a single word and distinguishes it from the meaning of another single word. The word ‘bat’, for instance, consists of the phonemes [b], [a], and [t]. Substituting [b] with the phoneme [p], we get ‘pat’, substituting [a] with the phoneme [i], we get ‘bit’, and substituting [t] with the phoneme [n], we get ‘ban’ (Anderson, 1995).

Flowerdew and Miller (2005) define stress as “the application of greater force to a syllable that occurs at the level of the word and the sentence” (p. 31). Every word of more than one syllable will have one syllable that carries the primary stress. There are two main aspects of stress: word and sentence stress (Buck, 2001; Flowerdew & Miller, 2005) . Buck (2001) defines word stress as the relative emphasis of the various syllables of a word. In other words, the stressed syllable is louder, more clearly enunciate and larger than the unstressed syllable. A stressed syllable

> forms a very important part of the phonological shape of that word. An English word may be misunderstood if the relative stress of the syllable is not correct even though the word is pronounced with the correct sound sequence. (Buck, 2001, p. 35)

This aspect is especially important with words containing three or more syllables (Buck, 2001). Further, stress patterns provide the overall rhythm of a word. Moreover, stressed words are usually content words, while unstressed words are normally grammatical and function words (Flowerdew & Miller (2005). Stressed words in a sentence are important, not only because they indicate the point the speaker is making, but also because they determine the pace of the speech. English, therefore, is regarded as a *stressed-timedlanguage* (Buck, 2001).

Ur (1984) defines tone groups as “strings of syllables that run together to form a single sequence and generally characterised by a heavily stressed *tone*” (p. 13). Flowerdew and Miller (2005) add that tone groups are the basic units of information the speaker wants to convey. They are often, though not always, equated with clauses. A major characteristic of tone groups is that each tone group has one syllable that is more heavily stressed and is accompanied by a pitch movement, the tonic syllable; this creates intonation (Flowerdew & Miller, 2005).

Tonic syllables are important as they signal the information that is new or important, which makes them the basis of the rhythm of speech (Flowerdew & Miller, 2005; Ur, 1984).

Both elision and assimilation make word recognition difficult for L2 listeners as they reduce the stressed syllables and blur word boundaries (Flowerdew & Miller, 2005).

Acquiring and applying the appropriate L2 phonological knowledge by being familiar with the above aspects of the L2 input provides listeners with the appropriate phonotatics to perceive the information in the input.

To sum up, contrary to visual word recognition which relies on orthographic knowledge, aural word recognition relies heavily on phonological knowledge when perceiving L2.

b. Types of knowledge involved in parsing

Parsing in listening comprehension requires primary sntax.Knowledge of syntax includes knowledge of sentence patterns, knowledge of word order and function words and knowledge of semantics.

i. Knowledge of sentence patterns

According to Anderson (1995), all sentences consist of a number of constituents or units. Knowledge of syntax allows us to recognise these different constituents. This implies that the more clearly we identify the unit structures of sentences, the more easily we understand them. In other words, although we cannot interpret all the possible full sentence patterns to encode all possible forms as this requires an infinite number of patterns, we can still interpret the different constituents,sub-patterns or phrasesand combine the interpretations of these constituents.

ii. Knowledge of word order

Apart from sentence patterns, we also use the syntactic cues of word order and function words to help interpret sentences. Some researchers (e.g., Hakes & Foss, 1970;Hakes, 1972) have investigated the contribution to the parsing of sentences of word order and function words, respectively. In order to investigate the contribution of word order to parsing, McDonald (2006)compared English with German by asking her participants to interpret sentences such as

1. Him kicked the girl.
2. The girl kicked he.

In order to interpret sentence 1, English speakers used the word order cue, which allowed them to consider *him* as the agent and *the girl* as the object. To interpret the same sentences, German speakers did just the opposite. They considered *him* as the object and *the girl* as the agent. In doing this, German speakers tended to interpret the English sentence more like German sentences.

iii.Knowledge of semantics

As outlined above, listeners use syntactic cues to interpret sentences. However, Anderson (1995) argues that people can also interpret sentences by using their knowledge of syntax. In other words, people can determine the meaning of a string of words simply by considering how they can be put together in order to make sense. Anderson goes further by stating that, sometimes, when a semantic principle conflicts with a syntactic one, the semantic principle determines the interpretation of the sentence.

Several researchers (e.g., Strohner & Nelson, 1974; Fillenbaum, 1971, 1974) have investigated the contribution of semantic knowledge to the interpretation of sentences. Strohner and Nelson (1974), for instance, asked two and three-year-old children to act out the following two sentences with animal dolls:

1. The cat chased the mouse.
2. The mouse chased the cat.

Although the two sentences have two different meanings, the participants in the study interpreted both sentences as indicating that the cat chased the mouse, ignoring the word order in sentence 2. Strohner and Nelson related such an interpretation to the participants' prior knowledge about cats and mice. They concluded that the participants in the study were relying more heavily on semantic patterns than on syntactic patterns.

Moreover, although, occasionallyonly semantics determines the interpretation of the sentence, people appear to combine both syntactic and semantic cues to interpret sentences (Anderson, 1995).Tyler & Marslen-Wilson (1977) have investigated the contribution of the combination of syntactic and semantic cues to the comprehension of a sentence. They asked their participants to continue fragments like the following:

1. If you walk too near the runway, landing planes are __________.
2. If you've been trained as a pilot, landing planes are __________.

The results showed that the participants took less time to continue the fragments that had consistent prior context, which allowed Tyler and Marslen-Wilson to suggest that the participants used both the semantics of the prior context and syntactic cues to overcome ambiguities. They concluded that the semantic prior context and the syntactic cue are in conflict, meaning the participants' comprehension is affected negatively.

To sum up, the results of the studies outlined above show that knowledge of syntax and semantics is combined to interpret sentences. How this combination takes place, however, is controversial (Anderson, 1995). There are two positions: the position of language modularity and the position of interactive processing. Advocates of the position of language modularity argue that in an initial stage, only syntax is processed and only later is semantics applied. This is due to the fact that syntax belongs to what Anderson (1995) calls a *language-specific module*. A characteristic of language, therefore, is that it operates automatically and instantaneously. Semantics, however, is not language-specific and applying it to the interpretation of sentences is demanding, as it urges us to use all of our world knowledge, a process that requires time. The proponents of the position of interactive processing, on the other hand, argue that when we interpret sentences, we always combine syntax and semantics at all levels of the process.

c. Types of knowledge involved in utilisation

Pragmatic knowledge

Listeners usually apply pragmatic knowledge during the utilisation stage of the comprehension process (Vandergrift & Goh, 2012) in order to understand the contextual meaning of any conversation. Contextual meanings involve the social status and interpersonal relationships that are signalled in language use as well as the speaker's intention to deploy language norms for particular purposes (Rost, 2002). This makes pragmatic knowledge culturally bound and, hence, closely related to sociocultural and sociolinguistic knowledge. With the use of formal and informal registers, idioms and slang, for example, listeners further interpret speakers' utterances (Bonk, 2001). These components of pragmatic knowledge, in addition to others, allow L2 listeners to infer the speaker's intention, especially when the literal meaning of the utterances is ambiguous or requires understanding of the contextual meaning intended (Vandergrift & Goh, 2012). A request such as "*Do you have the salt?*" (Vandergrift & Goh, 2012, p. 25) at a dinner table, for instance, may imply that the speaker would like someone to pass the salt rather than reply positively.

There are four pragmatic notions that contribute to the understanding of listening, namely deixis, intention, strategic use and conversational meaning. When listeners and speakers use deixis, they usually point to the variables of time (e.g., then, now, today), persons (e.g., there, here, come back), objects (e.g., that, it, those), status (e.g., 'tu' vs 'vous' in French) when they interact. In order for the listener to interpret these deictic elements, they need to understand the context in which these elements are uttered, which is a crucial notion in understanding how listening occurs in context (Rost, 2002).

Berlo (1960) states that the very purpose of communication is to influence people with intent, which implies that the situated speech can be understood at two different levels: by its objective truth value and by the speakers' interaction. When people speak, they have the tendency to influence their listeners in every instance of their speaking. To elaborate on the above two levels of situated speech, Austin (1962) distinguishes between *constative* and *performatives* in speech. Constatives refer to that aspect of speech that can be evaluated in terms of their *truth value*. For instance, the utterance 'I sent the letter yesterday' can be evaluated as true or false or nearly true or false. Performatives, on the other hand, are the aspects of speech acts that can be evaluated in terms of 'felicity' or 'what the speech act does in the interaction'. For example, the same utterance 'I sent the letter yesterday' can be evaluated in terms of its 'felicity' as a response to the accusation 'Why haven't you mail the letter yet?'

As for strategic use, when people speak, they build meaning in part through what Grice (1975) terms *maxims*. In this respect, in order to understand speakers' meaning, listeners need to evaluate the speakers' utterances using the following set of *cooperative principles of conversation:*

a. *The maxim of quantity*: Make your contribution to the conversation as informative as is required. Do not make your contribution more informative than is required.

b. The maxim of quality: Do not say what you believe to be false. Do not say something for which you have inadequate evidence.

c. The maxim of relations: Be relevant. Say only those things that are relevant to the situation.

d. The maxim of manner: Avoid obscurity of expression. Avoid ambiguity. Be brief (avoid unnecessary prolixity). Be orderly. (Grice, 1975, pp. 45-46)

Rost (2002) posits that the conversation or interaction meaning "emerges from the context and is not determined in advance" (p. 45). He argues that for communication to occur, the listener needs to recover the unexpressed information in the form of shared background knowledge, common ground or mutual knowledge. The meaning expressed in conversations is mutually built incrementally and through an interactional structure created by both the speaker and listener. This incremental nature of conversations is fundamental as much inference is required to activate the relevant hypotheses and construct the mutually acceptable meanings. This interactional structure is worked out in the actual interaction and is realised as a system of turn-taking. The variables in turn-taking are the following: "[w]ays of holding the floor (self-selection or other-selection); interactions and overlaps; back-channelling; insertion sequences and repairs" (Rost, 2002, p. 46).

To conclude, in order for the listener to be effective, he or she needs to take an active role in constructing meaning with the speaker. One way to do this is by being aware of the different components of the pragmatic knowledge outlined above.

Discourse knowledge

Discourse or textual knowledge (Vandergrift & Goh, 2012) involves comprehension at the level of text organisation. This knowledge contributes to the listening comprehension process, depending on the nature of the text. This category can include what is called *scripted knowledge* (Vandergrift & Goh, 2012). An example of scripted knowledge is a restaurant advertisement. It may include the name address, phone number and the restaurant's speciality or current specials, in addition to other types of information. Another example of this category may include knowledge of and attention to discourse markers signalling the beginning (e.g., first of all) or conclusion (e.g., in sum) of a set of arguments, an opposing argument (e.g., on the other hand) or a hypothesis (e.g., if) (Vandergrift & Goh, 2012).

Similarly, listeners apply discourse knowledge proactively to predict the kinds of information that the passage may convey. In this respect, listeners very often use this kind of information in combination with prior knowledge. For example, by applying their prior knowledge about interviews with football players, listeners can anticipate what they will hear in similar interviews with football players, what questions will be asked and how the interviews will most probably conclude. It is important to note that at the parsing stage thes types of knowledge can be used but at a smaller scale.

To conclude this section, the different knowledge sources work together with cognitive processes allowing the listener to arrive at a meaningful interpretation of any listening task (Vandergrift & Goh, 2012). It is equally important to note, however, that some of the above knowledge sources, such as prior knowledge, can be transferred from L1 to L2. The relationships between the above knowledge sources in the listening process are encapsulated in Figure 2.2 below.

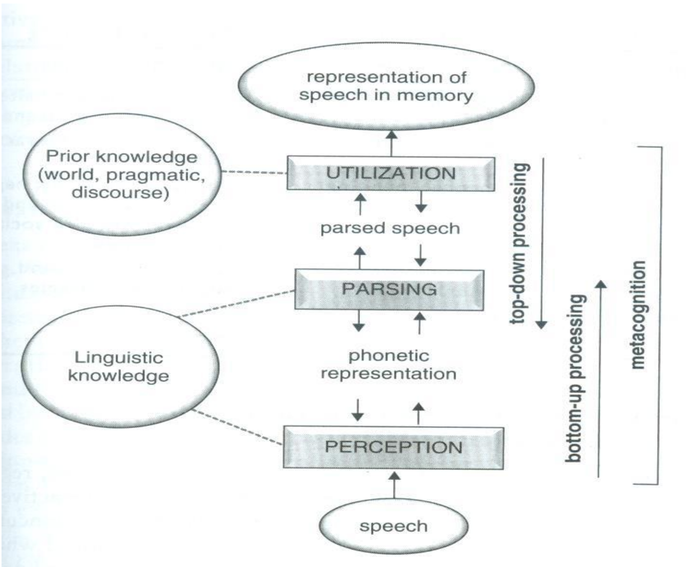


Figure 2.2. Cognitive processes and knowledge sources in listening comprehension. Reprinted from *Teaching and Learning Second Language Listening: Metacognition in Action* (p. 21), by L. Vandergrift and C. C. M. Goh, 2012, London: Routledge. Copyright 2012 by Taylors & Francis. Reprinted with permission.

In what follows, I will investigate some studies pertinent to the relationship between listening comprehension and word recognition.

2.3.4 Studies on word recognition and L1/L2 listening comprehension

This section summarises four studies discussing different aspects of the relationship between word recognition and listening comprehension: ‘phantom word activation in L2, ‘word segmentation in L2’, ‘revising segmentation hypotheses in first and second language listening’, ‘bricks or mortar: which part of the input does a second language listener rely on?’and ‘the effect of teaching phonotactics on the lexical segmentation of English as a foreign language’. These particular studies are selected because they arerelatively recent ones, as they were all conducted in 2008. In addition, as mentioned above and elaborated on below, eachstudy investigates a particular aspect of the impact of word recognition on listening comprehension. Equally important, the first three studies compare the impact of three different aspects of word recognition in L1 and L2, which provides a broad picture to the facts mentioned in this section of chapter 2. Finally, the fourth study investigates the impact of word recognition on EFL listening comprehension in a context similar to that of the present study (Arabic), which will allow me to compare and contrast the findings of the summarised study with those of the present one.

Study 1: Phantom word activation in L2

Broersma and Cutler (2008) studied acoustic speech word recognition among L1 and L2 English language speakers. They hypothesised that, in the course of auditory language processing, L1 and L2 listeners’recognition of the correct word is attained competitively and selectively from among simultaneously-activated multiple word candidates, using phonetic discrimination mechanisms that allow them to recognise, distinguish and acoustically select the correct word from the spoken input – and that such activation and competition occurs more among L2 than L1 listeners.

The importance of this research lies in the low degree of importance given in L2 listening research literature to lexical recognition of spoken words. However, this sheds more light on the context of human neuro-plasticity in information process. The researchers posit that studies of L2 contrastive phonemic production and the ability of context clues to make up for speech loss fell short of recognising L2 listeners’ issues and that the key element of language processing is not the context clues or phonemic distinctions only but, more importantly, the spoken-word perception.

The researchers carried out two experiments: one concerning word choice and the other concerning lexical activation. They tested the extent to which the same auditory input can initiate the activation of potential word candidates among L1 and L2 speakers of English respectively, by using definite sets of utterances which have mismatching features between L1 and L2 and are likely to generate potential word candidates.

The word choice experiment attempted to answer the question whether nonsensical words, such as "groof" and "flide" are recognised as real words among L2 listeners. It involved 48 university students, half of them were native Dutch speakers with at least six years of English language schooling, while the other half were native British English speakers. Materials comprised 32 one-syllable English discrete words ending with a voiced or voiceless phoneme: /z/,/s/, /v/, /f/, /b/, /p/, /d/ or /t/ to create sets of real voiced-ending English word counterparts by changing the final one-syllable into voiced or voiceless. These words, which differ phonemically from Dutch words, added to 84 filler words, were recorded by a male native British English speaker.

Participants carried out the experiment individually listening to all the 84 filler words. The experimental words and non-words were randomly cued but equally distributed among each half of the 24 participants. Each of them would press a button, quickly and accurately, to indicate that the word in the auditory input is a real English word.

The word choice experiment result indicated that L1 and L2 listeners almost equivalently identified real English words with an accurate recognition rate of 97% and 94% respectively, but L2 listeners varied substantially from L1 in recognising near-English words as real English lexical items. The researchers concluded that L2 listeners perceived near-English-like words as real English lexical items more than their L1 listeners, competitively and selectively to distinguish and recognise the correct word from the acoustic input. L2 listeners also showed more acceptance of auditory non-word input as real English words while L1 listeners did not.

In the second lexical activation experiment, there were 36 native speakers of Dutch and 36 native speakers of English, none of whom took part in the first experiment. Tools were acoustic lexical items used in the first experiment with 98 English words and 129 non-English words, equally divided into matching, mismatching and stimuli. Experiment

2 sought to find out whether the use of nonsensical words, such as "groof" and "flide", embedded with words or across them in a natural speech context, would help the automated activation of possible real-English word candidates. Participants used a priming paradigm by pressing a button to indicate that the acoustic input matched the visual representation of the word.

Each participant received the 32 experimental stimuli once, and each was primed a half-word and a half non-word and visually observed on the computer screen a half-word and a half non-word. A three-stage pattern was followed: five real words, a minimum of one filler item and another five non-words. Responses were recorded for accuracy and speed.

Lexical activation experimental results showed that L1 respondents had quicker association of the acoustic stimuli with the visual representation on the computer screen and their response time to both matched and mismatched lexical items was similar, suggesting that the mismatched lexical stimuli did not trigger multiple word candidates. For L2 listeners, both matching and mismatching stimuli were accomplished with ease. The researchers concluded that, for L2 listeners, auditory input of a non-word such as "groof", if embedded across a real speech context as in "big roof", could trigger a real word candidate as "groove". Hence, in similar situations, L2, but not L1 listeners could experience the activation of multiple competing word candidates.

In conclusion, the study of word recognition among L1 and L2 listeners through lexical decision and lexical activation experiments yielded the following results.

1. L1 laboratory-based literature research had already established the fact that auditory input triggers many potential word candidates, which simultaneously and competitively sought to detect, recognise and match the lexical sound representation.
2. Activation of multiple competing word candidates occurred in L2 listening.
3. Such activation was more numerous in terms of word candidates and took a longer time span among L2 than L1 listeners.
4. Such heightened word activation among L2 listeners could not be attributed to L2 listeners’failure to distinctively recognise the phonemes in the auditory input.

5. Acoustic input entails multiple word activation, which would compete for word recognition. The biggest difference between L1 and L2 listeners was the speed of disposing of unnecessary word candidates: L2 listeners tended to take more time selecting a stimuli speech input for a target word.
6. For L2 listeners, acoustic input was a course of repeated refinement and assessment of numerous word candidates.
7. Unlike L1 listeners, who quickly rejected non-English words, L2 listeners'processing of the multiple competing word candidates slowed down their decisions.
8. The two experiments were informative in determining that the difficulty in L1 and L2 listening is lexical. For L2 listeners, a small phonemic ambiguity could bring about a variety of competing word candidates at the lexical level.
9. There are three main ways to improve L2 listening. Firstly, lexical knowledge and its recognition in a natural speed context need training. Secondly, L2 listeners need more practice in distinguishing words in embedded and across word contests than engagement with distinguishing phonemes. Thirdly, the broader the L2 vocabulary is, the more accurate perfecting limited word candidates is likely to happen.
10. In order to better comprehend L2 listening difficulty, the researchers concluded that there is a need for more understanding of L2 word processing and selection of activated competitors.

Study 2: Revising segmentation hypotheses in first and second language listening

In his study, Field (2008c) examined how first and second language listeners adjust their segmentation assumptions as new perceptual evidence arrives. In other words, Field's enquiry was to establish how sensitively first and second language listeners respond to acoustic-phonetic evidence that disambiguates a previously ambiguous piece of speech and, in particular to evidence that requires the listener to redistribute word boundaries. Field hypothesised that different patterns of behaviours would characterise the ways in which native and non-native listeners redistribute lexical boundaries. Field attempted to answer two research questions: "How flexible are native listeners in redistributing word boundaries once disambiguating information becomes available and are non-native listeners equally flexible?” (p. 38)

The participants were 264 secondary school students. They were placed in three groups: native speakers of British English (NLs) (N=112), French native speakers (NLs) (N=39), and non-native listeners (NNLs) (N=113) with a range of first languages. NLs participants were pupils aged between 14 and 18, attending secondary schools in the Cambridge, UK area. The French native speakers were students attending classes at the Institut Britannique in Paris. They were mainly young adults in their mid-twenties, but a few were older. Their level of English was all at intermediate or upper intermediate level. NNLssubjects were students of English at a private school in Cambridge.

Field based his study on a modified gating technique. Gating is a psychological research tool in which parts of an utterance are presented in syllables or time segments (gates) repeating the previous segment until the utterance is complete (Brown, 2011). In his study, Field employed eight stems that shared the same strong-weak (SW) rhythmic pattern. Each stem permitted three different segmentations: into a mono-syllabic word (*drove*), into two mono-syllabic words (*drive a*), or into a monosyllabic word followed by the beginning of another word (*drive a-*). The items were distributed into three sets (A, B and C). Each set consisted of one variant of each of the eight items. Each variant was divided into four gates. The gates were based on *syllables* rather than on *timing*:

> Gate a: after the first S syllable, e.g., /'wei/
> Gate b: after the first sw sequence, e.g., /'weitə/
> Gate c: midway between gate b and the end, e.g., /'weitə'mɑ:/
> Gate d: whole item, e.g., /'weitə'mɑ:təʊz/. (Field, 2008a, p. 42)

The participants in each group were asked to listen to part of a word, phrase, or sentence and write down what they thought they had heard at (a) on the answer sheet. They were then asked to listen to a slightly longer part of the sentence that they had to transcribe at (b). Following this, they had to listen to a longer extract and write it down at (c). Finally, they were asked to listen to the whole sequence and transcribe it at (d).

For the participants’ achievement of the target segmentation, the results showed a highly significant difference across the groups at gate (c) for French, NL, and NNL responses. It was even more significant at gate (d). The results were also significant when the Spanish responses were substituted for those of NNLs both at gates (c) and (d). When the groups were paired, this effect proved to be entirely attributable to the differences between, on the one hand, the NL group and, on the other, the French and NNL/Spanish ones. Thus, at gate (c), there was a highly significant effect of the group distinguishing NL and the French participants and the NL and NN participants, but there was none distinguishing French and NNL. At gate (d), the effect became even more marked for both NL/French and NL/NNL participants. The results also indicated a significant difference in the way the L1 and L2 participants reacted to the incorrect segmentation. The NLs were quick to change their interpretations on the basis of incoming evidence, whereas the NNLs were considerably more reluctant to do so.

Study 3: Bricks or Mortar: Which Part of the Input Does a Second Language Listener Rely on?

Field's (2008b) study attempted to determine the type of words listeners rely on most: content words (semantic) or function words (syntactic). That is, Field investigated intake by L1 and L2 listeners to establish whether function or content words are processed more accurately and reported more frequently. Field attempted to answer two research questions. First, *Do function words or content words feature more reliably in the bottom-up that become available to the listener*? Second, *Do listeners structure their interpretation of a partially understood piece of spoken input around familiar functors?*

The participants were 90 students: 46 non-native listeners (NNLs) and 44 native listeners (NLs). The NNLs were drawn from mixed-nationality classes at an English language school in Cambridge, UK. They were divided into two groups of 23 on the basis of their scores in an entry test administered by the school. The first group NNL1 comprised those who had scores ranging from 30-60. The second group NNL2 included those who had scores ranging from 61-80. The NLs were drawn from Year 10 in state secondary schools in Cambridge, UK. The NL1 included 21 language learners graded as successful language learners.

The participants in all groups were asked to listen to a recorded authentic piece of connected speech. Whenever there was a pause in the recording, they were asked to write the last four or five words they had heard.

The NLs outperformed the NNLs correctly identifying both function and content words. The NNLs, however, recognised a greater percentage of content words, compared with function words.

Field concluded that English function words are identified less accurately by L2 listeners than are content words. Field attributed this phenomenon to the limitation of working memory: L2 learners need to choose where to direct their attention.

Study 4: The effect of teaching phonotactics on the lexical segmentation ofEnglish as a foreign language

Al-Jasser's (2008) study investigated the effect of teaching English *phonotactics* upon Arabic speakers' lexical segmentation of running speech in English. Al-Jasser tested the following hypothesis: "Explicit teaching is potentially helpful in lexical segmentation" (p. 97). The researcher posited two research questions: *Is the resultant knowledge applied to lexical segmentation? And if it is, how automatic does this process become compared to that of native speakers?*

The participants were sixty students: 20 native speakers of American English with no knowledge of Arabic and 40 non-native EFL learners who were native speakers of Arabic. The former participants constituted the native control group, whereas the latter were divided into two groups of twenty: a non-native control group and a non-native experimental group.

The study followed a pre-test-treatment-post-test design. In the pre-test, all three groups took a Word Spotting Task which tested their use of phonotactic cues relevant to English and Arabic in achieving listening comprehension. The non-native groups were post-tested with the same task after eight weeks during which only the experimental group received phonotactic training. The Word Spotting Task required the participants to spot real words embedded at the beginning or end of nonsense sequences (e.g., *lock* in *garslock*) which were aurally presented on the computer.The participants reacted by pressing a response button. The dependent variables were reaction time (i.e.,the time it takes the subjects to spot the word) anderror rate (i.e.,the number of times the target word is missed).

In the Word Spotting Task, what determined the phonotactic boundary condition was the last segment of the preceding nonsense syllable and the initial sound of the target word. The sounds */l/, /w/*or */r/* were found to be appropriate for producing four required conditions.Using 36 common non-syllabic English words beginning with*/w/*, */l/* and */r/* (12 words each) and using the inventory provided by Yavas (2006) of illegal English onset and coda clusters, it was possible to create the four required boundary conditions: *Common Boundary, English Boundary, Arabic Boundary* and *No Boundary*. In the *Common Boundary,* the phonotactic constraints of both languages require a syllable boundary. An example is the onset of the word *line* as in */vi:tlain/* since words in neither language start with */tl/.* In the English Boundary, only English requires a syllable boundary as in */vi:dlain/.* Words in Qassimi Arabic (QA) start with the consonant cluster */dl/*. In the Arabic Boundary condition, QA requires a syllable boundary as in */vi:blain/*. English, but not QA words can begin with the cluster */bl/.* In the '*No Boundary*' condition, neither language requires a syllable boundary between the consonant as in */vi:flain/*. In addition, */fl/* is a possible onset in both languages. Four lists of items were constructed. Each included the entire 36 target words, but the boundary conditions were varied between items.

Each of the non-native groups was given on average one and a half hours of listening instruction per week for eight weeks. Both groups received standard instruction in sound-level phenomena including reduction, contraction, assimilation, stress and intonation, but only the experimental group received additional phonotactic training.

The post-test results showed that the native speakers were faster and more accurate in detecting words aligned with boundary constraints common to English and Arabic. The native speakers were also faster and more accurate in detecting words aligned with English boundary constraints than when they were not. Moreover, the native speaker subjects were faster than EFL learners in detecting words in all conditions. Al-Jassar suggested that a difficulty for EFL learners was the fact that their bottom-up word recognition skills did not achieve automaticity.

The post-test results also showed that the reduction in reduction times (RTs) and error rates of the non-native control groups were not statistically significant when compared to pre-test results. In brief, non-native control group's RTs and error rates did not change at post-test.

The post-test results for the experimental group showed significant gains in segmentation ability. These participants showed signs of improvement in both RTs and error rate in English Boundary conditions.

The researcher concluded that teaching phonotactics in lexical segmentation by directinglearners' attention to the presence of such cues allows learners to promote their segmentation skills.

To conclude this section, the examination of the interventions on L2 aural word recognition outlined above enabled the following conclusions:

1. Bottom-up processes contribute to L2 aural word recognition.
2. L2 learners need to rely both on their decoding skills and context of world knowledge.
3. L2 learners need to be taught how to revise their hypotheses.
4. L2 learners should be trained in identifying both content words and functionwords.
5. More importance needs to be placed on L2 phonotactics.
6. L2 learners need to be trained in the use of prosodic cues in aural word recognition.
7. L2 learners need to be aware of the importance of allophonic cues in L2 aural word segmentation.

Despite the fact that much research has been conducted to satisfy the needs outlined above and allow the promotionof word recognition in L2 listening, L2 learners still face many problems in this regard. Thus, the following section deals with some of the major problems revealed in the literature. Section 2.3.5 will deal with the problems related to aural word recognition in particular as the focus of the present study is L2 listening comprehension.

2.3.5 Obstacles to aural word recognition in L2 listening comprehension

The problems of aural word recognition in L2 are manifold. This section sheds light on the major problems mentioned in the literature: processing problems, cognitive, psychological, pedagogical and context ones (Vandergrift & Goh, 2012).

Processing problems

A common complaint from L2 listeners is that they have difficulty segmenting meaningful units from the sound stream. In other words, L2 listeners find it too hard to determine the boundaries between the words due to the fact that the acoustic signals arrive quickly and then vanish (Vandergrift & Goh, 2012). Various problems have been mentioned relating to the perception of the acoustic signals and segmenting words from the sound stream (Goh, 2000).

A major processing problem for L2 listeners in this respect is that they cannot remember certain words or phrases they have just heard. One of their most common complaints is that, although they can understand what is said when they hear it, they will forget it as soon as they begin to listen to another part of the message. A possible cause of this problem is the limited capacity of L2 listeners' short-term memory (Goh, 2000). There is an overlap between the three comprehension phases: perception, parsing, and utilisation. L2 listeners experience this problem most when the part they have just parsed is followed by an input with unfamiliar elements, such as new concepts or vocabulary. Processing more demanding input may cause a cognitive overload, resulting "in little or no spare processing with the existing knowledge in long-term memory" (Goh, 2000, p. 61).

The second problem relates to perception in L2 listening. L2 listeners do not recognise the words they know and, therefore, cannot recall their meanings immediately (Goh, 2000). A possible reason for this is that L2 listeners cannot match the sounds they hear with the script relationship in their long-term memory. It is possible that for some of them, sound-to-script relationships have not been fully automatised. Therefore, although they know certain words by sight, they are unable to recognise them by sound. Another possible explanation for this problem is that the relationship between the word and its referent is not automatised; the listener knows the word but they are slow when activating this knowledge (Goh, 2000).

Cognitive aspects

The limitation of WM and inefficient word recognition in listening comprehension impact attention mechanisms negatively. Learners focus on individual words rather than long chunks. This prevents them from focusing on semantic cues, leading to task overload which hinders the automatic listening comprehension processes. The ultimate result of this is lack of focus controlled processes, such as attention (Conrad, 1985; Eastman, 1991).

Psychological problems

Anxiety and stress are common problems that hinder aural word recognition in L2 listening comprehension. L2 unskilled listeners have few automatic processes and do not yet know to which aspect of the auditory stream to attend. Stress, therefore, may cause them to disregard essential cues, e.g., semantic cues (Conrad, 1985; Eastman, 1991). Moreover, task overload may cause tension as a symptom of anxiety, a "major deterrent to listening comprehension" (Nord, 1980, p. 8). In this regard, some surveys (e.g., Eastman, 1991) have shown that listeners who claimed to be tense while listening scored less on listening comprehension tests than those who claimed to be concentrating. Those surveys have also shown that the only significant differences in scores were found among those who claimed not to be concentrating.

Pedagogical problems

Inappropriate teaching and inadequate learning

Some L2 teachers believe that comprehension means understanding every word, leading them to replay tapes or tracks more times than necessary, analysing the scripts, or even translating them word-for-word before and after the listening session(Eastman, 1991; Faerch & Kasper, 1986) . This misconception on the part of the teacher can percolate through to the students. Such an approach leads to inappropriate learning: unskilled L2 listeners may turn to 'aural reading' or use the same strategies that they deploy when reading for comprehension in that they may apply word-for-word translation, believing that it is a successful route to meaning both in reading and listening (Eastman, 1991).

Moreover, less adept listeners who deploy on-line translation strategies are ineffective partly because

A. [they] do not associate word sounds with meaning sufficiently closely to reduce access time to meanings;
B. [they] have less declarative knowledge in L2 and are likely to recognise fewer sounds as words and so are less likely to be sure of what they learn; [and]
C. [they] are aware of their poor ability to comprehend aurally and may be anxious while listening. (Eastman, 1991, p. 184)

Due to the inadequate teaching and learning outlined above and to the fact that many words and phrases have not been adequately learnt, unskilled listeners confirm meaning by seeking the original link by which they learnthe word, namely its pairing in L1 equivalent. This leads them to translate. The problem lies in the fact that mental effort may give unskilled listeners the meaning but only at the cost of time and attention as these listeners have less time to devote to guessing other (half-heard) words and to attend to the message itself (Eastman, 1991).

Context

Eastman (1991) and Garnes and Bond (1980) argue that when the signal is unclear, L1 listeners deploy their semantic knowledge to aid decoding. Unfortunately, unskilled L2 listeners lack this ability. When faced with comprehension breakdowns, these listeners resort to focusing their attention on trying to recognise words and initially separate them from the sound stream. Where unskilled listeners do recognise words, these words are likely to be isolated, as these listeners have little motivation to attend to words in context in order to semantically access them in sufficient amounts. This implies that these listeners are unable to focus on the context of the listening and therefore they rely heavily on inferencing procedures. This is often erroneous as it is based on inefficient,inappropriate and perhaps incorrect premises or ideas. Moreover, unable to gain access to real world knowledge, these unskilled listeners now need to attend to L2 aural input as new input for which they have no relevant frame. They are left with the new incoming information which effectively has no context, with the consequence that they are unable to predict or anticipate conclusions (Eastman, 1991).

To conclude, more research is needed to tackle these problems, allowing L2 learners to promote their aural word recognition. In this regard, one of the aims of the present study is to contribute to allowing L2 learners to overcome the above problems while listening for comprehension.

In addition to word recognition as a predictor of L2 listening comprehension investigated in the previous section, the present study investigates another predictor of L2 listening comprehension, namely WM. The impact of WM on L2 listening comprehension is dealt with in the following section.

2.4 Working Memory (WM) as a Predictor of Listening Comprehension

In addition to its focus on the relationship between listening comprehension and vocabulary knowledge (and word recognition), research in L2 acquisition has focused on the relationship between listening comprehension and WM. This section investigates the role of WM in listening comprehension. The first part deals with the definition and construct of working memory and the second part with the role of WM in listening comprehension. Part three compares the role of WM and Short-Term Memory (STM) in order to emphasise the role WM plays in listening comprehension. The last part summarises two studies that were conducted to investigate the relationship between WM and listening comprehension.

2.4.1 Definition and construct of WM

In general, WM is defined as a system involving two functions: storage and the processing of input. Such a system has at least four major characteristics. It is temporary, limited in capacity, active, and complex (Baddeley, 1986; Baddeley & Hitch, 1974; Daneman & Blennerhassett, 1984; Engle, 2010; Fontanini & Tomitch, 2009). In the present study, Baddeley and Hitch’s (1974) model of working memory is adopted, as it is the most inferential one (Shanshan & Tingshan, 2007).In this model, WM refers to a limited capacity system as the temporary storage and manipulation of input that is necessary for complex tasks such as comprehension and planning.

Baddeley and Hitch’s model involves a phonological loop, a visuo-spatial sketchpad and an episodic buffer (Baddeley, 1986; Baddeley & Hitch, 1974). The most important element in the hierarchy of WM is the central executive, which supervises and controls the WM as a system in that it links the phonological loop, the visuo-spatial sketchpad and the episodic buffer. The main function of the phonological loop is to store unfamiliar sound patterns while more permanent memory records are being constructed. The phonological loop involves two components:a storage system and a rehearsal mechanism. The storage system is responsible for the representation of verbal information in phonological or phonetic form. The rehearsal mechanism is responsible for the encoding of the meaning materials. The episodic buffer, on the other hand, deals with both visual and speech-based information. The visuo-spatial sketchpad deals with visual information (Baddely, 1986).

2.4.2 Importance of WM

Research (e.g., Cook, 2001; Engle, 2010; Levin et al., 2004; Moran & Gillon, 2004; Montgomery et al., 2008) has emphasised the importance of WM. Engle (2010), for instance, advocates that WM and working capacity are fundamental concepts in modern cognitive psychology and in understanding why people differ in the performance of a wide array of real-world tasks. Cognitively speaking, working memory allows for the storage or retention (Montgomery et al., 2008) and processing of the input. In other words, working memory is responsible for the allocation of resources for processing information while the mind works on various tasks (Cook, 2001) such as verbal reasoning or comprehension (Montgomery et al., 2008). In addition, working memory provides the link between cognitive and academic skills (Levin, et al., 2004). In this respect, Levin and colleagues (2004) advocate that reading, writing, and understanding auditory language are tied to working memory. They add that the three components of working memory work together to provide the initial point of processing for incoming information, in large part, for academic success. This may show why the working memory is involved in everyday performance in L2 use and in the classroom (Cook, 2001).

In what follows, I focus on the differences between WM and short-term memory (STM) in order to elucidate why WM is used as a predictor of listening comprehension instead of short-term memory.

2.4.3 Differences between WM and STM

Research has shown that WM is a more reliable predictor of general abilities than STM (e.g., Engle, 2010; Huton & Towse, 2001). The first difference is at the level of concepts. The concept of STM describes a more or less passive temporary store, whereas the concept of WM describes a more dynamic system. The STM temporary store is more or less passive: it is based solely on the direct assessment of the immediate recall of a list of information. In other words, STM is concerned with retention only. In contrast to STM, WM is concerned not only with retention, but also the transformation of information (Baddeley & Hitch, 1974). To stress the supremacy of WM over STMas a predictor of cognitive abilities, Cowan (2008) advocates that WM includes STM and other processing mechanisms that help to make use of STM. In other words, WM is an entity, whereas STM is only one among several components of that entity.

The second difference between WM and STM is at the level of reliability and validity of their respective tasks. The measures of WM correlate with intellectual aptitudes better than the measures of STM and, in fact, possibly better than the measures of any particular psychological process (Cowan, 2008). The major reason for this difference is that STM tasks consist only of presenting the sequential order of information (Hutton &Towse, 2001) by using tasks such as the digit span task, which entails reading or listening to lists of temporally separated digits and repeating the same sequence. In the span format, the number of items increases until errors exceed the threshold. In contrast, most common WM span tasks contain both a memory and a processing element. In this regard, there is a variety of WM span tasks. For instance, the reading span task (Daneman &Carpenter, 1998) involves reading and completing sentences and remembering the sentence final words for subsequent recall. The operation span involves solving arithmetic problems and remembering sums or accompanying words (Turner & Engle, 1989). A common characteristic of WM span tasks is that they involve completing an additional processing task before each item-to-be remembered becomes apparent (Hutton & Towse, 2001).

Developmental studies have also shown that STM is a weaker predictor of cognitive performance than WM (Daneman & Blennerhassett, 1984; Huton & Towse, 2001; Leather & Henry, 1994). Two aspects of this weakness are the psychological features of working memory and STM and the extent of their correlation with cognitive tasks. Regarding the psychological features of STM, as mentioned above, the fact that STM assesses only retention of the input, means that it may be less successful at capturing variance in cognitive skills than WM (Hutton & Towse, 2001). Engle (2010) argues that STM fails to consistently correlate with important real-world cognition. For this reason, STM simple span tasks are considered insufficiently reliable and inconsistently valid (Dempster & Corkill, 1999; Engle, 2010). Performance on the WM span tasks correlate with a wide range of higher-order cognitive tasks (Daneman & Merikle, 1996; King & Just, 1991; Daneman & Green, 1986; Kiewra & Benton, 1988; Dougherty & Hunter, 2003; Kyllonen & Stephens, 1990). Instances of these higher order cognitive tasks are reading and listening, language comprehension, following oral and spatial directions, vocabulary learning from context, note-taking, writing, reasoning, hypothesis generation and complex learning such as learning to write programmes in computer language (Engle, 2010).

In the following section, the relationship between WM and listening comprehension will be considered.

2.4.4 Studies on the relationship between WM and listening comprehension

In this section, I will summarise two studies dealing with the relationship between listening comprehension and WM.

Study 1: The characteristics of memory representations in the Listening Span Test and EFL abilities

Sakuma's (2004) study investigated the characteristics of the phonological language information processing of English as a Foreign Language (EFL). The study explores two angles: the relationship between WM capacity and language comprehension on the one hand, and the WM capacity and the characteristics of recall errors for target words on the other.

The participants were 39 first-year undergraduate students at a national Japanese university studying a foreign language. They were divided into three levels: 13 upper, 13 middle and 13 lower-level participants, based on their Listening Span Test (LST) scores.

The materials included the English Language Proficiency Test (ELPT) for measuring various English abilities as well as the LST for measuring the WM capacity. The LST comprised two tasks concerning linguistic information processing: short-term recall of the final word in each sentence and true or false (TF) tests for sentence content. The sentences ranged from 9 to 13 words. Each stimulus sentence was of equal quality.

The overall results showed that learners with higher LST scores tended to achieve higher scores on each comprehension section and on the characteristics of recall errors for the target words.

Study 2: Study on the relationship between WM and EFL listening comprehension

In their (2007) study, Shanshan and Tongshun investigated the effect of WM on listening in order to discover whether listening comprehension could be affected by the individual differences of WM Span. In particular, the study answered two research questions. Firstly, *Does WM contribute to listening comprehension?* Secondly, *Which is better as a predictor of listening comprehension, L1 WM or L2 WM?*

The participants were 59 Chinese-native speakers and EFL students at Shanghai JIAO Tong University: 47 males and 12 females. They all took a listening span test (LST) as well as a listening comprehension test (LCT). The WM span test was a developed version of Daneman and Carpenter's (1980) WM span test. All the participants were required to listen to a set of recorded unrelated English sentences that ranged from 10 to 12 words read by a native speaker of English. After listening to all the sentences in each set, participants were asked to recall and write down the last word of each sentence and judge whether the sentences they heard were logical or not. The listening test consisted of the College English Test Band 4 (CET 4).

The overall results showed that the participants with higher capacity and processing scored better on the LCT. Another finding was that L2 WM impacted listening comprehension better than L1 WM, suggesting that L2 WM is a better predictor of listening comprehension than L1 WM.

To conclude this section, the higher the WM capacity and processing, the better the L2 listening comprehension and word recalls are.More generally, word recognition and WM are considered as good predictors of listening comprehension.

As mentioned above the major aim of the present study is to enable L2 learners to overcome some of the various obstacles they always face in L2 listening. Among these obstacles is the negative impact of learners' L1 listening comprehension on their L2 listening comprehension. The following section sheds light on this impact.

2.5 Impact of L1 Listening Comprehension on L2 Listening Comprehension

Even though there is a consensus today that a native language is not the only determinant of L2 acquisition, several models describing the relationship between L1 and the target language suggest that the former can have an impact on the latter. This cross-linguistic influence can have consequences not only for production in the target language but also for perception and comprehension (Simon, 2007). Learners' inter-language is open to two forms of transfer from L1: a positive transfer if the transferred feature is found in the target language, or a negative transfer or interference if the transferred feature is not found in the target language (Cook, 1992).

The influence of L1 on L2/FL sound perception has been proven to be stronger than in any other linguistic areas (e.g., Lucembarri et al., 2010; Ellis, 1994). ESL/EFL learners perceive oral input through the filter of their L1 (Pallier et al., 1997). They transfer their L1 sound system into that of the target language and this may lead to negative transfer whenever a sound in the latter is absent from the Learner's L1 sound inventory or vice-versa, hindering learners from perceiving sounds (Avery & Ehrlich, 1992).

Due to the differences between the sound system in their L1 (Arabic) and that in FL (English), participants in the present study may face various problems of sound perception in listening comprehension. In this regard, Kharma and Hajjaji (1989) present two areas of difficulty that EFL Arab learners face in listening comprehension: the perception of certain consonant and certain vowels in English. According to the concept of Contrastive Analysis (CA), the phonemes that are similar in Arabic and English should be easier for Arabic speakers to perceive, whereas those that are different or non-existent should be more difficult to perceive (Simic, 2010).

First, certain consonant pairs of English are confused by Arab learners. Examples of such pairs are /tʃ/ and /ʃ/ as in "chair" and "shares"; /f/ and /v/ as in "fast" and "vast"; /p/ and /b/ as in "pin" and "bin"; /s/ and /Ɵ/ as in "sin" and "thin".Second, in the English vowels, two types of difficulty are identified. The distinction between certain pairs of vowels, such as /I/ and /e/ as in "sit" and "set"; /Λ/ and /D/ as in "luck" and "lock"; /ƏƱ/ and /Ɔ/ as in "coal" and "caught". The second distinction is between certain diphthongs that are replaced by other sounds due to L1 (Arabic) interference. For example, the English diphthongs /e∂/, /ƱƏ/ and /I∂/ are replaced by /eI/, /u:/ and /I:/.

The second issue of negative transfer from L1 to the target language listening comprehension relates to spoken word recognition. When ESL/EFL speech is heard, certain skills already in place for the native language speaker with regard to listening are often available. The availability of such skills may lead to positive and negative transfer from L1 to the target language (Lecumberri et al., 2010). For instance, this aspect on interference makes it very hard for ESL/EFL Arab learners to recognise unfamiliar words and certain words already learned. This is due to the fact that Arabic has a shallow orthographic structure (Palmer et al., 2007). In other words, there is a regular correspondence between sounds and letters in Arabic, whereas there are many irregularities in English.

Another obstacle to the target language spoken word recognition is caused by the inter-word competition which is the basis of word recognition (Lecumberri et al., 2010). Compared to the enriched vocabulary of L1 listeners, that of the target language listeners is impoverished. Due to this impoverished vocabulary (2010), the correct word candidates may not even be available or as Lecumbarri and colleagues put it “the competitor set may contain certain candidates that could simply not bother a native speaker”(p. 870). The set of word candidates may even include candidates that are in the listener’s L1 rather than in the target language input.

The third issue of L1 listening comprehension concerns speech segmentation. Studies in L1 speech segmentationhave shown that lexical, syntactic, stress pattern and rhythmic characteristics of language (e.g., syllable-timed and stress-timed) are important in determining how native speakers segment speech. In other words, speech segmentation in particular at the word level is a complex operation (Field, 2008c). Such a complex operation requires L1 listeners to follow a systematic procedure while segmenting continuous speech. First, native listeners need to determine where in a segment of connected speech each word begins and ends. Second, they need to match certain sounds in the input to a stored model of what a particular word sounds like or to many stored examples of the word (Field, 2008c). The issue in this regard is that in the target language listening comprehension, as Sanders and colleagues (2002) state “non-native speakers do not acquire rhythmic segmentation cues other than those used for the L1”(p. 520).

The fourth issue in L1 listening comprehension relates to decoding as L1 listeners achieve decoding with a high degree of automaticity. Moreover, the matching process does not acquire huge sources of attention, which leaves native listeners free to focus upon aspects of wider meaning. Inducing this kind of automatic matching facility in the learners of the target language is too demanding (Field, 2008a). During online parsing, for instance, L1 listeners constantly form or revise hypotheses until they accumulate sufficient evidence that makes them certain about what the speaker intends. When parsing in this online way, listeners in the target language make sense of certain cues in the input, which helps them narrow down the possible options. Among these options are probability of occurrence, chunks and verbs.

Regarding probability of occurrence, L1 listeners are highly sensitive to the way in which certain word forms occur together or signal what is to come. Thus, the presence of “the” or “a” indicates that the speaker is beginning a noun phrase like in “the fast train”, and that an adjective or a noun is likely to come next. Equally important, the various chunks of language, such as collocations, short question initiators or even complete syntactic structures, stored as pre-units or chunks, assist L1 listeners to parse spoken input. When these chunks occur in the online speech, L1 listeners retrieve them automatically and apply them without dividing them into constituents because they can be recognised as single units.

As for verbs, L1 listeners use them to decide the structure of sentences speakers use. From the point of view of L1 listeners, knowing the pattern associated with a particular verb serves as a forewarning of what to expect next. What these three cues have in common is that they require both language knowledge and a high level of expectation (Field, 2008b).

However, when engaged in the target language online listening, ESL/EFL listeners may tend to draw upon cues that are appropriate to their native language not to the target one. Such cues may not have the same level of importance, as languages are said to vary greatly in the importance they attach to the above cues or other ones based on word order, inflection, intimacy or world knowledge (Field, 2008a), for instance. The issue in this regard is that the strength of these cues in a listener's L1 may determine the way they handle an utterance in the target language (Field, 2008a), leading to confusion rather than assistance.

The fifth issue in L1 listening comprehension concerns prosodic segmentation, or more precisely the processing of the syllable structure. Studies on the use of prosodic segmentation (e.g., Cutler et al., 1986) have shown that syllable structure in L1 listening is important in determining how native speakers of any particular language segment continuous speech in the target language. Equally important, studies have shown that the structure of the syllable varies from one language to another. In English, for instance, the structure of the syllable is extremely complex, as English even permits a CCCVCCCC syllable, as in the word "strengths" [streŋkΘs], in its citation form (Field, 2008c).

Native English listeners are also able to process the specific consonant clusters that exist in English. They have no difficulty in processing combinations such as /kl/, /pr/ or even /spl/ that occur at the beginning of syllables and other ones, such as /ŋ/, /ŋk/ or /ntʃ/ that occur at the end . Equally important, native English listeners have no difficulty in making the /s/-/p/ transition at the beginning of a word like sport.

The issue in this respect is that since the structure of the syllable varies from one language to another, while listening to the target language, listeners may apply their L1 segmentation cues rather than those in the target language, which hinders both perception and segmentation processes in the target language. Studies investigating the problems faced by ESL/EFL Arab learners have shown that these learners may face various perception and segmentation problems due to the differences between the structure of the syllable in English and that in Arabic (Al-Saidat, 2009; Kharma & Hajjaj, 1989; Simic, 2010).

Clearly, certain English syllable types do not exist in Arabic and they pose difficulties in different ways. For example, it may be difficult for certain Arab ESL/EFL learners to produce English initial consonant clusters having two or three members and final consonant clusters of three or four members (Al-Saidat, 2009; Kharma & Hajjaj, 1984). The processes involved in the pronunciation of such clusters are insertion, reduction, substitution and deletion. They may, for instance, insert a short vowel to break down initial clusters in order to pronounce them as in /sɪpɔ:t/ for "sport" and /sɪpirŋ/ for "spring". During English listening comprehension, the problems outlined above may hinder certain Arab learners from perceiving and segmenting clusters in the beginning and end of words, thus leading to confusion in word segmentation.

The sixth issue in L1 listening comprehension relates to another aspect of prosodic segmentation, namely the processing of syllable stress. In stress-timed languages, such as English, there is a clearly marked distinction between syllables that are stressed and those that are unstressed (e.g., Grosjani & Gee, 1987; Bond, 1999; Sanders et al., 2002). This contributes to the characteristic rhythm of a language and serves to highlight certain parts of the input that are especially informative (Field, 2008a).

Stressed syllables are of considerable help to stress-timed-language listeners; they tend to be reliable and easy to perceive since they are usually louder and much more clearly produced than unstressed syllables, considering the former as a reliable guide, particularly when speech, as Bond (1999) puts it, “is muddy and fast flowing” (p. 13). One aspect of the importance of stressed syllables for L1 listeners is that stressed syllables may provide listeners with an access code that allows them to locate words when searching through one’s mental vocabulary. For instance, to recognise the English words “magazine” and “photography”, two important keys would be /zɪ:/ and /tDg/ (Field, 2008a).

Although unstressed syllables seem to be given less prominence than stressed ones in stress-timed languages, they also guide L1listeners in decoding connected speech. Unstressed non-syllabic English words, such as the, it and for, for instance, contribute to the grammatical structure that L1 listeners associate with vocabulary items. There is considerable evidence that native English listeners deploy unstressed syllables to process function words separately from content words that are processed by using stressed syllables (Field, 2008a).

The issue in this respect is that due to the phonological differences between the sound systems of languages, there are also differences between the stress patterns of languages. For instance, as outlined above, in a stress-timed language, such as English, the stress pattern is an important segmentation cue for native speakers of English. The ability of non-English speakers to deploy stress patterns as a segmentation cue, however, may be influenced by the characteristics of their L1 (field, 2008). ESL/EFL learners, for instance, may make certain phonological errors relating to stress and intonation. These errors may hinder the processing of stress while listening to English.

A major phonological difference between Arabic and English is that Arabic has a more regular stress pattern than English. Once Arab children acquire the phonological rules in Arabic, they can easily apply them to words. English, however, does not have as many general rules about syllable stress as Arabic. Consequently, transferring phonological rules from Arabic to English may make ESL/EFL Arab learners apply misleading segmentation cues while listening for comprehension (Wahba, 1998).

Another issue in L1 listening comprehension concerns the transfer of inefficient strategies to the target listening comprehension. Apart from the impact of L1 linguistic interference in the target listening comprehension, L1 language learning style preferences in native language listening may interfere with non-native learning strategies applied to listening comprehension (Andriga et al., 2012; Hasan, 2000; Simon, 2007).In their native language, listeners do not process the input as if all details were equally interesting or equally worthy of being recalled. On the contrary, they skim over parts of the input and only pay attention to certain relevant parts only. Thus, instead of processing sentences word for word, they focus on the ideas behind the words to draw conclusions. This, as Hasan (2000) puts it, “helps them to relax the intensity of their listening efforts through using clues from the context and background knowledge to understand the context as whole” (p. 142).

Thus, L1 preferences of learning style in general may be transferred to target language learning and impact it negatively. Due to their preference for rote-learning in general, ESL/EFL Arab learners, for example, may deploy ineffective strategies in listening comprehension, in that they may not focus their attention on the message selectively. On the contrary, to get the main idea, they may listen to every word or detail, thinking that every word or detailis important and must be understood. This way of processing information may lead to information overload in the spoken input which may hinder ESL/EFL Arab learners'ability to monitor the message and get an overall comprehension of the test (Hasan, 2000).

The last issue of L1 listening comprehension concerns L1 listeners' application of prior knowledge to listening comprehension. While applying top-down processing in L1, listeners draw upon prior knowledge in order to infer what the true meaning of the speaker is (Buck, 2001; Field, 2008a). The representations of such prior knowledge, also referred to as schemata, are frequently developed and updated by L1 listeners to refer to a variety of schemata that help them interpret the text and predict the outcomes. In addition, in the case of intellectual or cultural disconnections, L1 listeners are able to adjust and incorporate new schemata to facilitate their comprehension.

The issue in this respect is that although EFL/ESL learners' prior knowledge about the topic of the spoken text facilitates comprehension, it may be misleading when, as Vandergrift (2007) puts it, it "is used dogmatically"(p. 37). For instance, ESL/EFL learners' use of prior knowledge may lead to inaccuracy in comprehension, especially when it is not supported by corroborating evidence in the input (Vandergrift, 2007). Thus, such random use of schemata may impose listeners'interpretation of what is heard and lead to various aspects of distortion in L2 Listening comprehension.

To sum up, L1 interference may hinder L2 listening comprehension in different ways. Differences in sound systems may impact word recognition as well as word segmentation, including prosodic segmentation. In addition, differences in learning style preferences in general may lead to the application of ineffective strategies to listening comprehension in the target language. Finally, overuse of L1 schemata may cause misinterpretation in L2 comprehension.

There is, therefore, a need for researchers and practitioners to tackle these problems among others, including those that hinder aural word recognition outlined in section 2.3.5. In this regard, there is evidence in the literature that in the contemporary language learning and teaching field, all the teaching methods outlined beloware combined in an attempt to recognise the potential of all L2 listening comprehension approaches (Brown, 2002; Griffiths, 2008; Kumaravadvelu, 2001; Tajeddine, 2005).

In an attempt to understand how the various teaching approaches of listening have combined,the last section of this chapter deals with a brief overview of these approaches.

2.6 Approaches to Listening Comprehension Teaching

This section outlines the major approaches and methods that have been used since the nineteenth century to teach English in general. The approaches discussed here are the Grammar-Translation approach, Direct-Method approach, Audio-Lingual approach, Communicative approach, Task-Based approach, Community Language approach, Suggestopedia, Silent Way, Total Physical Response approach, Strategy-Based approach, and the Eclectic approach. Apart from the Community Language approach, Suggestopaedia, the Silent Way, and the Total Physical Response approach, all the approaches dealt with in this section are the main approaches that have been applied to teaching listening (Flowerdew & Miller, 2005).

Grammar translation approach (GTA) is traced back to the nineteenth century and concerns the implementation of foreign language learning in school curricula (Harmer, 2007). By focusing on a deductive analytical teaching of L2 grammar, this approach aims at transmitting grammatical structures through translation, which leads to a passive learning process (Flowerdew & Miller, 2005; Harmer, 2007; Celce-Mercia, 2001). In addition, by following the same translation technique, listening is not taught as a separate skill. Rather, due to the lack of equipment and teacher training in the skill, learners access language through teachers prescribing L2 rules (Flowerdew & Miller, 2005), which entails that the teacher is the only source of knowledge for learners whose success depends on the translation from L1 into L2 and vice versa (Freeman, 2000).

Contrary to GTA, the ***directed method approach*** (DMA) consisted of placing L2 at the heart of learning (Flowerdew & Miller, 2005; Harmer, 2007). Translation was no longer in vogue. Only native speakers could teach L2, which meant that the target language was mandatory to teach (Harmer, 2007; Celci-Murcia, 2001). In the light of this inductive approach, new teaching strategies were adopted to communicate meanings, abstract concepts, and grammatical rules (Danesi, 2003; Flowedew & Miller, 2005; Celci-

Murcia, 2001). Yet, this method was devoid of the methodological and systematic teaching of listening in the target language (Flowerdew & Miller, 2005).

The ***audio-lingual method*** (ALM) arose during and after World War II (Flowerdew & Miller 2005). Then, there was an urgent need to improve foreign language learning due to the emergence of international languages, population mobility and the expansion of educational programmes. As Harmer (2007) states, the focus of this method is the continuous use of stimulus-response reinforcement to form learner habits through drilling, memorisation, substitution, and mimicry. The motives behind these processes were to enhance learners'accuracy by avoiding mistakes and controllingl learning and teaching materials (Celci-Murcia, 2001). In fact, the implementation of the two methodological procedures – presenting spoken forms to L2 learners and contextualizing the meaning in its linguistic and cultural context – lead to fostering new language learning habits (Richards & Rodgers, 2001; Cook, 2001).

Unlike the ALM, the ***communicative approach*** (CA), as its name implies, is based on viewing language as a communicative system (Celce-Mercia, 2001). The language course should include semantic notions and social functions of language use. At the practical level, role-play, dramatisation and group and pair work are used to integrate skills. The teacher is transformed into a facilitator, which requires fluency in the target language. The exposure to L2 is integral in applying this approach in teaching (Cook, 2001; Flowerdew & Miller, 2005; Larsen-Freeman, 2000; Richards & Rodgers, 2001).

Listening to language brings authenticity to the classroom, which means engaging learners actively in the learning process (Larsen-Freeman, 2000; Flowerdew & Miller, 2005). When teaching listening, finishing the task process is central in the communicative approach. An interaction between the learner's background and the listening task is maintained to extract, negotiate, and infer meaning and overcome any vocabulary deficiency, whether in bottom-up or top-down processes (Savignon, 2001).

In trying to overcome the focus of the communicative approach on language form, the ***task-based approach*** (TBA) was developed to emphasise language use (Carter & Nunan, 2001; Ellis, 2003; Harmer, 2007; Larsen-Freeman, 2000; Willis& Willis, 2001). Learners are provided with real-life contexts to fulfil language tasks and the focus remains on communication (Ellis, 2003; Richards & Rodgers, 2001). In fact, this approach rests on the meaning-focused task fulfilment and language use (Harmer, 2007). For this reason, some criteria should be observed: the task should plan for an activity by focusing on meaning; learning should be engaged in real-world and cognitive processes and the ultimate goal should be a communicative output (Ellis, 2003).

In adopting this approach to teach listening, learners, once exposed to language and provided with a communicative goal, embark on meaning formation, which is applicable to all language skills (Carter & Nunan, 2001). In an active process as such, learners listen to the authentic situations of language use and shape the information through the application of holistic inferential strategies (Flowerdew & Miller, 2005). Furthermore, learners in this regard are supplied with an enriched input to be reached and their proficiency level is constantly observed to allow them to comprehend listening tasks even with zero comprehension in the target language (Ellis, 2003).

The ***community language learning method*** (CLLM) or ***community counselling method*** (CCM) is based on Rodgerian counselling stating that the teacher is the counsellor who maintains social domains of learning, therefore leading to modifying the teacher's and learner's roles (Brown, 2002; Larsen-Freeman, 2000; Richards & Rodgers, 2001). Observing learners'needs is the teacher's goal towards assisting learners to be independent and self-assured (Brown, 2002). In this regard, a social domain is created along with interpersonal relationships to enhance the learning process and avoid learner anxiety (Richards& Rogers, 2001).

In essence, ***suggestopaedia*** advocates a set of recommendations from suggestology science. The premise of this approach is that the human brain is capable of understanding considerable amounts of learning materials in suitable conditions (Brown, 2001). Toward this aim, relaxation and teacher's control of learning should be provided (Richards & Rogers, 2001). Music, in fact, is used to provide relaxation and maximise learning.

The ***silent way approach*** involves an activation of learners'cognitive processes by leading the learner to discover, repeat and remember the input, observe physical materials associated with the learning material and be a problem-solving learner (Brown, 2000). Teachers, in their turn, should remain silent while students are engaged in productive L2 practice.

The **total physical response** approach (TPR) postulates that the coordination of speech and action is a prerequisite to learning a language (Richards & Rodgers, 2001). Translating verbal input into physical activities is achieved through four principles. The verbal input should allow students to be involved in physical activities, and receptive skills are prioritised over productive skills, teacher-student relationships should be interpersonal and new material is introduced only when students can convert it to physical activities (Danesi, 2003).

When compared to the aforementioned approaches, the TPR approach is the main proponent of the methodologists based on Rost's (2006) *initial listening*. The innovations in teaching listening are attributed to this approachthat draws upon Krashen's comprehensible input and code-breaking approach to listening (Cook, 2001; Maritnez-Flor & Uso-Juan, 2006; Nunan, 2002). By decoding the listening input, learners engage in effective L2 learning. Listening is approached through physical actions mediated by some tasks such as single unrelated commands, action series, natural action dialogues based on short scripts, and action role playing without a script, associated with short story-telling (Cook, 2001; Peck, 2001).

The ***strategy-based approach*** (SBA), developed in the 1970s, prioritises independent learning of the target language. While the teacher trains the learner to be independent, the latter assumes their responsibility by selecting tasks, discovering learning gaps and strengths, figuring out solutions, acquiring various problem-solving skills, applying maximum strategies and monitoring as well as self-evaluating the learning process (Cohen, 2003; Flowerdew & Miller, 2005). The learner, in this process, develops and resorts to various skills to effectively achieve the listening goal (Flowerdew & Miller, 2005).

This synthesis among the various methods aims at satisfying the needs of the teacher, learner and context (Bell, 2003; Griffiths, 2008), which in turn has influenced textbook design (Flowerdew & Miller, 2005). More precisely, in one listening lesson, the learner may be required to listen to sounds using a discrete item-based approach, to complete cloze sentences or paragraphs using a grammar-based approach and to reflect on their manner of listening.

Conclusion

Despite the changes in the teaching approaches of L2 listening, L2 learners are still unable to overcome the various obstacles outlined above and many othersbesides. Therefore, these learners still struggle with L2 listening. In the context of the participants in the present study, these participants as EFL Arab learners among many others, not only lack sufficient linguistic knowledge to understand the spoken input in English, but also the strategic knowledge that allows them to compensate for their linguistic deficiency.

The major aim of the present study, therefore, is to compare the contribution of cognitive and metacognitive strategies to listening comprehension with the hypothesis that metacognitive strategies would allow these learners to apply the various cognitive strategies available in the EFL textbooks used in their learning context.

The following chapter investigates these two strategies and provides EFL learners, researchers and practitioners with an insight into their definitions, types and importance.

CHAPTER 3 THE TEACHING OF LANGUAGE LEARNING STRATEGIES AND FACTORS AFFECTING IT

Introduction

Since the early 1970s, research has focused on the field of second language learning.The emphasis on teaching has shifted from teaching methods and approaches to the characteristics of the learner and their impact on second language acquisition processes (Wenden, 1987b). In other words, since then, there has been less focus on classroom-based language teaching methodology. Classroom-based language teaching methodology has given way to afocus on language learning strategies (White, 2008; Williams & Burden, 1997). Such a focus has led to a growing inquiry into how language learners process, store, retrieve, and use the target language material, a dimension that has allowed researchers to attempt to elicit how language learners use learning strategies as a means of improving their target language competences (White, 2008).

This chapter deals with the literature pertinent to one of the theoretical aspects of my study, namely language learning strategies. Section 3.1 will deal with the definition, types and importance of language learning strategies in general. Section 3.2 will define five cognitive strategiespertinent to the present study and discuss their types and importance. Section 3.3 will deal with metacognitive strategies. In particular, it will define metacognition and discuss its components, definition, types as well as the definition, types and importance of metacognitive strategies.In addition, this section will discuss the importance of metacognitive knowledge and concludes with the importance of metacognitive strategies for listening comprehension.Section 3.4 will conclude the chapter with language learning strategy instruction, language learning strategies and listening comprehension, factors affecting language learning strategies as well as with a preview of the hypothesis of the thesis and the research questions.

3.1 Definition and Types of Language Learning Strategies

3.1.1 Definitions of language learning strategies

The literature on language learning strategies has shown a lack of consensus in defining the term ‘strategy’ (Dörnyei, 2005; McDonough, 1995; White, 2008). Cohen (2003) for instance, defines language leaning strategies as “learning processes which are consciously selected by the learner” (p. 4). On the other hand, for Oxford (1999b), language learning strategies are specific actions, behaviours, steps or techniques that learners use to improve their own progression in developing skills in a second or foreign language. According to Rubin (1975), language learning strategies are also “the techniques or devices which a learner may use to acquire knowledge” (p. 43). Weinstein et al., (2000) define language learning strategies as “strategies [that] include any thoughts, behaviours, beliefs, or emotions that facilitate the acquisition, understanding or later transfer of new knowledge and skills” (p. 727). Such a lack of consensus in defining language learning strategies reflects how ambiguous the theoretical definition of the learning strategy construct is. An ambiguous definition as such has left several issues open. According to Dörnyei (2005), the most fundamental issue lies in determining the difference between engaging in an ordinary activity and a strategic learning activity. That is to say, what is the difference between the process of learning and learning strategy use? Despite the lack of consensus in defining learning strategies, research (e.g., White , 2008) confirms that such strategies are commonly defined as the operations or processes which are consciously selected and employed by the learner to learn the target language or facilitate a language task.

The following sectiondiscusses the different types of language learning strategies.

3.1.2 Types of language learning strategies

Language learning strategies are commonly classified into three main categories: cognitive, metacognitive, and socio-affective strategies (Brown, 2000; Chamot, 1990; Chamot & O’Malley, 1988; O’Malley et al., 1985b; Rubin, 1987a). Cognitive strategies involve the unconscious ways (Cook, 2001) or specific learning tasks (Brown, 2001; Chamot, 1990)that learners use to acquire the language. Metacognitive strategies are the self-regulatory (Chamot, 1990) strategies that have an “executive function” (Brown, 2000, p. 124). Socio-affective strategies deal with social-mediating activities and interact with others (Brown, 2000). They include questioning for clarification, cooperation and self-talk (O’Malley & Chamot, 1990).

Two main theoretical assumptions underlie allthe language learning strategies (Griffiths & Parr, 2001). The first assumption is that language learning is a cognitive process that allows theories of language learning strategies to postulate that learners are able to consciously influence their own learning.Regarding the second assumption, Griffiths and Parr (2001) argue that language learning strategies can be learnt and, therefore, taught.

3.1.3 Importance of language learning strategies in general

There is a correlation between the use of language learning strategies and improvement in performance (Rost & Ross, 1991; Rubin et al., 1988; Thompson & Rubin, 1996). In providing a broad view on the importance of language learning strategies, Oxford (1990) argues that learning strategies are the very tools learners use to solve problems, accomplish tasks, meet objectives or attain goals. Elaborating on this, Oxford has shown three major benefits of the use of language learning strategies.

First, language learning strategies allow learners to become more competent in communication. Oxford (1990) has revealed that language learning strategies enhance the growth of learners' communicative competence in different ways. Metacognitive strategies, for example, allow the regulation of learners' own cognitive abilities, their focus, planning and evaluation of their communication progress. Affective strategies, on the other hand, allow learners to develop the self-confidence and perseverance needed to involve themselves actively in language learning. Social strategies promote learners' interaction and empathetic understanding. Finally, compensation strategies help learners fill the gaps in their knowledge and continue communicating in an authentic way.

Second, language learning strategies allow learners to become more self-directed. According to Oxford (1990), language learning strategies encourage greater self-direction for learners, consequently allowing them to rely on themselves rather than on the teacher. This promotes learners' autonomous learning (Goh, 2008), allowing learners to gradually gain greater confidence, involvement and proficiency.

Finally, language learning strategies enable learners to become experts in problem-solving. In other words, language learning strategies provide learners with a variety of strategies allowing them to solve their learning problems. A learner may use reasoning or guessing strategies to promote their comprehension (Oxford, 1990).

The following section deals with the first type of language learning strategies that the present study investigates, namely cognitive strategies.

3.2 Cognitive Strategies

The first part of this section concerns the definition of cognitive strategies. The second deals with the importance of cognitive strategies in general and the last expands on the different types of cognitive strategies.

3.2.1 Definition, types and importance

The literature contains no one definition of cognitive strategies. Indeed, generally speaking, cognitive strategies are referred to as tasks (Chamot, 1995), steps (Flowerdew & Miller, 2005; Rubin, 1987a; Wenden, 1995b), operations (Martinez & Santiago De Compostella, 1996; Wenden, 1995a), techniques (Gardner, 2002), or manipulations (O'Malley et al., 1985b). To elaborate on the above, Chamot (1990) defines cognitive strategies as "[t]ask-appropriate strategies in which learners actually manipulate the information or skills to be learned" (p. 497). For Rubin (1987a), cognitive strategies are the steps or operations that are used in learning or problem-solving that require direct analysis, transformation or synthesis of learning material. Martinez and colleagues (1996) define cognitive strategies as "fundamental operations to obtain knowledge and understanding of the linguistic system" (p. 105). Finally, Gardner (2002) defines cognitive strategies as techniques that individuals use to help them learn the L2 and improve their skills.

Researchers have explored various aspects of learners' use of cognitive strategies (Dörnyei, 2005; Flowerdew & Miller, 2005; Goh, 1998b; Oxford, 2001, 2011). Oxford (2011), for instance, provides a number of tactics that language learners associate with cognitive strategies. First, language learners apply the strategy of using the senses by looking at the visible structure of the input in order to comprehend it. Second, learners may use the strategies of conceptualisation with details to allow them to distinguish between more and less important information. Finally, learners may use the strategy of going beyond the immediate data to predict what the speaker is going to say.

Another aspect that research into cognitive strategies has shown is the interaction between the learner and the cognitive strategies the learner uses. In this respect, cognitive strategies are directly related to learning tasks (Goh, 1998b), in that learners interact with the input to be learned by transforming it mentally or physically.Learners interact mentally by making mental images or elaborating on previously learned skills or concepts. When they interact physically, learners classifythe items to be learned

(Flowerdew & Miller, 2005). In addition, when using cognitive strategies, learners usually test their hypotheses by searching for clues both in the input and in their own background knowledge, guessing the meaning of unknown items and determining if the meaning makes sense, and if not, repeating at least part of the process (Oxford, 2001).

Regarding their importance,cognitive strategies are essential in learning a language (Oxford, 1990). In fact, as Oxford (1990) states, cognitive strategies "are typically found to be the most popular strategies with language learners" (p. 43). The importance of cognitive strategies is manifold. First, as "construction workers" (Oxford, 2011, p. 406), cognitive strategies help learners put together, construct, transform, elaborate, consolidate and apply L2 knowledge. Moreover, not only do cognitive strategies allow language learners to process and recall new information (Goh, 1998b), but they also help learners to make and strengthen associations between their new and already learned information, i.e., background knowledge (O'Malley & Chamot, 1990; Oxford, 1990, 2001). Finally, cognitive strategies facilitate the mental structuring of input (White, 2008) and the "construction of the mental edifice of L2 and itsculture" (Oxford, 2011, p. 44). All the aspects of cognitive strategies outlined above develop learners' language and facilitatetheir comprehension of the input (Oxford, 2001; White, 2008).

As for the types of cognitive strategies, they are manifold. The main ones are inferences, elaboration, prediction, contextualisation, reconstruction, resourcing, grouping, note-taking, summarising, deduction, imagery and transfer (Clark, 1977; Eysenck & Keane, 1995;Goh, 1998b;O'Malley & Chamot, 1990) (see Appendix A). This section of the chapter deals with the cognitive strategies of inferences, note-taking, summarisation, prediction and elaboration as they are the strategies that the CSBM include in the present study. Each strategy is tackled from three different dimensions: its definition, importance and types.

Inferences

Harley (2008) defines inferences as "the derivation of additional knowledge from facts already known" (p. 365). For Wenden (1995a), inferencing is the strategy which deploys obtained linguistic or conceptual knowledge to derive explicit hypotheses about the linguistic form, semantic meaning, or speaker's intention. In other words, one can make inferences by going beyond the literal meaning of the text in order to elaborate on what was already presented, or to maintain the coherence of the text.

One aspect of inferencing is achieved through conventional procedures involving language use and another through problem-solving procedures involving logic and real-world knowledge. Concerning the former, learners can understand extended texts (or extended speaking turns) by making use of ‘discourse grammar’ (Rost, 2002). In this regard, a primary inferencing process in listening, for instance, is determining what cohesive devices are being used by the speaker. These devices include anaphora, lexical substitutions, conjunctions and ellipses (Rost, 2002). The latter part of the process of inferencing includes general knowledge: “retrieval processes in which any piece of prior knowledge is retrieved” (Rost, 2002, p. 65). For instance, learners can use what they know about their own or a second language to infer meaning. To do this, learners use a top-down approach exploring the overall picture (or large meaning) from which to infer the meaning of individual items. In this respect, learners form hypotheses by defining what is important in a sentence, a phrase or an utterance and ignore irrelevant items. Another aspect of the top-down approach that learners apply to infer meaning is their use of what they know about the communication process. In this respect, learners consider information such as ‘who the participants are’, ‘what the history of the communication process the speaker or genre is’, and other kinds of social and discourse information (Wenden, 1995a).

As for the importance of inferences, it is manifold. Using inferences, as a process, is an effective way to increase comprehension of linguistic material (Bialystock, 1978; Chamot, 1989, 1990; Goh, 1998b; Rost, 2002; Nunan, 1999). Inferences force learners to process the material more deeply by making them do more work than they would with tasks that only require little comprehension (Nunan, 1999). A listener who does not have direct access to the speaker’s intended meaning in producing an utterance or series of utterances, for instance, relies on inferences to arrive at an acceptable interpretation of the utterances (Rost, 2002). In other words, inferences allow learners to use any available information to guess the meaning or usage of unfamiliar language items associated with a language task. In addition, inferences enable learners to predict outcomes or to fill in missing information (Chamot, 1989, 1990).

Moreover, inferences compensate for the limited capacity of the WM (Rost, 2002). In other words, inferences allow learners to overcome the cognitive processing handicap caused by the tremendous increase in the functional capacity of the WM during the process of integration of new information chunks into higher order chunks. In order to overcome their lack of ability to recall the exact verbal material that has been processed, for instance, listeners might construct only the number of inferences necessary to maintain a coherent representation of the text (Rost, 2002).

Regarding the types of inferences, there are three main types: logical inferences, elaborative inferences, and bridging inferences (Harley, 2008). As their name implies, *logical inferences* are derived from the meanings of the words. There arevarious types of logical inferences that learners deploy during listening comprehension (Rost, 2002). Initiating links allow learners to infer that ‘A is the reason for B.’ Enabling links allow learners to infer that ‘A makes Y possible.’ Schematic links help learners infer that ‘A contains an information framework that is needed to interpret B.’ Classification links allow learners to infer that ‘B expresses something that can be classified in terms of A.’ Practical (sequential) links enable learners to infer that ‘B expresses something that follows A.’ Logical links enable learners to infer that ‘A and B together express a ‘syllogism’ in logic.’ Finally, reference links allow learners to make anaphoric links between items across utterances (Rost, 2002).

Elaborative inferences, on the other hand, consist in expanding what is in the text with world knowledge. Such inferences are always culturally related and informed by both individual experiences and values (Rost, 2002)

Bridging inferences, sometimes called ‘backward inferences’ (Rost, 2002), consist in relating new to previous information (Clark, 1977). Rost (2002) defines bridging inferences as “[a]ny inference that fills in assumed facts or presupposes details in order to make a coherent representation” (p. 67). Bridging inferences are culturally related and based on cumulative experiences and personal attitudes.

Note-taking

Note-taking consists in writing key words and concepts in abbreviated verbal, graphic, or numerical forms (Chamot, 1989, 1990; Oxford, 1990; Piolat et al., 2005).Note-taking implies both comprehension (van Dijk & Kintsch, 1983) and written production (Alamargot & Chanquoy, 2001) that is similar to composition (Piolat, et al., 2005). Note-taking includes comprehension for note-takers, as listeners must comprehend information and try to store it in their long-term memory by writing it down (Piolat et al., 2005). In addition, note-taking includes composition for note-takers, as writers must select the information to record in ways that differ from the source material. As writers, therefore, note-takers use abbreviations, syntactic shortcuts, paraphrasing statements, and often a physical formatting of the notes that differs from the linear text of the written source material (Piolat et al., 2005).

With regard to the importance of note-taking, it allows students to learn both while they take notes and when they review their notes (Piolat et al., 2005). Taking-notes in itself increases learning by fostering retention and the connection of information. Indeed, while taking notes, students memorise, particularly when they engage in deep comprehension of the source (Williams & Eggert, 2002). In this respect, Hartley and Davis (1978) argue that the attentional capacity of note-takers decreases as a function of several factors such as the importance given to the task and to the information delivered. Moreover, note-taking reduces learners' attentional capacity throughout the course of a lecture (Scerbo et al., 1992). Notes constitute an external memory that can be used later for studying and other tasks (Piolat et al., 2005) .

There are different waysof taking notes. The simplest and most common form is that of raw notes. It is important to point out that for raw notes to become useful, learners need to return immediately (before they forget what was said) and organise their notes using a different system. Another methodof taking notes is the shopping list format. The shopping list format is extremely simple, but always requires note-takers to order and organize the spoken input (Oxford, 1990). The third method of taking notes is the 'semantic map'. The semantic map involves indicating the main word or ideas and linking these with clusters of related words or ideas by means of lines or arrows (Oxford, 1990).

Summarisation

Summarisation is defined as constructing a condensed version of the original passage or input, either written or spoken (Oxford, 1990). A summary can be either mental or written (Chamot, 1989, 1990). In this respect, a summary must capture the gist of a piece of information as well as reduce the material substantially (King, 1992). It is important to note that effective summarisation is generative in nature, that is, listeners or readers deploy their own experience to construct novel sentences. Such sentences make connections between the presented concepts and relate new information to the learners' prior knowledge and experience. In other words, when learners use their own words to summarisethe connections between the material to be learned and each learner's existing knowledge,those words are automatically constructed because they are associated with information stored in that particular learner's memory (Willtrock & Alessandrini, 1990).

Summarisation affects comprehension positively (Rineheart et al., 1986; Pearson & Fielding, 1991; Willtrock & Alessandrini, 1990). First, it cultivates active listening and minimises passive listening (Rinehart et al., 1986). In this respect, summarisation allows listeners to be involved in processing and manipulating information by using their schema or mental semantic network to organise the verbal input, retrieve stored information and focus attention on key concepts (Pearson & Fielding, 1991). In addition, summarisation allows listeners to differentiate key ideas from supporting or important ideas and to construct logical connections between them. Finally, being an activity that allows orderly memory search from a mental semantic network, summarisation helps listeners to impose a structure of organisation on what appears to be dissociated facts and helps listeners to retrieve information from their mental network (Willtrock & Alessandrini, 1990).

Second, summarisation prompts deep comprehension and learning (van Dijk & Kintsh, 1983) as it allows listeners to construct a solid foundation of factual and conceptual knowledge. In this respect, it is important to note that summarisation serves to reinforce the memory representation of the content beyond which learners achieve through listening. Writing a summary requires much more conscious thought, judgment and effort. Indeed, when summarising, a listener is not only selecting the important ideas of the text, but also reconstructing the meaning in a more succinct and generalised form (van Dijk & Kintsch, 1983).

Third, summarisation allows learners to promote self-testing during listening (Brown & Day, 1983; Garner, 1982; Palinscar, 1986), which may signal comprehension breaks and invite listeners to initiate fix-up strategies to repair breaks in comprehension (Winne& Hadwin, 1998). Summarising a text may also improve comprehension by improving meta-comprehension accuracy and increasing the effectiveness of self-regulated study (Winne & Hadwin, 1998).

Fourth, summarisation urges students to use other cognitive strategies which are necessary to good comprehension, such as activation of prior knowledge, prediction, questioning, and verifying (Brown & Day, 1983).

Finally, summarisation strategy training is especially effective as it has transfer effects to a variety of measures (Bean & Steenwyck, 1984) such as standardised means of listening comprehension. There are several factors that may pave the way for these transfer effects to occur. The first factor is that summarisation training encourages learners to become more aware of the ideas structured within the text and how individual ideas relate to one another (Rinehart et al., 1986). The second factor is that summarisation training encourages learners to attend to the input text and improve metacognitive control of the listening processes. This is especially important for listeners who tend to be less attentive than good listeners (Pressley, 2002), for instance.

As for the types of summarisation,at an early stage of language learning, summarising can be a simple process, such as providing a title to what has been heard. The title functions as a kind of summary to the story or passage(King, 1992). Another method is to depict a series of events in the order in which they occur in a story. This is a very useful exercise, especially for beginners, because it links the verbal with the visual pictures. As learners advance in their language knowledge, their summaries could be written in the target language, thus enabling more written practice. Advanced learners are able to produce more complex summaries such as a *précis* or an *abstract* (Oxford, 1990).

Prediction

Prediction is defined as the guesses that listeners make before and while listening. In other words, prediction involves guessing what a piece of spoken passage will be about or what language information will follow such as a word or a phrase (Goh, 1998b; Sheerin, 1987; White, 2008). It is important to note that listeners are able to predict and interpret language by analogy with past similar experiences. In other words, listeners may have a variety of stereotyped expectations of particular people, places, situations and text types which they can call upon and use as points of comparisons with what is currently being heard and experienced (Sheerin, 1987).

With regard to its importance, prediction is a key process in understanding L2 spoken language (Brown, 2000). In this respect, it is important to note that when native speakers listen, they use their perception of the key features of the context (Hymes, 1964) and their knowledge of the world to limit the range of possible utterances they are about to hear. By analogy, this ability to set up predictions, both before and while listening to the auditory input, reduces L2 listeners' memory load and therefore directs their attention. For this reason, listeners do not have to pay too much attention to, and actively process every phoneme, syllable, word, phrase or even tone group of a passage. Instead, listeners "can simply process the message of deviation from what was expected and thus reduce their memory load" (Sheerin, 1987, p. 126), which allows listeners to monitor the incoming message effectively and set up further predictions.

Elaboration

Elaboration is defined as the strategy that allows learners either to relate new information to prior knowledge or information that has previously been shared in memory, to relate different parts of new information to each other, or to make meaningful personal associations to the new information (Chamot, 1989, 1990; O'Malley et al., 1989; Wenden, 1995a). In this regard, Wenden (1995b) states that when learners elaborate on the information they hear, they identify patterns in the data, make associations and identify deeper meanings and classify them. This makes certain researchers consider elaboration to be a super-ordinate category for other strategies such as inferences, transfer, deduction, imagery and summary. Moreover, Rubin (1987a) refers to inferences and deductive reasoning as two general types of cognitive strategies which help with elaboration.

As for its importance**,** elaboration is considered as the basic type of processing necessary for comprehending and storing information (O'Malley et al., 1989; Wenden, 1995a). In this regard, research on elaboration is supported by the *generative learning principle* (Jonassen, 1994; Wittrock & Allesandrini, 1990). According to this principle, learners enhance their understanding when they construct meaning and integrate new meaning into what they already know. Consistent with this perspective, elaboration allows learners to actively generate relations both among the parts of the text as well as with their own knowledge, experience and the text. Elaboration, therefore, enables learners to create models that organise information in ways that fit their own experiences and by so doing, generate an effective representation (Graesser et al., 2002). Thus, listeners who have prior knowledge in the content area or life experiences that they could call upon to help understand the text materials will process the new information more effectively than those listeners who lack prior content knowledge or experiences related to the text (Dornisch et al., 2011). Moreover, providing precise elaboration helps learners to process texts deeply, makes passages more memorable (Bransford et al., 1982) and facilitates learning (Stein & Bransford, 1979).

There are various types of elaboration. It can be personal, related to world knowledge, academic, between parts, questioning, self-evaluative, creative or in the form of imagery (Chamot, 1989). *Personal elaboration* involves making judgments about or personally reading the input presented. *World elaboration* consists in deploying knowledge gained from experience in the world. *Academic elaboration* includes using knowledge gained in academic situations. *Between-parts elaboration* involves relating parts of the task to each other. *Questioning elaboration* consists in using a combination of questions and world knowledge to brainstorm logical situations in a task. *Creative elaboration* involves making up a story line, or using anintelligent perspective. Finally, *imagery elaboration* involves using mental or actual pictures or visuals to represent information (Chamot, 1989).

To conclude this section, cognitive strategies such as inferencing, note-taking, summarisation, prediction and elaboration may allow learners to engage in the active learning processes that should help in the development of strong mental models necessary for the deep processing of texts (Dornisch et al., 2011).

Despite all the benefits of the cognitive strategies outlined above, EFL Arab learners in the context of the present study have not yet acquired enough strategic knowledge to allow them to compensate for their L2 linguistic deficiency. There is evidence in the literature that these learners have not been trained in how to control these strategies despite the fact that they are included in their EFL textbooks and that these learners have been deploying them for over twelve years now. There is also evidence in the literature that many ESL/EFL practitioners and teachers have misconceptions about learning how to use these cognitive strategies. They assume that, like any other ESL/EFL learners, these EFL Arab students can learn to control their use of cognitive strategies by themselves. In other words, thesestudents do not need any explicit strategy training to learn how to control their use of cognitive strategies. The aim of the present study therefore, isto explicitly teach these learners howto control their use of cognitive strategies through the application of a battery of metacognitive strategies when listening for comprehension.

The following section discusses these various metacognitive strategies as well as their types and importance.

3.3 Metacognitive Strategies

The first part of this section deals with the definition and components of metacognition. The second part concernsthe first component of metacognition, namely metacognitive strategies and the third part discusses metacognitive knowledge.

3.3.1 Metacognition: definition and components

Flavell (1976) defines metacognition as "knowledge concerning one's own cognitive processes and products or anything related to them, e.g., the learning-relevant properties of information or data" (p. 232). In this respect, it is important to note that the construct of metacognition in L2 is based on reading instruction (Goh, 2008). It is closely related to Pressely and Gaskin's2006 construct of metacognition in reading instruction outlined below.

1. Memory for text improves with the use of individual (single) strategies.
2. Comprehension improves with the use of a repertoire of strategies.
3. Direct explanation and modelling improves comprehension.
4. Direct teaching of metacognitive information increases strategy use.
5. Development of strategy use takesconsiderable time and practice.
6. There is value in teaching students how to self-direct and monitor comprehension.
7. Students need to use what they know to understand new information.
8. Many factors affect motivation,especially efforts made at using task-matched strategies.
9. Competent thinking includes at least four major components: strategies, metacognition about strategies, world knowledge and motivation. (pp. 103-104)

The reason for having a construct based on research in reading comprehension is that although listening and reading are separate skills, they share many characteristics (Bae & Bachman, 1998; Buck, 2001; Field, 2008a). Carroll (1991) characterises the language domain as follows:

> [All] language abilities tend to be rather highly correlated; their general degree of correlation can be attributed to the influence of a general high-order factor

of language ability or general language development. (p. 5)

Some of the major similaritiesbetween listening and reading are outlined below. First, as receptive skills, both listening and reading require language processing which involves decoding and comprehension. Being related, both skills require the application of a general ability of language comprehension involving two basic knowledge sources: linguistic knowledge and world knowledge.The former involves vocabulary and syntax, while the latter includes topic, structure, schema and culture (Vandergrift & Baker, 2015). In other words, both listeners and readers draw upon linguistic knowledge to extract ideas and relate them to what has gone before. They interpret or infer what speakers or writers have left unsaidby making connections to world knowledge (Field, 2008).

Second, as Vandergrift and Baker (2015) argue, both skills require a “cognitive processing that is flexible and adaptable to task demands” (p. 393), allowing L2 listeners and readers not only to deploy internal conceptualisation of information, but also to construct in working memory the appropriate mental representation that has been understood and interpreted.

Finally, additional factors, such as metacognitive strategies and motivation, contribute to success bothin listening and reading (Grabe, 2009; Vandergrift & Baker, 2015).

The following section explores the components of metacognition: metacognitive strategies and metacognitive knowledge, respectively.

3.3.2 Metacognitive strategies: definition, importance and types

In this section, I will deal with the second type of language learning strategies, namely metacognitive strategies that the present study investigates. Firstly, I will define metacognitive strategies and discuss theirimportance.Secondly, I will focus on the types of metacognitive strategies.

Definition and importance of metacognitive strategies

Goh (1998b) defines metacognitive strategies as the techniques that “involve thinking about the way information is processed and stored, taking appropriate steps to manage and regulate these cognitive processes” (p. 126). This is based on Flavell's (1976) definition of metacognition outlined above.

Metacognitive strategies are of crucial importance in all types of learning as they assist learners to regulate (Chamot, 1995) or control (Cohen, 1998; Schraw, 1998), manage (Oxford, 2001; Wenden, 1995b) and oversee their learning processes (Vandergrift, 1999; Wenden, 1995b). In the field of language learning, in particular, metacognitive strategies are essential for successful learners both for classroom-based language learners (Chamot, 2004; Oxford, 1990) and for independent learners (Oxford, 2011; Jacobsen et al., 1995; Rubin, 2001).

Metacognitive strategies improve language learners' performance in a number of ways, including better use of attentional resources, better use of existing strategies and a greater awareness of comprehension breakdown (Schraw, 1998; Oxford, 1990). Moreover, metacognitive strategies "empower [language] learners" (Anderson, 2008, p. 91). In other words, when language learners reflect upon their learning strategies, they become better prepared to make conscious or deliberate decisions about what they can do to improve their learning. This allows language learners not only to develop their knowledge about how to actively achieve success in language learning, but also to gain greater awareness of ways to operate as more self-directed learners (Wenden, 1998; Oxford, 2011).

Another importantaspect of metacognitive strategies for language learners is that such strategies motivate language learners (Chamot, 1995; Paris & Winograd, 1990) and increase their sense of self-efficacy or confidence in being successful (Chamot, 1995). Metacognitive strategies inform and guide learners to make appropriate cognitive judgments about their thinking and learning. Metacognitive strategies allow learners to make judgments about themselves or the task at hand. For example, students may ask themselves *What do I know about this topic? Is this task hard or easy? How much should I know about this topic? How much should I try? Do I need to check my work? What are the consequences of doing well or poorly?* (Paris & Winograd, 1990).

These judgments about the task of learning in combination with other judgments and metacognitive beliefs about effort expectation difficulty and outcomes, including social interaction, motivational disposition, and consequences of learning, involve self-appraisal of cognition in some form or another. In this regard, judgments of the learning situation are metacognitive self-appraisal, because they involve a cognitive dimension of evaluation. Learners can judge their level of comprehension while listening, or preparedness for a test while studying. Metacognitive judgments as such are important because they determine which tasks students find worthwhile and how they choose to engage with them (Paris & Winograd, 1990).

Metacognitive beliefs are defined as the expectations that students hold with regard to their thinking and learning. The best known instances of metacognitive beliefs involve 'attribution of success and failure' (Paris & Winograd, 1990). Learners' beliefs reveal the following four cognitive dimensions that impact students' orientation to language learning: agency, instrumentality, control and purpose. Regarding agency, students develop beliefs about themselves as learners and their own cognitive abilities. They perceive themselves as skilful in particular areas or as generally competent or incompetent. They can develop beliefs about their ability to use particular strategies successfully. Metacognitive beliefs must include this view of themselves as 'interactional, self-directed, or self-critical' learners (Paris & Winograd, 1990).

Concerning instrumentality, students need to realise the cognitive utility of strategies, such as summarising, note-taking and planning, for instance (Paris & Winograd, 1990).In order to avoid developing passive and antagonistic attitudes toward learning and any view of themselves as ineffectual, students must believe in their own thinking. They need to believe that their actions are responsible for their successful performance and that failure is neither inevitable nor uncontrollable. On the contrary, failure must be regarded as a normal part of learning that can be constructively used to shape future efforts.

Finally, purpose impliesthe need for students to believe in the purpose of their own learning. They need to develop positive expectations of their performance and value success (Paris & Winograd, 1990).

To conclude this section on metacognitive beliefs, it is important to note that students who holdthese metacognitive beliefs about learning to read, write, calculate and so forth, develop a different orientation to the craft of schooling than students who choose to learn for other reasons.

Regarding the third dimension of the motivational aspect of metacognitive strategies, making the right actions, choices or decisions in learning, metacognitive judgments and metacognitive beliefs "guide decision- making at critical junctures in classroom learning" (Paris & Winograd, 1990, p. 40). When students choose to do task A or task B, for instance, they rely on their perceptions of many different factors, including the expected payoff, their expectations of success, and the amount of effort required to accomplish the task.

It is important to note that self-efficacy, defined as the conviction a person holds that he or she can successfully execute the behaviour required to produce certain outcomes (Bandura, 1977b), is a distinctive cognitive process in human motivation and action (Bandura 1977b, 1978; Zimmerman, 1990a; Zimmerman, 1990b). Such a process plays a crucial role in human motivation and action. An important question in this regard relates to how metacognitive strategies increase self-efficacy.

Metacognitive strategies increase self-efficacy in various ways (Bandura & Schunk, 1981; Bandura, 1986; Schunk, 1981). Bandura and Schunk (1981) studied the effects of goal setting and instructional training and reported that the students who set page completion goals daily for their mathematics classes displayed better motivation and higher perception of self-efficacy in acquiring arithmetic skills than the students who relied on the effect of problem-solving on motivation. Zimmerman and Ringle (1981), on the other hand, reported that both vicarious and direct outcomes of problem-solving affected young children’s perception of self-efficacy as well as their subsequent motivation. In addition, in a summary of research on perceptions of self-efficacy, Zimmerman (1990a) stated that the students’ use of self-regulation during academic functioning increased perceptions of self-efficacy and that such an increase was associated with greater intrinsic motivation and higher academic achievement. This leads to a consideration of the contribution of self-efficacy to learning.

Self-efficacy plays an important role in linking the effects of instructional treatments to students’ task persistence during the learning of acquired skills (Zimmerman, 1990a). Similarly, self-efficacy can lead students to set more challenging ultimate goals for themselves (Zimmerman, 1990b).

Types of metacognitive strategies

Metacognitive strategies include advance organisation, advance preparation, organisational planning, selective attention, strategy evaluation, self-monitoring, self-evaluation and self-management strategies (Goh, 2002b; O’Malley & Chamot, 1990; Oxford, 1990; Vandergrift, 1996, 1997b, 2003a) (see Appendix A). In the present study, the focus will be on planning, monitoring, and evaluation. This part of section 2 deals with various features of each of these metacognitive strategies. More precisely, I will deal with their definitions, importance and types.

Planning: definition, importance and types

Planning is a strategy that allows learners to develop awareness of what needs to be done to accomplish a task and to develop an appropriate action plan and/or appropriate contingency plan to overcome difficulties that may interfere with successful completion of a task (Goh, 2002b; O’Malley & Chamot, 1990; Oxford, 1990; Vandergrift, 1997b, 2003a; Vandergrift & Goh, 2012). In the performance of a learning task, planning may precede the task. Learners determine what their objectives are and decide on the means by which they will achieve them. This phase is called pre-planning (Wenden, 1995b). Planning-in-action depends, in part, on two other metacognitive strategies: monitoring and evaluation.

Pre-planning or preparation and planning are important metacognitive strategies that can improve students’ learning in various ways (Anderson, 1995). By engaging in preparation and planning in relation to a learning goal, for instance, learners are thinking about how they intend to go about accomplishing it. A student might set a relevant goal for themselves such as desiring to answer any comprehension questions at hand (Anderson, 1995). In addition, preparation and planning allow learners to anticipate some aspects of the input such as the main contents and some known vocabulary related to the main content. Learners can achieve this by activating their prior knowledge of the topic and by recalling their approaches to similar tasks (Weaver & Cohen, 1998), which makes planning a necessary metacognitive strategy for learning (Oxford, 1990).

Planning includes advance organisation and self-management (Berne, 2004; Chamot & Küpper, 1989; Flowerdew & Miller, 2005; Goh, 2008; O’Bryan & Hegelheimer, 2009; O’Malley & Chamot, 1990; Oxford, 1990, 2011; Rubin, 2005; Schraw, 1998; Vandergrift, 1997b; Vandergrift & Goh, 2012). Advance organisation allows learners to preview the anticipated task (Chamot et al., 1988). In other words, learners define their goals before tackling any learning activity in order to anticipate the task and/or propose strategies for managing it. In a listening activity, for instance, a learner might decide to read over what they have to do or to try to think of the questions the teacher is going to ask (Flowerdew & Miller, 2005).

Self-management, on the other hand, allows learners to understand the conditions that help themto successfullyaccomplish any language tasks. Similarly, self-management permits learners to arrange for the presence of those conditions and to control their language performance, maximizing the use of their prior knowledge or what is already known about the information in the input. In a listening activity, for example, a listener might try to adopt a frame of mind which enables the listener to understand the spoken passage or to put everything aside and concentrate on what the speakers are saying (Flowerdew & Miller, 2005).

Self-management necessitates two metacognitive strategies: directed and selective attention. Directed attention allows learners not only to decide in advance to attend andignore irrelevant distractors, but also to maintain attention during task execution (Chamot, 1989). A listener, for example, might decide to 'listen really hard' and to 'put everything aside and concentrate on the spoken input' (Flowerdew & Miller, 2005). Selective attention, on the other hand, permits learners not only to decide in advance to attend to specific aspects of language input or situational details that assist in the performance of a task, but also to attend to specific aspects of the language input during task execution (Chamot, 1987). Before tackling a listening task, for example, a student might decide to listen for the key words or to establish the speakers in the conversation, their relationship by tone of voice, and how they will address each other (Flowerdew & Miller, 2005).

Monitoring: definition, importance and types

Monitoring is the strategy that allows learners to check, and/or correct their comprehension in the course of learning (Anderson, 2008; Chamot, 1989; Cohen, 2003; Goh, 2002b, 2008; O'Malley & Chamot, 1990, Vandergrift, 2003a). This is based on Flavell's (1981) definition of monitoring which "consists of keeping track of how the learning is going and taking appropriate measures to deal with difficulties that interfere with the process" (p. 272). Implicit in this description is an assessment of the cause of the perceived difficulties (Wenden, 1998). Such difficulties may include lack of focus, emotional malaise, problems in understanding or expressing or ineffective applications of one or more cognitive or socio-affective strategies (Rubin, 2005). This aspect of monitoring allows Schraw (1998) to consider monitoring as the ability to engage in periodic self-efficacy while learning.

Another characteristic of monitoring is self-efficacywhich develops slowly and is quite poor in children and even adults. Self-efficacy improves with training and practice (Pressley & Ghatala, 1990). In this regard,it appears that monitoring is the behaviour of effective language learners who are able to recognise the causes of their comprehension breakdown, which allows them to pause in order to do something about them (Anderson, 1995). In other words, monitoring is the key process that distinguishes effective language learners from ineffective ones (Nisbet & Shucksmith, 1986). Thanks to their monitoring ability, effective language learners are able to recognise their comprehension breakdown and decide on the appropriate remedy to rectifyit (Anderson, 2008).

On the other hand, monitoring allows less competent learners to regulate their learning process in various ways (Anderson, 2008; Oxford, 1990; Wenden, 1998; Weinstein & Mayer, 1986). First, monitoring can lead learners to refine and expand their metacognitive knowledge (Wenden, 1998). While monitoring their learning, learners are prompted to examine both the relationships between learning goals as well as the means of achieving their task outcomes and to accommodate their knowledge to what has been noticed (Flavell, 1979b, 1981). When a learner makes a list (the means) to facilitate understanding of certain technical terms (learning goal), for instance, monitoring might allow the learner to realise that the list they have designed is not helping them (learning outcomes). A learner, therefore, may discontinue using such a revision list of strategic knowledge and select another strategy that is more selective (Wenden, 1998). By monitoring their use of learning strategies, learners are better able to meet their learning goals (Anderson, 2008).

Second, monitoring allows learners to track the causes of their learning problems, such as inappropriate verbatim translation or overgeneralisation from a native language. Monitoring, in this regard, permits learners to understand more about the new language, their own use of learning strategies, and the extent of their progress (Oxford, 1990). Equally important, monitoring enables learners to use a variety of strategies during the process of problem-solving. In this regard, Vandergrift and colleagues (2006) have provided a list of these strategies. They include strategies such as:

A. using known words to deduce the meaning of unknown words,
B. using the general idea of a text to deduce unknown words,
C. using one’s experience and general knowledge in interpreting the text,

D. adjusting one's interpretation[s] upon realising that [they are] not correct,
E. monitoring the accuracy of one's inferences for congruency with the developing interpretations, and
F. comparing the developing interpretation[s] with one's knowledge of the topic

(p.450)

In addition, monitoring allows learners to orchestrate a variety of strategies and select the appropriate ones for the task at hand. In this respect, effective strategy use does not occur in isolation. This suggests that understanding the use of the interdependence strategy while engaging in a language learning task is an important learning experience. Since monitoring urges learners to apply a variety of strategies in order to select the appropriate ones, learners become more strategic in their learning (Bialystock, 1979).

Equally important, monitoring provides learners with opportunities to practice a variety of strategies which they can apply in their pair and class discussions. Instances of these strategies are supporting ideas, using evidence and providing counter-arguments (Reznitskaya et al., (2007). Gillies and Bayle (2006) refer to these strategies as *mediating learning behaviours*because they are designed to promote thinking and learning. According to Gillies and Bayle (2006), these behaviours include:

A. challenging basic information,
B. using cognitive and metacognitive reasoning,
C. confronting discrepancies,
D. promoting,
E. focusing on issues,
F. using tentative questions, and
G. scaffolding information.(p. 450)

Moreover, monitoring allows learners to generate deep-level elaborations, inferences and predictions through self, peer and class monitoring. This systematic approach enables learners to allocate more attentional resources to the L2 input instead of translating into L1. Such attentional resources, therefore, are not squandered on inefficient on-line translation. This is supported by Eastman (1991) who argues that:

[m]eaning is constructed in a continuous metacognitive cycle in which new material interacts with listener inferences and is monitored against world knowledge and expectations generated by the conceptual framework and the developing mental translation of the text in memory. (p. 486)

Monitoring and problem identification strategies contribute to the development of metacognitive awareness in terms of directed attention (O'Bryan and Hegelheimer (2009). O'Bryan and Hegelheimer (2009) conducted a study to investigate the impact of this metacognitive strategy training on listening comprehension. A link was found between the directed attention statements on the Metacognitive Awareness Listening Questionnaire (MALQ) reading such as*I focus harder on the text when I have trouble understanding* and strategies, such as selective attention, monitoring and problem identification. Results also showed that these strategies were used frequently, indicating a conscious effort to focus on either specific or general aspects of the text when there is comprehension breakdown.

There are three major types of monitoring: comprehension monitoring, double-checking monitoring and auditory monitoring (Chamot & Küpper, 1989; Goh, 2010;O'Bryan & Hegelheimer, 2009; O'Malley & Chamot, 1990; Oxford, 1990; Vandergrift, 1996, 1997b, 2003a; Vandergrift & Goh, 2012). Comprehension monitoring is defined as checking, verifying or correcting one's understanding at a local level (Chamot & Küpper, 1989; O'Malley & Chamot, 1990; Oxford, 1990; Vandergrift, 1996, 2003a). In a listening activity, for instance, learners might apply comprehension monitoring in different ways. They might translate and see if it sounds right and just try to put everything together, believing that understanding one thing leads to understanding another (Vandergrift, 1997b). Double-checking monitoring consists of tracking across a task previously undertaken or considering possibilities (Chamot & Küpper, 1989). In a listening activity, for example, a learner might catch on to an idea at the end and then go back (Vandergrift, 1977b). The example below illustrates how this monitoring process operates:

sunny in the morning, that not making sense…(earlier) it sounded like a cold front, something doesn't make sense to me and more.

(Vandergrift, 1997b, p. 392)

Finally, auditory monitoring allows learners to listen for the language (how something sounds) to make decisions. During monitoring in a listening comprehension activity, learners might use a variety of tactics. They might use the sound of words to relate to other words they know (Vandergrift, 1997a).

Evaluation: definition,importance and types

Evaluation is the strategy allowing learners to check the outcomes of their language learning against an internal measure of competence and accuracy (Chamot & Küpper, 1989; Goh, 2008; O'Malley & Chamot, 1990; Oxford, 1990; Vandergrift, 1996, 1997b, 2003b; Vandergrift & Goh, 2012). In other words, evaluation refers to appraising the products and efficiency of one's learning. It is important to note that whereas ineffective learners often do not evaluate the success or failure of their learning, effective language learners must be able to evaluate the efficacy of what they are doing (Anderson, 2008). When they evaluate their learning, learners apply the criteria they establish during planning to determine whether they have met some or all of the other goals. Learners then consider whether they are satisfied with the performance or need to apply problem-solving strategies to obtain their goals (Rubin, 2005).

Evaluation allows learners/listenersto maintain an involvement in metacognition by asking themselves questions and responding to them thoughtfully. For instance, while learning the specific listening skill of main idea comprehension, learners can evaluate their strategy use in many ways. Answering the question *What am I trying to accomplish?* for instance, allows students to articulate that they are trying to identify the main idea in the passage they are reading or listening to and that they are doing so because understanding the main idea is a prerequisite to understanding the rest of the passage. Equally important is responding to the question *What strategies am I using?*Answering such a question enables students to know which strategies are available to them and to recognise which one(s) they need to select to identify the main idea. In addition, answering the question *How well am I using the strategies?* allows learners to judge how competently they are using the strategies they have selected, that is, whether the strategies are helping them to achieve their goal. Finally, if the strategies they are using are not helping them to achieve their goal, answering the question *What else could I do?* allows them to identify and deploy alternative strategies.

To conclude, it is possible to teach learners of all ability levels how to assess their own performance more accurately (Kruger & Dunning, 1999). Thoselearners whose skills or knowledge bases are weak in a particular area cannot be fully aware of their weaknesses. In other words, they do not know enough to recognise that they lack sufficient knowledge for accurate self-appraisal. In contrast, learners do not recognise the extent of their knowledge or skills. By teaching learners how to evaluate their achievement, they are enabled to become more accurate in self-evaluation.

Learners apply a variety of strategies to evaluate their performance (Chamot & Küpper, 1989; Flowerdew & Miller, 2005; O'Malley & Chamot, 1990; Oxford, 1990, 2011; Vandergrift, 1996, 1997b, 2003a, 2007, 2008; Vandergrift & Goh, 2012). Such strategies include performance evaluation, problem identification and substitution or problem-solution. To evaluate their performance, learners judge their overall execution of the task (O'Malley & Chamot, 1990; Oxford, 1990; Vandergrift, 1996, 1997b, 2003, 2008). In a listening activity, for instance, a learner might ask themselves the question *How close was I*?in determining the extent of their performance (Vandergrift, 1997b).

Strategy evaluation suggests that learners judge their strategy use when the task is completed (Chamot & Küpper, 1989). In a listening activity, for example, a learner might judge the efficacy of a particular strategy by asking themselves the question *I used some strategies to help me understand the listening passage. Are they useful?*

Problem identification relates to learners decidingwhich problems they are still encounteringwith the text or task (Rost, 2002). The following extract from a think aloud protocol illustrates how learners identify their problems in their learning process:

> I'm not sure about "partager" and I'm not really sure what that means. I think that kind of has something to do with that. (Vandergrift, 1997b, p. 393)

Finally, substitution or problem-solving consists in selecting alternative approaches, revised plans, or different words to accomplish a particular learning task. In a listening task, for instance, learners may say the following to themselves:

> I missed something between, but I could tell that he [the speaker] didn't know what to tell his teacher so he obviously didn't do his homework because of the apartment (Vandergrift, 1997b, p. 87).

To sum up, what allows L2 learners,including EFL Arab learners in the context of the present study, to control their use of cognitive strategies in L2 listening comprehension when deploying metacognitive strategies is that these strategies raise their awareness of how to achieve success and how to operate more self-directed learning when applying cognitive strategies to L2 listening comprehension.

As an attempt to show further benefits of metacognitive strategies, the following section deals with a further theoretical aspect of metacognitive strategies, namely metacognitive knowledge.

3.3.3 Metacognitive knowledge: importance and components

This section deals with two aspects of metacognitive knowledge: importance and components of metacognitive knowledge.

Metacognitive knowledge plays an important role in many different cognitive activities: oral communication of information, oral persuasion and comprehension, reading comprehension, writing, language acquisition, attention, memory, problem-solving, social cognition and various types of self-instruction activities (Flavell, 1979b; Vandergrift, 2002, 2005; Wenden, 1998)). In this regard, Flavell (1979b) adds that ideas about metacognitive knowledge are reaching areas such as social learning theory, cognitive behaviour modification, personality development and education.

This kind of knowledge helps learners become active participants (Wenden, 1998), impacts learners' strategic knowledge (Flavell, 1979b) and their self-regulation of learning, and allows learners to become motivated, self-confident and self-efficient (Goh, 2005; Vandergrift, 2002b, 2005; Vandergrift & Tafaghodtari, 2010; Zhang & Goh, 2006)

Moreover, metacognitive knowledge helps learners become active participants in their own performance as metacognitive knowledge is the knowledge base for effective planning, monitoring and evaluating (Wenden, 1998). In this regard, metacognitive knowledge impacts learners' self-regulation of learning by allowing them to find the most appropriate ways to practice and reinforce what they have learned on their own rather than being passive recipients of instruction (Zhang & Goh, 2006). Similarly, metacognitive knowledge helps learners become more strategic in that it leads them to select, evaluate, revise, and abandon cognitive tasks, goals and strategies according to the requirements of the tasks (Flavell, 1979b). Finally, by being aware of the impact of the roles of metacognitive knowledge outlined above, learners become highly motivated to perform any given cognitive activity related to language use, language acquisition and various types of self-instruction (Wenden, 1998).

Components of metacognitive knowledge

Metacognitive knowledge consists of three components, namely person knowledge, task knowledge and strategic knowledge (Flavell, 1979b; Goh, 2005; Goh & Taib, 2006; Vandergrift& Goh, 2012; Wenden, 1991; Zhang & Goh, 2006). The following section deals with each of these components.

Person knowledge: definition and components

Wenden (1998) defines person knowledge as "the general knowledge learners have acquired about the human factors that facilitate or inhibit learning" (p. 518). Person knowledge consists of people's beliefs about the nature of themselves and other people as cognitive processors as well as how a variety of that person knowledge influences language learning (Flavell, 1979a).

Flavell (1979a) subcategorises people's beliefs into three types. The first consists of beliefs about *intraindividual differences*. An example of this is the learners' belief that they can learn more effectively by listening than by reading or writing. The second type of belief includes beliefs about *interindividuals*such as the learner's belief that one of their friends is more socially sensitive than another. The third type comprises beliefs about "universals of cognition" (p. 907). For example, beliefs about universal properties of cognition such that children might gradually acquire a language and that there are various degrees and kinds of understanding like communication, attending, recallingand problem-solving (Flavell, 1999). Another example of these beliefs is that learners may not understand someone or something they hear, see or read about if they do not attend closely (Wenden, 1995b).

Factors affecting person knowledge

The factors that influence person knowledge include age, cognitive factors, motivation and personality, among others.

i. Age

The role of age in L2 acquisition is a controversial issue (Long, 1990; Ellis, 1989; Scovel, 1988). The controversy centres around whetheror not there is a critical period for language learning. In other words, is there a certain period when language is most efficiently learnt such that after this period it is impossible to learn or learn efficiently? If such a critical period exists, when does it begin and end? Among those who advocate that there is a critical period of L2 acquisition is Long (1990) who argues that the acquisition of a native-like accent is impossible by learners who do not begin learning a language before the age of six. Long (1990) also argues that it is difficult for learners who begin at puberty to acquire native-like grammatical competence. For Scovel (1988), on the other hand, the critical period for a native-like pronunciation, for instance, is around the age of 12. Wenden (1991) argues that there may be differences between adults and children in the rate and final product of language learninginthatolder learners may enjoy an initial advantage with regard to the rate of acquisition.

ii. Cognitive factors

Cognitive factors include aptitude, general aptitude and language learning aptitude, intelligence and cognitive style. Carroll (1981) defines aptitude as the ability or capacity for learning a task. Aptitude depends on the enduring characteristics of the learner. Carrol (1965) identifies four factors regarding language aptitude: phonemic-coding ability, grammatical sensitivity, inductive-language learning ability and rote-learning ability. Phonemic-coding ability is the ability to code foreign sounds in a way that can be recalled later. This ability is seen as related to the ability to spell and to manage sound-symbol relationships. Grammatical sensitivity relates to being able to recognise the grammatical functions of words in sentences. Inductive language learning is about being able to identify the patterns of correspondence and relationships involving form and meaning. Finally, rote-learning ability is the ability to form and remember associations between stimuli.

There are two cognitive factors that influence person knowledge, namely intelligence and cognitive style. Intelligence refers to our general academic or reasoning ability which is a general factor underlying two components. The term ‘cognitive style’ refers to the way people perceive, conceptualise, organise and recall information. Research in psychology, however, has identified other various dimensions of cognitive styles. The dimension that has attracted the most attention in second language acquisition is *field dependence/independence* (Ellis, 1994). For Ellis, the major distinction between these two types of learners is that field dependent learners operate holistically, whereas field-independent learners are analytic.

Motivation for learning is another factor that impacts on person knowledge. Wenden (1991) defines motivation as a “learner’s purpose for orientation toward learning another language” (p. 36). It can be *intrinsic*as it derives from our personal interests and inner needs. It can also be *extrinsic*deriving from external sources, such as material rewards (Ellis, 1994). Motivation can also be a mixture of both intrinsic and extrinsic motivation (Wenden, 1991). Motivation is a variable factor; its strength can vary over time andbe influenced by external factors (Ellis, 1994). In addition, motivation is extremely important for successful second language acquisition (Ellis, 1994).

iii. Personality

Person knowledge may be defined as a person’s traits (Wenden, 1991). For language teachers, this factor plays a major role in the success or failure of language learning (Ellis, 1994). One of the traits that shapes learners’ personalities is the *extroversion/introversion*distinction (Ellis, 1994). Extroverts are generally sociable, risk-takers and sensation-seekers, whereas introverts are quiet and prefer reading to social networking (Ellis, 1994). Regarding the relationship between the distinction *extroversion/introversion* and L2 learning, there are two major hypotheses (Ellis, 1994). The first hypothesis is that extroverts are more effective than introverts at learning basic interpersonal communication skills (BICS). The rationale behind this hypothesis is that sociability leads to more opportunities to practice, more success in communicating in L2, and more input. The second hypothesis is that introverts are more effective than extroverts at developing cognitive academic language ability or proficiency (CALP). The rationale behind such a hypothesis is that since introverts spend more time reading and writing than extroverts, they perhaps enjoy more academic success than extroverts (Ellis, 1994).

Task knowledge: definition and components

Wenden (1991) defines task knowledge as “the knowledge [that] refers to what learners need to know about the procedures that constitute tasks” (p. 42).
Task knowledge includes three types of knowledge: knowledge of the purpose and nature or classification of the task, knowledge about its demands (Rubin, 2005; Wenden, 1995b) and knowledge regarding the procedures that constitute this task (Flavell, 1979a; Goh, 1997; Vandergrift & Goh, 2012; Vandergrift et al. 2006; Wenden, 1991, 1995b, 1998; Zhang & Goh, 2006).

In what follows, I will discuss the types of task knowledge outlined above.

i. Knowledge of the purpose

Wenden (1995b) states that what is intended by the term *task purpose* is the learner’s purpose or, in other terms, the outcome of a pedagogical task. In other words, task purpose is what teachers expect their students to learn (Wenden, 1995b).
The type of knowledge concerning task purpose is defined as “[learners’] perception of the learning needs the task intends to meet and a basis for determining its relevance” (Wenden, 1995b, p. 186). This implies that when learners contemplate a task, they may consider whether it meets their *achievement needs*, *instrument needs* or *integrative needs* (Wenden, 1995b). Examples of *achievement needs* are improving vocabulary, understanding spoken language, and improving oral skills. Instances of *instrument needs* are acquiring employment and passing an exam. Finally, an example of *integrative needs* is when one becomes part of a new culture (Rubin, 2005; Wenden, 1991, 1995b).

Another aspect of task knowledge regarding task purpose that learners may consider is *task environment* (Wenden, 1995b). This refers to whether the task is learning-oriented or performance-oriented. Learning-oriented tasks are characterised by three major aspects. They are moderately challenging, lack competition and encourage self-evaluation (Nicholas, 1984). Performance-oriented tasks are characterised by their emphasis on testing valued skills, interpersonal competition climate and task extrinsic measure-based assessment (Nicholas, 1984). In addition, learners may know that learning-orientated tasks encouragethem to improve their competence, whereas performance-orientated tasks require a demonstration of competence (Nicholas, 1984).

ii. Knowledge of the task demands

The term ‘task demands’ refers to what is entailed in performing a task (Wenden, 1991). This type of task knowledge urges the learner to draw on resources, knowledge and strategies to complete a task (Wenden, 1991). More precisely, task demands urge learners to answer four major questions: *What resources are necessary to complete a task?* (Wenden, 1991, 1998, 1995b),*Is the task hard or easy?* (Flavell, 1979b; Wenden, 1991, 1995b),*How do you go about doing the task?* (Wenden, 1991, 1995b, 1998) and *When is deliberate learning required?* To answer these questions, learners need to know the type of knowledge necessary to complete the task at hand. This type of knowledge is commonly referred to as ‘*domain knowledge*’ (Wenden, 1995b). Do learners only need knowledge about language or is world knowledge about the specific language needed? If a learner wishes to reach native-like fluency in speaking, for instance, they may need to draw upon their store of knowledge about the nature of spoken language. To do this, they need certain cultural knowledge about the target language. If another learner is asked to do a cloze exercise, they may need knowledge about the nature of the written language, such as the different discourse patterns of the language and their general organisation. They also need to know about the topic of the passage (Wenden, 1991). Finally, it should be mentioned that some cognitive enterprises are more demanding and difficult than others, even if the learner is given the same available information. For example, it is more difficult to recall the exact wording of a story than its general content (Flavell, 1979b).

This leads me to elaborate on the second question above with the further question *How do learners know whether the task is hard or easy?*

To answer this question, Brown (1986) states that “a task is easy or hard to the extent that it maps onto the pre-existing knowledge base and preferences of learners” (p. 55). Concerning language learners, the difficulty level of a task is not only a measure of what these learners have learned, but also a measure of how well they know it (Wenden,1991). For instance, for some language learners, listening to communications between native speakers on television is difficult due to the speed at which people speak; this is evidence of a lack of facility in understanding the spoken language (Wenden, 1991). Moreover, the level of difficulty depends on whether or not learners know how to go about the task at hand (Wenden, 1995b). This leads me to elaborate on the third question above with the question *How do learners go about doing a task?*

Knowledge of task demands related to how to go about doing a task comprises two aspects. First, learners should know whether or not the task is to be divided into sub-tasks and if so, how and in which order should these sub-tasks be completed (Wenden, 1991, 1995b). Second, learners should know the appropriate strategies they need to acquire the knowledge or the skills they are seeking (Wenden, 1991, 1995b). To complete a cloze exercise, learners need strategies like eliciting background knowledge, inferencing, and deduction by applying the grammar rules that learners have learned about sentences (Wenden, 1991).

As for the last question *When is deliberate learning required?* learners need to be able to determine whether or not a particular task needs deliberate learning. The following is Wenden's (1991) summary of the kinds of situations that require conscious thinking (Flavell, 1979a; Lefevre, 1983):

1. [when] a new task is involved that learners have never done before;
2. [when] the nature of [the] task is such that it requires conscious thinking, e.g., writing;
3. [when] the task requires accuracy, e.g., doing a maths problem, writing; [and]
4. [when] the task has not been learned correctly/efficiently (p. 43)

To conclude, task demands serve as a form of self-diagnosis that allows learners to know whether or not they are ready to complete the task.

In what follows, the third type of task knowledge,the nature or classification, will be discussed.

iii. Knowledge of the nature or classification of the task

Wenden (1991) relates the nature of the task or classification to the knowledge "that is the outcome of a classification process that determines the nature of a particular task"(p. 59). Language learners acquire this type of knowledge from their teachers, their fellow students, and from their own experiences (Wenden, 1991). In order to classify the nature of a task at hand, learners need to know the type of questions they may ask themselves and be aware of the criteria they need to apply in the classification process

(Wenden, 1995b). Wenden (1998) proposes the following questions for learners to ask themselves when classifying the nature of a task:

1. *Have I done something like this before?*
2. *Is this the kind of task with which I am familiar?* (p. 186)

Such questions allow learners to exert *intentional efforts* (Resnick, 1989) in order to compare the task at hand with similar classes of tasks they already know about (Rubin, 2005). This classification process may allow learners to identify the nature of the problem posed by any particular task (Wenden, 1995b).

Wenden (1995a) suggests the following criteria that learners need to apply in their classification of tasks:

1. medium (written or spoken),
2. kind of language skill (receptive or productive),
3. setting (formal or informal), and
4. outcome (procedural or declarative). (p. 186)

To distinguish between writing an expository essay in response to an academic assignment and mastering conversational English in a foreign country as a tourist, for instance, learners may apply the '*medium*' as a criterion allowing them to identify written and spoken discourses (Wenden 1995b). Learners may also apply '*setting*' as a criterion to distinguish between a learning task to understand a TV sitcom in a foreign/second language (informal setting) and learning to comprehend a lecture (formal setting) (Wenden, 1995b).

Importance of task knowledge

As outlined above, planning, monitoring and evaluating are three metacognitive strategies essential for autonomous learning (Wenden, 1995b). However, it is fundamental that these three strategies work in the context of task knowledge. That is, learners must acquire the necessary task knowledge in order to deploy these strategies. As Wenden (1995a) states, task knowledge is "a pre-requisite for self-regulation" (p. 188).

The second contribution of task knowledge to self-regulation in learning in general, and language learning in particular, is that it helps learners in their decision to learn. More precisely, knowledge of the task purpose and the task demands can play a crucial role in planning for learning (Boekaerts, 1992) or "the selection of and engagement in pedagogical tasks" (Wenden, 1995a, p. 188). According to Boekaerts' (1992) model of the effective learning process, the decision to learn is the fruit of the self-appraisal that measures learners' perception of task demands and task purpose against the structure oftheir goals, their competence and their self-concept. This means that when learners perceive that the task is compatible with their goals and when they consider themselves competent enough to meet the demands of the task, they appraise their task as an opportunity for learning, hence, they engage in learning. It should be mentioned that the same applies to learning a language.

Another contribution relating to task knowledge, and more precisely task demands, with regard to self-regulation in learning is that it allows learners to decide on the content, progression, pace and timing of their learning (Wenden, 1995a). This is facilitated with the help of the mental representation that learners construct to understand the task at hand. To explain this, Newell and Simon (1972) describe the components of the task demands. They state that any mental representation of a task includes three components: task goal and sub-goals, possible states through which a task may pass in the process of completion and knowledge of the constraints under which the task is to be completed. When a language learner is assigned the task of completing a writing assignment, for instance, they may consider the different stages of the writing process in order to set the sub-goals. In so doing, learners may realise that they need to write multiple drafts of the essay. Learners may also realise that they need to take into consideration not only the other assignments they are required to complete, but also the fact that they may not have enough background knowledge about the assignment topic. These constitute constraints for learners. As a result of this knowledge of the task demand, derived from their task appraisal, learners are able to:

1. define the content and progression of their learning,
2. decide pace and place of learning, [and]
3. access stated goals and sub-goals. (Wenden, 1995a, p. 189)

In this regard, these decisions are incorporated into learners' planning of their learning (Wenden, 1995a).

The last contribution of task knowledge to self-regulated learning is that it helps learners to select and use the appropriate strategies to complete the task at hand. This is performed through the task classification process which is the very medium that allows learners to select the appropriate strategies and deploy them effectively (Wenden, 1995a). For example Anderson (1984) describes how content schemata contributes to learners' listening comprehension achievement by:

1. facilitating selective attention,
2. enabling inferential elaboration,
3. allowing orderly searches in memory, and
4. facilitating summarizing. (p. 248)

Strategic knowledge: definition and components

There are two common definitions of strategic knowledge. The first oneprovided by Chamot (2001)defines strategic knowledge as the techniques or procedures that learners perform in any learning task. The second one defines knowledge as "the steps or operations that are used in learning or problem-solving that requires direct analysis, transformation, or synthesis of learning" (Rubin, 1987a, p.23).

Strategic knowledge includes two components: knowledge about the strategies that work best,and knowledge regarding how best to approach learning in general, or language learning in particular (Goh, 1997; Vandergrift, 2002; Wenden, 1998). Knowledge regarding strategies that work best allows learners to select and deploy the strategies that can be used effectively: what are the strategies, why are they used, and when and how can they be used?Strategic knowledge, therefore, helps learners achieve learning goals by guiding them to select appropriate strategies to complete any task (Nisbet & Shuksmith, 1986).

In what follows, I will discuss the importance of metacognitive strategies for listening comprehension.

3.3.4 Importance of metacognitive strategies for listening comprehension

Metacognitive strategies are important owing to the part they play in contributing to listening comprehension (Goh, 2008; Liu & Goh, 2006; Mareschal, 2007; Vandergrift, 2004, 2007; Zheng, 2007). Goh (2008) identifies the following advantages of metacognitive strategy instruction:

1. It is effective in listening comprehension helping learners to be more motivated and less anxious.
2. It has a positive effect on listening performance.
3. Weak listeners potentially benefit the most from it. (p. 196)

In other words, metacognitive strategies allow learners to plan, monitor, and evaluate their learning processes (Chamot 1990). The scope of listening strategy research has recently expanded to emphasise learners' metacognitive knowledge. In metacognitive-based activities, listeners are asked to explicitly report their perceptions about themselves, their understanding of listening goals, their approach to the task and their strategies (Vandergrift et al., 2006). Despitethe fact that research has shown the positive impact of raising metacognitive awareness on listeners' performance and motivation, metacognitive awareness "is still relatively new" (Goh, 2005; p. 70). Therefore, recent research suggests that more focus should be placed on the development of metacognitive instruction (Vandergrift, 2006a; Goh, 2008).

In what follows, I will elaborate on the importance of language learning strategies for both EFL teachers and learners.

3.4 Language Learning Strategies and Language Teaching in General

This section focuses on the application of language learning strategies to EFL teaching and learning in general. The first part discusses the history of language learning strategies. The second part will address language learning strategy instruction, more precisely focusing on explicit language learning instruction.

3.4.1 Brief history of language learning strategies and language teaching

Griffiths and Parr (2001) argue that "the theory of language learning strategies […] as used by speakers of other languages has developed alongside other theories of language teaching and learning" (p. 247). Chomsky's (1968) theory of generative grammar established a shift in focus from the teacher as the centre of learning, as dominantly manifested in the Grammar Translation and Audio-Lingual approaches, to the learner as rules generator (Griffiths & Parr, 2001). Chomsky's notion of generative grammar rules established the development of linguistic notions. This has led to a radical change in the learner's role from a behaviourist passive role to the learner being a competent organiser and controller of his or her own learning processes. Such a revolutionary change in role has given birth to learning strategies, and hence the birth of the field of language learning research. This has heralded the eclectic approach as an alternative to the behaviourist teacher-centred approaches. However, according to Griffiths and Parr (2001), the eclectic approachhas resurrected the interest in the contribution made by the learners themselves in the teaching [and] learning dichotomy, and in the learning strategies which learners employ in the process of learning language (p. 249).

3.4.2 Language learning strategy instruction

This section begins with a discussionon embedded and separate language learning strategy training. It then investigates the differences between implicit and explicit language learning strategy training.

Embedded vs separate language learning strategy training

Research and practice in language learning strategy instruction reveals many generalisations regarding the EFL/ESL classroom. Chamot (1990) relates these generalisations to a number of areas: curriculum, methodology, materials, teacher training and learner training. To begin with, there is an unresolved question: *Should strategy instruction be integrated within the language curriculum or should it be separate?* (Chamot, 1990;Jones et al., 1987; Wenden, 1987). A number of researchers argue thata separate strategy instruction for a strategy course allows learners to fully focus on learning strategies rather than dividing their focus between content and strategies

(Chamot, 1990;Jones et al., 1987). Others, however, recommend an integrated strategy instruction as this type of instruction allows students to learn more effectively from it than from a separate strategy instruction (Chamot, 1990; Wenden, 1987). Elaborating on the effectiveness of integrated strategy instruction, Chamot (1990) argues that "practicing strategies as real school tasks facilitates transfer to similar tasks" (p. 499). Chamot (1990) adds that integrated strategy instruction may add to learners' perception of the utility of the new strategies for a difficult task than for an easier task that they can accomplish successfully using familiar strategies that they have already automatised.

Explicit language learning strategy training

Strategy training needs to be conducted explicitly or directly (Carrier, 2003; Chamot, 1990, 2004; Chamot & Küpper, 1989; Chen, 2005; O'Malley & Chamot, 1990; Oxford, 1990). The reason for this is that explicit or direct strategy training is an alternative to embedded strategy training. In other words, explicit strategy training means that learners are told why, how and when learning strategies are learned (O'Malley & Chamot, 1990; Chen, 2005; Chamot & Küpper, 1989). According to Chamot (2004), this instruction involves:

> the development of students' awareness of the strategies they use, teacher modelling of strategic thinking, student practice with new strategies, student self-evaluation of the strategies used, [and] practice in transferring strategies to new tasks. (p. 19)

In this regard, teachers constantly inform their learners of the benefits of the strategies the latter use (Carrier, 2003). While modelling their strategic thinking, for instance, teachers need to name the strategy, define it, and guide their students through the different steps of the strategy application (Carrier, 2003). Moreover, teachers need to provide their students with opportunities to practice and analyse the strategies they are learning. Finally, in order to assist their students' self-evaluation, teachers need to provide learners with clear and accurate feedback about their performance. Such feedback allows learners to estimate the effectiveness of the strategy training they are given (Chen, 2005).

Explicit or direct strategy training is an alternative to embedded strategy training. Embedded strategy training, as its name implies, presents learners with strategies, but learners “are not informed of the reason this approach is being practiced or when a certain strategy is appropriate” (Chen, 2005, p. 5). A major problem with this approach is that it does not allow learners to generalise strategies (Carrier, 2003) and transfer them to new tasks (Brown et al., 1986). In other words, embedded strategy instruction does not lead to transfer (Chamot, 1990). Contrary to embedded learning strategy instruction, however, explicit strategy training implies that learners are informed of why, how and when learning strategies are learned (O’Malley & Chamot, 1990; Chen, 2005; Chamot & Küpper, 1989). According to Chamot (1987), such an explicit instruction involves:

> the development of students’ awareness of the strategies they use, teacher modelling of aptitude as a concept corresponds to the notion that, in approaching a particular learning task or program, the individual may be thought of as possessing some current state of capability of learning that task – if the individual is motivated, and has the opportunity of doing so. The capability is presumed to depend on some combination of more or less enduring characteristics of the individual. (p. 84)

This statement includes two concepts pertinent to learning in general: aptitude and opportunity. Aptitude has four main dimensions (Carroll, 1981)which are phonemic coding ability, grammatical sensitivity, rote learning ability for using materials and inductive language learning ability. Phonemic coding ability allows learners to identify distinct sounds, form associations between those sounds and the symbols representing them and to retain these associations (Larsen-Freeman & Long, 1991). Grammatical sensitivity allows learners to “recognise the grammatical functions of words or other linguistic entities in sentence structures” (Larsen-Freeman & Long, 1991, p. 105). Rote-learning ability for language materials allows learners to rapidly and effectively learn the associations existing between sounds and meaning. Finally, inductive language learning ability helps learners to infer the rules governing a set of language materials that allow them to produce such inferences (Larsen-Freeman & Long, 1991). Rubin (1975) argues that an individual with considerable natural ability and motivation but with little opportunity should be provided with activities which can be practised both within and outside classroom activities. These activities allow learners to be exposed to the language and provide them with opportunitiesto practice outside the classroom.

To sum up, there is evidence in the literature that explicit language strategy training has many advantages over implicit training. Another aim of the present study, therefore, is to show that EFL Arab learners can also benefit from these advantages particularly in L2 listening comprehension.

To conclude this chapter, the following section will explore five studies pertinent to the contribution of language learning strategies to listening comprehension.

3.4.3 Language learning strategies and listening comprehension: previous Studies

The present subsection explores a number of studies that have examined the contribution of strategy training to language comprehension andin particular to listening comprehension. Five studies are summarised to shed light on the possible correlation between listening comprehension and strategy training.

Study 1: Can strategy training improve listening comprehension?

Thompson and Rubin’s (1996) study was the first longitudinal classroom-based study of listening comprehension strategy training to have shown apositive result from such training. In their study, Thompson and Rubin tested the following hypothesis: If we teach listeners how to use a variety of cognitive and metacognitive strategies in an efficient, appropriate and planned way, do we allow learners to improve their listening comprehension abilities?

The participants were thirty-six, third-year university students of Russian divided into two groups – an experimental group and a control. The participants in the experimental group were trained in the application of listening strategies to their classroom listening activities, whereas the participants in the control group had no listening strategy training. All the participants in the experimental group were trained to be effective in the use of a variety of cognitive strategies, namely predicting, listening for the known, listening for redundancies, listening forthe tone of voices and listening for resourcing. In addition, the same students were trained to be effective at focusing on story lines in drama, paying attention to the sequences of questions in interviews and determining the answers to any information questions in the news. In addition to the above strategies, the same participants in the experimental group were trained in the use of three types of metacognitive strategies, namely planning, defining goals and monitoring.

It should be mentioned that the activities that the participants in both groups completed consisted of watching 45 video segments during the third-year Russian course. Both groups watched the same segments in the same sequence for an average of 20 minutes.

In order to test the hypothesis and research questions outlined above, participants in both groups took two pre-tests in listening comprehension (a video comprehension test and an audio comprehension test). The same tests were taken by all the participants in both groups as post-tests at the end of their third-year Russian course and at the end of the treatment.

The findings showed a significant difference between the experimental and control group in their performance on watching the videos thus confirming the thesis hypothesis, even though, at first, there was no significant difference between both groups' scores on the audio comprehension pre- and post-tests, and second, the gain scores on the video comprehension test were relatively modest.

Finally, the study confirmed that strategy training, in general, and cognitive and metacognitive strategy training, in particular, improved the experimental participants' self-efficacy, which enhanced their confidence in their ability to listen to authentic Russian.

Limitations of the study

Thompson and Rubin (1996) argued that there were two reasons why the results of the strategy instruction were significant in the case of video but not in the case of audio. First, to tackle the test, the participants were required to have had a balanced training in watching videos and listening to audios. However, most of the activities that students were involved in were based on watching videos, which, according to Thompson and Rubin, might have led to a lack of process support in the audio test performance. Second, the participants were not familiar with the genres of many of the items in the ETS audio test since such genres were not taught during the training. Finally, more than ten percent of the participants scored at least eighty percent on the pre-test, which prevented them from making further considerable improvement on the post-test.

Moreover, the findings showed that the gain scores on the video comprehension test were relatively modest despite the high number of video activities in the training. As argued by Thompson and Rubin, such modest results were due to a number of factors. The first factor was that the participants' level of listening comprehension did not allow participants to make considerable improvementsin two of the test segments, namely the interview and the more complex news segments because they were too difficult. Moreover, the amount of exposure to authentic video – (only fifteen hours) – and the learner strategy training were insufficient to provide improvement. Finally, the participants should have started the intervention with a higher threshold of listening comprehension to benefit from the listening strategy training dealing with particular types of passages (e.g., interviews news with no visual support).

Study 2: Improving high school English language learners' second language listening through strategy instruction

In her exploratory study, Carrier (2003) sought to confirm the hypothesis which states that focused listening strategy training allows ESL learners to improve their listening comprehension ability, which prepares them for understanding oral academic content classes. To test this hypothesis, Carrier recruited seven volunteers who were high school intermediate ESL students and who, apart from their various academic content classes, attended a daily ESL class.

All the participants attended 15 sessions during which they were trained in how to apply listening strategies to their listening comprehension activities. The training consisted of 10 lessons that included two categories of listening strategies, namely bottom-up and top-down strategies. The bottom-up strategies were meant to explain the concepts and provide practice on the rhythm and sounds of English syllable length, dropped syllables, syllable length and word meaning and clear versus unclear vowels. The top-down strategy training, on the other hand, consisted of two broad categories of strategies: note-taking and video listening strategies. The note-taking strategies included training the participants to be effectiveinabbreviating, using symbols, representing visual relationships, and listening for discourse markers. The listening strategies were meant to train the participants to be effective inwatching videos and determining settings, interpersonal relationships, mood and topic. They were also meant to train the participants to be effective in using visual cues to enhance the participants' comprehension of the oral text. Furthermore, the training included two lessons that taughtthe participants how to apply both bottom-up and top-down strategies in an interactive way by combining the bottom-up processing of words and pitch patterns with top-down processing strategies and prior knowledge in order to construct meaning. In other words, the participants were trained to be effective at inferring and constructing meaning through identifying the most important words from their stress.

In order to examine the effectiveness of the listening strategy training, the participants took two pre- and post-tests. The first pre-test measured the participants' discrete or bottom-up listening skills, while the second pre-test measured their video listening or top-down listening skills. The two post-tests measured the same variables and followed the format and focus of the pre-tests, except that the information in the questions was different in order to avoid the training effect.

Overall, the findings showed a significant improvement in the participants' discrete and video listening ability, as well as note-taking ability, which allowed Carrier to draw a number of conclusions. First, using television and videos as instruction aids allows listeners to comprehend the input more easily than reading printed material. Second, teaching the strategies of selective attention and their application to word stress allows listeners to determine important information. Finally, note-taking instruction helps listeners improve their skills in taking notes while listening and constructing meaning from these notes.

Limitations of the study

There are twoaspects of this study that might have limited its generalisability. First, the participants were volunteers, and consequently they might have been more motivated to do much better than randomly selected participants. Second, the sample was very small as is often the case in classroom-based research where it is difficult to find a large population of EFL or ESL students willing to participate in research studies.

Study 3: Teaching L2 learners how to listen does make a difference: An empirical study

In their empirical study, Vandergrift and Tafaghodtari (2010) investigated the effectiveness of a metacognitive process-based approach to L2 listening. More precisely, the study investigated the effectiveness of a pedagogical cycle that was applied to L2 listening and focused on the long-term development of strategic listening.

The participants in the study were university-level students learning French as a second language. They were divided into two groups – an experimental group of 59 students and a control group comprising 47 students. In each group, the participants were divided into more skilled and less skilled listeners, according to their scores on the listening comprehension pre-test. Those who scored above the mean score (14) were classified as more skilled listeners and those scoring below the mean score were classified as less skilled listeners.

The two researchers tested three hypotheses. Firstly, teaching a metacognitive cycle to the experimental group participants should allow them to outperform their counterparts in the control group. Secondly, the lessskilled participants in the experimental group should show the highest levels of improvement in their listening comprehension. Thirdly, the same lessskilled listeners in the experimental group should demonstrate the highest level of metacognitive awareness of listening at the end of the treatment.

All the participants in the experimental group were trained in the application of a pedagogical cycle once a week. The cycle involved six related phases – preparation and prediction, first listen, discussion, second listen, third listen and personal reflection. In the preparation phase, the participants entered the date and the topic of the passage on a new page in their listening notebook or "Carnet d'écoute". In the 'Carnet d'écoute,'' each page was divided into three columns – "Anticipations", "Première écoute", "Deuxième écoute", and a small section for reflection at the bottom of the page, "Pour améliorer". Subsequently, in the prediction phase, the students brainstormed the kinds of information they thought they might have heard, as well as any related French vocabulary, and entered this in French or in English in the "Anticipations" column. During the first two weeks of the treatment, the students completed this prediction phase together as a class and then, during the following three weeks with a partner, before eventually being left to work on their own. In the First Listen phase, the students listened to the passage for the first time. As they listened, the students checked their predictions and noted any other information that they may have understood in the "Première écoute" column. Then, in the discussion phase, the students worked in pairs to compare their predictions and the information they understood thus far. Their discussion consisted in discussing points of confusion and disagreement, considering other reasonable possibilities and locating parts of the passage which would need more careful focus in the "Deuxieme écoute" column. In the "Deuxieme écoute" phase, the students listened to the same passage a second time and entered any newly understood information under the "Deuxième écoute" column. These activities were held during the discussion phase allowing students to confirm their comprehension of the passage and share how they managed to understand it. In the Third Listen phase, the students listened to the same passage a third time and, once again, checked their understanding of what they missed in the previous two listening phases. Finally, in the reflection phase, each student completed a personal reflection on the whole activity and noted in the "Pour améliorer" column the strategies that they planned to apply to their activity in the following week.

The control group listened to the same texts three times. The procedure they followed included the following steps. In the preparation phase, students entered the date and the topic in their "Carnet d'écoute" which was also divided into three columns, but had no section for reflection. The control group did not have a prediction activity, nor were they given the chance to discuss, predict, or monitor their comprehension with a partner. The only discussion the participants in the control group had was after the third listen in which they confirmed their understanding of the text.

In order to measure their change in metacognitive knowledge about listening, the participants in both groups completed the Metacognitive Awareness Listening Questionnaire (MALQ) (Vandergrift et al., 2006). The MALQ included 21 items classified under five factors: planning/evaluation, problem-solving, directed attention, mental translation and person knowledge. The MALQ was completed three times: at the beginning, the middle, and the end of the study. Each time they completed the MALQ, six participants from the experimental group were selected for participation in a stimulated-recall session on their MALQ responses. The participants met a research assistant twice, after the middle point and at the end of the study. At the first stimulated-recall session, the participants were presented with their beginning and middle point MALQ answers and the research assistant discussed the major discrepancies in the answers with these participants. In the second stimulated-recall session, they discussed the possible reasons for further discrepancies.

The findings confirmed the first and the second hypotheses, but regarding the third hypothesis, the results were mixed. The results of the first hypothesis showed that both the more and less skilled listeners in the experimental group significantly outperformed their counterparts in the control group. This confirmed the hypothesis that if the metacognitive cycle was taught to the experimental group participants, it would enable them to perform on their listening comprehension better than their counterparts in the control group who did not use the same instruction.

As argued by Vandergrift and Tafaghodtari, many factors contributed to such positive results. First, the pedagogical cycle taught the experimental group, not only how to answer questions in listening comprehension tests, but also how to listen. The treatment focused on the listening process that listeners went through in order to challenge the different difficulties they encountered while listening, as opposed to just focusing on the product of listening. The nature of the pedagogical cycle itself was the second factor contributing to the above positive results. In this context, Vandergrift and Tafaghodtari argued that this cycle taught the participants how to apply a cluster of listening strategies interactively, rather than in isolation.

Moreover, the guided practice in the listening process might have urged the participants in the experimental group to process the language they heard in a more natural way. It would have completed this by focusing mainly on the main ideas and related details, which, presumably, allowed these students to acquire more efficient implicit knowledge about L2 listening through task performance. Such an implicit knowledge might have enabled the participants to build on two important abilities, namely *access fluidity* and *attention control*. *Access fluidity*, according to Vandergrift and Tafaghodtari, is the ability to associate connected words and expressions with meaning, whereas, *control attention*, as conceived by these two researchers, relates to focusing and refocusing one's attention in real time on the message until it is decoded.

The researchers added that two more factors contributed to the positive results: length of the treatment and students' reflections. The fact that the treatment occupied a whole term, might have meant that the participants had enough time to carry out their listening tasks, which might have resulted in such an improvement in their performance. Moreover, by being able to reflect on their performance, the students in the experimental group were given opportunities to explain the decisions they made during the listening task. This might have enabled these students to control their listening process and achieve their improvement in their listening comprehension.

The second hypothesis, as outlined above, was significantly confirmed. This hypothesis stated that the pedagogical cycle would allow the less skilled students in the experimental group to outperform their counterparts both in the experimental and control group, in their listening comprehension post-test. In this regard, Vandergrift and Tafaghodtari argued that the major factor contributing to such a performance was the fact that the less skilled students in the experimental group were led to uncover the listening processes during the treatment not only through the teacher's guidance, but also through the skilled peers guidance, which might have allowed these less skilled students to benefit more effectively from the implementation of the pedagogical cycle.

The third hypothesis, as outlined above, stated that the less skilled listeners in the experimental group would show the highest level of development in metacognitive awareness of listening when measured by the MALQ. Vandergrift and Tafaghodtari showed that the differences in the reported growth of the participants' metacognitive knowledge about listening appeared to hold only for problem-solving and mental translation. In this regard, the researchers added that the same model of implicit learning through task performance, described above, allowed the less skilled listeners in the experimental group to promote their problem-solving ability while listening. As for the explanation of the results for mental translation, the researchers argued that the training allowed the less skilled listeners in the experimental group to overcome the desire to process what they heard word by word. They might have managed to overcome the compulsion to translate into L1, which might have enabled them to give more attention to metacognitive processes such as monitoring and problem-solving.

Moreover, the researchers argued that the stimulated-recall protocols explained how participants might have been interpreting the MALQ statements related to translation. The decreased use of mental translation in the MALQ reflected an increased ability to identify the meaning of words which, in turn, showed that either these less skilled listeners learned greater lexical knowledge or that they became more able to infer meanings. This showed that the less skilled listeners either learned greater lexical knowledge or became more able to process accurate inferences.

Limitations of the study

The participants in the experimental group commented on the final questionnaire that they were rather bored with the routine of answering the same questions in their reflection phase. Such a boring routine might have impacted the participants' interest while reflecting on the process of their learning of the strategies during the training.

Study 4: The effects of training in the use of learning strategies in learning English as a second language

In this study, O'Malley (1987) investigated the effectiveness of strategy training on three types of academic language tasks, namely vocabulary, speaking and listening. For the purposes of my study, this summary will deal with the effectiveness of the strategy training on the listening comprehension task only.

In the study, 75 high school intermediate students learning English as a second language were divided into three groups, two experimental comprising a metacognitive group and a cognitive groupand one control. The metacognitive group received training on one metacognitive strategy (selective attention), one cognitive strategy (note-taking), and one socio-affective strategy (cooperation). The cognitive group, on the other hand, was trained on the same types of strategies but no metacognitive strategies. Finally, the control group received special instruction on reading strategies using content that was not related to the study to ensure that participants benefited from the study.

To test the effectiveness of the training, participants in the three groups took a pre- and post- listening comprehension test. Although the scores fell in the predicted direction, there were no significant differences between the pre-test and post-test.

Limitations of the study

The researcher argued that the main reason for these results was that the participants in both experimental groups did not have sufficient training and therefore could not gain familiarity with the strategies mentioned above.

Study 5: Effects of listening strategy instruction on news videotext

In his quasi-experimental study, Cross (2009b) investigated the impact of listening strategy training on the comprehension of BBC news videotexts. This study attempted to answer the following question: *Does listening strategy instruction improve learners' ability to comprehend news videotexts?* (p. 155).

The participants in the study were Japanese adult advanced-level EFL learners aged between 26 and 45 who attended classes at an institution in central Japan. They were divided into two groups: an experimental group of two males and five females and a control group comprising one male and seven females. Each group was divided into more or less skilled listeners.

The participants in both groups attended one of two simultaneous 10-week Current Affairs courses for 3 hours each week. Each lesson in week 2 to week 9 of the course was based on material drawn from the BBC’s Internet news website and a 2-3 minute news videotext pre-recorded from its satellite services with the topic and news videotext varying each week. During the strategy training and following a 30-minute pre-listening stage using the website material, the experimental group completed 90 minutes of strategy instruction (a total of 12 hours instruction across the study). The study instruction followed a pedagogical cycle encompassing three stages:pre-listening preparation,monitoring of comprehension and evaluation of performance.

During the strategy training, fourteen strategies were taught to both groups: four metacognitive, seven cognitive and three social-affective. The metacognitive strategies were selective attention, self-management, planning and self-evaluation. The cognitive strategies were detection, reconstruction, inferencing, elaboration, imagery, note-taking and transfer. The social-affective strategies were cooperation, questioning for clarification and self-monitoring.

The experimental and control groups completed the pedagogical cycle each week. In this regard, it is important to note that the experimental group received strategy input prior to practicing the application of strategies, feedback on strategy use and review of strategies. The control group, however, did not receive any explicit strategy instruction; they were merely taught to complete the listening task which lasted 60 minutes. It is equally important to note that the control group had the same news videotexts and did the same 30-minute pre-listening and post-listening tasks as the experimental group with the same material.

The data were collected by applying four instruments: a pre- and post-listening comprehension test, a questionnaire, interviews and journals. The assessment of the listening comprehension of news videotexts was achieved in equal number for both groups in the week one pre-test and week ten post-test. In both testing phases, a different BBC news videotext was used. The questionnaire was designed to provide background information on the participants’ news-watching habits and perceived comprehension to both groups in week one of the study. Each participant in both groups was interviewed separately by the researcher following the week one pre-test regarding how they had attempted to understand the news videotext. The responses were categorised according to whether they used bottom-up or top-down processes. The participants were also asked about the difficulties they faced. The researcher kept a journal throughout the ten weeks of the study. The journal allowed the researcher to take observation notes during the lessons as the tasks were completed by both groups.

The data from the interview and the questionnaire responseswereutilised to inform the strategy instruction and to provide insights into possible reasons for the success or otherwise in terms of pre-test and post-test scores of the strategy training programme. The independent t-test for the control and experimental groups showed a significant difference between the pre- and post-test performance, i.e. across the period of the study ($t = -4.135$, $df = 7$, $p = .004$) and($t = -4.436$, $df = 6$, $p = .004$), respectively. Thus, both groups made significant gains in the study. However, the independent t-test did not indicate any significant difference between the experimental group and the control group.

Limitations of the study

The study had the following two limitations. First, the number of participants was low, which might have magnified the effect of individual variability and led to a possible distortion of the results.Second,theparticipants in both groups were not interviewed after the post-test. It would have been informative to interview the participants after the post-test to see if they hadmentioned any changes in processing preference compared to week one for comprehending the news.

Concluding comments

As outlined above, the generalisability of the findings of each of the surveyed interventions wasaffected by many factors that have been identified by the same researchers of the studies outlined above. These factors are summarised as follows:

1. Some studies did not allow the participants enough time to be familiar with the strategies taught.
2. Some researchers could not guarantee that all the groups followed the same approach during the strategy training.
3. Other studies did not include enough participants, which might have affected the validity of their findings.
4. The reliability of some instruments (e.g., the journals) was not evident.

Summary

In this section, I have shown how, since the 1970s, a resurgent interest in language learning strategies has emerged and yielded a wealth of research. Thanks to this research we now know more about how language learning strategies are defined, categorised and how they are taught and applied.

An exploration of the teaching of language learning in the EFL and ESL context, shows that such strategies are best taught explicitly. Explicit language learning strategy instruction enables learners to be more aware of what strategies to use, and when, how and why to use them.

I have concluded by surveying certain studies that have sought to apply cognitive linguistics into the teaching of listening comprehension. This evaluation showed an unresolved contribution of metacognitive strategies to improved listening comprehension.

The examination of these interventions has also shown the difficulties and problems involved with applying cognitive and metacognitive strategies to the teaching of listening comprehension. In my study, I will attempt to resolve these problems and extend my research into language learning strategy teaching.

This section has focused on the application of cognitive and metacognitive strategies to listening comprehension. The following section will deal with the factors that affect language learning strategies.

3.5 Factors Affecting Language Learning Strategies

This section deals with the factors that have contributed to the effective application of language learning strategies in general, and listening comprehension in particular. The focus in this section is on prior knowledge, schemaand scripts.

3.5.1 Prior knowledge: definition and impact

This section deals with the definition of prior knowledge as well as the impact of prior knowledge on learning in general, and listening comprehension in particular.

In order to define prior knowledge, Vandergrift and Goh (2012) relate it to “all the conceptual and life experiences that language learners have acquired and are available for comprehension purposes” (p. 65). In other words, anything we know can be brought to bear on comprehending a text (Harley, 2008). Prior knowledge has three aspects: content knowledge, context knowledge and cultural knowledge (Saville-Troike, 2006). Content knowledge relates to the background information about the topic of the passage being heard. Listeners perceive and interpret new information by relating it to their previous knowledge about the topic. Context knowledge, on the other hand, includes information learned from what the writer's or speaker's intentions are, as well as information about the overall structure of the discourse patterns being used. Cultural knowledge involves "understanding of the wider social setting within which acts of […] listening take place" (Saville-Troike, 2006, p. 154).

The following section investigates the extent of the impact of prior knowledge on language learningin general, and listening in particular.

As for its impact,prior knowledge has a huge impact on our ability to comprehend and recall the input (Harley, 2008). In other words, knowing about the topic of a passage allows for a better understanding and recall of language. Such an impact has various consequences. It provides listeners with the appropriate context which allows them to activate prior knowledge and to develop a conceptual framework for their top-down processing. This enables listeners to process the linguistic input in a much more effective way as it frees up listeners' WM resources allowing them to process large chunks of language.Tyler (2001) observed that when L1 and L2 listeners know about the topic of a passage, through an advance organiser, for instance, their WM consumption was similar. The absence of an advance organiser, however, led to a much higher WM consumption in L2 listeners, preventing them from recalling long chunks of informationand resulting inimpeding their understanding.

The second aspect of the impact of prior knowledge on input comprehension in general and listening comprehension in particular, is that the activation of prior knowledge allows listeners to predict the content of the listening text as well as some potential words, which enables them to infer unstated information crucial to the understanding of the language input. This also enables listeners to monitor their comprehension processing as the activation of prior knowledge allows them to apply both top-down and bottom-up processing interactively (Vandergrift & Goh, 2012).

3.5.2 Schema: definition and types

As outlined above, the listeners' prior knowledge influences their understanding and recall of the language input. Such an influence, as Martinez-Flor and Uso-Juan (2006) argue, is "the key feature of the schema theory developed during the 1980s"

(p. 33). In other words, the role of background knowledge in the comprehension of the language input has been formalised as *schema theory* (Carrell & Eisterhold, 1983b; Vandergrift & Goh, 2012).

Field (2008a) defines schema as “a complex knowledge structure in the mind which groups all that an individual knows about or associates with a particular concept” (p. 27). There are two types of schema: content schema and formal schema (Carrell & Eisterhold 1983b, Carrell & Eisterhold, 1983b; Lynch, 2006; Martinez & De Compostella, 1996). Content schemata relate to the background knowledge of the content area of a text (Carrell, 1983b). Such background knowledge includes topic familiarity and previous experiences with a particular field as well as cultural knowledge. Formal schemata, on the other hand, includes one’s knowledge of discourse with respect to different genres, different topics, or different purposes (Carrell & Eisterhold, 1983b). To enhance and facilitate the listening comprehension process, it is essential that both types of schematic knowledge are applied during the comprehension process.

The following section deals with scripts.

3.5.3 Scripts: definition, aspects, types and impact on comprehension

The last section of this chapter deals with the definition and description of scripts, their types and their impact on comprehension.

Another type of stored knowledge that is closely associated with schema is known as a script (Schunk & Abelson, 1977). Schunk and Abelson define a script as a structure that describes the appropriate sequences of events. According to the researchers, “[the] structure is an interconnected whole, and what is in one slot affects what can be done inanother” (p. 42). The basic idea behind scripts is that our knowledge is structured and stored in re-occurring events or, as outlined above, sequences. These sequences of activities are associated with stylised and stereotyped situations (Field, 2008). In other words, “they are not subject to much change nor do they provide the apparatus for handling totally novel situations” (Schunk & Abelson, 1977, p. 42). Examples of such situations include eating in a restaurant, riding a bus, watching and playing a football gameand participating in a birthday party. Schunk and Abelson characterise a restaurant script, for instance, as involving four scenes: entering, ordering food, eating, and exiting. These include necessary "props" (e.g., table, menu), roles (e.g., customer, waiter), entering conditions (e.g., customer is hungry, customer has money), and results (e.g., customer has less money, customer is less hungry) (Flowerdew & Miller, 2005).

Impact of scripts on comprehension

As outlined above, script-based understanding implies that in order for one to comprehend the actions that are occurring in a particular situation, one must have been in that situation before. Hence scripts provide us with connectivity between what we read or hear and our world knowledge. In other words, while it is possible to understand a story, for instance, without a script, scripts are an important part of the comprehension of a story as they allow us to connect the pieces of the story by inferring the implied details intentionally left out by the speaker of the story (Schunk & Abelson, 1977).

This section briefly discussed the factors that impact language learning strategies. prior knowledge, schema and scripts were explored, and their contribution to learning was discussed.

3.6 Conclusion and Research Questions

Based on the insights found throughout and particularly those found in pedagogical application insights into language learning strategies, I carried out my own study. In this study, I implement some of what I have learnt here and avoid the limitations recorded in the previously surveyed studies aiming to gauge the effectiveness of cognitive linguistic insights into language learning strategies (see section 3.4.3).

In addition, as this literature review shows, and in particular the survey of the cognitive-orientated studies, there is no conclusive evidence of the contribution of a metacognitive strategy-based method to listening comprehension within the framework of cognitive linguistics in French, Japanese and Russian contexts (Carrier, 2003; Graham & Macaro, 2008; O'Malley, 1987; Thompson & Rubin, 1996; Vandergrift, 2010). These results can be attributed to the limitations outlined in section 3.43.

In order to address these issues and the applicability of the metacognitive strategy-based method in different contexts (an Arabic context in the case of my study), my study will consider the following **three research questions**:

1. Is metacognitive teaching likely to lead to higher listening comprehension scores than the teaching of cognitive strategies?

2. Are students in the control group likely to develop metacognitive strategies on their own although they are only taught cognitive strategies because these types of strategies are related?
3. Are there other variables that are likely to contribute to listening comprehension? Students with high scores in these variables will have higher scores in listening comprehension.

CHAPTER 4 METHODOLOGY

4.1 Participants and Setting

The subjects that participated in the study were 18-year-old female university students all from the UAE. These participants were divided into two groups: an experimental group and a control group, each of which consisted of 22 students from small towns of Dibba, Kalba, and Khorfakkan, in the eastern region of the UAE.

Before joining the university, these participants had studied in government schools and had been taught English as a subject, (usually) five hours a week for 12 years. These EFL learners had used books designed by English authors (e.g.,*UAE Parade: Grade 3,* by Veramendi (2006) and *On Location: Grade 12,* by Bye (2009)) and had been taught by non-native, Arab teachers (Egyptians, Syrians, Tunisians). After obtaining their high school certificates, Emirati students, whose major medium of instruction was English, must sit the TOEFL test and attain a score of 500 or higher or sit the IELTS test and score 5. If these scores are not reached, they join an Intensive English Programme (IEP) to improve their English and maximise their chances of attaining the required TOEFL or IELTS scores.

The participants in this study belong to the Intensive English Programme (IEP) at the University of Sharjah, UAE. On joining this institution, these participants were required to take the TOEFL test. Based on their TOEFL test scores, they would have either registered for their majors (if they scored 500), or they would have been placed in one of four levels: level 1 (< 370), level 2 (373 - 437), level 3 (440 - 477) and level 4 (480 - 497).

The subjects of this study consisted of level 2 students who acquired TOEFL scores between 373 and 437. In this study, these students were classified as breakthrough according to the Oxford Quick Placement Test (OQPT) (see Appendix E). These particular students were selected for this study because the number of students at the IEP levels 1, 3 and 4 were very limited, ranging from five to eight students in each level, whereas the numbers at level 2 ranged from 10 to 25 students.

I taught the instructional treatment to both the experimental and control groups, thus taking a teacher-as-researcher role.

In this study, the experimental group students were trained in the application of metacognitive strategies to listening comprehension. Control group students, on the other hand, were trained in the application of cognitive strategies to listening comprehension. It is important to note that the two groups attended different teaching sessions as they belonged to two L2 sections. It is also important to note that Iwas teaching 4 IEP sections belonging to three IEP levels: Section 81 level 1, sections 81 and 82 level 2 and section 81 level 3.The experimental participants were the students in section 81 level 2 and the control group were the students in section 82 level 2. Each IEP section had its own schedule. I was teaching listening skills in both sections: section 81 from 8:00 a.m. to 8:50 a.m. and section 82 from 9:00 a.m. to 9:50 a.m. everyday, five days a week.

4.2 Measures and Procedures

4.2.1 Instructional treatment

The instructional treatment of this study comprises a two-month trainingprogramme teaching listening for comprehension using two different teaching methods. It consists of 25 lessons for each group (experimental and control). All the lessons were part of both the experimental and control participants' regular IEP listening comprehension classes which they attended five days a week for 50 minutes daily. The participants in both groups had the same listening comprehension passages from the IEP textbooks, but attended two separate teaching sessions as they belonged to two separate sections as outlined above.

The treatment consisted of four phases (see Figure 4.2, p. 147). In phase 1, the students in the IEP programme (section 81 and 82, level 2) took the Oxford Quick Placement Test (OQPT) (see Appendix E) in order for me to select the students who belonged to the score range allowing me to control for external variables relating toindividual differences in language proficiency. The first phase took four days: one day for the students to take the OQPT and three more days for me to mark the test, sort the scores and select the participants whose scores fell within the same score range.

In the second phase of the treatment, the participants in both groups took sevenpre-treatment tests (LC, VKK1 and VKK2, MALQ , WMST) (see Appendices F, G, H, I), respectively and the (AWR, OWR) tests on four consecutive days during their regular listening comprehension classes that I was teaching.

In the third phase, the participants in both groups were first taught five cognitive strategies: namely prediction and checking, inferencing, elaboration, note-taking, and summarisation (see Appendix A). These strategies were selected as they are predominantly used in ESL/EFL textbooks. In addition, they are common strategies in second language listening (Vandergrift, 1997; Oxford, 1990, 2011). This phase began with introductory lessons in which I tried to familiarise the participants in both groups with the names of the cognitive strategies as well as help them understand the nature, importance and application of these strategies. The terminology and explanations were given both in English and Arabic, (the participants' L1), in order to allow the participants to understand, memorise and recall the names of these strategies and to understand the objectives of each strategy clearly and easily. This was a crucial phase in the study as I had to ensure that all the participants in both groups were familiar with many aspects of the five cognitive strategies outlined above (their names, definitions, examples, importance, when to use them). This phase occupied four weeks (see Figure 4.4, p. 150) (see Appendix B).

Following this, over a period of two months, (forty teaching days), the battery of cognitive strategies outlined above was once again given to the participants in both groups in their regular listening classes (one lesson per day five days a week). The control group applied these strategies to the listening comprehension activities they had in class during the whole treatment (see Appendix C). The experimental participants, however, applied the same cognitive strategies but in parallel with the metacognitive strategies (see Appendix D). The experimental group had two parts in this phase. In the first part, the participants were familiarised with the notion of metacognitive knowledge: the factors that influence listening comprehension and the factors underlying the MALQ (see Appendix D). In the second part, the same group took a variety of lessons familiarising them with the different types of metacognitive strategies (see Appendix D) and applied them to their listening comprehension activities during the MetSBM treatment. The metacognitive strategies were predicting and checking predictions, activating prior knowledge, planning, monitoring, evaluation, problem-solving, selective attention and directed attention. The strategies were selected because they are the basis of strategic knowledge, a component of metacognitive knowledge (Vandergrift&Gogh, 2012) (For more information about these strategies, see chapter 3, sections 3.3.2 and 3.3.3). In the third phase it took each group forty days to finish applying their strategy battery to the various listening comprehension activities they experienced during the treatment. The language of instruction for both groups was English.

In the fourth phase of the treatment, the participants in both groups took seven post-treatment tests (LC, MALQ, VKK1 and VKK2, WMS, AWR, OWR). The tests were the same tests that both groups took prior to the treatment. They were taken on four consecutive days during both groups' regular listening comprehension classes that I was teaching.

The following section explores the two methods of instruction together with an explanation of the strategies of the treatment, accompanied by two sample lessons: the first to the experimental group and the second to the control group. I will also discuss the tasks and objectives behind each lesson plan. Both types of lessons were kept similar in length to ensure that both groups received the same timing on each of the treatment lessons.

Instructional Treatment

Methods of Instruction and Sample Lessons

A. *The Metacognitive Strategy-Based Listening Comprehension Instruction Method (MetSBM)*

The MetSBM was used with the experimental group. It is inspired by the cognitive linguistics approach to teaching listening comprehension. The aim of the MetSBM, as Vandergrift and Goh (2012) state, is to promote learners' "ability to self-regulate [their] learning" (p. 101). MetSBM attempts to enable learners to first, "manage the process and outcome of specific listening tasks in order to maximise opportunities for comprehending and using the information they have processed" (p. 101). Secondly, it allows learners to "select, manage and evaluate their own listening development activities outside of formal class time" (p. 101).

MetSBM is built on the four principlesoutlined below.

i. There is evidence that learners' metacognition can directly affect the process and outcome of their learning […] including actual test performance (Vandergrift & Goh, 2012, p. 132).

ii. Metacognition is […] positively linked to motivation and self-efficacy. (Dörnyei & Skehan, 2003, p. 56)

iii. It is termed the seventh sense (Nisbet & Shucksmith, 1986)

iv. Metacognitive abilities are mental characteristics shared by successful learners. (Vandergrift et al., 2006).

Treatment

The treatment was based on the model proposed by Goh (2000, 2010), Vandergrift and Tafaghodari (2010), Vandergrift (2004, 2007), and Vandergrift and Gogh (2012). Each week the participants took three different listening lessons. What follows is a description of the set of integrated sequence-of-lesson procedures that the experimental group followed during each lesson: planning, listening 1, pair process-based discussion, listening 2, whole-class process-based discussion, listening 3, script-sound recognition and personal reflection.

(1) Planning: In pairs, students stated their goal. They also discussed what they knew about the topic of the listening passage and predicted the information and words/phrases they might hear. Generally speaking, at this stage, two basic listening processes are extensively applied: 'top-down' (using background knowledge and context) and 'bottom-up' (using primarily the individual words uttered). The general topic of the passage and the vocabulary essential to the discussion of the topic were introduced to the students. In this way, the listening exercises were contextualised for the students, enabling them to make predictions and use their background knowledge while listening. As a teacher, I also tried to elicit pertinent background information from the students. In addition, the vocabulary list containing the key words and phrases that might be unfamiliar to the students were given to them before the listening exercise. In addition, students predicted the problems they might encounter and selected appropriate strategies for coping with these difficulties. Theywere asked to write their notes either in their L1 or L2. The students were also asked to complete the 'What to Know about the Topic' and 'What I Wanted To Know about the Topic' columns in the planning/evaluation graphic organiser (see p. 122).That would allow them to identify their prior knowledge about the topic and select the specific strategy or strategies to apply during *Listening 1*.

(2) *Listening 1*: While the students were listening to the passage, they underlined or circledthe words and/or phrases, including L1 equivalents that they had predicted correctly. They also wrote down everynew piece of information they heard. After completing their predictions, students listened to the text for the first time. As they listened, they would verify their predictions by placing a check mark beside the predicted information that they may have understood.

Generally speaking, the benefit of the *Listen1*for students is that it allows them to develop essential skills throughout the passage. These skills include listening not only for key words, but also for details, attitudes, opinions and gist. In addition, students can learn how to be active by asking themselves questions and responding to them, making inferences, recognising information and identifying items. Usually, this is done specifically with tactics for listening exercises.

(3) *Pair process-based discussion*: In pairs, the students compared what they had understood so far and explained the strategies used. They also identified the parts that caused confusion and disagreement and made notes on the parts that needed special attention in the *Listen 2*. In this step, my role as a teacher was to model my thinking-aloud to show the students how they would listen selectively to the confusing parts of the text.

(4) *Listening 2*: The students listened to the confusing parts that had caused disagreement after the *Listen 1* and made notes on any further information they could hear.

(5) *Whole-class process-based discussion*: As a teacher, I led a class discussion confirming comprehension before discussing with the students the strategies they would use. Based on the discussion, I modelled the use of strategies or a selected strategy (metacognitive strategy) for achieving comprehension goals.

(6) *Listening 3*: The students who were unsuccessful in using the strategies in steps 2 and 4 could then practice using a strategy or a cluster of the strategies

modelled by me with the same information.

(7) Script-sound recognition: I provided the students with a transcript of the recording and asked them to listen for a fourth time, allowing them to match sounds to print and vice versa for difficult words or phrases. My role in this phase was to elicit these lexical items and demonstrate the pronunciation or phonological modifications found in the listening passage. The written form of the transcript would not be given before then in order to motivate students to listen to the text without reference to the written form, which would enable them to be more confident (Vandergrift & Goh, 2012).

(8) Personal reflection: The students reflected on the lesson by answering some guidingquestions prepared by me. The questions allowed the students to write down what they had understood and learned from the listening passage. They also reflected on the guided listening process that they gained from the pair and class discussions. Following this, the students evaluated the effectiveness of the strategies they used to understand the listening text as suggested by Goh (2000). Finally, the participants reflected on their comprehension gains by completing the “What I Learned’ column in the planning/evaluation graphic organiser (see page 122).Generally speaking, self-evaluation would allow students to adjust their strategies for the second attempt. Room for the written reflection at the bottom of the instrument encourages students to personally reflect on the process and concretely state what they would do to improve their performance the next time.

Homework: Twice a week participants in the experimental group were asked to completea listening task, following the same pedagogical cycle and procedures they had used as well as noting how successful they felt about accomplishing the task and generally about the treatment sessions. Generally speaking, the aim of the homework is toprovide additional practice in listening tasks and the use of listening comprehension.

It is important to note that each activity in this metacognitive pedagogical sequence leads L2 listeners through the process of listening illustrated in Figure 4.1.

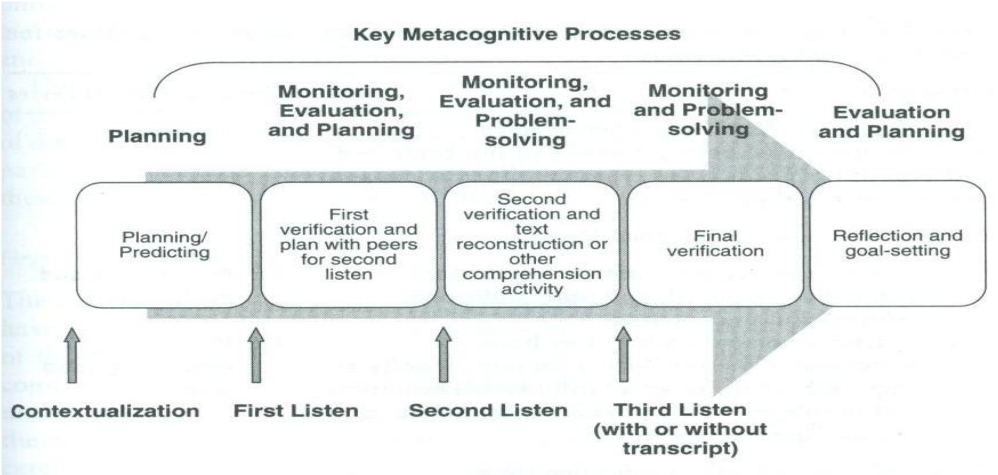


Figure 4.1. Stages in the metacognitive pedagogical sequence for listening instruction. Reprinted from *Teaching and Learning Second Language Listening: Metacognition in Action* (p. 109), by L. Vandergrift and C. M. M. Goh, 2012, London: Routledge. Copyright 2012 by Taylors & Francis. Reprinted with permission.

Following is a detailed description of a sample lesson of one of the MetSBM (Setting and Checking Goals).

Lesson Handout

Focus: Planning (Goal Setting & Goal Checking)

Time: 50 Minutes

Level: 2

Unit: 3 / Listening 1: Why are good manners important?

Objectives: By the end of the lesson the students will have: a. recalled and practiced the types of cognitive and metacognitive strategies they had seen previously b. discussed the topic and predicted what they might hear c. been introduced to and practiced the stages of goal setting d. been introduced to and practiced the stages of goal checking e. applied these two strategies and other cognitive and metacognitive strategies to

listening for main ideas and details

f. monitored their peer and class discussions

g. reflected on their performance

Materials: working sheet, data show, goal setting and checking goal sheet and activating background sheet, listening activity handout, CD 1 / tracks 29-30

Step 1: To revisit the previous lessons

- T elicits the different types of cognitive and metacognitive strategies seen before (see Lesson Handout below)
- Ss do the task.
- T outlines the activities of the day.
- T reminds Ss of the 'Prediction' strategy.

Step 2: Planning

- T explains the Planning/Predicting activity.
- Ss read the instructions in the planning process in the worksheet below and complete both the first and the second columns (see Handout below).
- T invites Ss to discuss their predictions in pairs and complete column 3 ' My Peer's Predictions' (Ss write down the information they did not predict themselves).
- Ss follow the task accordingly.
- T invites some volunteers to report on the information they wrote in 1, 2, and 3 and models the sentences that the students are going to use in their report.
- Ss do the task accordingly.

Step 3: Listening 1 and pair process-based discussion

- T explains the task.
- Ss read the instructions.

- T asks Ss to tell himwhat strategy they can use.
- Ss discuss the various planning and predicting strategies they can apply to follow the task.
- T plays CD1 Track 29 once.
- Ss listen and write T if the statement is true and F if false. Then they check all the other predictions from the beginning down to the main idea.
- T invites Ss to discuss their answers as well as the problems they faced and discuss how they are going to tackle those problems.
- Ss do the task accordingly and write any additional information under 'First Listen'.

Step 4: Listening 2

- T invites Ss to listen a second time to check their answers and write any additional information under Second Listen.
- Ss do the task accordingly.
- T invites Ss to discuss their answers with their peers, paving the way for the next step.

Step 5: Whole-class process-based discussion

- T introduces the 'Goal Setting' strategy and invites the Ss to follow him by reading the handout (see Lesson Handout below).
- T follows the same procedure with the 'Goal Checking' strategy.
- T asks Ss to read the instructions related to Listening for Details and asks them to set their goal(s) before they tackle the task.
- Ss act accordingly and discuss their goals and how to set them
- T plays Track 30, p. 43.
- Ss listen, check their answers and add any additional information under 'Third Listen'.

• T invites Ss to discuss their answers and the possible strategies they will apply to the next listening comprehension lesson. **Step 7:** Script-sound recognition • T provides Ss with the written script and invites them to listen to the whole passage while reading the script. • Ss act accordingly **Step 8:** Personal reflection • T invites Ss to reflect on their performance during the whole listening activity of the day. • Ss do accordingly. • T asks Ss for their listening comprehension gains in the 'What I Learned' column of the planning/evaluation graphic organiser. • Ss act accordingly.
Homework: Setting Goals and Checking Goals: Ss choose a listening activity from Randal's and follow the steps they followed during the classroom listening activity.

SETTING GOALS

WHAT is Setting Goals?

Setting Goals is understanding an activity and deciding what you want to gain/learnfrom that activity.

EXAMPLE: You are going to watch a video asking people about global warming, so your goal might be to understand each person's opinion.

WHY: Setting goals gives you a purpose for listening and helps you to choose the best strategies.

WHEN: Use the setting goals strategy any time you have an activity to do.

CHECKING GOALS

WHAT is Checking Goals?

Checking goals is deciding whether you have met your goal or not.

EXAMPLE: After you watch the interview video, tell yourself what each person's opinion was, then ask yourself the question if you are confident about your understanding. If your friend also watched the video, you could share your idea with her to see if she agrees.

WHY: Checking goals is knowing whether you met your goal or not. This helps you decide if you need to listen again or try a different strategy, and can help build your confidence when goals are met.

WHEN: After learning activities, OR anytime you set a goal

The Lesson

UNIT 3: Why are good manners important?

Listening 1: Be polite

Activity 1: Write down the topic of the listening exercise. Then write what you know about the topic

<table>
<tr><td colspan="3">Topic: ____</td></tr>
<tr><td>WHAT I KNOW ABOUT THE TOPIC</td><td>WHAT I WANT TO KNOW ABOUT THE TOPIC</td><td>WHAT I LEARNED</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td colspan="3">Write some ideas that you think the passage will deal with.
____</td></tr>
</table>

Activity 2: Complete the table according to the different instructions.

My Predictions	Why	My Peer's Predictions	First Listen	Second Listen	Third Listen
Planning Topic: __________ __________	__________ __________	__________ __________	__________ __________	__________ __________	__________ __________
Words/Phrases __________ __________ __________		__________ __________ __________	__________ __________ __________	__________ __________ __________	__________ __________ __________
Information __________ __________ __________	__________ __________ __________		__________ __________ __________ __________ __________	__________ __________ __________ __________ __________	__________ __________ __________ __________ __________
Main Ideas __________ __________ __________	__________ __________ __________		__________ __________ __________ __________	__________ __________ __________ __________	__________ __________ __________ __________
Details __________ __________ __________	__________ __________ __________		__________ __________ __________ __________ __________	__________ __________ __________ __________ __________	__________ __________ __________ __________ __________
Listening Problems & Solutions __________ __________ __________	__________ __________ __________				

Activity 3: Script-sound recognition

- Read the text while listening. Then pronounce the underlined words.

Activity4: Personal reflection

Circle the statement you think is right for you and answer the question. Then complete the statement about what you will do in the next listening comprehension lesson.

I found the task (**easy**, **hard**, **neithereasy nor hard**.)

Why?

____

In the next listening task, I will pay attention to:

____

Comprehension gain: Complete the column 'What I Learned' in Activity 1.

Homework: Choose a listening activity from Randal's and follow the steps you have been through during the lesson.

B. The Cognitive Strategy-Based Listening Comprehension Instruction Method (CSBM)

The control participants were taught the same battery of cognitive strategiesthat their experimental peers learned in the first phase of the treatment (see Appendix B). In the second phase of the treatment, however, the control participants applied the cognitive strategies that they learned in the first phase of their treatment to the textbook listening activities along the lines of the CBSM (see Appendix C). This conventional method treats listening comprehension in three phases: pre-listening, while-listening and post-listening. The process of the cognitive strategy-based instruction as recommended by Goh (2000) follows.

(1) Pre-listening: As a teacher, I would revisit a cognitive strategy from the first cognitive strategy training phase. I would introduce the topic of the listening

passage and ask the students to say what they knew about it. I would write on the board the students' ideas and unfamiliar words. Subsequently, they would read the instructions for the listening activity.

(2) While-listening

(First Listening): I would play the recording and the students would listen attentively and complete the activity by providing the correct written answers. This would be done by selecting the correct options, filling in the blanks, sequencing information, drawing a diagramor taking notes.

(Second Listening): I would play the recording a second time and invite the students to confirm or change their answers. Following this, I would elicit the correct answers from the students without asking them whether they had been inaccurate.

(3) Post-listening:The students would do a follow-up activity, such as writing a summary of the passage or role-playing.

It is important to note that during the listening activity, there was no mention of the strategies in thecontrol group. In fact, any strategy-related section explained above was skipped in class and only the listening activities based on the conversational method were covered with them.

Below is the structure of a sample lesson of a listening activity based on the CSBM.

Lesson Handout

Focus: Making Predictions

Time: 50 Minutes

Level: 2

Unit: 3 Why are good manners important?Listening 1: Be polite

Objectives: By the end of the lesson the students will have: • been introduced to and practiced the strategies of activating background knowledge (making predictions)

- brainstormed situations in which these strategies can be used and cannot be used
- listened to a speech about “How to be polite”
- made predictions about what they might hear

Materials: working sheet, data show, making predictions and activating background sheet, listening activity handout, CD 1 / tracks 29-30

Activities:

Step 1 To revisit the previous lessons.

- T elicits the different types of cognitive strategies already seen in the first phase of the treatment
- Ss brainstorm as many types of cognitive strategies as possible
- T takes notes on the board
- T outlines the activities of the day
- T reminds Ss of the “Prediction” strategy and goes through the information on the “Making predictions” sheet

Step 2 To go through thepre-listening activities

- T tells students they will listen to a radio programme called *Book Talk* and that the people will be talking about the *Civility Solution*: *What to do when people are rude.* It is about the need for more polite behaviour.
- T asks Ss what they know about the topic.
- Ss say what they know about the topic.
- T previews the words from Listen 1 by pronouncing them.
- Ss read the definitions and do task 1.
- T elicits the answers and provides Ss with the right answer.
- Ss do task 2.
- T elicits the answers and provides Ss with the right answer when needed.
- T invites students to read the instruction related to Preview Listening 1
- Ss read the instructions and write their predictions opposite the question related to part 1.
- T plays track 26 once.
- T elicits some of the correct predictions without giving any feedback and then plays the same track one more time.

Step 3 To listen for main ideas • T explains the task. • Ss read the instructions. • T plays CD1/Track 29 once. • Ss listen and write their answers in the textbook. • T elicits some answers without giving any feedback and then plays the same track a second time. **Step 4** To listen for details • T explains the task. • Ss read the instructions. • T plays CD1 Track 30 once. • Ss listen and tick the right answer in the textbook. • T elicits the answers from Ss and provides them with the right answer when needed without providing any feedback and then plays the same track a second time. • Ss listen and rectify their previous answers if necessary and/or tick the answer they missed in the first listen. • T elicits some answers and provides Ss with the right answers when needed.
Homework: Practicing making predictions: Ss do one listening activity from Randal's to apply the two strategies they applied in class.

Making predictions and activating background sheet

MAKING PREDICTIONS

What is Prediction?

► **Thinking of the words, phrases, and information that you might hear.**

EXAMPLE: You want to buy a coffee. Think about what you need to say and predict what the cashier will say to you.

WHY: Predicting what you might hear makes it easier to understand what you hear

.

WHEN: Use prediction when you have knowledge of the topic. When you get new information (during listening) you can change your prediction.

ACTIVATING BACKGROUND KNOWLEDGE

WHAT is activating prior-knowledge?

► Bringing information that you already know about a topic into your mind before you listen.

EXAMPLE: Your teacher tells you that you will listen to a radio programme about fast food.Think about everything you know about fast food, such as where you buy it, how much it costs, how it tastes, how healthy it is and how popular it is.

WHY: Thinking about what you already know helps you get ready to listen. Having this information in your mind makes it easier to understand new information while you listen.

WHEN: Activate background knowledge when you know what the topic isand you already know something about the topic.

The Lesson

UNIT 3: Why are good manners important?

Listening 1: Be polite

Activity 1: Fill in the blank with the right type of strategy from the box.

1. Elaboration	a. Personal elaboration
	b. World elaboration
	c. Academic elaboration
	d. Questioning elaboration
	e. Creative elaboration
	f. Imagery
2. Inferencing	a. Linguistic inferencing
	b. Voice inferencing

c. Paralinguistic or kinesic inferencing d. Extralinguistic inferencing e. Inferencing between parts 3. Summarisation 4. Translation 5. Transfer 6. Substitution 7. Induction 8. Grouping 9. Note-taking 10. Resourcing 11. Repetition

Cognitive strategies الإسترتيجيات الذهنية	Definition تعريفها
1. ______________________	
a. ______________________	Guessing the meaning of unknown words by linking them to known words وهو تخمين معاني المفردات المجهولة للطالب يربطها بكلمات معلومة لديه
b. ______________________	Guessing by means of the tone of voice وهو نخمين المعنى عن طريف نبرة الصوت
c. ______________________	Guessing the meaning by referring to paralinguistic cues

	وهو تخمين المعنى بالرجوع إلى المؤشرات المجارية للغة.
d. ________________________	Guessing based on other cues, such as what is required in the text وهو تخمين المعنى المبني على المؤشرات اللغوية الإضافية مثل ما هو مطلوب في النص
e. ______________________	Making use of certain words in the text that may not be related to the task to get more information about the task إستعمال بعض الكلمات في النص والتي قد لا يكون لها علاقة بالتمرين من أجل الحصول على معلومات إضافية حول التمرين
2. _______________________	
a. ________________________	Using prior personal experience to comprehend the text وهو إستعمال الخبرة الشخصية لفهم النص
b. _______________________	Using world knowledge to comprehend the task وهو إسنعمال المعرفة بالعالم الذي يحيط بنا لفهم النص
c. _______________________	Using knowledge gained during the learners' formal learning experiences وهو إستعمال المعرفة المتحصل عليها خلال الخبرات التعلمية الرسمية للمتعلمين
d. _______________________	Questioning oneself about what one knows and does not know about the topic وهو أن يسأل الطالب نفسه عما يعرف و عما لا يعرف حول الموضوع

e. ________________________ f. ________________________	Trying to adapt what one hears to make the story more interesting و هو أن يحاول الطالب أن يؤقلم ما يسمعه ليجعل القصة أكثر متعة له أو لها Using mental imagery to create a picture of what is happening و هو إستعمال التخيل الذهني لرسم صورة لما يحدث
3. ________________________	Writing a short summary to organise the concept in one's mind or on paper و هو كتابة ملخص قصير لتنظيم المفهوم في الذهن أو على الورق
4. ________________________	Transforming the target language into the native language و هي تحويل اللغة المستهدف تعلمها إلى اللغة الأصلية
5. ________________________	Using linguistic knowledge to guess the meaning of unknown words, predict outcomes, or fill in information و هو إستعمال المعرفة اللغوية لتخمين معاني الكلمات المجهولة والتنبؤ بالمخرجات أو إضافة المعلومات
6. ________________________	Repeating or practicing some words that have been heard و هو إعادة أو التدرب على بعض المفردات التي قد سمعها الطالب
7. ________________________	Using resources or dictionaries to help comprehend the target language و هو إستعمال المصادر التعليمية أو القواميس
8. ________________________	Clarifying material to facilitate the recall of some grouped information and to enhance comprehension و هو توضيح المادة لتسهيل إسترجاع بعض المعلومات المجمعة للرفع من مستوى الفهم
9. ________________________	Writing down some ideas and keywords و هو كتابة بعض اللأفكار والكلمات الرءيسية

10. ______________________	Using grammar rules to understand the text وهو إستعمال القواعد النحوية لفهم النص
11. ______________________	Choosing alternative techniques, words, or phrases to accomplish a language task وهو إختيار طرق فنية بديلة أو كلمات، أو مقاطع من جمل لإنجاز تمرين لغوي

Activity 2: (Vocabulary): Do activities A and B.

Activity 3: (Listening for Main Ideas): Read the statements. Then listen to the radio programme. Write T (true) or F (false).

Activity 4: (Listening for details): Read the questions. Then listen to the radio programme again. Circle the answer that best completes each statement.

Homework: Do ONE listening activity from Randal's. Try to apply the two strategies you used in class.

C. The MetSBM versus the CSBM

The experimental and control groups were taught how to listen for comprehension by applying two different teaching methods, the MetSBM and the CSBM. These two listening comprehension instructional methods permitted the participants in both groups (taught in separate sessions) to perceive the application of learning strategies to listening comprehension in different ways. Below is a summary of some of the main differences and similarities between the methods adopted in the instructional treatment for both groups (see the Instructional Treatment: Methods of Instruction and Sample Lessons above, and Table 4.1).

Table 4.1: Some of the Main Differences between the Methods Adopted in the Instructional Treatment for both Groups

MetSBM	CSBM
. Metacognitive Strategy-Based Method: Metacognitive strategies coordinate the process and manage one's listening performance (planning), during	**.** Cognitive Strategy-Based Method: cognitive strategies manipulate input directly to assist understanding by utilising prominent textual signals, guessing

(monitoring), after (evaluation) listening and especially when encountering comprehension problems. . A metacognitivelisteningstrategyis whatone does when one is aware of the listening process, and one is attempting to understand. . A metacognitive strategyis typically a combination of skillsor a sequence of tactics as the listener is monitoring the process. For example, a metacognitive strategy would involve the listener consciously recognising that she or he might not comprehend, taking the initiative to paraphrase her or his understanding of the speaker and asking whether he or she is correct. . Metacognitive Strategy-Based Method: Both cognitive and metacognitive strategies are learned and applied.	meaning, anticipating what the speaker will say and using mental images. .A cognitive listening strategy is what a listener deploys to aid comprehension and occurs at asub-conscious level. . A cognitivestrategy generally entails one single tactic or skill. For example, a cognitive strategy would entail paraphrasing information or making an inference. . Cognitive Strategy-Based Method: only cognitive strategies are learned and applied.
. Metacognitive Strategy-Based Method: a process-based method	. Cognitive Strategy-Based Method: a product-based method
. The participants were made awareof theobstacles to listening comprehension. . The participants were made aware of the different types of knowledge they needed to learn how to listen for comprehension. . The participants were learning fromtheir peers through pairwork and class discussions. . The participants reflected on their performance, which allowed them to evaluate their comprehension and the	. The participants followed the instructions in the textbook activities and applied the cognitive strategies they learned in the first phase of the treatment and remodelled by the teacher in the second phase. . The structure of the lessons followed the mainstream: pre-listening, during listening and follow-up activities. . The lessons were rather teacher-centred: the teacher would direct the participants during the lesson and evaluate the

effectiveness of the strategies they learned and applied during the two phases of the treatment. **.** The structure of the lessons was motivatingas it allowed the participants to include various novel activities such as pair and class discussion, self-monitoring and self- evaluation, reflections and script-sound matching. **.** The lessons were rather student-centred.	participants' answers by stating 'right' or 'check your answer'.

4.3 Study Materials

4.3.1 Pre-treatment Instruments

A. Oxford Quick Placement Test (OQPT)

For external variables, the Oxford Quick Placement Test (OQPT) (see Appendix E) was conducted in order to choose the participants who have the same level of language proficiency: beginners, intermediate, or advanced. The OQPT assesses reading, vocabulary, and grammar using a typical multiple choice format (stem with either three or four response options). The pencil and paper test consists of two parts. Part 1(questions 1-40) is taken by those who are intermediate or below. Part 2 (questions 41-60) is taken by those students who attain more than thirty-five out of forty questions on part 1. That is the reason it is taken only by students who score more than 36 out of 40 on the first part. The second-tier questions are aimed at those students with higher ability levels in English. According to the test developer, the reason for dividing the test into parts is to minimise the effect of guessing and thus improve test accuracy.

With regard to scoring, one point is given for each correct answer and no points for an incorrect one. The scores in the first part range from 0 to 40. It is important to note that the participants in both groups took only the first part as no student scored36 or more out of 40 on the first part (see Table 4.2). Students' scores ranged from 11 to 13.

I applied the Common European Framework (CEF) level (see Table 4.2). Since the scores ranged from 11 to 13, the students were classified as breakthrough or A1 (see Table 4.2).

Table 4.2: Look up table for computer and paper and pen scores

ALTE Level	CEF	Level Description	Paper and Pen test score		Computer-basedtest score
			Part 1 Score out of 40	Parts 1 and 2 Score out of 60	
5	C2	Mastery (Upper Advanced)		55 – 60	80 - 100
4	C1	Effective Proficiency (Lower Advanced)	If a student scores 36 or more, it is recommended they complete Part 2 of the test.	48 – 54	70 - 79
3	B2	Vantage (Upper Intermediate)	31 – 40	40 – 47	60 - 69
2	B1	Threshold (Lower Intermediate)	24 – 30	30 - 39	50 - 59
1	A2	Waystage (Elementary)	16 – 23	18 - 29	40 - 49
0.5	A1	Breakthrough	10 – 15	10 - 17	29 – 30
0		Beginner	0 – 9	0 - 9	0 - 28

B. The Listening Comprehension Test (LCT)

The Listening Comprehension Test (LCT) includes 18 questions related to three short conversations selected from Tanka and Most (2009) (see Appendix F). All three conversations deal with familiar topics. In the first conversation, three university students introduce one another on the first day of the autumn semester. In the second conversation, three university students talk about where and how they would like to spend their winter break. In the last conversation, two university students argue about the value of TV programmes. The students listened to each passage once and answered the questions. One point was given for each correct answer. The scores range from 0 to 12 points maximum.

C. Vocabulary Knowledge (VKK1 and VKK2) Test

To test the participants' vocabulary size, Paul Nation's on-line 1000 and 2000 Level Test (version B) (http://eish, health.wits.ac.za.39=node/199) was conducted. The test includes 39 items (see Appendix G). The participants in both groups were asked to read a sentence with or without a picture, and click 'T' if the sentence is 'TRUE', 'N' if the sentence is 'NOT TRUE', or 'X' if they 'DO NOT UNDERSTAND' the question. In order to assess their scores, the participants clicked the 'Check' icon at the bottom of the web page.The Vocabulary Levels Test (VKK1 and VKK2) used in this study is the online version of the original test (Nation and Laufer, 1999). This test is used to assess the breadth of the participants' vocabulary knowledge before and after the treatment. As the participants scored below 83% in the second level (words from 1000 to 2000), I was content with the results obtained in the first two levels of this vocabulary test.

D. The Metacognitive Awareness Listening Questionnaire (MALQ)

The MALQ (Vandergrift et al., 2006) was conducted to assess the participants' metacognitive awareness and the perceived use of strategies while listening. The questionnaire is based on a 7-point Likert scale that ranged from 'Strongly Disagree' to 'Strongly Agree' with 1 indicating that the participants 'Strongly Disagree' and 7 that they 'Strongly Agree" (see Appendix H). Since the questionnaire was developed based on Flavell's (1979b) three-part model of metacognitive knowledge (person, task, and strategy), it provides measures which were modelled on the constructs related to metacognitive awareness and self-regulation of listening comprehension: problem-solving, planning and evaluation, level of mental translation, personal knowledge and directed attention.

The MALQ consists of 21 randomly ordered items related to L2 listening comprehension. These items measure the perceived use of the strategies and processes underlying the five factors related to the regulation of L2 listening comprehension outlined above.

Initially, the MALQ included 88 items grounded in research and theory about L2 listening comprehension as well as strategy use and metacognition knowledge based on Flavell's (1979) conception of metacognition. For redundancy, content validity, clarity and readability, this initial list was then subjected to four experts: two in questionnaire design and two in the field of listening comprehension. As a result, 58 items remained. After a further rigorous scrutiny for content validity conducted by the judges, 51 items remained. These items were further tested for exploratory analysis. They were field tested with a large sample of respondents (N = 966) in various countries, in different learning contexts and at different levels of language proficiency. As a result, correlations among the five factors ranged from .009 (person knowledge and planning) to 47 (attention and problem-solving). Internal reliability estimates were respectable ranging from .68 for the four items on directed attention factors (items 13, 14, 15 and 18) to .78 for three items on the mental translation (items 4, 12 and 21). This led to the choice of the final 21 items.

After the exploratory factor analysis, the questionnaire was administered to another large sample of respondents (N = 512) for confirmatory factor analysis. They were French second language (FSL) learners in Canada and EFL learners in Iran. Their proficiency levels ranged from beginner, beginner-intermediate, intermediate to intermediate advanced. Following that, a listening comprehension test was administered in order to establish whether or not there was a relationship between the listening behaviour reported in the MALQ and the actual listening performance.

An examination of the completely standardised solution of the five-factor model indicated that correlations among the factors ranged from .09 to .57, with problem-solving and attention showing the strongest relationship, $r = .57$, and planning and person knowledge showing the weakest relationship, $r = .09$. As for the correlation relationship between the listening behaviour reported in the MALQ and actual listening performance, the correlation coefficient obtained was significant, $r = .36$, $p < .001$, confirming the relationship between listening comprehension ability and metacognitive awareness of the process underlying successful L2 listening. Finally, results of the regression analysis suggested that metacognition significantly predicted listening comprehension. This indicated that about 13% of the variance in listening performancecould be explained by metacognition.

In the present study, I used a 7-point scale for more accurate responses. Although several factor analyses were conducted by the designers of the MALQ (Vandergrift et al.,

2006) in order to refine it and identify the underlying constructs based on the set of observable variables, similar analyses were conducted in the present study because the scale was changed and the participants to whom the questionnaire was administered were university students. After administering the MALQ before and after the treatment, I carried out a reliability analysis using*Cronbach'sAlpha* and deleted item 15 from the Person Knowledge factor until I reached an optimal value for *Cronbach's Alpha* (α = .631) in the pre-treatment MALQ and an optimal value for Cronbach's Alpha (α = .803) in the post-treatment MALQ. I also deleted item 16 from the Directed Attention factor until I reached an optimal value for Cronbach's Alpha (α = .690) in the pre-treatment MALQ and an optimal value for Cronbach's Alpha (α = .806) in the post-treatment MALQ. Reliability checks on the MALQ yielded Alphas ranging from (α = .631) to (α = .853) in the pre-treatment MALQ and from (α = .803) to (α = .947) in the post-treatment MALQ. Thus, as *Cronbach's Alpha*was (α> .7) the questionnaire's data were considered reliable (for more information about the results of the reliability analysis conducted on the MALQ deployed in the present study, see section 5.4.1, chapter 5)

Despite the above, the MALQ, in general had minor limitations. Certain factors comprise only two or three items, which might not be enough to create a valid subscale. Despite this, I used the MALQ as it is the only existing questionnaire that enabled me to avoid developing a new instrument to gauge the metacognitive awareness level of the participants in the present study. Such a task could constitute a PhD project on its own.

E. AWR Test

The participants in both groups took the aural word recognition (AWR) test: Milton and colleagues'(2010) A_Lex test. The AWR test has a Yes/No format used to estimate the students' aural word recognition abilities. In the AWR test, each participant presses a button on the screen in order to hear the test word as often as needed to form a judgment. In this case, the participants have to indicate whether they know each word. It is important to note that the AWR test presents word sounds only. The button may be pressed as many times as needed in order for the test word to be reheard. Once a participant made a decision and pressed the "Yes" or "No" button, a new test word is loaded and this, in turn can be heard as many times as needed. This process continued until all the test words were heard. A_Lex took approximately 10 to 15 minutes on average. A screenshot to illustrate the delivery format is shown in Figure 4.2.

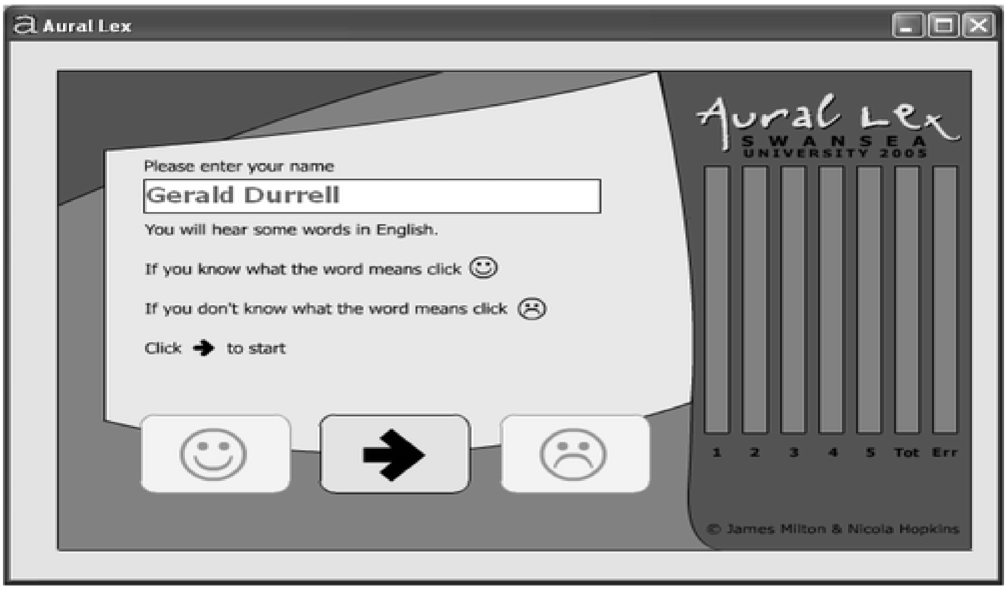


Figure 4.2. Aural Lex test format. Reprinted from "Comparing phonological and orthographic vocabulary size: Do vocabulary tests underestimate the knowledge of some learners," by J. Milton and N. Hopkins, 2006, *Canadian Modern Language Reviews*, 63(1), p. 136. Copyright 2006 by the Canadian Modern Language Reviews. Reprinted with permission.

F. OWR Test

To estimate the participants' orthographic word recognition (OWR), Meara and Milton's (2003) X_Lex test was used. The X_Lex test uses a Yes/No format where learners see a word on a computer screen and then, without hearing the word, they have to decide if they know it. A screen image of the X_Lex illustrates how the words are presented and how the profile is drawn from the learner as the test takes place. It is important to note that the participants do not hear the words. The A_Lex and X_Lex tests are constructed in the same way (Milton et al., 2010; Nation & Meara, 2010). The test words follow the same procedure, are the same in number and are delivered one by one as in A_Lex. Similar to the A_Lex, the X_Lextest has no time limit, and generally takes 5 to 10 minutes to complete. A screenshot to illustrate the delivery format is shown in Figure 4.3.

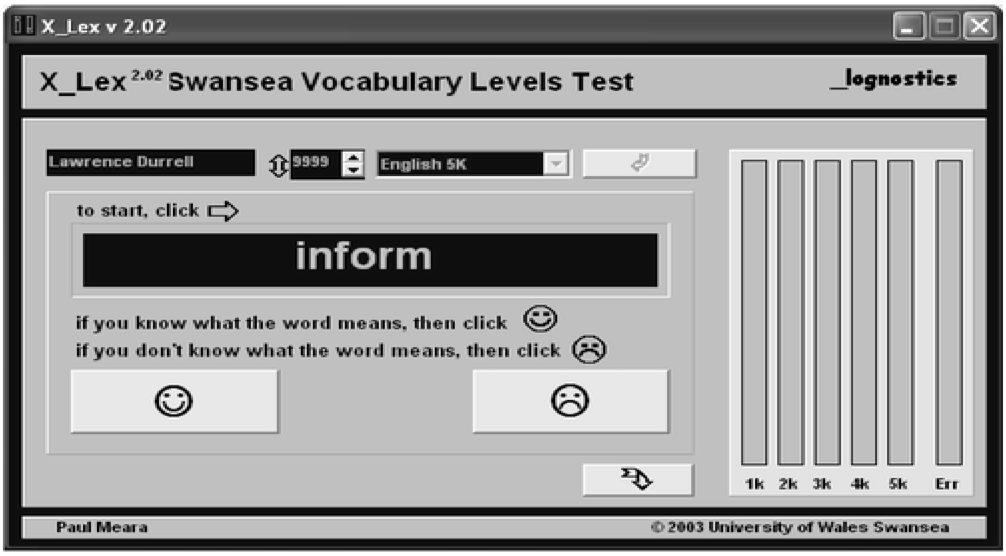


Figure 4.3. X-Lex test format. Reprinted from "Comparing phonological and orthographic vocabulary size: Do vocabulary tests underestimate the knowledge of some learners," by J. Milton and N. Hopkins, 2006, *Canadian Modern Language Reviews,* 63(1), p. 134. Copyright 2006 by the Canadian Modern Language Reviews. Reprinted with permission.

It is equally important to note that both tests assess "knowledge of each of the first five 1000 lemmatised word frequency bands in English where a word is taken to include a head word and its regular formed inflections" (Miltonet al., 2010, p. 88). Both tests estimate overall knowledge of this vocabulary. The frequency bands are drawn from work by Hindmarsh (1980) and Nation (1984). They both present learners with 120 words, one by one. There are 20 words from each 1000 word frequency band and a further 20 pseudo words, which are designed to look and sound like words in English but are not real words. This is to allow the score on the real words to be adjusted for guessing and overestimation of knowledge. The tests provide an overall score of words out of 5000.

Both tests are scored in the same way. The participants receive 50 points for each real word they say they know and 250 points deducted for each pseudo word they say they know. The participants who say they know all the real words and do not accept any pseudo words get 5,000 points (maximum). The participants who accept pseudo words, however, get -250 points for each word. If they accept all pseudo words, they receive a score of zero. The reason behind this scoring system is to penalise the participants for guessing.

Both A_Lex and X _Lex tests were delivered in a computer lab and in the case of

A_Lex, participants used headphones to hear the test words. The order of the tests was randomly assigned with half the participants in each group taking A_Lex first and the other half X_Lex first.

G. Working Memory Span (WMS) Test

The Working Memory Span test includes two parts: a Listening Span Test and a Listening Comprehension Test. Both parts are taken together as two related parts of the WMS test (see Appendix I).

i. The Listening Span Test

In this study, the participants' working memory capacity was measured by a modified version of the Listening Span Test developed by Daneman and Carpenter (1980) (see Appendix I). The choice of the test was based on the fact that the Listening Span Test is a dual-task test that measures both processing and storage functions during listening (Daneman & Carpenter, 1980; Shanshan& Tongshun, 2007). Moreover, the Listening Span Test, as a working memory span test, measures individual differences in language comprehension (Daneman & Carpenter, 1980; Daneman & Green, 1986; Osaka & Osaka, 1992; Shanshan& Tonghsun, 2007).

The format of the Listening Span Test is similar to Daneman and Carpenter's (1980) Reading Span Test in many ways. The test consists of 42 unrelated sentences divided into four groups (see Appendix I). Group 1 includes three sets of two sentences each, group 2 three sets of three sentences each, group 3 three sets of four sentences each, and group 4 three sets of five sentences each. Daneman and Carpenter's (1998) Listening Span Test comprises sentences containing a number of words ranging from 9 to 16 in each sentence. Since the participants in the present study were non-native speakers of English, in contrast to Daneman and Carpenter's (1980) participants, the number of words in each sentence varies from 9 to 12. This choice was a replication of Shanshan and Tongshun's (2007) sentence length. The syntax of the sentences is also simpler than that of the sentences in Daneman and Carpenter's (1980) to replicate the sentence level of difficulty in Fontanini and Tomitch's (2009) study. The sentences are taken from general knowledge texts and cover a number of domains, such as biological and physical sciences, literature, geography, history and current affairs, to replicate Daneman and Carpenter's knowledge domains. All the sentences were recorded by a native speaker of English.

The participants listened to each set of words and then judged whether the information in each sentence in the set was logical by writing the letter (T) if the sentence was logical or (F) if illogical. Then, when they heard a signal given by the teacher, the participants wrote the last word in each sentence on the line provided in the answer sheet (see Appendix I). It is important to note that the participants had the right to change the order of words, except that they could not begin with the last word in the last sentence of the set.

The scoring method in this part of the WMS Test was the 'total method' i.e., the total number of words recalled. For example, if a participant recalled two out of four words on a trial, he or she received two points for that trial. The maximum possible score was 42. It is important to note that participants would not receive a point on a recalled word if their judgement of the logic of the sentence was wrong.

For content validity and reliability, I used FACETS as the scale I used to score the WMST was a dichotomous one: 0 and 1. According to McNamara (1996), FACETS provides appropriate analyses in this respect. Chronbach Alpha,on the other hand would not have led to reliable results because of this scale. FACETS provides two types of results: candidates' abilities and test item analyses reports. In the current study, FACETS provided these two types of analyses on four aspects of the WMST: the reasoning and recalling items separately, reasoning and recalling items together and the listening comprehension component (Part 2) of the WMST separately. The results of these analyses follow.

Reasoning items of the WMST (part 1 A)

FACETS reasoning candidates' abilities report showed the following results. The 'measr'scale or the ability estimates of the test-takers (n=50) ranged from -3 to +4. Most of the test-takers' ability (n=39) clustered through the range of 0 to 1. Seven candidates had an ability that ranged from 0 to -1 and four candidates had a higher ability above the measure of +1. These candidates were said to be the most able ones. For the test items, there were 22 items whose value ranged from below 0 to -3. These test items were said to be the most difficult ones. There were 20 test items with a value that ranged from +0 to

+4 (For more information about the candidates' abilities report, see Appendix S). These items were said to be the least difficult ones.

In analysing the measurement report of the test items of the reasoning section of the WMST, Appendix T, the infit mean square ranged from .73 to 1.21. The infit mean square was estimated at 1.00, while the value of the SD was .12. In this regard, the consistency value, according to McNamara (1996), can be set using the mean with 2SD in both directions. For instance, SD was .12 and the mean was 1.00 (.12X2=.24+1.00=1.24). In the other direction, the mean was (.12X2=.24. 1.00-.24=.76). The range then is 1.24 to .76. This means that any test items beyond this range hadto be weeded out or edited. In observing the 42 reasoning items of the WMST, no item could be said to have been misfitting with a value that was beyond the range .76. This led to the argument that the construct of the reasoning items in the first part of the WMST was valid and reliable.

Recalling test items of the WMST (part 1 B)

Regarding the ability estimates for the candidates (n=50) in the recalling section of the WMST, Appendix U shows the recalling candidates' abilities report. Results showed that 'measr'or the ability estimates of the test-takers (N=50) ranged from -4 to +3. Most of the test-takers clustered within the range of 0 to 1, with 37 test-takers with an ability that ranged from 0 to 1, 4 candidates with an ability that ranged from 1 to 2 and 9 candidates with an ability that ranged from 0 to -1. The students above the measure of 0 were said to be more able than those below 0. This means that the candidates above the measure of 0 would have more chances to answer the items correctly. What could be deduced from column 6 was that there was a wide dispersion of the 42 recalling items that ranged from -4 to +3.

In analysing the test items (Appendix V), the mean infit square ranged from .79 to 1.23, the infit mean square (column 7) is estimated at 1.00, while the value was .11. In this respect, the consistency value, according to McNamara (1996), can be set at using the mean with 2SD in both directions. For instance, SD was .11 and the mean was 1.00. (.11X2=.22+1=1.22). In the other direction, the mean was 1.00 (.11X2=.22. 1.00-.22=.78). The range then was from 1.22 to .78. This meant that any test items beyond this range shuld be weeded out or edited. In observing the 42 recalling items, no item could be said to have been misfitting. Thus, all WMST recalling items were kept in the test. In this regard, it was argued that the construct of the recalling items was valid.

Analysis of both parts (reasoning and recalling)WMST(parts 1 A and B)

In order to further analyse the reasoning and recalling items of the WMST and for practicality reasons, the candidates' abilities (Appendix W) and test items (Appendix X) in both (A) and (B) part 1 of the WMST were addressed together. Results showed that thirty-nine test-takers had an ability that ranged from 0 to +1. The test items behaved in the same direction with 30 items that ranged from 0 to +1, while 12 items ranged from 0 to -1. Both parts of the test were on the same row, with the recalling part being accessible as the reasoning one (for more information, see Appendix W**)**

In analysing the candidates' ability (Appendix W) (column 5), candidate 122 could be said to be the most able student with an ability estimate of 1.05. On the other continuum of ability estimates lied candidate 123 who was said to be the least able candidate with an estimate value of -.42. Although the differences between the raters were very small, the reliability of the separation index which shows the candidates' ability estimates from one to another was high .73. Also the chi-square of 185.9 with 49 d.f. was significant at $p < .00$, and therefore, the null hypothesis that all test-takers had the same ability in both parts of the test had to be rejected. In this regard, according to McNamara's (1996) criteria, no candidates were identified as misfitting or overfitting. The infit mean square was fixed at 1.00 with SD of .25. This meantthat the consistency range was set at 1.50 and -.50(see Appendix X). Therefore, the construct of the reasoning and recalling parts together was valid.

ii. The Listening Comprehension Test

The Listening Comprehension test is always used in conjunction with the Listening Span test to add to the complexity of the WMS test as a whole, providing it with more validity and reliability (Daneman & Carpenter, 1980; Daneman & Green, 1986; Osaka & Osaka, 1992; Shanshan, & Tongshsun, 2007). The listening comprehension part included three short passages and four MC questions on each passage (see Appendix I).
While taking the L CT section of the WMS test, the participants in both groups listened to each of the three passages only once and had to tick the right choices after each passage. Each correct response was given one point and the maximum score was 12.

For content validity and reliability, I also used FACETS as the scale I used to score this component of the WMST was a dichotomous one: 0 and 1. The results of the FACETS analyses are shown below.

The listening comprehension component (Part 2) of the WMST

The listening component (Part 2) of the WMST was piloted twice. Below are the results of the FACETS analyses.

First piloting

In observing the ability of the test-takers, there was not a wide range since the measure scale extended from -1 to +1, with 45 students whose ability was between 0 and +1. Test item 10 was the most difficult item. Test item 6 was less difficult. The least difficult item was number 12 (see Appendix Y).

In analysing the test items measurement (Appendix Z), the difficulty logit value (measure, column 5) ranged from .03 to -.30 with test item 10 being the most difficult, while test 12 was the least difficult (column 12). The infit mean square was 1.00 and the SD was .02. In this regard, the consistency value, according to McNamara (1996), can be set using the mean with 2SD in both directions. For instance, SD was .02 and the mean was 1.00 (.02x2=.04+1.00=1.04) and (.02x2=.04-1.00=.96). Consequently, the consistency value ranged from .96 to 1.04. Any test item value beyond this range had to be edited or weeded out from the listening comprehension component of the WMST. In this test, there were four items that stood on the borderline of this range: items 4 and 5 with a value of 1.04 each and items 2 and 12 with a value of .96 each. These four items had to be weeded out and replaced with other ones. The reliability of the separation was estimated at .00 and the chi-square of 2.6 with .10 d.f. was significant at $p<.00$ indicating that the test items did not discriminate much between the test-takers.

In analysing the candidates' abilities report (Appendix Y), the same pattern was used. Following McNamara's (1996) pattern of analysis (mean with two SD) in both directions (mean 1.00 and SD 0.04, column 7), the consistency value then would be (0.04x2=0.08) and (1.00+.08=1.08). The other continuum would be 1.00-0.08=.92). In this case, candidates 118(.92) (borderline) and 148(.90) were identified as misfitting. Misfitting candidates, according to McNamara (1996), could be due to fatigue, lack of attention, guessing, anxiety, lack of ointerest, poorly constructed test items and other variables. The reliance of the separation index was estimated at .00 and the chi-square of 7.4 with .49 d.f. was significant at p<.00 indicating that the test did not discriminate much between the test-takers meaning that the test difficulty did not differ significantly with this test. This result and those above called for a more useful listening comprehension component of the WMST. This urged me to pilot the listening comprehension component of the WMST a second time with another fifty students from Fujairah Higher Colleges of Technology (HCT), Fujairah, UAE.

Second piloting

In observing the ability of the test-takers, there was a wide range since the measure scale extended from -3 to +3, with 25 students whose ability was between 0 and +1. Test item 10 was the most difficult one. Less difficultwere test items 12, 4, 5 and 7. The least difficult item was number 9 (see Appendix Y).

In analysing the test items measurement (Appendix Z), the difficulty logit values (measure, column 5) ranged from .7 to -.15. The infit mean square was estimated at 1.00, while the value of the SD was .07. In this regard, the consistency value, according to McNamara (1996), can be set using the mean with 2SD in both directions. For instance, SD was .07 and the mean was 1.00 (.070x2=.14+1=1.14) and (.07x2=.14-1=.86). Cosequently, the consistency value was from .86 to 1.14. Any item value beyond this range had to be edited or weeded out fro the listening comprehension component of the WMST.In this test, there were no items that stood on the borderline of the range, beyond or below the range.

In analysing the candidates' measurement report (Appendix Z), the same pattern was used following McNmara's (1996) pattern of analysis (Mean with 2SD) in both directions (Mean 1.00 at SD .07x2=0.14) and (1.00+0.14=1.14). The other continuumwould be 1.00-0,14=.86). In this case, no candidates were identified misfitting. The infit mean square of consistencey range was set at 1.14 and -.86 (see Appendix Z).

4.3.2 Post-treatment Instruments

Following the three-month treatment, the same pre-tests, apart from the OQPT which was used only to measure the participants' language proficiency level prior to the treatment, were immediately administered to the participants to track their progress in listening comprehension. In order to prevent the participants from recalling some of the items given in the pre-tests, some researchers modify the post-tests, particularly when they are administered in close temporal sessions. In my research, I retained the same tests and judged that the three-month period between the pre-tests and the post-tests was sufficient time to avoid such an overlap.

4.4 The Pilot Study

Prior to the main study, a small-scale pilot study was conducted withstudents similar to the participants of the present study. They were 50 Emirati female students from the Intensive English Programme (IEP) at the Higher College of Technology (HCT), Fujairah campus, eastern region, UAE. They were all 18-year-old students in their first semester in the IEP and all in Level 2 of the IEP. According to the results of the OQPT (Paper and Pen test) they took prior to the pilot study, they were all breakthrough learners, as their scores ranged from 10 to 15. Prior to joining the IEP, they had all spent 12 years learning English as a Foreign Language (EFL) from KGto secondary school. Equally important, and similar to the participants in the main study, all these students had used books designed by English authors (e.g., *UAE Parade: Grade 3,* by Veramendi (2006) and *On Location: Grade 12*, by Bye (2009)) and had been taught by non-native, Arab teachers (Egyptians, Syrians, Tunisians).

The aim of the pilot study wasfirst to check the practicability, validity and reliability of the instruments to be used in the main study. The second was to confirm the procedures to be used in the main study. The third reason was to ensure that the level of texts difficulty in the LCT as well as in the listening comprehension section of the WMST was not too far beyond or below the comprehension level of the participants in the main study.

In the pilot study, participants took the same tests taken by participants in the main study and went through the same procedures of the main study. The tests were arranged as follows: first the OQPT, second the LCT followed by the MALQ, third the A_Lex and X_Lex and finally the WMST.

On inspecting the procedures of the pilot study and receiving feedback from the participants, it was confirmed that it was safe to proceed to the main study.

4.5 The Instructor and the Setting of the Study

All the instructional treatment lessons of the study were delivered by me as a teacher- researcher. In this regard, a number of precautions were taken to avoid all possible validity problems caused by the teacher-as-researcher role in conducting educational research. In addition, all the lessons taught were equal in length. Equally important, the experimental participants were not told that they were the focus learners and that their results in the study would be determinant in showing the effectiveness of the MetSBM over that of the CSBM. I took these measures in order not to influence the experimental participants' performance as had they been informed about being the experimental subjects, these participants might have shown more enthusiasm to impress me. This is a factor to control as it impacts the validity and reliability of the findings. Finally, I tried to abide by the teaching methods used in the instructional treatment.

4.6 Study Stages and Methods of Data Analysis

4.6.1 Study stages

Before the main study, ethical approval had to be obtained. I completed an application for ethical approval which my supervisors signed and submitted to the University Research Ethics Committee. Equally important, I obtained permission from the University of Sharjah, UAE, where I teach, to conduct the experiment. The participants who volunteered to participate in the study signed a consent form (see Appendix J). From the outset, I advised the participants that the data which would be collected in the questionnaire of the study would remain confidential and would only be used in the study.

In the next stage of the study, all the participants took the Oxford Quick Placement Test (OQPT) (see study instruments above). In addition, prior to the instructional treatment, all participants took a pre-test on each of the variables, dependent and independent, as outlined above. These were the Listening Comprehension (LC), Metacognitive Awareness Listening Questionnaire (MALQ), Working Memory Span (WMS), Aural Word Recognition (AWR), Orthographic Word Recognition (AWR), and Vocabulary Level (VKK1 and VKK2) tests.

Following this, I beganthe implementation of the treatmentwhich consisted of the four phases outlined above. The overall procedures were as follows:

Phase 1

OQP test (20 minutes)

↓ 1day

Phase 2 Pre-tests

a. LC test and MALQ(30 minutes)

b. VKK1 and VKK2 (30 minutes)

c. WMS test (50 minutes)

d. AWR and OWR tests (50 minutes)

↓ 4 days

Phase 3 Instructional treatment

a. Familiarisation of the experimental and control groups with the five cognitive strategies (prediction, inferences, elaboration, note-taking, summarisation (4 weeks)

a. Instructional treatment (25 lessons, 50 minutes each)

. control group: Battery of

cognitive strategies (prediction, inferences,elaboration, note-taking, summarisation) (30 days)

. experimental group:Metacognitive pedagogical sequence and cognitive strategies(prediction, inferences,elaboration, note-taking, summarisation) (30 days)

↓ 1day

Phase 4 Post-tests

a. LC test and MALQ (30 minutes)

b. VKK1 and VKK2 (30 minutes)

c. WMS test (50 minutes)

d. AWR and OWR tests (50 minutes)

Figure 4.4. Study procedures

4.6.2 Methods of data analysis

Descriptive statistics such as *the mean, the standard deviation, the median, the minimum* and *the maximum* were calculated for the scores obtained from all the pre- and post-treatment tests. Additionally, in order to measure the effectiveness of the instructional treatment for each of the experiment and control groups, two non-parametrical tests were employed: The Mann-Whitney U test and the Wilcoxon sign-ranked test. The Mann-Whitney U test was used to measure the difference between the scores of the two groups independently, whereas the Wilcoxon sign-ranked test was employed to gauge paired differences. All the data were analysed using the statistical package SPSS 19.

4.6.3 Conclusion

In this chapter, I dealt with matters pertinent to the participants of the study and then focused on the instructional treatment. I described the treatment and discussed the ways in which the two strategies were delivered to the experimental and control groups. Following this, I explored the pre- and post-treatment instruments of the OQP,LCT, (VKK1) and (VKK2) test, AWR test, OWR test and the WMS test. Finally, I explained the stages of the study and described the methods of data analysis.

The following chapter deals with the results obtained from the analysis and comparison of the different instruments.

CHAPTER 5 RESULTS

In this chapter, I will present my analysis of the collected data and report the main results obtained for the experimental and control groups. The process of my analysis includes the following stages.

First, I computed the descriptive statistics of the pre-treatment tests and then carried out the non-parametric Mann-Whitney U test to see whether or not the differences between the scores at any entry level for both groups were significant.Subsequently, the data from the post-tests were statistically analysed. In particular, I computed the descriptive statistics for the scores obtained by both groups on the Language Proficiency Test (Oxford Quick Placement Test – OQPT), Listening Comprehension Test (LCT), Working Memory Span (WMS) test, Vocabulary Levels (VLs) tests or Vocabulary Knowledge (VKK1) and (VKK2) tests, Aural Word Recognition(AWR) test, and the Orthographic Word Recognition (OWR) test. Two different tests of significance were used to analysethe data: The Mann-Whitney U test for the comparison between the experimental group and the control group and the Wilcoxon signed-rank test for paired observations.Finally, the data collected from the administration of the Metacognitive Awareness Listening Questionnaire (MALQ) were statistically analysed in order to investigate the level of the participants' metacognitive awareness of their listening comprehension abilities.

5.1 Statistical Analysis of the Pre-treatment Collected Data

In this section, I will compute both groups at the beginning of the treatment to check whether their scores were comparable (statistically no significant differences).Most of the variables are not normally distributed and the number of participants is relatively low (N=22 in each group). Therefore, I decided to carry out the non-parametric testsof significanceoutlined above. The differences between the two groups are not significant (see Appendix K).

5.1.1 Language Proficiency Test (Oxford Quick Placement Test (OQPT)

Table 5.1

Descriptive statistics of the OQP Test mean scores

Groups	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	22	12.04	.78	11	13
Control	22	12.09	.81	11	13
Total	44	12.06	.78	11	13

Table 5.1 shows the mean scores of the experimental and control groups in the OQP test. In addition, the Mann-Whitney U test shows that the difference between the two groups is not statistically significant (U = 234.60 p= .842) (see Appendix K).

5.1.2 Listening Comprehension Test (LCT)

Table 5.2

Descriptive statistics of the LCTest mean scores

Group	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	22	7.50	1.01	6.00	9.00
Control	22	7.22	1.06	6.00	9.00
Total	44	7.36	1.03	6.00	9.00

Table 5.2 shows the participants' performance in the listening comprehension test. The test consists of 18 items. The difference between the two groups is not significant (U = 207.00, p = .392) (see Appendix K).

5.1.3 Vocabulary Knowledge(VKK1) and (VKK2) Tests

Table 5.3

Descriptive statistics of the pre-treatment VKK1Test mean scores

Group	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	22	24.56	1.56	22.00	26.00
Control	22	24.68	1.70	22.00	26.00
Total	44	24.63	1.61	22.00	26.00

Table 5.4

Descriptive statistics of the pre-treatment VKK2 Test mean scores

Group	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	22	2.27	.45	2.00	3.00
Control	22	2.22	.42	2.00	3.00
Total	44	2.25	.43	2.00	3.00

Tables 5.3 and 5.4 show the participants' knowledge of the first and second thousand most commonly used words in written and spoken English. The VKK1 test is based on the first 1000 words and the VKK2 test on the second 1000 words. The VKK1 test consists of 39 items and VKK2 test of 19 items. The difference between the two groups at each levelis not statistically significant ($U = 224.00$, $p = .652$) and ($U = 231.00$, $p = .731$) respectively (see Appendix K).

5.1.4 Working Memory Span (WMS) Test

Table 5.5

Descriptive statistics of the pre-treatment WMS Test mean scores

Group	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	22	56.13	3.09	51.00	61.00
Control	22	55.04	3.88	49.00	59.00
Total	44	55.59	3.51	50.00	60.00

Table 5.5 shows the mean scores of the experimental and control groups from the WMS test. In addition, the Mann-Whitney U test shows that the difference between the two groups is not statistically significant (U = 218.00, p = .577) (see Appendix K).

5.1.5 Aural Word Recognition (AWR) Test

Table 5.6

Descriptive statistics of the AWRTest mean scores

Groups	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	22	1881.81	58.84	1800.00	1950.00
Control	22	1879.54	61.06	1800.00	1950.00
Total	44	1880.67	59.27	1800.00	1950.00

Table 5.6 shows the mean scores of the experimental and control groups in the Aural Word Recognition test (overall scores). In addition, the Mann-Whitney U test shows that the difference between the two groups is not statistically significant (U = 237.00, p = .903) (see Appendix K).

5.1.6 Orthographic Word Recognition (OWR) Test

Table 5.7

Descriptive statistics of the pre-treatment OWRTest mean scores

Groups	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	22	2190.90	86.78	2100.00	2350.00
Control	22	2188.63	72.26	2100.00	2300.00
Total	44	2189.76	78.93	2100.00	2350.00

Table 5.7 shows the mean scores of the experimental and control groups in the Orthographic Word Recognition test (overall scores). The difference between the two groups is not statistically significant ($U = 239.00$, $p = .942$) (see Appendix K).

All differences between the two groups at the beginning of the treatment are not significant. This means that the two groups are comparable (see Appendix K).

5.2 Statistical Analysis of the Difference between Pre- and Post-Tests for each Group Separately

In this section, I will compare the scores in the pre- and post-tests for the two groups separately.AsI have a paired comparison in this section, I used the Wilcoxon signed-rank test.

5.2.1 Listening Comprehension (LC) Test

Table 5.8

Differences between the pre-treatment and the post-treatment LCT mean scores (experimental group)(N=22)

Experimental Group	N	Mean	Std. Deviation
LC pre-treatment test	22	7.50	1.01
LC post-treatment test	22	11.31	1.35

Table 5.9

Differences between the pre-treatment and the post-treatment LCTmean scores (control group)(N=22)

Control Group	N	Mean	Std. Deviation
LC pre-treatment test	22	7.22	1.06
LC post-treatment test	22	7.68	1.46

As outlined above, there is no significant difference between the experimental and the control group in the results of the LCT taken before the treatment. In the post-test, however, the experimental group performed much better than the control group (Tables 5.8 and 5.9). The scores of the experimental group increased from (7.50)in the pre-test to (11.31) in the post-test compared to those of the control group which went from (7.22) in the pre-test to (7.68) in the post-test.

Furthermore, a close look at the boxplot below (Graph 5.1)showsthat a sizeable number of the experimental group participants achieved very good marks on the test. Such a performance was absent in the control participants' scores as the highest score for this group was 10.

For the same reason as in the previous section, I used a non-parametric test of significance for these paired data (Wilcoxon signed-rank test). The difference between the scores of the experimental group in the pre- and post-treatment LCTis significant ($Z = -4.142$, $p < .001$) (see Appendix L). Likewise, the difference between the scores of the control group on the same test is significant ($Z = -3.640$, $p < .001$) (see Appendix M).

5.2.2 Vocabulary Knowledge K1 (VKK1) and K2 (VKK2) tests

Table 5.10

Differences between the pre-treatment and the post-treatment VKK1 Test mean scores (experimental group)(N=22)

Experimental Group	N	Mean	Std. Deviation
VKK1 pre-treatment test	22	24.59	1.56
VKK1 post-treatment test	22	25.04	1.83

Table 5.11

Differences between the pre-treatment and the post-treatment VKK1 Test mean scores (*control group*) (*N=22*)

Control Group	N	Mean	Std. Deviation
VKK1 pre-treatment test	22	24.68	1.70
VKK1 post-treatment test	22	25.04	1.81

Tables 5.10 and 5.11 show that both the experimental and control groups producedsimilar results. The scores of the experimental group increased from (24.59) in the pre-test to (25.04) in the post-testand those of the control group went from (24.68) in the pre-test to (25.04) in the post-test. The Wilcoxon signed-rank test shows that the difference between the scores of the experimental group in the pre-and post-treatment VKK1 isnot significant($Z = -2.227$, $p = .023$) (see Appendix L). On the other hand, the difference between the scores of the control group in the pre- and post-treatment VKK1 tests is significant ($Z= -3.530$, $p < .001$) (see Appendix M).

Table 5.12

Differences between the pre-treatment and the post-treatment VKK2 Test mean scores (experimental group)(N=22)

Experimental Group	N	Mean	Std. Deviation
VKK2 pre-treatment tests	22	2.27	.45
VKK2 post-treatment test	22	2.36	.49

Table 5.13

Differences between the pre-treatment and the post-treatmentVKK2 Test mean scores (control group)(N=22)

Control Group	N	Mean	Std. Deviation
VKK2 pre-treatment test	22	2.22	.42
VKK2 post-treatment test	22	2.36	.49

Tables 5.12 and 5.13 show that both the experimental and control groups had almost the same results. The scores of the experimental group increased from (2.27) in the pre-test to (2.36) in the post-test and those of the control group went from (2.22) in the pre-test to (2.36) in the post-test. The Wilcoxon signed-rank test shows that the difference between the scores of the experimental group in the pre- and post-treatment VKK2isstatistically significant ($Z = -4.148$, $p < .001$) (see AppendixL). On the other hand, the Wilcoxon signed- rank test shows that the difference between the scores of the control group in the pre- and post-treatment VKK2 is notstatistically significant($Z= -1.000$, $p = .317$) (see Appendix M).

5.2.3 Working Memory Span (WMS) Test

Table 5.14

Differences between the pre-treatment and the post-treatment WMS Test mean scores (experimental group)(N=22)

Experimental Group	N	Mean	Std. Deviation
WMS pre-treatment test	22	56.13	3.09
WMS post-treatment test	22	76.63	6.19

Table 5.15

Differences between the pre-treatment and the post-treatment WMS Test mean scores (control group)(N=22)

Control Group	N	Mean	Std. Deviation
WMS pre-treatment test	22	55.04	3.88
WMS post-treatment test	22	56.20	3.48

Tables 5.14 and 5.15, show that the experimental group outperformed the control group. The scores of the experimental group increased from (56.13) in the pre-test to (76.63) in the post-test, whereas those of the control group went from (55.04) in the pre-test to (56.20) in the post-test. It is important to note that it was not expected that the WMS test would show significant differences between the two groups after the treatmentas it is unlikely that the general working memory span of the participants increases through the treatment. This will be discussed in chapter 6. The Wilcoxon signed-ranktest shows that the difference between the scores of the experimental group in the pre-and post-treatment in the WMS test isstatistically significant ($Z = -4.109$, $p<.001$) (see Appendix L). Similarly, the difference between the scores of the control group on the same test is statistically significant ($Z = -4.136$, $p < .001$) (see Appendix M).

5.2.4 Aural Word Recognition Test (AWRT)

Table 5.16

Differences between the pre-treatment and post-treatmentAWRTest mean scores (experimental group)(N=22)

Experimental Group	N	Mean	Std. Deviation
AWR pre-treatment test	22	1881.81	58.84
AWR post-treatment test	22	2154.54	43.39

Table 5.17

Differences between the pre-treatment and the post-treatment AWR Test mean scores (control group)

Control Group	N	Mean	Std. Deviation
AWR pre-treatment test	22	1879.54	61.06
AWR post-treatment test	22	2018.18	58.84

As outlined above, there is no significant difference between the experimental and the control groups in the results of the AWR test taken before the treatment. In the post-test, however, both the experimental and the control group performed better (Tables 5.16 and 5.17), with gains by the experimental group being larger. The scores of the experimental group increased from (1881.81) in the pre-test to (2154.54) (see Appendix L) in the post-test compared to those of the control group which went from (1879.54) in the pre-test to (2018.18) in the post-test (see Appendix M). The Wilcoxon signed- rank test shows that the difference between the scores of the experimental group in the pre- and post-treatment AWRtest isstatistically significant ($Z = -4.158$, $p<.001$) (see AppendixL). Equally important, the difference between the scores of the control group in the same tests is statistically significant ($Z= -3.572$, $p<.001$) (see Appendix M).

5.2.5 Orthographic Word Recognition (OWR) Test

Table 5.18

Differences between the pre-treatment and the post-treatmentOWRTest mean scores (experimental group)(N=22)

Experimental Group	N	Mean	Std. Deviation
OWR pre-treatment test	22	2190.00	86.78
OWR post-treatment test	22	2290.90	71.77

Table 5.19

Differences between the re-treatment and the post-treatment OWR Test mean scores (control group)(N=22)

Control Group	N	Mean	Std. Deviation
OWR pre-treatment test	22	2188.63	72.26
OWR post-treatment test	22	2275.00	86.94

Tables 5.18 and 5.19 show that, in the post-test, the experimental and control groups performed better than in the pre-test. The scores of the experimental group went from (2190.90) on the pre-test to (2290.90) in the post-test. The scores of the control group increased from (2188.63) in the pre-test to (2275.00) in the post-test. The Wilcoxon signed-rank test shows that the difference between the scores of the experimental group in the pre- and post-treatment OWRtest is statistically significant ($Z = -4.075$, $p<.001$) (see Appendix L). Similarly, the difference between the scores of the control group in the same test is statistically significant ($Z =-4.058$, $p<.001$) (see Appendix M).

5.3 Statistical Analysis of the Differences between the Two Groups for the Post-tests

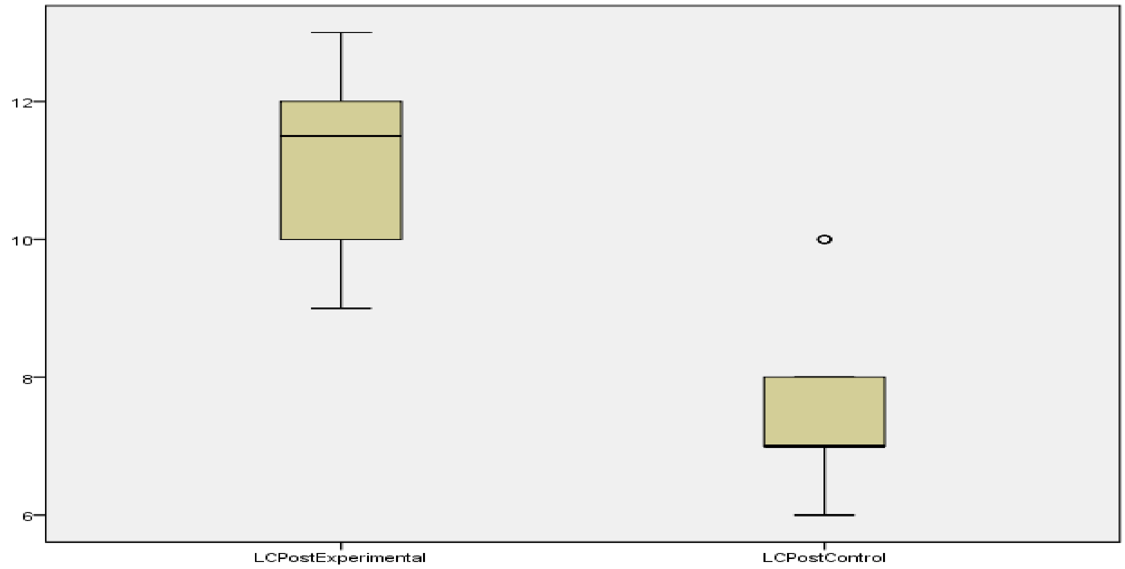
5.3.1 LCT

Table 5.20

Differences between the mean scores of the experimental and control roups on the post-treatment LCT

Groups	N	Mean	Std. Deviation
Experimental	22	11.31	1.35
Control	22	7.68	1.46

As outlined above, there is no significant difference between the experimental and the control group in the results of the pre-treatment LCT. However, Table 5.20 shows that the experimental group outperformed the control group in the post-treatment LCT. The difference between the two groups in the post-treatment LCT is statistically significant ($U=37.50$, $p<.001$) (see Appendix N).In addition, a close look at the boxplot below (Graph 5.1) reveals that a substantial number of the experimental participants achieved very good marks on the test. This result, however, was absent in the control group as their highest score was 10.



Graph 5.1 Post-treatment LCT mean scores for experimental and control groups

5.3.2 Vocabulary Knowledge(VKK1) and (VKK2) Tests

Table 5.21

Differences between the mean scores of the experimental and control groups on the post-treatment (VKK1) Test

Groups	N	Mean	Std. Deviation
Experimental	22	25.04	1.83
Control	22	25.04	1.81

Table 5.21 shows the mean scores of the experimental and control groups in the VK K1 test. The difference between the twogroups is not statistically significant (U = 230.00, p = .774) (see Appendix N).

Table 5.22

Differences between the mean Scores of the experimental and control groups on the post-treatment Vocabulary Level (VKK2) Test

Groups	N	Mean	Std. Deviation
Experimental	22	2.36	.49
Control	22	2.36	.49

Table 5.22 shows the mean scores of both groups on the VK K2 test. The difference between the two groups is statistically significant (U = 30.00, p <.001) (see AppendicesN& R).

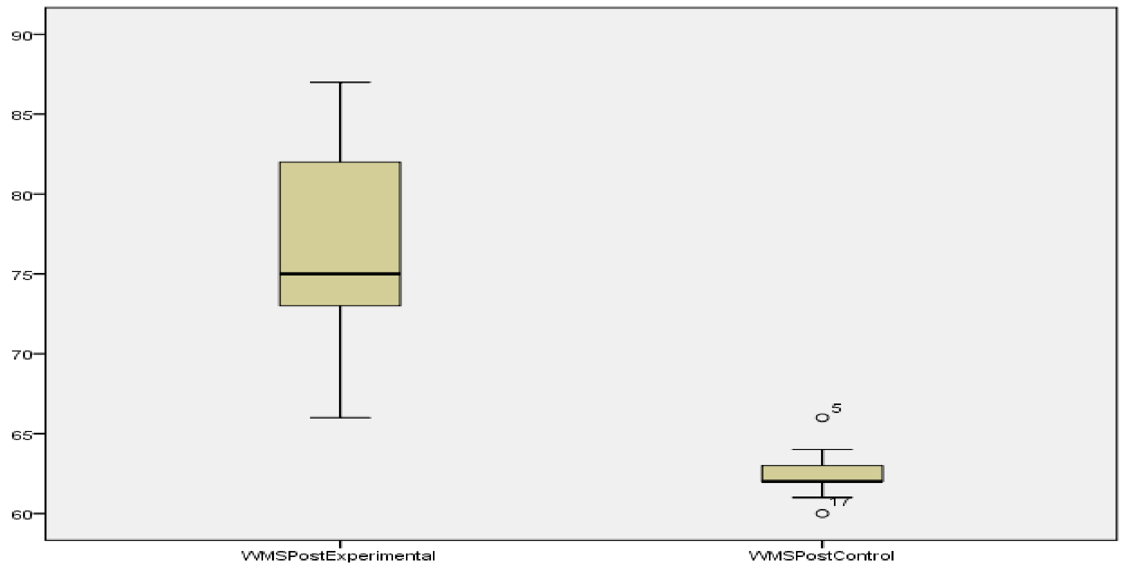
5.3.3 Working Memory Span (WMS) Test

Table 5.23

Differences between the mean scores of the experimental and control groups on the post-treatment WMS Test

Groups	N	Mean	Std. Deviation
Experimental	22	76.63	6.19
Control	22	56.20	3.48

Table 5.23 illustrates the mean scores of the two groups on the WMS test. The difference between the scores of the two groups is statistically significant (U=.000, p<.001) (see AppendixN).In addition, a close look at the boxplot (Graph 5.2) shows that the experimental participants achieved higher marks on the test than their control counterparts. As outlined above, the increase in the WMS test was not expected and will be discussed in more detail in the next chapter.



Graph 5.2 Post-treatment WMS test mean scores for experimental and control groups

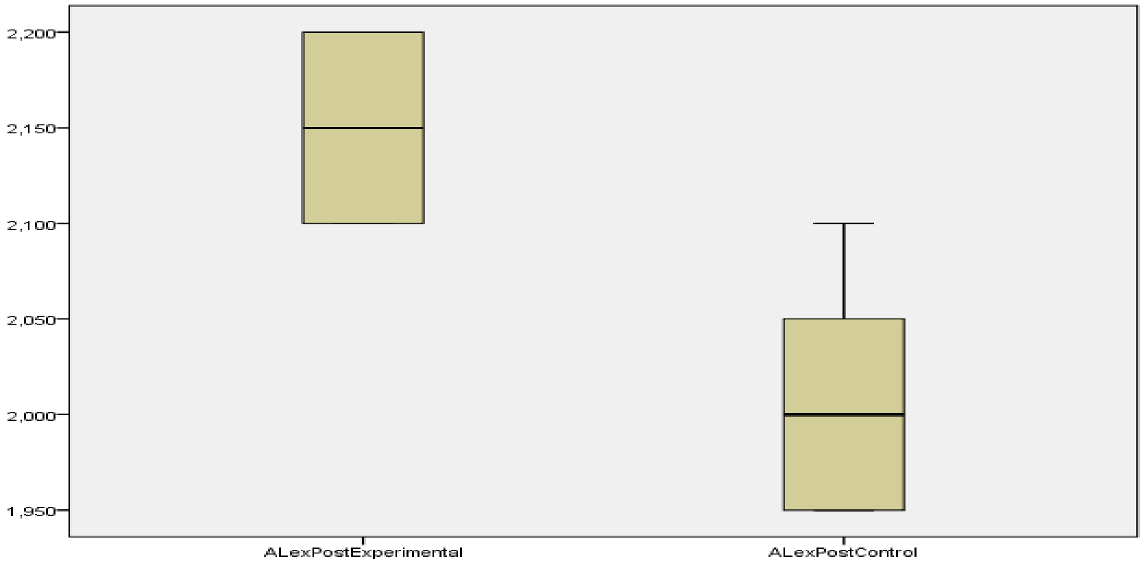
5.3.4 Aural Word Recognition Test (AWRT)

Table 5.24

Differences between the mean Scores of the experimental and control groups on the post-treatment AWR Test

Groups	N	Mean	Std. Deviation
Experimental	22	2154.54	43.39
Control	22	2018.18	58.84

Table 5.24shows the scores of both groups in the AWRtest. The difference between the scores of both groups is statistically significant (U=17.50, p<.001) (see AppendixN).
A close look at the boxplot (Graph 5.3) below reveals that all the participants in the experimental group achieved higher scores than participants in the control group.



Graph 5.3 Post-treatment AWR test mean scores for experimental and control groups

5.3.5 Orthographic Word Recognition (OWR) Test

Table 5.25

Differences between the scores of the experimental and control groups on the post-treatment OWRTest

Groups	N	Mean	Std. Deviation
Experimental	22	2290.90	71.77
Control	22	2275.00	86.94

Table 5.25 illustrates the scores of both groups on the OWRtest. The difference between the scores is not statistically significant (U = 217, p = .549) (see Appendix N).

Summary

To summarise, all the scores of both groups were equal at the beginningbutmost of them were different after the treatment, which implies that the treatment (both CSBM and MetSBM) had an effect on the listening comprehension scores of both groups.

5.4 Statistical Analysis of the Metacognitive Awareness Listening Questionnaire (MALQ)

5.4.1 Reliability Analysis

After administering the MALQ before and after the treatment, I carried out a reliability analysis with Cronbach's Alpha and deleted item 15 from the Person Knowledge factor until I reached an optimal value for Cronbach's Alpha (α = .631) in the pre-treatment MALQ and an optimal value for Cronbach's Alpha (α = .803) in the post-treatment MALQ. I also deleted item 16 from the Directed Attention factor until I reached an optimal value for Cronbach's Alpha (α = .690) in the pre-treatment MALQ and an optimal value for Cronbach's Alpha (α = .806) in the post-treatment MALQ. As Table (5.26) shows, reliability checks on the MALQ yielded Alphas ranging from (α = .631) to (α = .853) in the pre-treatment MALQ and from (α = .803) to (α = .947) in the post-treatment MALQ.

Table 5.26

Metacognitive Awareness Aspects, number of Iiems in each aspect, and reliability coefficient

(N=44)

Aspect	Description	Number of items	Cronbach's Alpha	
			Pre-treatment	Post-treatment
Planning/ Evaluation	Q1, Q10, Q14, Q20, Q21	5	.853	.933
Problem-Solving	Q5, Q7, Q9, Q13, Q17, Q19	6	.819	.947
Mental Translation	Q4, Q11, Q18	3	.768	.914
Person Knowledge	Q3, Q8	2	.631	.803

Directed Attention	Q2, Q6, Q12	3	.690	.806

5.4.2 Comparisons between Groups on the Pre-treatmentMALQ

In this section, I will discuss the computations of the scores of both groups at the beginning of the treatment. Such a construction was meant to check whether the scores of the MALQ with regard toplanning/evaluation, problem-solving, mental translation, person knowledge and directed attention were comparable (i.e. statistically had no significant differences).

Planning/Evaluation

Table 5.27

Descriptive statistics of the MALQ with regard tothe planning/evaluation scores

Groups	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	22	21.77	1.95	19.00	26.00
Control	22	20.77	3.94	13.00	27.00
Total	44				

Table 5.27 shows the mean scores of the experimental and control groups on the pre-treatment MALQ with regard toplanning/evaluation. In addition, the Mann-Whitney U test shows that the difference between the two groups is not statistically significant (U = 210.50, p = .456) (see Appendix K).

Problem-solving

Table 5.28

Descriptive statistics of the MALQ with regard to the problem-solving scores

Groups	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	22	26.27	3.14	20.00	30.00
Control	22	24.27	3.58	19.00	32.00
Total	44				

Table 5.28 shows the mean scores of the experimental and control groups on the MALQ with regard toproblem-solving. Furthermore, the Mann-Whitney U test shows that the differencebetween the two groups is not statistically significant ($U = 169.00$, $p = .085$) (see Appendix K).

Mental Translation

Table 5.29

Descriptive statistics of the MALQ with regard to mental translation

Groups	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	22	18.31	1.83	15.00	21.00
Control	22	18.00	1.44	15.00	21.00
Total	44				

Table 5.29 shows the mean scores of the experimental and control groups on the pre-treatment MALQ with regard tomental translation. The Mann-Whitney U test also shows that the difference between the two groups is not statistically significant ($U = 200.00, p = .312$) (see Appendix K).

Person Knowledge

Table 5.30

Descriptive statistics of the MALQ with regard to person knowledge

Groups	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	22	11.40	.95	10.00	13.00
Control	22	11.09	1.34	10.00	13.00
Total	44				

Table 5.30shows the mean scores of the experimental and control groups on the MALQ with regard toperson knowledge. The Mann-Whitney U test also shows that the difference between the two groups is not statistically significant ($U = 205.00$, $p = .340$) (see Appendix K).

Directed Attention

Table 5.31

Descriptive statistics of the MALQ with regard to directed attention

Groups	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	22	15.36	2.12	11.00	18.00
Control	22	15.09	1.60	12.00	18.00

Total	44				

Table 5.31 shows the mean scores of the experimental and control groups on the pre-treatment MALQ with respect todirected attention. The Mann-Whitney U test shows that the difference between the two groups is not statistically significant (U = 199.00, p = .304) (see Appendix K).

5.4.3 Comparisons of the Groups MALQ Pre- and Post-treatment Test Scores

With regard to the descriptive tests of the MALQ, Tables (5.32) and (5.33) show that both the experimental and control group participants' metacognitive awareness is raised with respect toplanning/evaluation.However, in terms of problem-solving and directed attention, the experimental group participants demonstrated higher levels of metacognitive awareness than those in the control group. Participants in the experimental group also managed to rely less on mental translation and became more confident in their listening comprehension abilities (person knowledge) than participants in the control group.

Table 5.32

Comparison of means and standard deviations of the five MALQ aspects in the pre- and post-treatment

(experimental group) (N=22)

	Planning/ Evaluation		Problem-Solving		Mental Translation		Person Knowledge		Directed Attention	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Mini.	19.00	27.00	20.00	30.00	15.00	9.00	10.00	10.00	11.00	18.00
Maxi.	26.00	31.00	30.00	37.00	21.00	13.00	13.00	14.00	18.00	21.00
Mean	21.77	29.13	26.27	34.76	18.31	10.50	11.40	12.85	15.36	19.47
Std. De.	1.19	1.20	3.14	1.86	1.83	1.80	.95	1.29	2.12	1.16

Table 5.33

Comparison of means and standard deviations of the five MALQ aspectsinthe pre- and post-treatment

(control group) (N=22)

	Planning/ Evaluation		Problem-Solving		Mental Translation		Person Knowledge		Directed Attention	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Mini.	13.00	15.00	19.00	20.00	15.00	12.00	10.00	10.00	12.00	12.00
Maxi.	27.00	26.00	32.00	33.00	21.00	15.00	13.00	13.00	18.00	18.00
Mean	20.77	21.13	24.27	24.72	18.00	13.50	11.09	11.95	15.09	15.54
Std. De.	3.94	3.50	3.58	3.59	1.44	1.20	1.34	1.10	1.60	1.33

As outlined in Tables 5.32 and 5.33, both groups performed better on the post-treatment MALQ than they did on the pre-treatment one. Table 5.32 shows that the experimental participants improved their scores on the MALQ with regard to the five metacognitive aspects outlined above. Equally important, Table 5.33 shows that the participants in the control group performed better on the post-treatment MALQ in terms of planning/evaluation, problem-solving and person knowledge than they did on the post-treatment MALQ with regard to the same aspects above. The control participants also relied less on mental translation than they did on the pre-treatment MALQ in terms of the same aspect**.**

5.5 Statistical Analysis of the Differences between the Two Groups for the Post-Tests

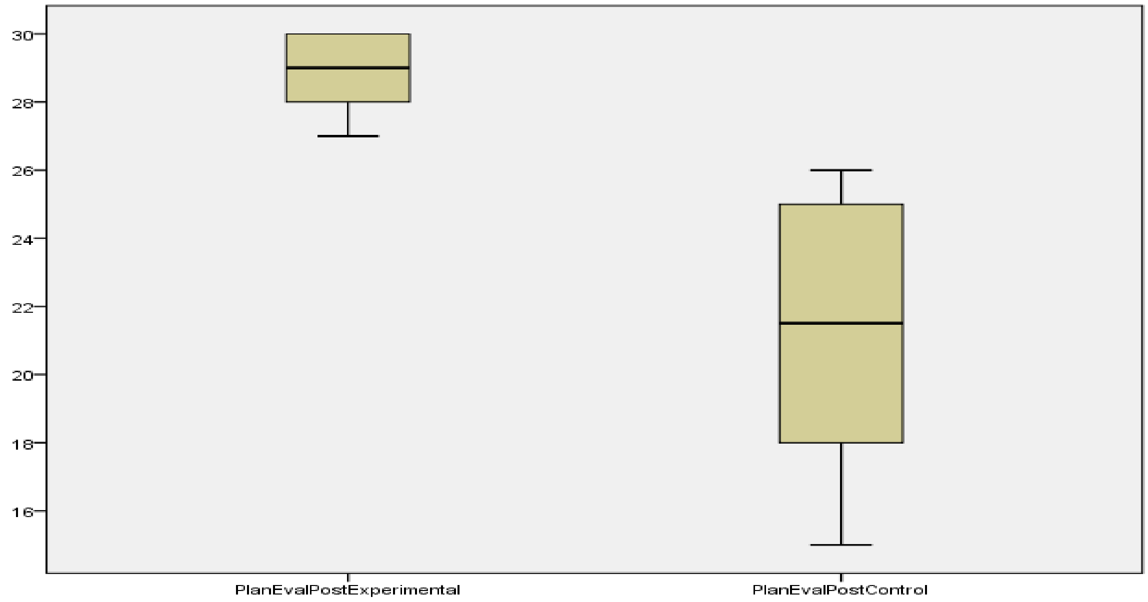
5.5.1 Metacognitive Awareness Listening Questionnaire(MALQ) with Respect toPlanning/Evaluation

Table 5.34

Differences between the scores of the experimental and control rogups on the post-treatment metacognitive Awareness Listening Questionnaire (MALQ) with regard to planning/ valuation

Groups	N	Mean	Std. Deviation
Experimental	22	29.13	1.20
Control	22	21.13	3.50

As outlined bove, there is no significant difference between the experimental and the control group in the results of the MALQ in terms of planning/evaluation taken before the treatment. The difference between the two groups on the MALQ post-test for planning/evaluation is, however, significant ($U=.000$, $p<.001$) (see Appendices N & R). Inspectionof the boxplot below (Graph 5.4) shows that all the experimental participants achieved very good marks on the test. Their scores ranged between 27 and 30.The control participants' scores, however, ranged between 15 and just above 26.



Graph 5.4 Post-treatment MALQ mean scores with regard to Planning/Evaluation for experimental and control groups

5.5.2 Metacognitive Awareness Listening Questionnaire (MALQ) with regard to Problem-Solving

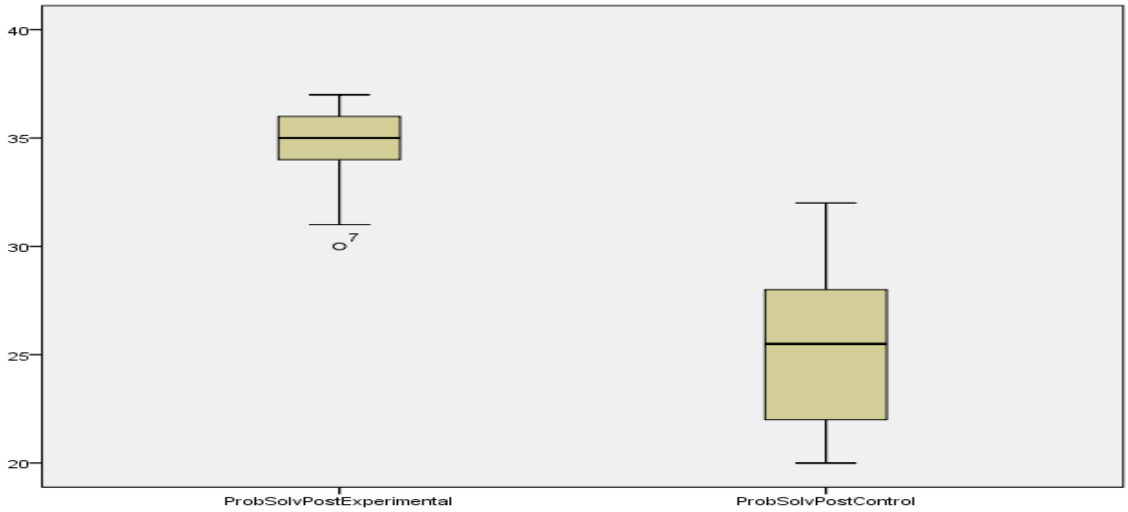
Table 5.35

Differences between the scores of the experimental and control groups on the post-treatment MALQ with regard to problem-solving

Groups	N	Mean	Std. Deviation
Experimental	22	34.76	1.86
Control	22	24.72	3.59

As outlined above, there is no significant difference between the experimental and the control group in the results of the MALQ with regard toproblem-solving taken before the treatment. The difference between the two groups in the results of the post-treatment

MALQ in terms of the same aspect, however, is significant (U=3.50,p<.001) (see AppendicesN& R).The boxplot (Graph 5.5)below shows that a sizeable number of experimental participants achieved very good marks on the test. Their scores ranged between 31 and around 37. The scores of the control group on the same post-treatment MALQ aspect, ranged between 20 and 33.



Graph 5.5 Post-treatment MALQ mean scores with regard to Problem-Solving for experimental and control groups

5.5.3 Metacognitive Awareness Listening Questionnaire (MALQ) with Regard to Mental Translation

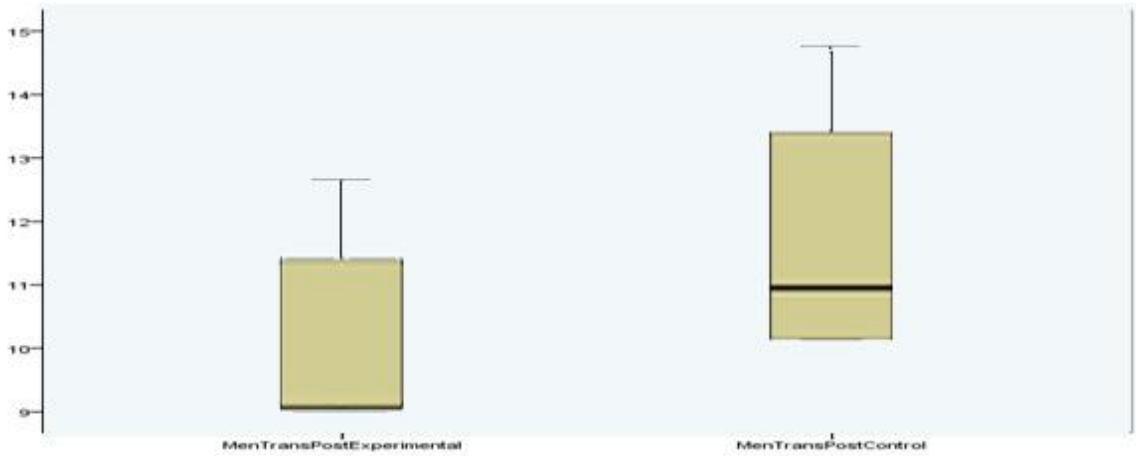
Table 5.36

Differences between the scores of the xperimental and control groups on the post-treatment MALQ with regard to mental translation

Groups	N	Mean	Std. Deviation
Experimental	22	12.94	1.17

Control	22	16.95	1.17

As outlinedabove, there is no significant difference between the experimental and the control group in the results of the MALQ scores with regard tomental translation before the treatment. The difference between the two groups in the post-treatment MALQ in terms of mental translationis, however, significant (U=4.00, p<.001) (see Appendices N& R).The boxplot below (Graph 5.6)shows that all the experimental participants relied much less on mental translation than their peers in the control group. Their lowest score was 9 and the highest 13. The control participants' lowest score was 12 and the highest 15.



Graph 5.6 Post-treatment MALQ mean scoreswith regard to Mental Translation for experimental and control groups

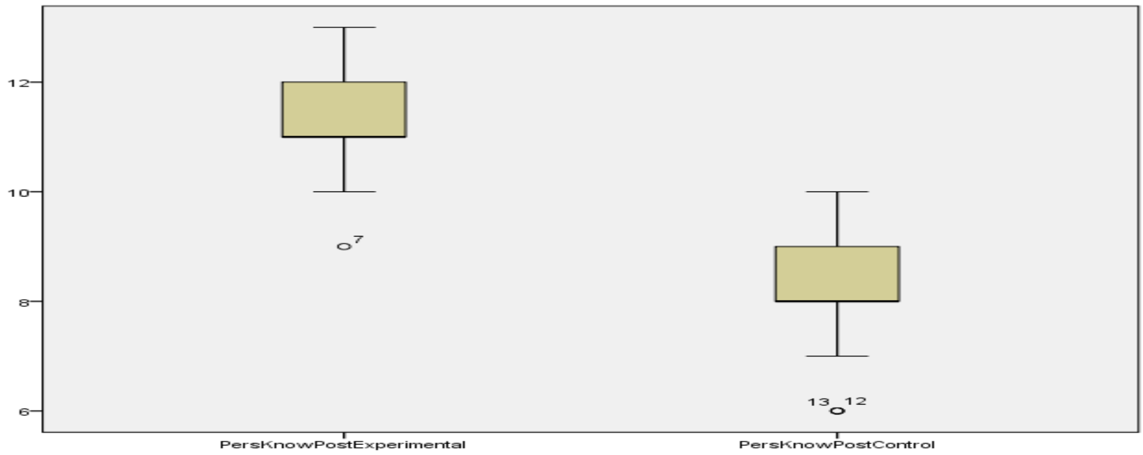
5.5.4 Metacognitive Awareness Listening Questionnaire (MALQ) with respect to Person Knowledge

Table 5.37

Differences between the scores of the experimental and control groups on the post-treatment MALQ with respect to person knowledge

Groups	N	Mean	Std. Deviation
Experimental	22	12.85	1.29
Control	22	11.95	1.10

As outlined above (Table 5.2), there is no significant difference between the experimental and the control group in the results of the MALQscores with regard toperson knowledge before the treatment. The difference between the two groups in the post-treatment MALQ with regard toperson knowledge is, however, significant (U=6.00, p<.001) (see AppendicesN& R).The boxplot (Graph 5.7) below shows that the participants in the experimental group outperformed their counterparts in the control group. The lowest score for the former was 10 and the highest 13, whereas the lowest score for the latter was 7 and the highest did not go beyond 10.



Graph 5.7 Post-treatment MALQ mean scores with regardto Person Knowledge for experimental and control groups

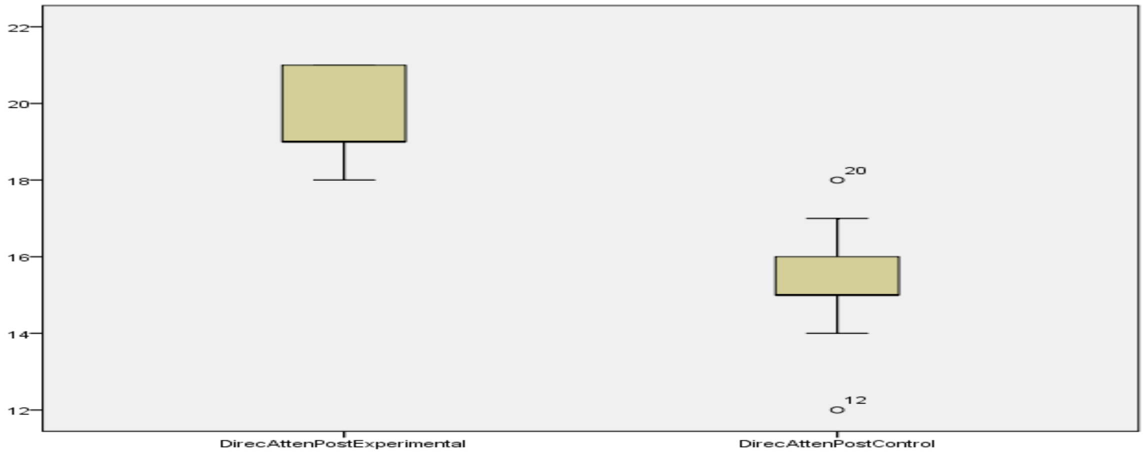
5.5.5 Metacognitive Awareness Listening Questionnaire (MALQ) with Regard to Directed Attention

Table 5.38

Differences between the scores of the experimental and control groups on the post-treatment MALQ with regard to directed attention

Groups	N	Mean	Std. Deviation
Experimental	22	19.47	1.16
Control	22	15.54	1.33

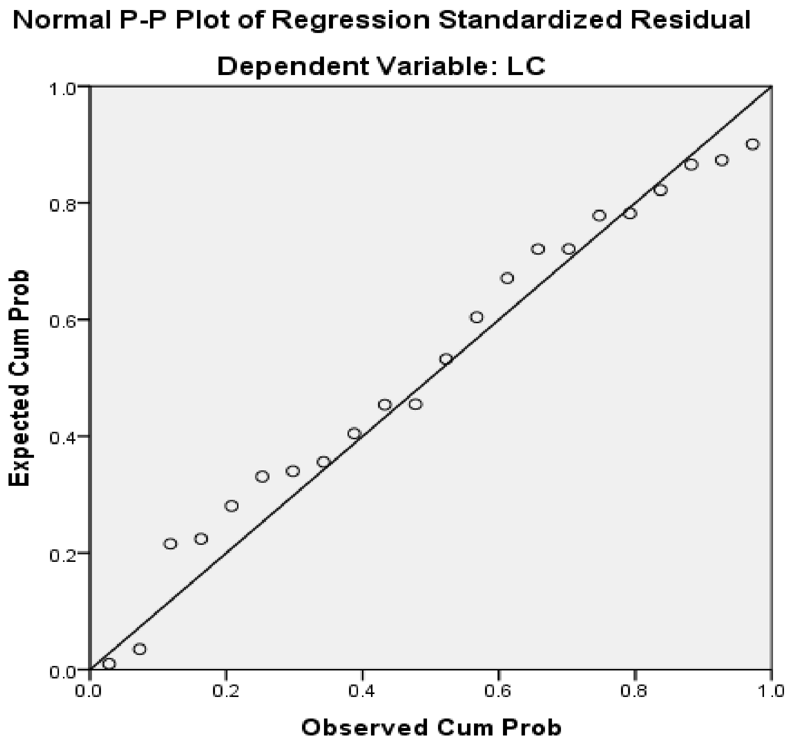
As outlined above (Table 5.2), there is no significant difference between the experimental and the control group in the results of the MALQ scores in terms of directed attention before the treatment. The difference between the two groups in the post-treatment MALQ interms of the same component is, however, statistically significant (U=5.00, p<.001) (see Appendices N& R).The boxplot (Graph 5.8) below shows that the scores of the participants in the experimental group were higher than those of the participants in the control group. The scores of the former participants ranged between 18 and 21, whereas those of the latter participants ranged between 14 and 17.



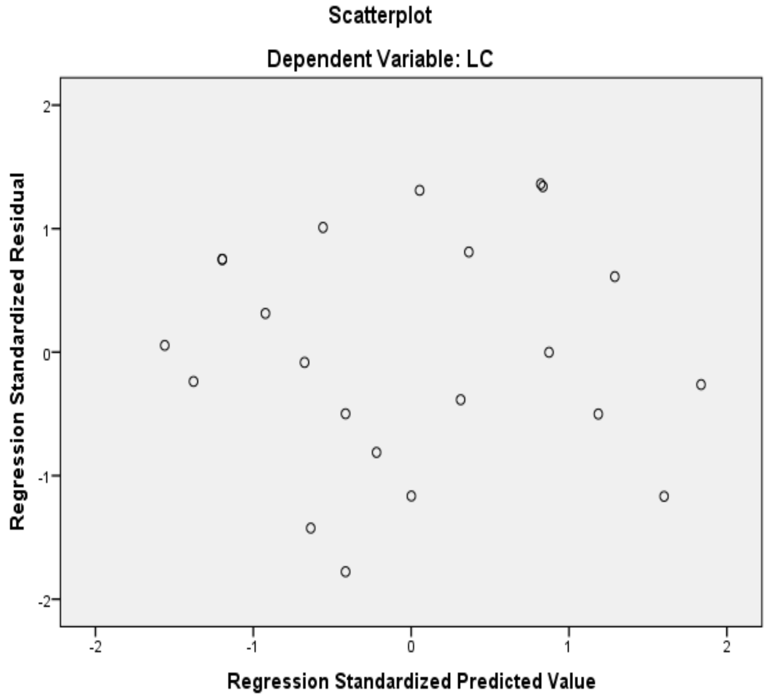
Graph 5.8 Post-treatment MALQ mean scores interms of Directed Attention for experimental and control groups

5.6 Multiple Regression

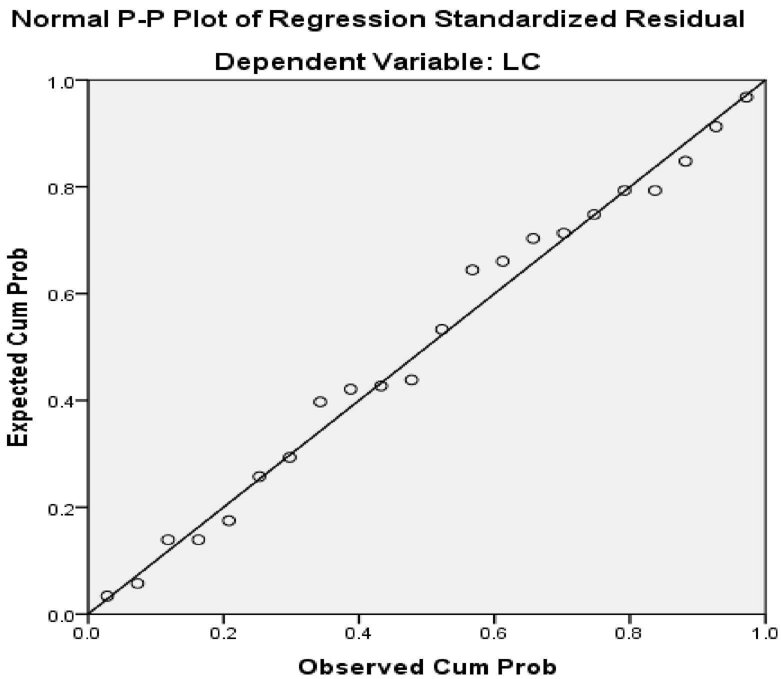
I separated the scores of the post-treatment test of the experimental group from those of the control one. I then, carried out a backward method standard multiple regression to assess the ability of the independent variables (working memory, aural word recognition, orthographic word recognition, vocabulary knowledge (K1), vocabulary knowledge (K2), planning/evaluation, problem-solving, person knowledge, mental translation, directed attention to predict listening comprehension. As recommended by Field (2009), I used the backward method to control for '*suppressive effects*'. In other words, this method allowed me to avoid excluding predictors involved in suppressor effects. As such, I avoided making Type II errors (for a more detailed discussion on this advantage of the backward method, see Field, 2009). I also conducted preliminary analyses to ensure no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity (see Normal P-PPlots and Scatter Plots, in in Graphs 5.9 and 5.11). I also computed the values for the variance inflation factor (VIF) and the values for the tolerance statistic to check whether multicollinearity was a problem (see AppendicesO&P). Graphs5.10 and 5.12illustrate the aboverespectively.



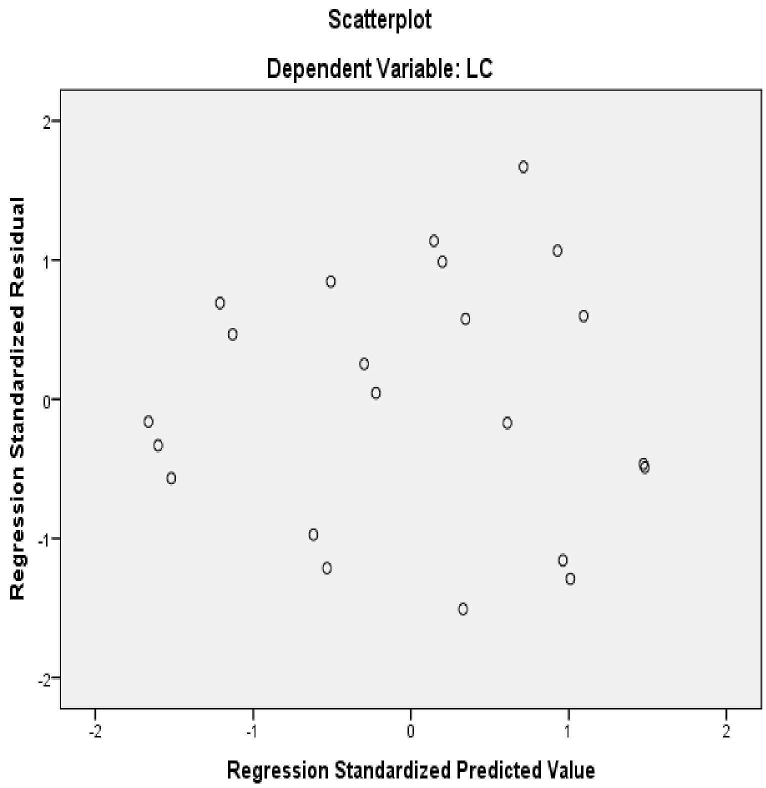
Graph 5. 9P-PPlot of regression standardised residual for experimental group



Graph 5. 10Regression standardized predicted value for experimental group



Graph 5. 11 P-PPlot of regression standardised residual for control group



Graph 5. 12 P-PPlot of regression standardised predicted value for control group

In what follows, I will briefly outline the standard backward methodmultiple regression results of the experimental and control groups separately.

5.6.1 Final Model of the Multiple Regression

Experimental Group

The prediction model of the experimental group contained six of the ten predictors (aural word recognition, planning/evaluation, orthographic word recognition, problem-solving, directed attention, working memory) and was achieved in five steps with four variables removed (mental translation, person knowledge, vocabulary knowledge (K1), vocabulary knowledge (K2). The model was statistically significant, $F(6, 15) = 45.222$, $p < .001$, and accounted for approximately 92.70% of the variance of listening comprehension($R^2 = .948$, Adjusted $R^2 = .927$) (see Appendix O). As Table 5.39 and Appendix Oshow, listening comprehension was primarily predicted by aural word recognition, planning/evaluation, and orthographic word recognition, and to a lesser extent by directed attention, problem-solving and WM. Aural word recognition made the strongest significant contribution to explaining listening comprehension (β = .760, p <.001) followed by planning/evaluation and orthographic word recognition (β =.369,p <.001) and (β = .332, p <.001), respectively. To a lesser degree, problem-solving had the fourth weight in predicting listening comprehension(β = .280, p <.001) followed by directed attention and working memory (β =.242, p <.001) and (β = .218, p <.001), respectively (see Table 5.40 & Appendix O).

Table 5.39

Results of the multiple regression

(ExperimentalGroup)(N=22)

	B	Std. Error B	Beta
Constant	-37.165	4.224	
Aural word recognition	.019	.003	.760*
Planning/Evaluation	.154	.037	.369*
Oral word recognition	.005	.002.332*	
Problem-solving	.081	.038	.280*
Directed attention	.239	.075	.242*
Working memory	.126	.066	.218*

*Adjusted R^2 = .927, * p <.0.001*

Control Group

The prediction model contained four of the ten predictors (aural word recognition, working memory, mental translation, person knowledge) and was achieved in seven steps with six variables removed (aural word recognition, vocabulary knowledge (K1), vocabulary knowledge (K1), problem-solving, vocabulary knowledge (K2), directed attention, planning/evaluation). The model was statistically significant, $F(4, 16) = 44.119$, p<.001, and accounted for approximately 89.60% of the variance of listening comprehension (R^2 = .917, Adjusted R^2 = .896) (see Appendix P). As Table 5.40and Appendix P show, listening comprehension was primarily predicted by orthographic word recognition and working memory, and to a lesser extent by person knowledge and a decrease in mental translation.Orthographic word recognition made the strongest significant contribution to explaining listening comprehension (β = .668, p <.001) followed by working memory (β =.375, p <.001). To a lesser degree, the decrease in mental translationrecorded the third weight in predicting listening comprehension (β = .177,p <.001) followed by person knowledge (β = -.149, p <.001)(see Table 5.39 and Appendix P).

Table 5.40

Standard multiple regression backward method results

(control group)(N=22)

	B	Std. Error B	Beta
Constant	-25	.481	3.527
Aural word recognition	.012	.001	.668*
Working memory	.081	.017	.375*
Mental translation	.207	.103	.177*
Person knowledge	.129	.055	.149*

*Adjusted R² = .896, * p <.0.01*

5.6.2 Conclusion

The focus of this chapter was on the statistical analysis of the data collected before and after the treatment. Various statistical tests were used for the analysis of the obtained data. First, the scores of pre-treatment tests (OQPT, LCT, WMST, VLTs (K1) and (K2), AWR, OWR) were analysed. The results showed that there were no statistically significant differences between the control and experimental groups prior to the treatment. This shows that any differences between the groups in the post-treatment LCT were attributed to the approaches used for each group and not to any external, prior knowledge of the participants.As for the post-treatment LCT, although the results from the computed statistical tests show significant gains for both groups, it was demonstrated that the experimental participants, who were taught using the MetSBM approach, outperformed their control peers who were taught using the CSBM approach.

Finally, the MALQ was submitted to statistical analysis and the participants' increase in the degree of their metacognitive awareness was investigated. It was found that the experimental participants' gained more metacognitive awareness with respect to planning and evaluation, problem-solving, and directed attention, which positively impactedon the post-treatment LCT.The same participants also managed to reduce their word-for-word translation while listening for comprehension in the post-treatment test.

The final model of the multiple regression of both groups showsthat the very strategy training factors that influenced listening comprehensionwere statistically significant. The strategy factors that contributed to the listening comprehension of the experimental group were planning/evaluation, directed attention, and problem-solving. In the control group,person knowledge was the only training factor whose contribution to listening comprehension proved significant.

Apart from the influence of the treatment on the scores for the listening comprehension, there are other factors that influenced listening comprehensionin both groups while aural word recognition, orthographic word recognition, and working memory contributed to the listening comprehension of the experimental group. On the other hand, orthographic word recognition and working memory influenced the listening comprehension of the control group.

In what follows, I will discuss the results outlined above, the research hypothesis and the research questions of the study in the light of the data discussed above.

CHAPTER 6 DISCUSSION

6.1 Discussion of the Results

In this chapter, I will examine the thesis hypothesis and the research questions ofthe study. In particular, I will discuss the usefulness of cognitive linguistics for teaching L2 listening comprehension and examine the contribution to listening comprehension of metacognitive strategies, namely planning/evaluation, problem-solving, directed attention, person knowledge, and mental translation on the one hand, and cognitive strategies, especially prediction, elaboration, summarisation, note-taking, and inferences, on the other. I will also discuss how the cognitive strategy training contributes to metacognitive awareness, on the one hand, and show the limitation of such a training compared to the huge impact that the metacognitive training can have on listening comprehension, on the other. I will also discuss the impact of word recognition, taking into account aural and orthographic aspects, as well asWM on the performance of both groups. Finally, I will discuss the contribution of vocabulary knowledge (VKK1 and (VKK2) to listening comprehension. In particular, I will compare the post-treatment listening comprehension test scores of the experimental and control groups and draw conclusions regarding the factors that enabled the experimental group to outperform their peers in the control group.

6.1.1 The Listening Comprehension Test (LCT)

The experimental and control participants

The LCT was used to assess the effectiveness of the treatment instructional methods:MetSBM and CSBM.The results in the post-treatment LC Tshow that the experimental participants outperformed their control peers. The difference between the scores of the experimental (11.31) and control groups (7.68) is statistically significant ($U = 37.50$, $p < .001$) (see Tables 5.8 and 5.9 &Appendix N). The scores of the pre- and post-treatment LC test of both groups shows that the experimental participants' scores ranged between 8 and 13, whereas the control group participants' scores ranged between 6 and 10 (see Appendix R), and never managed to reach the highest score that the experimental participants reached.

In what follows, I will discuss the research hypothesis as well as the three research questions.

6.2 Discussion of the Hypothesis and the Research Questions

6.2.1 Discussion of theHypothesis

The experimental participants who will be taught how to listen for comprehension using the *metacognitive strategy-based instruction method* (MetSBM)are expected to outperform the control group, who will be Taught how to listen for comprehension using the *cognitive strategy-based instruction method* (MetSBM)

In considering this hypothesis, the results of the post-treatment LCTsuggest that the experimental participants succeeded to a certain extent in applying the metacognitive strategies that they were taught in the listening comprehension post-test. The mean score on their post-treatment LC T was (11.31) (see Table 5.8). Thisisa distinct improvement over those of the pre-treatment LCT, whereas the control participants achieved a much lower mean score (7.50) (see Table 5.9). Moreover, the difference between the scores of bothgroups on the post-treatment LCT is statistically significant ($U = 3750$, $p < .001$) (see Appendix N) (see Tables 5.8 and 5.9). These results support the research hypothesis. The improved results achieved by the experimental group can be attributedto the following variables:(1) aural word recognition, (2) planning/evaluation, (3) orthographic word recognition, (4) problem-solving, (5) directed attention, and (6) working memory.

6.2.2 Discussion of Research Question 1

Is metacognitive teaching likely to lead to higher listening comprehension scores than the teaching of cognitive strategies?

With regard to the first research question, the answer is mainly ‘yes’. As chapter 5 shows, the MetSBM training, which sensitises language learners to the process underlying listening, can improve L2 listening comprehension. In other words, the above results show that there is a correlation between the MetSBM training that the experimental participants experienced in the second phase of the treatment and the improvement of their performance on the listening comprehension post-treatment test. This confirms what other researchers have found in similar studies (e.g., Goh, 2008; Liu & Goh, 2006; Goh & Yusnita, 2006; Vandergrift, 2004, 2007; Zheng, 2007). In the present study, the experimental participants benefited from the MetSBM training. They became better at regulating or controlling, managing and overseeing their listening comprehension process.These three benefits are confirmed in the literature(Chamot, 1995; Oxford, 2011; Vandergrift, 1999) (see sections 3.3.2 and 3.3.3).

The results outlined above are also consistent with the role that metacognitive strategies play in enabling L2 learners to become more efficient listeners. They are more strategic in that they set goals for their listening activities and assess the deployment of their strategies (see sections 3.3.2 and 3.3.3). Equally important, the MetSBM training allowed the experimental participants to perform better on the use of attention resourcesand existing strategies, as well as to gain greater awareness of comprehension breakdown. The results of the MetSBM training areconfirmed by the resultsin similar studies (Thompson& Rubin, 1996; Vandergrift & Tafaghodtari, 2010)(see section3.4.3).

The following section sheds lights on further aspects of the impact of the MetSBM training on the experimental participants' achievement in the post-treatment MALQ, namely planning/evaluation, problem-solving, directed attention, person knowledgeand decrease in mental translation.

1. *Impact of the MetSBM training on the experimental participants' metacognitive awareness with regard toplanning/evaluation*

In considering the planning/evaluation component in the MALQ, results from the multiple regression analysis show that this component is the second highest predictor of listening comprehension with a Standard Beta value of (.369) (see Table 5.39, p. 183). Equally important, results in the post-treatment test suggest that not only did the experimental participantsperform better than in the pre-treatment test, but also outperformed theircounterparts in the control group. The difference between the scores for the experimental participants on the pre- and post-treatment MALQ planning/evaluation component is statistically significant ($Z= -4.135$, $p < .001$) (see

Appendix L), whereas the difference between the scores for the control group on the same aspect is near significant (Z = -2.483, p = .23) (see Appendix M). Equally important, the difference between the two groups'scores on the post-treatment with regard to the same aspect is statistically significant (U = .000, p < .001) (see Appendix N).

i. Contribution of the planning activities to the successful task completion of the experimental group

The planning activities that the experimental participants performed during the second phase of the treatment allowed them to raise their awareness of what is needed in order to develop appropriate action plans and to overcome the various difficulties that they faced during their listening comprehension.The numerous advance organisation activities that these participants performed in every pre-listening strategy enabled them to use their prior knowledge about the topics of the various passages that they listened toand directed their attention by deciding what they wanted to knowabout the topicsas well asenabling them to recall or predict the vocabulary related to the topic. Figure 6.1 illustrates the the advance organieer activity that the experimental participants would complete to plan for their listening (for further details about the contribution of advance organisation to listening comprehension, see, section 3.3.2andFlowerdew & Miller, 2005).

<table>
<tr><td colspan="3">Topic:____</td></tr>
<tr><td>WHAT I KNOW ABOUT THE TOPIC</td><td>WHAT I WANT TO KNOW ABOUT THE TOPIC</td><td>WHAT I LEARNED</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td colspan="3">PREDICTION
Write the words that you think you will hear.</td></tr>
</table>

Figure 6.1 An advance organiser that the experimental participants would complete before, during and after the various listening comprehension tasks they performed in the

second phase of the treatment.

The self-management activities that the experimental participants performed in the pre-listening stage during the second phase of the treatment enabled them to understand the conditions that helped them to accomplish their listening tasks successfully and arrange for the presence of these conditions and to control their language performance by maximising the use of prior knowledge (for further details about the impact of self-management on listening comprehension, see section 3.3.2 and Flowerdew & Miller, 2005).

ii. Contribution of the evaluation activities to the successful task completion bythe experimental participants

The various evaluation activities that the participants in the experimental group performed throughout the second phase of the treatment contributed to their success in completing their listening tasks. When these participants asked themselves the question *How close was I*? for instance, they would be determining the extent of their performance, an assertion that is supported by Vandergrift (1997b).Moreover, by asking themselves the question *Are the strategies I used useful to understand the passage*? the experimental participants would be judging the efficacy of the strategies they were using. The contribution of this strategy to listening comprehension is also supported by Chamot and Küpper (1989) (for more details about the benefits of evaluation activities, see section 3.3.2). The results outlined above are also consistent with the impact of evaluation on comprehensionshown by researchers (e.g., Anderson, 2002).

Moreover, the various evaluation activities that the experimental participants performed allowed them to maintain involvement in metacognition by responding thoughtfully to questions such as *What am I trying to accomplish? What strategies am I using? How wellam I using these strategies?* and *What else could I do?* Such a thoughtful metacognitive process is supported by Anderson (2002) (for further details about the role of evaluation in raising awareness, see section 3.3.2).

To summarise the impact of planning/evaluation on the experimental participants' listening comprehension, the results outlined above suggest that compared with the control group, the experimental participants became more skilled listeners in that they monitored their listening comprehension process better than their control counterparts.

The following section deals with the impact of the MetSBM training on the experimental participants' problem-solving component of the post-treatment MALQ.

2. Impact of the MetSBM training on the experimental participants' metacognitive awareness with respect toproblem-solving

In considering the problem-solving component in the MALQ, results from the multiple regression analysis show that this aspect of metacognitive awareness is the fourth highest predictor of listening comprehension with a Standardized Beta value of (.280) (see Table 5.39, p. 183). Equally important, results from the post-treatment test indicate that not only did the experimental participants perform better on the post-treatment MALQ problem-solving, but they also outperformed their counterparts in the control group on the same component. The difference between the scores of the experimental participants in the pre-and post-treatment MALQ in terms of problem-solving is statistically significant ($Z = -4.114$, $p<.001$) (see Appendix L). Similarly, the difference between the scores of the experimental and control groups in the post-treatment MALQ in terms of the same component is also significant($U = 3.50$, $p < .001$) (see Appendix N).

In what follows, I will provide my interpretation of what contributed to the experimental participants' results outlined above.

They can be attributed to two aspects: the various problem-solving strategies that the experimental participants applied during the second phase of the treatment and my guidance as a teacher.

a. Problem-solving strategies

As they were monitoring their comprehension and confronting difficulties, the experimental participants would adjust their approaches to the various passages they listened to in that they would activate more appropriate strategies as required by the task.For example, they would revise their predictions or adjust their inferences in order to reflect new possibilities. They would also make inferences about the meaning of a chunk of a passage that they did not understand by making deductions from the information they were confident they had understood or by asking for clarifications if the listeningcontext allowed (see section 3.3.2). This learning behaviour is supported by a number of researchers in studies similar to the present one (Vandergrift & Goh, 2012).

b. My guidance as a teacher

My explicit instructionsregarding the reasoning and problem-solving skills that I taught to the experimental participants allowed themto apply these skills to their listening comprehension activities successfully. Having been taught how to ask questions, how to seek and provide help for each other, and having their cognitive and metacognitive thinking challenged during cooperative learning, for instance, the experimental participants were able to engage in reasoned argumentation and problem-solving. Without my guidance, these participants would not have had the initiative to elaborate on information, ask thought-provoking questions, and draw upon prior-knowledge spontaneously. This is an assertion that is supported by many researchers in similar studies (e.g., King, 1999, 2002). Equally important, without my explicit teaching of how to seek and provide help foroneanother, effective cooperation and learning would not have occurred. This assertion is also supported in the literature (e.g., Webb, 1992; Webb & Farivar, 1999; Webb & Master-George, 2003; Webb et al., 2004).

Equally important isthe role that I played as a teacher during the pair and whole-class discussions of the experimental group which impacted these participants' performance positively. My role involved employing three strategies: prompting students for supporting reasons, modelling the use of evidence, and challenging students with counter-arguments;all three are recommended by Rezniskaya et al., (2007). This role contributed to the increase in the experimental participants' awareness with respect to problem-solving.

In addition to the above, I taught the experimental participants how to apply two effective strategies to assess their reasoning and problem-solving skills. These two strategies comprised the organizers *What is the Problem?* and *Thinking about a Problem*. Such activities allowed the experimental participants to plot the types of reasoning and problem-solving responses they would generate in response to the task. For example, with regard to the *Think about a Problem* organiser, the experimental participants would be asked to identify three possible positive and negative consequences of each solution. The first part of this task, for instance, would require them to compare and contrast their understanding of the information, hence demonstrating a more sophisticated response than a straight factual recall (see section 3.3.2 and section 4.2.1).

To conclude, the various problem-solving activities that the experimental participants were taught enabled them to activate a variety of appropriate strategies, such as verifying their predictions, adjusting their inferences, and making inferences by making deductions from the information they were sure they had understood.Equally important, my guidance as a teacher during the MetSBM training enabled the experimental participants to use reasoning while applying their problem-solving skills. In addition, my prompts for supporting reasons, my modelling the use of evidence, and my challenging counter-arguments impacted the experimental group positively during pair and whole-class discussions. Finally, learning how to use problem-solving organisers, such as *What is the Problem*? and *Think about aProblem*allowed the control participants to plot the important types of problem-solving and reasoning in their responses.

In the following section, I will give my interpretation on the impact of the MetSBM training on the experimental participants' directed attention.

3. Impact of the MetSBM training on the experimental participants with regard to directed attention

Results in the final multiple regression model show that directed attentionhad the thirdmost influential impact among the five MALQ aspects outlined above, as it had thefifth highest Standardized Beta (.242) (see Table 5.39, p. 183). Equally important, results in the post-treatment test indicate that the experimental participants both performed better on the post-treatment MALQ in terms of directed attention than on the pre-treatment one and outperformed their counterparts in the control group(see Chapter 5). The difference between the scores of the experimental participants on the pre- and post-treatment directed attention is statistically significant ($Z = -4.128$, $p < .001$), while the difference between the scores of the control participants on the same component is statistically near significant ($Z = -2.514$,$p < .028$) (see Appendices L & M, respectively). Equally important, the difference between the scores of the two groups in the post-treatment MALQ fordirected attention is statistically significant ($U = 5.00$, $p < .001$) (see Appendix N).

The results outlined above can be attributed to the role of the monitoring and problem identification activities that the experimental participants performed during the second phase of the treatment. My findings confirm O'Bryan and Hegelheimer's (2009) assertion that monitoring and problem identification strategies contribute to positive changes in listeners' awareness in terms of directed attention. In addition, the experimental participants' increase in their directed attention was the result of the various planning activities that they applied during the treatment. Their use of graphic organisers, for instance, allowedthem to enhance their self-management abilities. The importance of self-management, in particular, and planning, in general, has been found to be centralin other studies (Berne, 2004; Chamot &Küpper, 1989; Flowerdew &Miller, 2005; Goh, 2008; O'Bryan & Hegelheimer, 2009; O'Malley & Chamot, 1990; Oxford, 1990, 2011) (see section 3.3.2).

Results in the present study also show that the increase in the experimental participants' awareness about their directed attention contributed to their improvement in the post-treatment LCT scores. This is corroborated by Kaplan and Berman's (2010) finding in a similar study. Kaplan and Berman point out that "directed attention [has] similarities to top-down" (p. 46). They argue that the ability to consciously control our attention is the key capacity for both the executive function (planning and thinking) and self-regulation (control of thoughts) and behaviour.

To sum up, the increase in the experimental participants' directed attention was due to their learning and application of the various monitoring and problem identification activities, their use of a variety of planning activities, and their increased awareness about their directed attention abilities while listening for comprehension.

In the following section, I will focus on the other componentthat indirectly contributed to the increase of experimental participants'scores in the post-listening test, namely person knowledge.

4. Impact of the MetSBM training on the experimental participants'metacognitive awareness with regard toperson knowledge

In considering the person knowledge component in the MALQ, results from the post-treatment test suggest that the experimental participants performed better than they did on the pre-test. The difference between their scores on both tests is statistically significant ($Z = -4.041$, $p < .001$) (see Appendix L). Equally important, results from the post-treatment MALQ reveal that the experimental participants showed higher awareness of their person knowledge than their control counterparts. The difference between the scores of both groups on the person knowledge aspect of the MALQ is statistically significant($U = 6.00$,$p < .001$) (see Appendix N).

My interpretation of the increase in the experimental participants' person knowledge is that the MetSBM training impacted these participants' beliefs about the nature of themselves and that of their classmates as cognitive processors. In other words, thanks to the MetSBM training, the experimental participants' beliefs tended to become oriented towards ˈuniversals of cognitionˈ rather than towards ˈintra-individual differences or intra-individuals. The benefit of beliefs about ˈuniversals of cognitionˈ are discussed by Flavell (1999) (see section 3.3.2). The various collaborative learning-based activities that the experimental participants performed during the MetSBM treatment allowed them to become ˈextrovertsˈ rather than ˈintrovertsˈ. The impact of an ˈextrovertˈ personality on learning is well known by researchers (e.g., Ellis, 1994) (see section 3.3.2).

Another factor that contributed to the increase in the experimental participants' awareness of their person knowledge was the cognitive style that these participants acquired from the MetSBM training. The fact that the MetSBM training is learner-centred, allowed them to become independent learners and therefore analytic. Generally speaking, they became more like risk-takers and sensation-seekers. Collaborative learning led experimental participants to have more opportunities to practice monitoring their listening comprehension problems as well as their choices and deployment of strategies. The impact of this cognitive style is also shownin similar studies (e.g., Carrol, 1981; Ellis, 1994) (see section 3.3.3).

A further factor that increased the experimental participants' awareness of their person knowledge was motivation. The various activities such as peer and class discussions that the experimental participants performed during the MetSBM training, enhanced their collaborative learning and motivated them intrinsically,a factor recognised in the literature (e.g., Ellis, 1994; Wenden, 1991) (see section 3.3.3).The contribution of the MetSBM training to the development of metacognitive awareness of the experimental participants had two dimensions. First, these participants became more motivated to perform more effectivelyin the application of cognitive and metacognitive strategies both during the second phase of the treatment and on the post-treatment LC T .

The second dimension was that the experimental participants gained a higher sense of self-efficacy in completing tasks successfully in that the MetSBM training informed and guided them to make appropriate cognitive judgments about their thinking and learning, in general, and about their listening comprehension process, in particular. Examples of such judgments are the ones that the experimental participants would make about the task at hand: effort, expected difficulties and outcomes.

Equally important, the MetSBM training allowed the experimental participants to develop the metacognitive beliefs and expectations alongsidetheir thinking and learning, in general, and their listening comprehension process, in particular. They developed beliefs about themselves as L2 listeners and their cognitive abilities when listening to L2 in that they perceived themselves as becoming more and more skilful L2 listeners. They also developed beliefs about their improvement at deploying L2 listening strategies more and more skilfully. Equally important, their beliefs included viewing themselves as self-critical and interactional L2 listeners(for more information about the impact of metacognitive beliefs, see section 3.3.2).

As for the high sense of self-efficacy gained during the treatment, the experimental participants were able to make the right choices and actions while listening for comprehension in the post-treatment LCT. The importance of making choices and actions while listening for comprehension is outlined above (see section 3.3.2). It is important to note that the contribution of the MetSB training to the increase in self-efficacy of the experimental participants worked in various ways. During the treatment, theseparticipants achieved many goals and many vicarious and direct outcomes of the problem-solving tasks and activities they performed, as well as using self-regulation.

Finally, self-efficacy played an important role in linking the effects of the MetSBM treatment regarding the persistence of the experimental participants on the application of the cognitive and metacognitive strategies they learned during the treatment regarding listening comprehension. This is consistent with the potential contribution of self-efficacy to language learning discussed by Zimmerman (1990a) (see section 3.3.2). Thisdimension is also consistent with the results of a number of studies (e.g., Bandura & Schunk, 1981; Zimmerman, 1990a; Zimmerman & Ringle, 1981) (see section 3.3.2).

To conclude, the MetSBM training impacted the experimental participants'increase in person knowledge in various ways. It allowed them to have positive beliefs about their cognitive processing abilities. It also enabled them to become extrovert learners, rather than introverts, which impacted their listening comprehension positively. Equally important, the MetSBM training enabled the experimental participants to become independent learners and motivated them to use metacognitive strategies. Finally, the MetSBMtraining enhanced the experimental participants' collaborative learning while listening for comprehension, heightened their sense of self-efficacy and promoted their metacognitive beliefs and expectations.

In what follows, I will provide my interpretation of the impact of the MetSBM training on the decrease in the experimental participants' reliance on mental translation, a second metacognitive factor that indirectly impacted the experimental participants' performance on the post-treatment LCT.

5. Impact of the MetSBM training on the experimental participants' reliance on mental translation to L1

Although the decrease in the use of mental translation is not listed among the variables that remained in the final model of the multiple regression of the experimental participants, the statistically significant difference between the pre- and post-test scores of these participants on this metacognitive aspect ($Z = -4.142$, $p < .001$) (see Appendix L) shows that the MetSBM training allowed the experimental participants to rely less on translating into their L1 than they did in the pre-treatment test. This implies that the monitoring process, in general, and the various problem-solving activities that the experimental participants learned and applied during the second phase of the treatment, in particular, contributed to this success (see section 4.2.1). Equally important, the MetSBM training enabled the experimental participants to rely less on translating into L1 than their control counter parts. This is evident from the statistically significant difference between the post-test scores of both groups on the MALQ in terms of the decrease in relying onmental translation($U = 4.00$, $p < .001$) (see Appendix N).

In the following section, an interpretation is provided of the extent to which the experimental participants benefited from the various monitoring and problem-solving activities they performed during the MetSBM training, in general, andduring the second phase of the treatment, in particular.

a. Monitoring activities

As the experimental participants were engaged in comprehension monitoring, the various inferences and world elaboration strategies they applied through self, peer and class monitoring, were more efficient than those performed by their counterparts in the control group who did not perform any monitoring strategy training as such. This is consistent with Eastman's (1991) assertion that:

[b]ecause less skilled listeners appear to engage in less comprehension

monitoring, their elaborations are not generated at a deep level, that is at discourse level, within the context of a solid conceptual framework (p. 486)

(see sections 3.3.2 and 4.2.1).In other words, monitoring allowed the experimental participants to generate deep-level elaborations, inferences and predictions. This systematic approach allowed the experimental participants to allocate more attentional resources instead of translating to L1. Such attentional resources, therefore, were not squandered on inefficient on-line translation. This assertion is supported by Eastman (1991) (see section 2.3.5).

b. Problem-solving activities

The experimental participants benefited from the various problem-solving activities they performed in that they would deduce the meaning of unknown words through the use of known ones or the general idea of a passage, to name a few (see chapter 3, section 3.3.2 and chapter 4, section 4.2.1). All the factors outlined above enabled the experimental participants to engage in processing fruitful interpretations rather than squandering their attentional resources in inefficient translation to L1.

6.2.3Discussion of Research Question 2

Are students in the control group likely to develop metacognitive strategies on their own even though they are only taught cognitive strategies because these types of strategies are related?

The answer to this research question can only partially be answered in the affirmative.Two different aspects of the CSBM training that allowed the control group participants to gain metacognitive awareness on their own, i.e., mental translation and person knowledge, will now be discussed.

Metacognitive awareness gained by the control groupon their own

1. Decrease in reliance on mental translation

The MALQ results in the post-treatment show that the CSBM training contributed tothe control participants' decrease in their reliance on mental translation in the post-treatment LCT. The final multiple regression model shows that the above decrease is the only statistically significant metacognitive aspect with thethird highest beta (β = .177, p<.001) (see Appendix P) that contributed to the control participants' post-treatment LCT. Equally important, the difference between the scores of the pre- and post-treatment MALQ with regard to this aspect is statistically significant (Z = -3.782, p < .001) (see Appendix M). This suggests that the CSBM training enabled the control participants to rely less on mental translation in the post-treatment LC T than in the pre-treatment test. The following section discusses the factors that enabled the control participants to rely less on mental translation while listening for comprehension in the post-treatment LCT.

Factors contributing to the control participants'metacognitive awareness increase with regard to their decrease in their reliance on mental translation

Three factors contributed to the control participants' decrease in their reliance on mental translation while listening for comprehension: the various cognitive strategies they learned and applied during the treatment, a number of co-variablesand several pedagogical factors.

a. Cognitive strategies

Three main cognitive strategies contributed to the decrease in the control participants' reliance on translation: prediction, inferencing and elaboration. Prediction reduced control participants' memory load, allowing them to direct their attention to the auditory incoming input in order to monitor it and set up further predictions. This benefit is confirmedin the literature (Brown, 2000;Eastman , 1991; Hymes, 1964; Sheerin, (1987) (see also section 3.2.1). In addition, the various prediction activities enabled the control participants to pay less attention to the phonemes, syllables, words, phrases, or tones of the listening passages,allowing themnot only to monitor the input effectively, but also to set up further predictions (see also section 3.2.1).

Similarly, the various inference activities that the control participants practiced allowed them to focus more on inputs by deeper processing inferences and enabling them both to guess the meaning or usage of unfamiliar language items associated with a language taskby using the available information and to predict outcomes or to complete incoming information (see 4.2.1). The impact of inferencingon listening comprehension is advocated by researchers (e.g., Bialystock, 1978; Chamot, 1989, 1990 Eastman, 1991; Goh, 1998b; Rost, 2002; Nunan, 1999) (see section 3.2.1).

Equally important,the various inferencing activities enabledthe control participants to compensate for the limited capacity of their WM. The MetSBM enabled these participants to construct only the number of inferences necessary to maintain a coherentrepresentation, thus compensating for their inability to recall the speaker’s exactstatement.Thisfactor is also confirmedin previous studies (e.g., Rost, 2002). In addition, there is evidence in the literature that this factor positively impacts L2 listening comprehension (see section 3.2.1).

Finally, the various elaboration activities provided the control participants with opportunities to relate new information to their prior-knowledge as well as to previously shared information in memory. In other words, the elaboration activities allowed the control participants to identify patterns in the data, make associations, and identify deeper meaning in order to classify patterns and associations. The impact of elaboration has been made evident from earlier research(Eastman, 1991; Graesser et al., 2002; Jonassen, 1994; Willtrock & Alessandrini, 1990; O’Malley et al., 1989; Wenden, 1995a) (see section 3.2.1).

b. Co-variables

Two co-variables contributed to the control participants’ decrease intheir reliance on mental translation, namely working memory and word recognition (both aural and orthographic).The significant increase in the control participants’ WM span ($Z = -4.136$, $p < .001$) (see Appendix M) enabled these participants to rely less on translation. In addition, the significant increase that these participants gained during the CSBM training both in orthographic word recognition ($Z = -4.058$, $p < .001$) and aural word recognition ($Z = -3.572$, $p < .001$) (see Appendix M) allowed them to more effectively recognise both content and function words, providing them with contexts to their inputs.

The increase in working memory and word recognitionoutlined above enabled the control participants to enhance their memory and attention mechanisms in that they managed to focus on longer chunks rather than on individual words. Similarly, the above increase in workingmemory and word recognition improved the control participants' ability to focus on semantic cues, leading to a reduction in the task overload, which allowed them to enhance their automatic listening comprehension processes rather than to focus totally on their controlled processes, such as attention. This ability is confirmed in several otherstudies (e.g., Conrad, 1985; Eastman, 1991) (see section 2.4).

Equally important, the CSBM training lowered the control participants' anxiety and stress. This is in line with Eastman's (1991) argument that in listening to L2, unskilled listeners have few automatic processes and do not yet know which aspects of the auditory stream to attend to.

c. Pedagogical factors

The CSBM training that the control participants were provided with were the result of three pedagogical factors: appropriate teaching, adequate learning and context.

i. Appropriate teaching

The explicit teaching approachesof the cognitive strategies I adopted in the first phase of this study enabled the control participants to become more strategic in tackling the various listening comprehension tasks.Among the benefits of this approach was an avoidance of the replaying of the tapes and tracks more than necessary (only twice). In addition, I avoided both analysing scripts and translating them word-by-word before, during, and after the listening comprehension task. Another pedagogical benefit of the CSBM was that this very approach percolated through the participants in the control group. They relied less on time for 'aural reading'. This approach enabled these participants to correct their misconception that 'aural reading' is a successful route to meaningfulness in listening. This is in line with what hasbeen advocated regarding the impact of translatinginto L1 listening (Eastman, 1991; Faerch & Kasper, 1986). These researchers suggest that among the pedagogical factors that encourage unskilled L2 listeners to use translation are inadequate and inappropriate teaching and transfer from reading comprehension (see section 2.3.5).

ii. Adequate learning

Another benefit of the CSBM training was that all the factors outlined above contributed to much more appropriate learning, allowing the participants in the control group to become more effective while listening for comprehension. Theylearned how to associate word sounds with meaning sufficiently closely, reducing access time to meaning. They also gained certain declarative knowledge in English, as an L2, which allowed them to recognise more sounds as words and so were more likely to be certain of what they learnt. All the benefits outlined above enabledthe participants in the control group to devote more focus and time to attendingto the passage rather than resortinginto translation to L2, which lowered their anxiety while listening. In this respect, the negative factors of inadequate learning are stressed by Eastman (1991) (see section 2.3.5).

iii. Context

Finally, the CSBM training allowed the control participants to deploy their semantic knowledge to aid decoding. When faced with comprehension breakdowns during listening for comprehension, for instance, the control participants would pay more attention to semantic access, meaning that they became more effective at usingthe context. In addition, the consistent application of the inference strategies applied by the control participants contributed to theireffective understanding of the context, which, in turn, enabled them to predict or anticipate conclusions, an ability that is confirmed by Eastman (1991) and Garnes and Bond (1980) (see section 2.3.5).

To sum up, the CSBM training enabled the control group participants to decrease their reliance on mental translation while listening for comprehension as they improved prediction and anticipation, processing inferences and relating new information to their prior-knowledge and to previously shared information. In addition, the CSBM training increased their working memory and enhanced their word recognition abilities.Equally important, the CSBM training allowed the control participants to become more strategic in that they reduced their access time to meaning and used their semantic knowledge while listening for comprehension. Finally, the control participants were more effective at predictingt and anticipating incoming inputs.

In what follows, I will discuss the impact of the CSBM training on the control participants' metacognitive gain with regard to person knowledge.

2. Person Knowledge

Results of the MALQ on the post-treatment show that the control participants' awareness with regard to person knowledge was raised slightly. The final multiple regression model shows that person knowledge was a nearly significant variable that predicted the control participants' listening comprehension ($\beta = -149$, $p = .020$) (see Appendix P). The difference between the scores on the pre- and post-treatment of the control participants was statistically significant ($Z = -2.924$,$p < .001$) (see Appendix M). In what follows, I will give my interpretation of the factors that enabled the control participants to gain metacognitive awareness with regard to person knowledge.

Factors that contributed to control participants' metacognitive awareness gain with respect to person knowledge

In this section, I will deal with the impact of both the explicit CSBM training and the five cognitive strategies that the control group participants practiced during the treatment, namely inferencing, note-taking, summarisation, prediction and elaboration.

a. Contribution of the explicit strategy trainingtothe control participants' metacognitive awareness gain with respect toperson knowledge

Due to the overlap between cognitive and metacognitive strategies and even though the control participants were not trained metacognitively, the explicit CSBM strategy training allowed the control participants to gain two aspects of metacognitive knowledge: task knowledge and strategic knowledge. These two types of knowledge, in addition to person knowledge, constitute the three components of metacognitive knowledge (see section 3.3.3). My explicit teaching and modelling of the cognitive strategies during the first phase of the CSBM training familiarised the control participants with these types of learning strategies. There was evidence that this instructional approach relatively developed the control participants' awareness of the strategies they used, taught them how to model strategic thinking and practice new strategies and allowed them to self-evaluate the strategies they used and to practice transferring strategies to other listening comprehension tasks. This approach isemphasised by Chamot (2004). The benefit from strategic knowledge in particular, and language learning strategies, in general, is confirmed in the literature (e.g., Nisbet & Shucksmith, 1986; Oxford, 1990) (see section 3.3.3).

Equally important,the explicit CSBM training had allowedthe control participantsto gain metacognitive knowledge regarding the purpose and demands of the task as well as the procedures that constitute the task demands.The impact of these two factors is confirmed by researchers (Brown, 1986; Flavell, 1979a, 1979b; Wenden, 1991, 1995b, 1998) (see section 3.3.3).

In what follows, an interpretation on the contribution of the five cognitive strategies that the control participants were familiarised with and practiced during the two phases of the CSBM treatment is discussed. In this regard, although research has revealed that cognitive strategies are interrelated, for the sake of this discussion I will elaborate separately on the contribution of each of the cognitive strategies outlined above to the control participants' metacognitive gain.

b. Contribution of the cognitive strategiesto the control participants' metacognitive awareness gain with respect toperson knowledge

i. Inferences

The various inference-based activities that the control participants performed during the CSBM treatment enhanced their comprehension of linguistic material. This benefit is confirmedin the literature (e.g., Bialystock, 1978; Chamot, 1989, 1990; Goh, 1998a; Nunan, 1999;Rost, 2002). Inferencingenhancedthe control participants' processing of the material in more depth in that they did more cognitive work than tasks that only required little comprehension: a cognitive process revealed by Nunan (1999). There were many instances throughout the listening comprehension process in which the control participants could not have direct access to the speaker's intended meaning in producing an utterance or series of utterances. Nevertheless, theseparticipants managed to arrive at an acceptable interpretation of utterances by relying on inferencing. In other words, inferencing enabled the participants in the control group not only to guess the meanings or usages of the unfamiliar language items associated with the language task by using the available information, but also to predict outcomes or to complete incoming information. The advantages of the inferences outlined above areconfirmedin other studies (Rost, 2002) (see sections 3.2.1 and4.2.1).

ii. Note-taking

The role played by the various activities of note-taking,such as raw notes, shopping list formats and semantic maps that the participants in the control group performed during the CSBM training increased their learning by fostering retention and connections of information. While taking notes, the control participants would be engaged in deep comprehension of the input, allowingthem to memorise more effectively. This assertion is also confirmedin the literature (e.g., Williams & Eggert, 2002) (see also section 3.2.1). Equally important is the fact that note-taking reduced the attention capacity of the control participants through the process of listening during the treatment.This assumption is supported by Harley and Davis (1978) and Scerbo et al., (1992) (see section 3.2.1). In addition, the process of reviewing notes contributed to a more systematic support of the working memory of immediate information or solutions that the control participants used to comprehend or evaluate any ultimate solution. This contribution is confirmed by the results in other studies(Piolat et al., 2005) (see section 3.2.1).

iii. Summarisation

The various summarisation activities, such as matching titles with passages, depicting a series of events in a story, or writing summaries that the participants in the control group performed throughout the CSBM training, contributed to a more effective performance from these participants not only at capturing the main ideas of the input, but also at reducing the material substantially, a conclusion supported by similar studies(King, 1992) (see chapter 3, section 3.2.1 and chapter 4, section 4.2.1). This enabledthe control participants to become more generative while listening in that they became more effective at deploying their own experience to construct novel sentences, for example. Constructing such sentences contributed to the success of these participants in making connections between the existing concepts and in relating new information to their prior knowledge. In other words, summarisation enabledthe control participants to use their own words to summarise the different inputs they listened to in order to understand them, which facilitated the automatic construction of connections between the material to be learned and the existing knowledge of each participant in the control group.

The participants in the control group benefited from the effects of summarisation outlined abovein different ways . First, summarisation enabled them to become active listeners in that they became more effectiveat organising the verbal input, retrieving stored information, and focusing attention on key concepts by using their schema, differentiating key words from supporting or important ideas and constructing logical connections between them as well as imposing a structure of organisation on dissociated facts, enabling participants to retrieve information from their mental network. The benefits of this cognitive process are evident in the literature(e.g., Pearson & Fielding, 1991; Rinehart et al., 1986; Willtrock & Alessandrini, 1990) (see section 3.2.1).

Second, summarisation assistedthecontrol participants to construct a better foundation in conceptual and factual knowledge leading to deeper comprehension and learning. There is evidence in the literature that this aspect of summarisation enhances learning (e.g., van Dijk & Kintsch, 1978) (see section 3.2.1). Third, the CSBM training allowed the control participants to promote their self-testing, a benefit confirmed by research (Brown & Day, 1983; Palinscar, 1986) (see section 3.1.2). Fourth, summarisation urged the control participants to use a cluster of other cognitive strategies necessary for the activation of prior knowledge in that they would use prediction, questioning, and verification. This is supported by Brown and Day (1983) (see section 3.1.2). Finally, the participants in the control group benefited from the transfer effects ofthe summarisation strategy training in a variety of measures one being astandardised means of listening. This is confirmedin the results of other studies (e.g., Bean and Steenwyck, 1984) (see section 3.2.1).

iv. Prediction

As mentioned above, there is evidence in the literature that there is an overlap between cognitive and metacognitive strategies. Due to this overlap, the various listening questions, such as ˈCan you guess the main ideas of the listening?’ or ˈTell your classmate the main ideas that you think the speaker is going to deal withˈ or ˈWhat do you know about the topic of the listening?ˈ activated the control participants’ prior-knowledge about the topic, which reduced their memory load and facilitated their cognitive processes while listening for comprehension. In addition, this allowedthem to direct their attention to the auditory incoming input in order to monitor it and set up further predictions. Absence of such pre-listening questionsmight have forced the participants in the control group to pay too much attention to the input and actively process every phoneme, syllable, word, phrase, or even tone of the passage, which are obstacles to comprehension (Sheerin, 1987) (see also sections 3.2.1 and 4.2.1). Equally important is the fact that any unnecessary cognitive effortmight have prevented the control participants from monitoring inputs effectively and, therefore disabled them from setting up further predictions.

v. Elaboration

Once again, due to the overlap between cognitive and metacognitive strategies, the opening pre-listening activities, such as the ones that asked the control participants to 'fill in the blank with the right type of cognitive strategy from the box' allowed these participants to make judgments about the input presented, retrieve any schema related to the topic, relate parts of the task to each other, make up story lines and completea diagram. This allowed these participants to relate new information to their prior knowledge as well as to previously shared information in memory.These are two benefits of elaboration which have been discussedin the literature (e.g., Chamot, 1989, 1990; O'Malley et al., 1989; Wenden, 1995). When the control participants elaborated on the various aural inputs during the CSBM treatment, they would identify patterns in the data, make associations and identify deeper meaning in order to classify them.

The characteristics of elaboration outlined above impacted the performance of the control participants in several ways. First, the process of constructing meaning and integrating new meaning with previous knowledge enhanced the understanding of the control participants. In addition, these participants were more effective at generating the representations that would allow them to relate the various parts of the text to their own knowledgeand experience. These benefits are confirmed by the results of other studies (e.g., Graesser et al., 2002) (for further information about elaboration, see section 3.2.1).

To conclude, the CSBM training improved the control participants' strategic knowledge, both cognitively and metacognitively. The various cognitive strategies that these participants learned and applied throughout the CSBM training contributed to the benefits outlined above in various ways. Inferencing strategies allowed the control participants to process their comprehension of the linguistic materials in a much more profound way. Second, the note-taking activities enhanced these participants' memorisation skills. Equally important, the summarisation activities enhanced the control participants' automatic contribution of connections between the materials in the inputs and their prior-knowledge. In addition, the prediction activities enabled these participants to monitor inputs effectively, and, therefore, set up further predictions and anticipations. Finally, the elaboration activities enhanced the control participants' processes of understanding and improved their skills in generating the representations necessary for relating the listening input to their prior knowledge.

However, although results provide empirical evidence for the benefits of raising the control participants' metacognitive awareness through theirCSBM training during the two phases of the treatment, the various significant differences between the scores of the experimental and control participants outlined above reveal that the CSBM training is less effective than the MetSM training in its contribution to listening comprehension.

Moreover, despite the overlap between the cognitive and metacognitive strategies, CSBM did not allow the control participants to get as high scores in the post-treatment LCT as those of their counterpart participants in the experimental group on the same test. Thus, there is evidence that absence of metacognitive strategies deployed in parallel to cognitive strategies prevented control participants from monitoring or controlling their use of the five cognitive strategies they deployed during listening for comprehension.

6.2.4 Discussion of Research Question 3

Are there other variables that are likely to contribute to listening comprehension?

The answer to the third question is in the affirmative. As chapter 5 confirms, results in the final multiple regression model of the experimental group reveal that AWR, OWR, and WM were the co-variables that had an influential impact on the experimental group. As for the control group, AWR and WM had a major impact on their performance in the post-treatment LCT. With regard to vocabulary size (VLTs K1 and K2), although this variable is not among the ones that remained in the final multiple regression model, results of the post-treatment VKK1 and VKK2show that this variable partially contributed to the improved performance of both groups in the post-treatment LCT.

In what follows, I will discuss the impact of these variables on the performance of both groups in the post-treatment LCT. More specifically, I will investigate word recognition, working memory and vocabulary knowledge, respectively.

1. Impact of word recognition on theperformance of both groups

In considering the AWR and OWR test, which were used to test the dimensions of word recognition (phonological or aural) (AWR) and orthographic (OWR), respectively, results in the final multiple regression model of each group show that AWR has the most influential impact on the experimental and control participants'performance in the post-treatment LCT as it has the first highest Standard Beta for both the experimental (.760) and control (.668) groups (see Appendices O and P). Despite the fact that the impact of OWR is not shown in the control groups'final multiple regression model, it has the third most influential impact on the experimental participants'performance in the post-treatment LCT as it had the third highest Standard Beta (.332) (see Appendix O). Equally important, the difference between the scores of each group in the pre- and post-treatment aural word recognition test is statistically significant: experimental group($Z = -4.158$, $p < .001$) and control group ($Z = -3.572$, $p < .001$) (see Appendices L andM). Similarly, the difference between the scores of the experimental group on the pre- and post-treatment orthographic word recognition test is statistically significant ($Z = -4.075$, $p <.001$) and the difference between the mean scores of the control group on the pre- and post-treatment orthographic word recognition test is statistically significant ($Z = -4.058$, $p <.001$) (see Appendices L and M). These results imply that the participants in both groups improvedin word recognition.

As for the reasons behind the improved performance in word recognition of both groups, there is evidence in the above results that the pedagogical cycle through which the experimental participants passed during the treatment contributed to their improvement in word recognition. The transcript-based activities that these students would complete at the end of the lesson acted as a reinforcement for word recognition during listening. These activities allowed them to improve at deconstructing the sections of the recording that they would find difficult to match to words. In other words, these students became more automatic at matching the oral word with its actual orthographic form in English, a task that is not easy for ESL and EFL Arab learners to do due to many factors. As outlined above, the major factor in this regard is that these learners would find it very difficult to recognise the written form of many familiar English words when they heard them due to the arbitrary relationship between the way these words are pronounced and the way they are spelled in English. These learners never face this problem while listening to their L1 (Arabic) as there is a regular relationship between the spelling of an Arabic word and the way it is pronounced (for further information regarding this issue, see section 2.5).

The improved performance of both groups on the A_Lex and X_Lex tests showsthat the potential of word recognition enabled theseparticipants to perform more effectively on the post-treatment LCT. This is consistent with the potential contribution of word recognition to the comprehension of spoken L2,Jia (2010) and Rost (2002),both consider word recognition in fluent speech central to the decoding process, or the parsing stage (Anderson, 1995) (see chapter 2, Section 2.3.2). The increase in OWR in the experimental X_Lex post-test shows that orthographic word recognition impacted these participants' listening comprehension. This is in accordance with the results of many similar studies (e.g., Seinberg & Tanenhaus, 1979; Ziegler & Ferrand 1998), confirming orthographic influence in auditory word recognition (see section 2.3.1). This implies that the improved performance of the participants in both groups on word recognition positively impacted the three processing stages that constitute Anderson's (1995) model of listening comprehension, namely perception, parsing, and utilisation (see section 2.3.2).

With regard to aural word recognition, being the highest predictor of listening comprehension ofthe experimental participants, it positively impacted these participants' scores in the post-treatment LCT. This enhanced their ability to recover the speakers' intentions. There is evidence in the literature that this ability impacts L2 listening comprehension (see section 2.3.1).

The findings regarding the contribution of word recognition to the improved performance of the experimental and control participants on the post-treatment LCToutlined above are also congruent with the results shown by other studies (Al-Jasser, 2008; Boersma &Cutler, 2008; Field, 2008b, 2008c)(see section 2.3.4).Field (2008b)discovered that good decoding skills distinguished skilled listeners from unskilled ones in that the former were much better at answering listening comprehension questions.

In another study, Field (2008b) shows that good word recognition skills allowed the native language participants to recognise not only content words, but also function words, an ability that also distinguished skilled listeners from unskilled ones. In a third study carried out by Field (2008c), the findings showed that good word recognition skills allowed the English native speakers (NLs) to outperform their non-English native speaker (NNLs) counterparts in reacting to incorrect segmentation during listening comprehension (see section 2.3.4).

Finally, the contribution of orthographic word recognition in the present study confirms the orthographic influence on spoken language processing in previous studies (e.g., Ziegler & Ferrand, 1998) (seesection 2.3.1).

To sum up, the MetSBM training enhanced the experimental participants' abilities in word recognition both in terms of AWR and OWR. The CSBM training, on the other hand, enabled the control group to improveonly on AWR.The increase outlined above enhanced the parsing and utilisation processes of participants in both groups.
In the following section, an interpretation will be provided on the impact of WM on the performance of both groups in the post-treatment LCT.

2. Impact of WM on the performance of both groups

In considering the WMS test, which was used to assess both the processing and storage functions of the WM span of both groups during listening comprehension, results in the post-treatment test suggest that both groups performed better than in the pre-treatment test, indicating that learning and training increase WM span in L2. As chapter 5 shows, results in the final multiple regression model of each group show that WM impacted both the experimental and control groups. For the experimental group, WM hasthe sixth highest Standard Beta (.218). For the control group, WM is the second highest predictor of listening comprehension ($\beta = .375$, $p <.001$). Equally important, the difference between the scores of the pre- and post-treatmentLCTs of each group is statistically significant: experimental group ($Z = 4.109$, $p < .001$) and control group ($Z = -4.136$, $p < .001$) (see Appendices L and M).

The role played by the WM span in listening comprehension has been identified by other studies (e.g., Cook, 2001; Engle, 2010; Levin et al., 2004; Moran & Gillon, 2004, Moran et al., 2006, Zenke et al., 2014) (see section 2.4.2). Zenke and colleagues (2014), for instance, assert that "WM appears to play a crucial role both in supporting learning and in maintaining focused behaviour" (p. 7) in practical situations. For this reason, WM is considered a central metacognitive processing resource that is involved in most every day mental activities (Zenke et al., 2014). In this regard, the visuospatial sketchpad is thought to coordinate the other two subsystems, namely the phonological loop and episodic buffer, by distributing and switching attention (Baddeley, 1996) (see section 2.4.2). WM has been shown to support a wide range of complex cognitive functions including logical reasoning and problem-solving and to be strongly related to measures of *fluid intelligence* (Zenke et al., 2014).

In addition, the role played by WM in listening comprehension outlined above is supported by the results ofa number of other studies (e.g., Sakuma, 2004; Shanshan & Tongshun, 2007). Sakuma (2004), for instance, investigated the relationship between WM capacity and language comprehension on the one hand, and the relationship between thecharacteristics of recall errors for target errors, on the other. The findings showed that the scores on the Listening Span Test tended to be higher on each comprehension section and also on the characteristics of recall errors for target words (see section 2.4.4). Shanshan and Tongshun (2007) also investigated the impact of WM on listening comprehension. Their findings showed that the participants with higher capacity and processing performed better on the LC T than theircounterpart peers with lower capacity and processing, showing that L2 WM is a better predictor of listening comprehension than L1 WM (see section 2.4.4).

In what follows, I will speculate on some possible reasons behind the increase of WM span in the present study.

The first reason is related to the impact of the first phase of the treatment in addition to the CSBM training, both of which enhanced the WM processing and storing fromparticipants in both groups. The application of the various cognitive strategies (predictions and checking predictions, inferences, elaborations, note-taking and summarisation) enabledthe participants in both groups to become more strategic while listening to the different aural inputs which impacted processing and/or storage functions of the WM during listening. This finding provides evidence for the support of the *strategic allocation hypothesis* (Engle et al., 1992). This hypothesis states that high spans perform well on measures of WM tasks as they allocate their WM resources more efficiently. Learners who perform well on measures of WM are commonly considered to be high spans, whereas those who perform poorly on these measures are commonly referred to as low spans.

Moreover, although many researchers (e.g., Engle et al., 1992) failed to provide support for the *strategic allocation hypothesis*, some studies have suggested that high spans and low spans differ in how they perform cognitively demanding tasks, implying that strategytraining impacts the performance of WM. For example, Rosen and Engle (1997) found that high and low spans differed in how information stored in long-term memory was recalled as measured by a verbal fluency task. They concluded that high spans were more likely than low spans to have used a clustering strategy and suppressed previously recalled *exemplars* during retrieval from long-term memory (for further details about this study, see Rosen & Engle, 1997). In another study, Rosen and Engle (1998) found differences between high and low spans during list learning. High spans produced fewer first-list intrusions during second-list learning than low spans.

To conclude, both the MetSBM and CSBM training positively impacted the WM (processing and/or storage) functions of the participants in both groups in that they became more strategic while listening for comprehension.

In what follows, I will elaborate on the impact of vocabulary size on the performance of both groups in the post-treatment LCT.

c. Impact of vocabulary knowledge (K1) and (K2) on the performance of both groups

In considering the VKK1 and VKK2 tests, results in the post-treatment tests show that both groups performed better than they did in the pre-treatment tests and that they increased their vocabulary size during the course. The difference between the scores of the experimental participants on the pre- and post-treatment VKK2 is statistically significant ($Z = -4.148$, $p < .001$) (see Appendix L). Moreover, the difference between the mean scores of the same participants on the pre- and post-treatment VKK1 test is near significant ($Z = -2.271$, $p = .23$) (see Appendix L). Equally important, the difference between the scores of the control participants on the pre- and post-treatment VKK1test is significant ($Z = -3.530$, $p <.001$), whereas the difference between thescores of the same group on the pre- and post-treatment VKK2 test is not significant ($z = -1000$, $p = .317$)(see Appendix M). The results outlined above are consistent with the emphasis of research on the importance of vocabulary knowledge to listening (see section 2.2.2). These results appear in line with the results of other studies (Adolphs &Schmitt, 2003; Bonk, 2000; Lund, 1991; Nation, 2006; Staehr, 2009)that emphasise the importance of vocabulary on listening comprehension (see section 2.2.2).

Despite the significant increases in both groups' vocabulary knowledge outlined above, neither K1 nor K2 was a predictor of listening comprehension. These results are not in line with the evidence that K1 and K2 are high predictors of L2 listening comprehension (Matthews & Chen's, 2015), suggesting the need for further research.

To sum up, in addition to the impact of both training events on the two groups, a number of co-variables predicted the performance of both groups on the post-treatment LCT. Aural word recognition (AWR), orthographic word recognition (OWR), and working memory (WM) predicted the performance of the experimental group. Equally important, aural word recognition (AWR) and working memory (WM) were the co-variables that predicted the performance of the participants in the control group on the post-treatment LCT.

6.2.5 Conclusion

In this chapter, I discussed in detail the results obtained from the statistical analysis of the various tests and the questionnaire (MALQ) in the study. In this discussion, I addressed my hypothesis as well as the three research questions.

For research question 1, it was found thatusing the MetSBM for teaching listening comprehension leads to higher scores than the CSBM. I discussed different explanations accounting for the supremacy of the MetSBM. For example, I attributed the success of the MetSBM to the activities that these participants performed during monitoring and problem-solving. I also attributed the success of MetSBM to the experimental participants’ personal knowledge, directed attention and decrease in reliance on mental translation. The contribution to the success of MetSBM was also attributed to the experimental participants’ increase in the WM span, vocabulary level (VKK2), and word recognition ability.

Regarding research question 2, I found that despitethe fact that the control participants had undergone CSBM training and due to the overlap between cognitive and metacognitive strategiesthey managed to gain some aspects of metacognitive awareness, namely a decrease in their reliance on translating into Arabic while listening for comprehension in English. However, the CSBM training did not allow these participants to gain as much metacognitive awareness as their experimental group peers. Absence of explicit MetSBM training similar to experimental participants’ prevented the control participants from monitoring or controlling the five strategies they were familiarised with and applied to their listening comprehension.

For research question 3, it was found that word recognition (aural and orthographic), WM and vocabulary size are other predictor variables for listening comprehension.

In the following chapter, I will deal with the summary and implications.

CHAPTER 7 SUMMARY AND PEDAGOGICAL IMPLICATIONS

7.1 Summary

This study sought to compare the effectiveness of two approaches to teaching listening comprehension to Arab EFL learners: a metacognitive-based approach based on insights from metacognition and the traditional approach based on the familiar cognitive strategies: prediction, summarisation, inferencing, note-taking and elaboration. Furthermore, the study considered the relationship between vocabulary knowledge, word recognition (aural and written) and WM as co-variables and predictors of listening comprehension.

The findings from the statistical analysis confirmed the primacy of techniques inspired by metacognition over those based on familiar cognitive strategies in learning how to listen for comprehension. Specifically, four metacognitive strategies were found to contribute to listening comprehension: planning/evaluation, problem-solving, directed-attention and a decrease in relying on mental translation. In addition, it was shown that three co-variables come into play when dealing with learning how to listen for comprehension: aural word recognition, orthographic word recognition, and WM.

Such findings give pedagogical support to the tenets of metacognition (Flavell, 1976; Wenden, 1987a, 1991, 1995a, 1995b, 1998) which were also confirmed by the advocates of the contribution of metacognitive strategies to listening comprehension (Goh, 1997, 1998b, 2000, 2002b, 2005, 2008, 2010;Vandergrift, 1990b, 1996; 1997a, 1997b, 1999, 2002b, 2003a, 2003b, 2004, 2005, 2008). Additionally, the results of my study confirm the findings of other studies using teaching methods based on the insights from metacognition (Vandergrift and Tafaghodtari, 2010).

7.2 Implications

The findings of my study have a number of implications that can be used to inform teachers and developers of teaching materials.

Pedagogical implications for teachers

As outlined above, the MetSBMtraining led to three predictors of listening comprehension, while the CSBM led to only two predictors. Equally important, the types of predictors resulting from the MetSBM training were different from those resulting from the CSBM training. The former refer to planning/evaluation, problem-solving and directed attention, whereas the latter refer to person knowledge and decrease in mental translation. Given these facts, EFL listening comprehension teachers are required to teach the main stream cognitive strategies in parallel to the neglected metacognitive strategies. This would not only allow learners to control or monitor the various cognitive strategies they used while listening, but also raise their awareness with regard to the five metacognitive strategies outlined above.

Equally important, the MetSBM training is more elaborate than the CSBM trainingin that, the MetSBM training includes activities that are absent in the CSBM training. These activities include graphic organiser-based activities prior to listening, pair and group discussion during listening, and reflection as post-listening activities. Given the positive impact of the teaching sequence recommended by researchers (e.g., Goh, 2008; Gog, 2014; Vandergrift, 2003; Vandergrift & Goh, 2012), ESL/EFL listening comprehension teachers need to avoid thinking that giving learners enough opportunity to practice completing listening exercises is an adequate approach for the development of listening. Instead, as Anderson (2008) states "if we want to develop metacognitively aware learners, we must have metacognitively aware teachers" (p. 104). Understanding and controlling processes is a fundamental skill that classroom ESL/EFL teachers need to develop in themselves. Consequently, teachers need to be familiar with the significance of strategy training in general and metacognitive strategy in particular. This confirms Gillis and Khan's (2009) finding which demonstrates that when teachers are taught to use different questioning strategies (cooperative and questioning condition) designed to challenge children's cognitive and metacognitive thinking, for instance, they are able to use more mediating behaviours to challenge and scaffold children's learning than teachers who have not been taught these skills. This could be enhanced by teacher trainers who are familiar with the benefits of metacognition in teaching ESL/EFL listening comprehension as suggested by Dhousti and Abulfathiast (2013).

With regard to the actual techniques of teaching listening comprehension, teachers can employ two types of metacognitive activities in order to help them to engage with the process of listening: integrated experiential listening tasks and guided reflections on listening (Goh, 2008, 2010; Vandergrift and Goh, 2012). Integrated experiential listening tasks allow listeners to experience cognitive and social affective processes of listening comprehension. In other words, although research in listening comprehension has shown that we cannot manipulate learners' mental processes while they are listening, integrated experiential activities develop and strengthen listeners' ability to control these processes. This can be done by helping listeners to focus their conscious attention on to what these processes are and reveal to them how they can manage and regulate the processes consciously in order to meet their comprehension goals (Goh, 2010).

Integrated experiential listening tasks include metacognitive listening sequences, self-directed listening, listening buddies, peer-designed listening diagrams, and post-listening perception activities (Goh, 2008b, 2010; Vandergrift & Goh, 2012). Each of these tasks assists EFL listeners inbringingtheir mental processes to their conscious attention and show them how to manage and regulate the processes more effectively in order to meet comprehension goals. The metacognitive listening sequence guides listeners at specific stages to orchestrate their metacognitive processes underlying successful listening (Goh, 2010).

Self-directed listening enables EFL learners to use listening strategies when they are practicing listening on their own. By responding to a set of prompts before and after a listening task, EFL learners are guided in preparing themselves for the listening task, evaluating their performance, and planning their strategy use for future listening (Goh, 2010; Vandergrift and Goh, 2012). Listening buddies allow EFL learners to work in pairs in order to plan their own listening practice (Goh, 2010).

Peer-designed listening programmes allow EFL learners to temporarily take on the role of a teacher. Such activitiesare based on the idea of involving EFL learners in group listening projects in order to help them develop greater metacognitive knowledge about foreign language listening (Goh, 2010). Additionally, the presentation of the projects can provide EFL teachers with valuable insights into what their learners understand about listening comprehension and show that listening is not merely receiving information and completing exercises.

Finally, post-listening perception activities allow EFL learners to notice the sounds in connected speech when they are not under pressure to process what they hear and shoulder a heavy cognitive load. In noticing sounds and phonological rules, EFL learners increase their task knowledge, due to the nature of spoken input and the demands of listening to the L2. This knowledge is particularly important for beginner EFL learners as the perception phase of their comprehension has not been automatised, and may still depend largely on their bottom-up processing as a way of understanding the message (Goh, 2010).

Guided reflections on listening, on the other hand, involve activitiessuch as those based on listening diaries, anxiety and motivation charts, process-based discussions, and self-report checklists. Listening diaries allow learners to attend to what they implicitly know about their own listening activities, behaviours, problems, and strengths (Goh, 1997, 2010). Anxiety and motivation charts help learners to reflect on specific aspects of their person knowledge, such as motivation and anxiety (Goh, 2010; Vandergrift &Goh, 2012). Process-based discussions allow learners to share the beliefs or strategies that they mention in their diaries or other post-listening activities (Goh, 2010). They also help learners to generate task and strategy knowledge relevant to any particular listening activity (Goh, 2010). Process-based discussion, therefore, can be a useful tool for raising learners' metacognitive awareness (Goh, 1997). Finally, self-reported checklists play an important complementary role in guiding reflections. They guide learners, especially those whose metacognitive knowledge is limited, in their reflections by directing their thinking to specific areas of listening (Goh, 2010).

In my opinion, the issue of lexical segmentation needs to be given more attention than it currently attracts in the listening classroom. Instruction should raise awareness of cases where the perceptual evidence might match more than one segmentation candidate. One way of doing so is by means of simple transcription tasks (Field, 2008a).

In addition, it is worthwhile designing exercises to make learners sensitive to segmentation cues that are specific to the target language as languages appear to vary in the strategies that determine which segmentation is preferred (Field, 2008a).

Perception and word segmentation skills need to be developed as part of a regular listening lesson within a metacognitive approach;that is, any perception activityis best carried out at the post-listening stage andafter having completed a listening task. Perception and word segmentation activities can help L2 listeners to make sound connections and become more aware of the various phonological modifications which improvethe listeners' bottom-up processing ability. Moreover, these activities are particularly helpful in enabling learners to become aware of the variations and irregularities of spoken language (Vandergrift & Goh, 2012).

Finally, a process-approach to listening instruction can enable beginner-level learners to improve both their perception and segmentation skills. Teaching listeners how to apply top-down processing strategies, for instance, may help them recognise particular words (Vandergrift, 2004). However, as listeners are not always able to recognize even the words that they do know (Vandergrift, 2004), teachers need to provide them with the reasons and judgments necessary to makeeffective decisions in perception skills that allow them to overcome the word segmentation skills of their native language. Such teaching helps EFL listeners to learn to identify words in connected speech (Goh, 2000; Rost, 2002; Vandergrift, 2004). Thus, teachers need to develop their learners' bottom-up skills so that all the components of the acoustic signal become meaningful units for listeners (Vandergrift, 2004). Such skills need to include prosodic features like stress and intonation in order to influence how listeners chunk and interpret connected speech (Vandergrift, 2004; Lynch, 1998).

Pedagogical implications for material developers

Given their importance, the results of this study might be of great help to EFL learners in the UAE as well as EFL learners in comparable contexts. One way to apply these results is to include the method used in teaching listening comprehension to the experimental participants in English language materials designed for EFL learners. In this regard, developers of pedagogical materials are required to design principled metacognitive listening instructional materials that serve the purpose of metacognitive instruction which is to provide various kinds of scaffolding so that EFL learners can experience the processes of listening and become aware of the factors that impact overall comprehension and listening development. It is important for material developers to apply a sound metacognitive framework for listening comprehension to ensure that the activities and materials are designed systematically and in a principled manner.

In order to ensure that the listening comprehension instructional materials are carefully planned and designed, material developers need to ensure that all important aspects of learning are covered in a principled manner. To do this, they are invited to consider the following broad cognitive framework of learning:

1. Learning is an active, strategic, and constructive process;
2. It follows developmental trajectories in sub-matter domains;
3. It is guided by the learners' introspective awareness and control of their mental processes; and

4. It is facilitated by social and collaborative settings that value self-directed student dialogue. (Vandergrift & Goh, 2012, p. 181)

Implications for researchers

In order for researchers in the field of metacognition applicable to L2 listening comprehension to assess any aspect of cognitive and metacognitive knowledge and strategies on general terms, they should use standard definitions. As mentioned above, however, researchers in this respect have used multiple definitions and this is problematic. How researchers define processes may influence the measures they deploy to assess them and their interpretionof their research results (Schunk, 2008). In other words, when researchers use different definitions and measures, they usually get inconsistent results.

Second, researchers'assessments should clearly reflect processes. In other words, researchers need to ensure that their assessment of the metacognitive strategies (planning/evaluation, problem-solving, controlled mental translation, person knowledge and directed attention) clearly reflect the process as they have defined them. As Schunk recommends, it should be made clear "how the assessments are operational translations of the processes" (p. 466). In other words, researchers need to clearly explain how the indications of the variables they are attempting to study are reliable and valid measures.

Third, researchers need to identify relevant theories. As Schunk (2008) notes "the lack of research studies creates confusion in terminology and makes researchers to use terms interchangeably. As outlined above, the fact that the framework of metacognition adopted for the present study is based on L2 reading instruction, for example, required further elaboration on similarities between L2 reading and L2 listening instruction (see section 3.3.1). If the research provided a framework of metacognition based on L2 listening instruction, such elaboration would not be required.

7.3 Limitations and Directions for Future Research

I have tried to take into accountthe pitfalls of previous related studies, but I encountered a numberof limitations during the course of my study.

First and foremost, the long-term effect of the strategy training delivered in the instructional treatment was not one of the variables the study was meant to examine. At this level, some teachers and researchers may judge this study as missing a particularly valuable tool. Initially, I thought of administering the delayed test, but due to the fact that the participants exited the IEP where I teach at the end of the semester, it was necessary to complete the treatment and the tests within one semester only. For future research, it might be worthwhile administering a delayed test after a period of six months (or even more) to measure the outcome of the strategy training on listening comprehension abilities over time.That would give further elaboration to the long-term impact of strategy training and metacognitive strategy training, in particular,on EFL/ESL listening comprehension.

Secondly, unlike Vandergrift and Tafaghodtari's (2010) participants, who completed the MALQ at the beginning, the middle and the end of the study, the participants in the present study completed the MALQ only twice: before and after the treatment. Moreover, each time the participants in Vandergrift and Tafaghodtari's study (2010) completed the MALQ, some of them were selected for participation in a stimulated-recall session on their responses to the MALQ items, which allowed the two researchersto triangulate their MALQ data, giving their results more validity and reliability. Participants in the present study, however, did not participate in any stimulated-recall session, which might have impacted the validity and reliability of the MALQ results. For further research, it might be worth asking participants to complete the MALQ before, while and after the strategy training and, in addition, to participate in stimulated-recall sessions each time they complete the MALQ.

Thirdly, it should also be noted that because of the low number of items in certain factors of the MALQ, it might not be possible to generalise the findings to other settings although the results were mainly statistically significant in the present study. Future researchers might be interested in examining the effects of metacognitive awareness as measured by the MALQ and actual strategy use through the use of stimulated recall or think aloud protocols. Triangulation of this nature can "help establish validity and reliability" (Chamot, 2004, p. 22), and will provide a more elaborate analysis of the impact of the training on the actual listening behaviour of the learners.

Fourthly, the MALQ is useful for helping researchers obtain the kind of information they are looking for, being a close-ended questionnaire led to two major limitationsin the present study. First, it did not require the participants to verbalise all aspects of their metacognitive knowledge. Instead, it required them to reflect only on the 19 validated statements. Second, because the MALQ, as a questionnaire, is typically used to quantify responses and examine tendencies in research studies, it did not address individual variation in the present study. This limited the scope and impacted the validity and reliability of the results of the present study.

Another aspect that remains to be explored further is why the MetSBM and CSBM training led to different predictors of listening comprehension and directed attention for the former, and person knowledge and decrease in mental translation, for the latter. This would provide more insight into understanding the role of cognitive and metacogntive strategies in listening comprehension as well as how the two types of strategy complete one another. This would require researchers in cognitive and metacogntive strategies in particular to produce validated advanced instruments to gauge the impact of the above aspects more accurately.

With regard to the predictors of listening comprehension in the present study, namely working memory, word recognition and vocabulary language, further research is needed to provide more insight into understanding their impact on listening comprehension. Further research on the impact of working memory on L2 listening comprehension could explore why both MetSBM and CSBM made working memory a predictor of listening comprehension despite the fact that there are differences in the instruction sequences. In this regard, further research would provide more insight into understanding why there was a signtificant increase in working memory capacity and processing in bothe groups.

Finally, the fact that vocabulary knowledge (VKK1 andVK K2) is not a predictor of listening comprehension in the present study suggests the need for further research. Equally important, the fact that orthographic word recognition is a predictor of listening comprehension in the present study suggests the need for further research to investigate the direction of this co-variable. In other words, further research is needed to investigate whether the impact of orthographic word recognition in the present study is in accordance with the interactive model or the partially interactive account, both of which are outlined in 2.3.1.

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APPENDIX A

Language Learning Strategies and their Definitions with Representative Examples from Listening Comprehension Activities

Cognitive Strategies

1. Inferencing: Using information within the text or conversational context to guess the meanings of unfamiliar language items associated with a listening task, to predict content and outcomes, or to fill in missing information.		
Strategy	**Definition**	**Representative Examples (Listening Comprehension)**
Linguistic inferencing	Using unknown words in an utterance to guess the meaning of an unknown word	• *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 word used in banking…I think there is some relationship, I guess.* • *I use the sound of words to relate to other words I know.*
Voice and paralinguistic inferencing	Using tone of voice and/or para-linguistics to guess the meaning of unknown words in an utterance	• *I listen to the way the words are Said.* • *I guess, using tone of voiceas a clue.*
Kenistic inferencing	Using facial expressions, body language, and hand movements to guess the meaning of unknown words used by a speaker	• *I try to read her body language* • *I read her face.* • *I use the teacher's hand gestures.*
Extra-linguistic inferencing	Using background sounds and relationships between speakers in an oral text, material in the	• *I guess the basis of the kind of information the question asks for.* • *I comprehend what the teachers*

	response sheet, or concrete situational referents to guess the meaning of unknown words	*chooses to write on the board to clarify what she is saying.*
Between parts inferencing	Using information from different parts of the text to guess at meaning	• *because in the beginning she said "race," so maybe it was a house race…* • *You pick out things you do know in the whole situation piece it together so that you know what it does mean.*
2. 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		
Personal elaboration	Referring to prior experience personally	• *I think there is some big picnic or family gathering, sounds 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?"*
World elaboration	Using knowledge gained from experience in the world	• *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 with the beaches there's too much ultra-violet light.*

Academic elaboration	Using knowledge gained in academic situations	• *[I know that] from doing telephone conversations in class.* • *I relied the word to a topic we've 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	• *Something about 61, restaurants, 61. Maybe it's the address.* • *Um, he said he started, probably fixing up his apartment. Probably just move in, um, because they're fixing it up.*
Creative elaboration	Using mental or actual pictures to represent information	• *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 like something for them to enter a date, to write, or draw…*
Visual elaboration (imagery)	Using mental or actual pictures or visuals to represent information	• *I make pictures in my mind for words I know, then I feel 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.*

3. Prediction: Anticipating the contents and the message of what one is going to hear		
Global prediction	Anticipating details for specific parts of a text	• *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	• *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.*
4. 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	• *I don 't know the words' exact meaning, but I remember the road – "hump"* • *Theoretically? Is 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	• *And the last sentence, "It can store food" and that's something at the back of the camel, so I can relate it to former sentence and the whole sentence I didn't know.*
5. Reorganizing: Transferring what one has processed into forms that help understanding, storage, and retrieval		
Repetition	Repeating a chunk of language	• *I sound out the words.*

	(a word or phrase) in the course of performing a listening task	• *I say the word to myself.*
Summarization	Making a mental or written summary of language and information presented in a listening task	• *I remember the key points and run them through my head, "What happened here and what happened here?" and get every-thing organized in order to answer the questions.*
Grouping	Recalling information based on grouping according to common attributes	• *I try to relate the words that sound the same.* • *I break up words for parts I might recognize.*
Note-taking	Writing down key words and concepts in abbreviated verbal, graphics, or numerical form to assist performance of a listening task	• *I write down the word.* • *When I write it down, it comes to my mind what it means.*
6. 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		
Translation	Rendering ideas from one language to L1 in a relatively verbatim manner	• *I…this word came to my brain, that is "show duan, fang fa, shouduan." 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.*
Transfer	Using knowledge of one language (e.g., cognates) to facilitate listening in another	• *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.
Deduction/induction	Consciously applying learned or self-developed rules to understand the target language	• *I use knowledge of the kinds of words such as speech.* • *I think it is an adverb or a verb …I this word was not very important.*
Resourcing	Using available reference sources of information about the target language, including dictionaries, textbooks, prior work	• *I think usually I just listen on, and I'll go consult the dictionary later, but I will not stop at this point.*

Metacognitive Strategies

1. Planning: Developing 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 a task		
Advance organization	Clarifying the objectives of an anticipated listening task and/or proposing strategies for handling it	• *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.*
Self-management	Understanding the conditions that help one successfully accomplish listening tasks, and arranging for the presence of those conditions	• *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.*
Directed attention	Attending in **general**to the listening task and ignoring distraction; maintaining attention while listening	• *I listen really hard.* • *I pick out the words that are familiar so that…* • *I tried to concentrate on carrying out my plan.*
Selective attention	Attending to **specific aspects**of language input or situational details that assist in understanding and/or task completion	• *I listen for the key words.* • *I pay special attention to adjectives.* • *Because I hear "also," then I concentrate on the word after "also."*
2. Monitoring: Checking, verifying, or correcting one's comprehension or performance in the course of a task		
Comprehension monitoring	Checking, verifying, or correcting understanding at the local level	• *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.*
Double-check monitoring	Checking, verifying, or correcting understanding across the task during the second time through the oral text	• *If I could listen to 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.
Auditory monitoring	Learners make decisions as to whether something sounds "right" or not	• *I use my knowledge of Portuguese, primarily sound (in combination with* ***transfer****).* • *I use the sound of words to relate to other words I know.*
3. Evaluation: Checking the outcomes of listening comprehension or a listening plan or against an internal or an external measure of completeness, reasonableness, and accuracy		
Performance evaluation	Judging one's overall execution of the task	• *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.*
Strategy evaluation	Judging one's strategy use	• *I don't concentrate too much to the point of translation of individual words because then you just have lot of words and not how hey're strung together into some kind of meaning.*

Problem-identification	Identifying what needs resolution or what part of the task still needs to be completed	• *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 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.*
Problem-solving (substitution)	Selecting alternative approaches, revised plans, or different words or phrases to accomplish a listening task	• *That way of listening didn't help me. I'm now watching many video re-cordings instead.* • *I should stop translating so much…maybe guess more.* • *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.*

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APPENDIX B

Treatment (Phase 1) Cognitive Strategies

MAKING PREDICTIONS

WHAT is prediction?

Thinking of the words, phrases, and information that you might hear

EXAMPLE: You want to buy a coffee. Think about what you need to say, and predictwhatthe cashier will say to you.

WHY: Predicting what you might hear makes it easier to understand what you hear.

WHEN: Use **prediction** when you have knowledge of the topic.
When you get new information (during listening) you can change your predictions or makenew ones.

ACTIVATING BACKGROUND KNOWLEDGE

WHAT is activating prior-knowledge?

Bringing information that you already know about a topic into your mind before you.

EXAMPLE: Your teacher tells you that you will listen to a radio program about fastfood.Think about everything you know about fast food: where you buy it, howmuch it costs, howit tastes, how healthy it is, how popular it is, and the like.

WHY: Thinking about what you already know helps you get ready to listen. Having this Informationin your mind makes it easier to understand the new information while you listen.

WHEN: Activate background knowledge when you know what the topic is, and you already know something about the topic.

CHECKING PREDICTIONS

WHAT is checking predictions?

Deciding whether your predictions were true or not. Did you hear things you expected to hear?What was different?

EXAMPLE: You predicted that you would hear the words “snow,” and “cold,”

WHY: Thinking back about the predictions you made and connecting them to what you listened to make it easier to **activate background knowledge**. It also helpsyou understand what you listened more effectively.

WHEN: **Check predictions** after every listening activity, and while you are listening, as new information comes to you.

INFERENCING (inside a sentence)

WHAT is inferencing?

Inferencing is using the words you DO know toGUESS the meaning of the word or words that you could not hear/do not know.

EXAMPLE:You hear the words “the man” and “cake,” so you GUESS that theman Y probably ATE the cake. You do not know, because you could not hear the verb,but you makeguess and continue listening to see if this guess is correct.

WHY Inferencing?

You make guesses during listening for the same reasons that you make predictions before listening. Unless you know all the words in the English language, you will need to make guesses to fill the gaps and be successful listener.

WHEN should Inferencing be used?

You use inferencing each time you do not understand 100% of what you hear.

BETWEEN-PARTS INFERENCING

WHAT is Between-Parts Inferencing?

This is similar to INFERENCING, but you make GUESSES about how different bits of information connect to each other, to try and understand the entire listening.

EXAMPLE: At the beginning of the listening, you understand that the people are discussing the environment, then you miss a part, but then you catch information about the oil spill in the Gulf of Mexico, so you GUESS that the part you missed was about *current*environmental *problems in oceans*.

WHY Problem Identification?

Guessing is a very important component of successful listening. It helps you make connections,keeps your mind active, and also helps you understand more.

WHEN Using Between-Parts Inferencing?

You use Between-Parts Inferencing when you do not understand 100% what you hear.

ELABORATION

WHAT is Elaboration?

Elaboration is using information you already know (your background knowledge)

WHEN should Elaboration be used?

DURING listening to fill in the gaps you did not hear from what you CAN understand.

EXAMPLE: You hear the words “backpack” and “fly over a wall.” You use **comprehension monitoring**, so you know that you missed something**.**You can use what youalready know (**elaboration**) about backpacks and flying to helpyou **infer**(guess) that this is an unusual (not common) backpack.

WHY should Elaboration be used?

You use what you already know to help you fill the gaps in your understanding.

When you use it together with **inference** (guessing) you can understand the main idea more effectively..

WHEN should Elaboration be used?You use Elaboration each time you do not understand 100% of what you are listening to.

* There are many types of **Elaboration**. You can use:

► Personal elaboration (life experiences)

► World elaboration (things you know about the world)

► Academic elaboration (learning experiences)

► Questioning elaboration (asking oneself about what one knows and what one does not know)

► Creative elaboration (adapting what one hears to make the story more interesting)

► Imagery (creating a picture of what is happening)

SUMMARIZATION

WHAT is Summarization?

Summarization is creating a mental, oral, or written summary of what you have heard.

EXAMPLE:You are watching a movie in English. Occasionally, as you watch and listen, you tell yourself what is happening. Check if you understand the main ideas and try to connect the things that you understand into a logical story.

WHY Summarize?

Summarizing, or re-telling the story to yourself, helps you to know whether or not you understand whatyou are hearing or not, and also helps you to understand the main idea and to connect details to the main idea.

WHEN should Summarizing be used?

You use Summarizing each time you want to check your understanding. You can summarizing during long listening experiences (such as movies) or just after shorter listening events (in tests or in class).

NOTE-TAKING

WHAT is Note-Taking?

Note-taking is writing down certain ideas and keywords.

EXAMPLE:You are watching a video on changes in the American family. Watch the first part of the video and take notes on the main ideas (*Listening Activity*)

WHY?

Note-Taking assists listeners understand the organization of the speech and recognizethe main ideas and details.

HOW?

Implemented by completing graphic organizers and forms and focusing on linkers

WHEN should one take notes?

This strategy is useful any time you need to answer questions about the gist, main ideas, and details.

APPENDIX C

CSBM Treatment (Phase 2)

Lesson # 1 Handout

Listening 1: Extreme Fashion (pp. 5-7)

Activity 1: Fill in the blank with the right type of strategy from the box.

1. Elaborationa. a. Personal elaboration b. World elaboration c. Academic elaboration d. Questioning elaboration e. Creative elaboration f. Imagery 2. Inferencinga. a. Linguistic inferencing b. Voice inferencing c. Paralinguistic or kinesinferencing d. Extra-linguisticinferencing e. Inferencing between parts 3. Summarization 4. Translation 5. Transfer 6. Substitution 7. Induction 8. Grouping 9. Note-taking 10. Resourcing 11. Repetition

Cognitive strategies الإستر تيجيات الذهنية	Definition تعريفها
1. ______________________ a. ______________________ b. _____________________ c. _____________________ d. ________________________ e. _____________________	Guessing the meaning of unknown words by linking them to known words و هو تخمين معاني المفردات المجهولة للطالب يربطها بكلمات معلومة لديه Guessing by means of the tone of voice و هو نخمين المعنى عن طريف نبرة الصوت Guessing the meaning by referring to paralinguistic clues و هو تخمين المعنى بالرجوع إلى المؤشرات المجارية للغة. Guessing based on other clues, such as what is required in the text و هو تخمين المعنى المبني على المؤشرات اللغوية الإضافية مثل ما هو مطلوب في النص Making use of certain words in the text that may not be related to the task to obtain more information about the task إستعمال بعض الكلمات في النص والتي قد لا يكون لها علافة بالتمرين من أجل الحصول على معلومات إضافية حول التمرين
2. ______________________ a. ________________________	Using prior personal experience to comprehend the

b. ______________________ c. ______________________ d. ______________________ e. ______________________ f. ______________________	text وهو إستعمال الخبرة الشخصية لفهم النص Using world knowledge to comprehend the task وهو إستعمال المعرفة بالعالم الذي يحيط بنا لفهم النص Using knowledge gained during the learners' formal learning experiences وهو إستعمال المعرفة المتحصل عليها خلال الخبرات التعلمية الرسمية للمتعلمين Questioning one's self about what one knows, and what one does not know about the topic وهو أن يسأل الطالب نفسه عما يعرف و عما لا يعرف حول الموضوع Trying to adapt what one hears to make the story more interesting و هو أن يحاول الطالب أن يؤقلم ما يسمعه ليجعل القصة أكثر متعة له أو لها Using mental imagery to create a picture of what is happening وهو إستعمال التخيل الذهني لرسم صورة لما يحدث
3. ______________________	Writing a short summary to organize the concept in one's mind or on paper وهو كتابة ملخص قصير لتنظيم المفهوم في الذهن أو على الورق
4. ______________________	Transforming the target language into the native language وهي تحويل اللغة المستهدف تعلمها إلى اللغة الأصلية
5. ______________________	Using linguistic knowledge to guess the meaning of unknown words, predict outcomes, or filling in information وهو إستعمال المعرفة اللغوية لتخمين معاني الكلمات المجهولة والتنبؤ

	بالمخرجات أو إضافة المعلومات
6. ________________________	Repeating or practicing some words that have been heard وهو إعادة أو التدرب على بعض المفردات التي قد سمعها الطالب
7. ________________________	Using resources or dictionaries to help comprehend the target language وهو إستعمال المصادر التعليمية أو القواميس
8. ________________________	Clarifying material to facilitate recalling of some grouped information and to enhance comprehension وهو توضيح المادة لتسهيل إسترجاع بعض المعلومات المجمعة للرفع من مستوى الفهم
9. ________________________	Writing down some ideas and keywords وهو كتابة بعض اللأفكار والكلمات الرءيسية
10. _______________________	Using grammar rules to understand the text وهو إستعمال القواعد النحوية لفهم النص
11. _______________________	Choosing alternative techniques, words, or phrases to accomplish a language task وهو إختيار طرق فنية بديلة أو كلمات، أو مقاطع من جمل لإنجاز تمرين لغوي

Activity 2: You are going to listen to two journalists talking about extreme fashion.

Guess the main ideas of the conversation?

Activity 3 (Vocabulary): Do activities A and B.

Activity 4 (Listening for Main Ideas): Read the questions. Then listen to the conversation between the two journalists. Check the statements that express main ideas of the conversation.

Compare your main ideas to those dealt with in the conversation. Then tick the right ones.

Activity 5: (Listening for details): Read the questions. Then listen to the conversation again.

Answer the questions.

Activity 6 What did you learn from the conversation.

Homework: Do ONE listening activity from Randal's. Try to apply the two strategies you used in class.

Lesson # 2 Handout

Listening 2: Fashionomics (pp. 8-10)

Activity 1: Fill in the blank with the right type of strategy from the box.

1. Elaborationa. Personal elaboration
b. World elaboration
c. Academic elaboration
d. Questioning elaboration
e. Creative elaboration
f. Imagery
2. Inferencinga. Linguistic inferencing
b. Voice inferencing
c. Paralinguistic or kinesinferencing
d. Extra-linguisticinferencing
e. Inferencing between parts
3. Summarization
4. Translation
5. Transfer
6. Substitution
7. Induction
8. Grouping
9. Note-taking
10. Resourcing
11. Repetition

Cognitive strategies الإستر تيجيات الذهنية	Definition تعريغها
1. ______________________	
a. ______________________	Guessing the meaning of unknown words by linking them to known words وهو تخمين معاني المفردات المجهولة للطالب يربطها بكلمات معلومة لديه
b. ______________________	Guessing by means of the tone of voice وهو نخمين المعنى عن طريف نبرة الصوت
c. ______________________	Guessing the meaning by referring to paralinguistic clues وهو تخمين المعنى بالرجوع إلى المؤشرات المجارية للغة.
d. ______________________	Guessing based on other clues, such as what is required in the text وهو تخمين المعنى المبني على المؤشرات اللغوية الإضافية مثل ما هو مطلوب في النص
e. ______________________	Making use of certain words in the text that may not be related to the task to obtain more information about the task إستعمال بعض الكلمات في النص والتي قد لا يكون لها علاقة بالتمرين من أجل الحصول على معلومات إضافية حول التمرين
2. ______________________	
a. ______________________	Using prior personal experience to comprehend the text

b. ______________________ c. ______________________ d. ______________________ e. ______________________ f. ______________________	وهو إستعمال الخبرة الشخصية لفهم النص Using world knowledge to comprehend the task وهو إستعمال المعرفة بالعالم الذي يحيط بنا لفهم النص Using knowledge gained during the learners' formal learning experiences وهو إستعمال المعرفة المتحصل عليها خلال الخبرات التعلمية الرسمية للمتعلمين Questioning oneself about what one knows, and what one does not know about the topic وهو أن يسأل الطالب نفسه عما يعرف و عما لا يعرف حول الموضوع Trying to adapt what one hears to make the story more interesting و هو أن يحاول الطالب أن يؤقلم ما يسمعه ليجعل القصة أكثر متعة له أو لها Using mental imagery to create a picture of what is happening وهو إستعمال التخيل الذهني لرسم صورة لما يحدث
3. ______________________	Writing a short summary to organize the concept in mind or on paper وهو كتابة ملخص قصير لتنظيم المفهوم في الذهن أو على الورق
4. ______________________	Transforming the target language into the native language وهي تحويل اللغة المستهدف تعلمها إلى اللغة الأصلية
5. ______________________	Using linguistic knowledge to guess the meaning of unknown words, predict outcomes, or filling in information وهو إستعمال المعرفة اللغوية لتخمين معاني الكلمات المجهولة والتنبؤ بالمخرجات أو إضافة المعلومات

6. ________________________	Repeating or practicing some words that have been heard وهو إعادة أو التدرب على بعض المفردات التي قد سمعها الطالب
7. ________________________	Using resources or dictionaries to help comprehend the target language وهو إستعمال المصادر التعليمية أو القواميس
8. ________________________	Clarifying material to facilitate recalling of some grouped information and to enhance comprehension وهو توضيح المادة لتسهيل إسترجاع بعض المعلومات المجمعة للرفع من مستوى الفهم
9. ________________________	Writing down some ideas and keywords وهو كتابة بعض اللأفكار والكلمات الرءيسية
10. _______________________	Using grammar rules to understand the text وهو إستعمال القواعد النحوية لفهم النص
11. _______________________	Choosing alternative techniques, words, or phrases to accomplish a language task وهو إختيار طرق فنية بديلة أو كلمات، أو مقاطع من جمل لإنجاز تمرين لغوي

Activity 2: You are going to listen to a professor discussing something called 'fashionomics'. Can you tell the main ideas the professor will deal with?

Activity 3(Vocabulary): Do activity A.

Activity 4 (Listening for Main Ideas): Read the questions. Then listen to part of college business class in which a professor is discussing something called “fashionomics”. Check the statements that express main ideas of theconversation.

Activity 5: (Listening for details): Read the questions. Then listen to the conversation again. Answer the questions.

Activity 6: Write down what you learned from the listening.

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Homework: Do ONE listening activity from Randal's. Try to apply the two strategies you used in class.

Lesson # 3 Handout

Listening 3: Be Polite (pp. 41-44)

Activity 1: You are going to listen to a radio programme about what to do when people are rude. Can you guess some ideas you think the speakers will discuss?

Activity2: (Vocabulary): Do activities A.

Activity 3: (Listening for Main Ideas): Read the questions. Then listen to the radio Programme about *The Civility Solution: What to Do When People Are Rude*. Write T or F opposite the statements that express main ideas of thespeech.

Activity 4: (Listening for details): Read the questions. Then listen to the conversation again. Answer the questions by ticking the right completion (p. 43).

Acitivity5: - Tell you classmate what you learned from the listening.

- Write down a summary of the talk.

Homework: Do ONE listening activity from Randal's. Then summarise it.

Lesson # 4 Handout

Listening 4: Classroom Etiquette (pp. 44-45)

Activity 1: You are going to listen to a teacher talking about teaching etiquette in the classroom. Tell you classmate the main ideas the teacher is going to deal with.

Activity 2: (Vocabulary): Do activity A (pp. 44-45).

Activity 3:

Activity 4: (Listening for Main Ideas): Read the sentences. Then listen to the news report about teaching etiquette in the classroom. Check the statements that express etiquette in the classroom. Then tick the answer that best completes each statement (pp. 45-46).

Activity 5 (Listening for details): Read the items. Then listen to thenews report again. Write short notes to help you remember what you heard .

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Activity 6: (Summary): Use your notes to write a summary of the news report.

Homework: Do ONE listening activity from Randal's. Take notes while you arelistening. Then answer the question and write a summary using yournotes.

Lesson # 5 Handout

Listening 5: The Game of Life (pp. 59-62)

Activity 1: You are going to listen to a woman talking about board games.

Activity2: Talk to your classmate about the information that you know about the topic.

Activity 3: (Vocabulary): Match the bold word with its meaning.

Activity 4: (Listening for Main Ideas): Read the questions. Then listen to the speech given by a board game developer. Check the statements that express main ideas of the speech.

Activity 5: (Listening for details): Read the questions. Then listen to the talk again. Answer the questions by ticking the right answer.

Write down a summary of the listening passage.

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Homework: Do ONE listening activity from Randal's. First, predict the main ideas and some details. Second answer the questions and check your predictions, then summarize the passage.

Lesson # 6 Handout

Listening 6: Business as agame

Activity 1: You are going to listen to two people taking about business. Read the title and tell your classmate some ideas you think the two people are going to discuss.

Activity 2: (Vocabulary): Do activity A.

Activity 3: (Listening for Main Ideas): Read the sentences. Then listen to conversation and check the answers to the questions.

Activity 4(Listening for details): Read the questions. Then listen to the conversation again. Answer the questions by writing T opposite the right statement and F opposite the wrong one.

Acitivity 5:(Summary): Read the main ideas and details silently. Then write a summary of the conversation.

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Homework: Do ONE listening activity from Randal’s. Take notes.Then use your notes to write a summary.

Lesson # 7 Handout

Listening 7: Separate at Birth

Activity 1: You aregoing to listen to a radio progogrammer interviewing a sociologist talking about the separation of brothers and sisters at birth.

Activity 2: Tell you classmates sme main ideas that you think the sociologist will deal with in the interview.

Activity 5: (Vocabulary): Do activity A.

Activity 6: (Listening for Main Ideas): Read the questions. Then listen to the sociologist's interview and check the answer to the questions.

Activity 7: (Listening for details): Read the questions. Then listen to the interview again. Then answer the questions.

Acitivity 9: (Summary): Read the main ideas and details silently. Write some notes. Then write a summary of the interview.

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Homework: Do ONE listening activity from Randal's. Write some notes. Then use your notes to write a summary.

Lesson # 8 Handout

Listening 8: Family History

Activity 1: You are going to listen to a lecturer describing how a group of famous African Americans used DNA to learn more about their families. Tell you classmate what you know about this topic.

Activity 2: (Vocabulary): Do Activity A.

Activity 3: (Listening for Main Ideas): Read the statements. Then listen to the lecturer describe how a group of famous African Americans used DNA to learn more about their families.

Activity 4: (Listening for details): Read the questions. Then listen to the lecturer again and aswer the questions.

Activity 5: Note down what you learned from the lecture. Then use your notes talk to your classmate about what you learned from the lecture.

Homework: Do ONE listening activity from Randal's. Take notes. Then use your notes to write a summary.

Lesson # 9 Handout

Listening 9: Sustainable Dave

Activity 1: You arego to hear someone called 'Sustainable Dave' talking about what he has done during one year to get rid of his trash and keep his home clean. Write down some notes about what 'Sustainable Dave' is going to say.

Activity 2: (Vocabulary): Do activity A.

Activity 3: (Listening for Main Ideas): Read the statements. Then circle the answer that best completes each statement:

Activity 4: (Listening for details): Read the statments. Then listen to the conversation again. Write T or F opposite each statement.

Acitivity 5: (Summary): Read the main ideas and details silently. Then write a summary of the interview.

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Homework: Do ONE listening activity from Randal's. Take notes, then use your notes to write a summary.

Lesson # 10 Handout

Listening 10: The Great Pacific

Activity 1: You are gpoing to listen to some news report about something called ˈGreat Pacificˈ. Can you tell what the report news will tell about the ˈGreat Pacificˈ?

Activity 2:(Vocabulary): Match the bold word with its meaning

Activity 3: (Listening for Main Ideas): Read the questions. Then listen to the news report about something called the "Great Pacific" and tick the rightcompletion.

Activity 4: (Listening for details): Read the statments. Then listen to the news report again. Circle the correct answer.

Acitivity 5:(Summary): Write down a summary of the news report.

Homework: Do ONE listening activity from Randal's. Second answer the questions and check them. Then summarise the passage.

Lesson # 11 Handout

NOTE-TAKING

Presentation: School Orientation

Task 1: Listening for Main Ideas

Listen to the advisor's presentation and complete the main idea notes below.

Main Ideas

Speaker : Gina Richards

Schedule Today

- Main Idea 1: ________________________
- Main Idea 2: ________________________
- Main Idea 3: ________________________

Task 2: Listening for Details

Listen to the advisor's presentation and complete the main idea notes below.

Main Ideas & Details

Speaker : Gina Richards

Schedule Today

- Main Idea 1: ________________________

Detail 1: The Placement test measures ________________________________.

Detail 2: The number of the parts of the Placement test is ______.

Detail 3: The parts of the Placement test are

a. _______________ b. _______________ c. _______________.

- Main Idea 2: ________________________

Detail 1: The orientation is about ___________________________________.

Examples:

1. _______________
2. _______________
3. _______________

- Main Idea 3: ________________________

Detail 1: The students will see

- _______________
- _______________

Examples:

i. _______________

ii. _______________

Detail 2: The students will visit

a. _______________
b. _______________

APPENDIX D

MetSBM Treatment (Phase 2)

(Parts 1 & 2)

OUTLINE

Phase 2 / Part 1

Lesson 1: Factors the Influence Listening Comprehension

Lesson 2: Listening Strategies

Lesson 3: Meta-cognitive Strategies

Lesson 4: Cognitive Strategies

Lesson 5: Meta-cognitive Strategies

Lesson 6: Factors Underlying the MALQ

Lesson 7: Cognitive strategies & Meta-cognitive strategies

Lesson 8: Cognitive strategies

Lesson 9: Revision (Cognitive & Meta-cognitive strategies)

Lesson 10: MALQ

Phase 2 / Part 2

Lesson 11: Making Predictions

Lesson 12: Checking Predictions

Lesson 13: Comprehension Monitoring

Lesson 14: Directed Attention

Lesson 15: Problem Identification

Lesson 16: Making Inferences

Lesson 17: Elaboration

Lesson 18: Summarization

Lesson 19: Summarization

Lesson: 20: Note-Taking

MetaSBM Treatment (Part 1)Lesson Plans & Handouts

Lesson 1: Factors That Influence Listening Comprehension

Objectives:*By the end of the lesson the students will have …* • Brainstormed one of the factors that influence listening comprehension • Been introduced to the major factors that influence listening • Practiced memorizing the factors that influence listening comprehension
Materials: Presentation not sheet, memorizing sheet, data show, factors that influence listening comprehension sheet
Activities: • T. outlines the class activities. • T. starts activity 1 by eliciting some factors that influences listening comprehension. • Ss brainstorm as many factors as possible. • T. takes notes on the board. • T. starts the presentation by eliciting the five types of factors. • Ss. brainstorm the five factors- text, speaker, listener, task, and environment. • T. starts talking about the factors related to the text by eliciting some factors. • Ss. brainstorm as many factors related to the text as possible. • T. presents all the factors related to the text in detail- phonological modification, vocabulary, speech rate, type of input, sentence length and complexity, visual support, signposting and organization, and abstract and non-abstract topics. • T. tackles the last part of the presentation by asking Ss. to match the factorswith their definitions. • Ss. work in pairs to match the factors with their definitions. • T. defines all the factors category by category.

• T. explains the memorization activity sheet and explains the activity. • Ss. match the category with its different factors. • T. explains HW.
Homework: Recognizing one's listening problems: Ss. do one listening activity from Randal's and reflect on the different problems will face while listening.

Handout

Factors that Influence Listening Comprehension

العوامل التي تؤثر على الاستماع و الفهم

What the presentation and fill in the blank with the type of factor that influences listening comprehension.

Category الصنف	Factors العوامل	Description الوصف
1.__________ __________	a. Phonological modification أ- التحوير الصوتي	Features that might make it difficult to divide streams of speech, such as linking and stress. العناصر التي قد تجعل من الصعب الفصل بين عناصرالكلام مثل الربط و مواضع الضغط
	b. Vocabulary ب- مفردات الكلام	The presence of unfamiliar content words. This includes English idioms, jargon and academic terms. وجود مفردات المحتوى المألوفة أو غير المألوفة. و يتضمن هذا التعبيرات الإصطلاحية الإنجليزية و المفردات الخاصة و كذالك المصطلحات الأكاديمية.
	c. Speech rate ت- سرعة الكلام	The perceived speed and slowness at which words are produced. السرعة والتباطؤ المتصور التي تنتج عنها الكلمات
	d. Type of input ث- نوع المدخل	Effects of features related to specific text types, such as lectures, TV/radio news broadcast, stories, face-to-face conversation. تأثيرات الجوانب المتعلقة بأنواع نصوص محددة مثل المحاضرات، نشرات الأخبار التلفزيونية والإذاعية، القصص، و المحادثات الشخصية
	e. Sentence length and complexity ج- طول الجملة و مستوى تعقيدها	Sentence types, such as simple sentences or long complex ones with embedded clauses. أنواع الجمل مثل الجمل البسيطة أو الجمل الطويلة المعقدة و المتضمنة لجمل أخرى
	f. Visual support ح- الدعم بالصور	Pictures, handouts, captions, and subtitles that support the spoken text. الصور و المذكرات و التعليقات على الصور و العناوين الثانوية التي تدعم النص المنطوق

	g. Signposting and organization خ- التأشير والتنظيم	The presence of macro and micro- discourse markers. وجود علامات تنظيم الكلام الكبرى و الصغرى
	h. Abstract and non-abstract topics د- المواضيع المجردة وغير المجردة	Abstract topic dealing with concepts compared with those that describe events, people, or objects. المواضيع المجردة هي التي تتعلق بالمفاهيم إذا ما قورنت بتلك التي الأحداث و الناس و الأشياء.
	a. Accent أ- اللهجة	This is related to where a speaker comes from. وهي تتعلق بمن أين ينحدر المتكلم.
2. ______________	b. Competence inspeaking ب- الكفاءة عند الكلام	The speaker's command of English, overall fluency, and their ability to interest or facilitate their comprehension. تحكم المتكلم في اللغة الإنجليزية، الطلاقة العامة، و قدرة المتكلم على جذب إهتمام المستمعين أو تسهيل فهمهم
	a. Interest and purpose أ- الإهتمام و الهدق	This is related to whether the information is crucial to the listeners or can generate sufficient interest in them to continue listening. و يتعلق هذا بما إذا كانت المعلومات مهمة للسامع أو يمكن تولد إهتماما كافيا لديه لمواصلة السمع.
	b. Prior knowledge and experience ب- المعرفة القبلية و الخبرة	This includes specific knowledge about the topic being talked about. ويتضمن هذا المعرفة المحددة حول الموضوع المتحدث عنه.
3. ______________	c. Physical and psychological states ت- الحالة المادية والنفسية	Fatigue, nervousness, anxiety, impatience, feeling relaxed and calm. التعب، العصبية، التوتر، التململ، الشعور بالراحة و الهدوء
	d. Knowledge of context ث- المعرفة بسياق الحديث	A general sense of what the spoken input is about الشعور العام حول ما يدور حوله الكلام
	e. Accuracy of pronunciation ج- الدقة بالنطق	Listeners who themselves do not pronounce certain words accurately may

	f. Knowledge of grammar خ- المعرفة بالقواعد g. Memory د- الذاكرة h. Attention and concentration ذ- الإنتباه والتركيز	have problems recognizing these words when the speaker says them correctly. The ability to parse long complex sentences. القدرة على تركيب جمل طويلة و معقدة The ability to retain what is heard or processed. القدرة على الإحتفاظ بما سمع أو عولج بالذاكرة The ability to direct one's attention to the task at hand and not to be distracted or discouraged when understanding is not immediately forthcoming. الفدرة على أن يكون الشخص بتوجيه إنتباهه للتمرين الذي يقوم به وأن لا ينجذب أو يحبط عندما يكون الفهم غير متواجدا آنيا
4. ____________	Sufficient time available for processing توفر الوقت الكافي للمعالجة	Time available between processing one part and the next or before responding. الوقت المتوفر بين معالجة جزء من التمربن و الجزء الذي يليه أو قبل الإستماع
5. ____________	Physical condition الظروف المادية	The presence of noise, the acoustics in a room, or the loudness of input. وجود الصوت، الصوتيات في الغرفة أو درجة علو المدخل الصوتي

Lesson 2: Listening Strategies

Objectives: *By the end of the lesson the students will have …* • Been introduced to the definition of strategies • Brainstormed some of the strategies they use when they listen • Introduced to the importance of strategies for learning • Introduced to the different types of strategies • Introduced to the importance of strategies for listening
Materials: Presentation not sheet, memorizing sheet, data show
Activities: • T. outlines the class activities. • T. starts activity 1 by defining the term 'strategy' • T. elicits some of the strategies that Ss apply to listening comprehension. • Ss. brainstorm as many strategies as they can. • T. takes notes on the board. • T. presents the different types of strategies- cognitive, met-cognitive, and socio-affective. • Ss. practice memorizing the types of strategies by doing a matching activity. • T. checks Ss' answers. • T. elicits the importance of strategies for learning. • Ss. brainstorm as many strategies as they can. • T. presents the importance of each type of strategies. • T. explains the memorizing activity. • Ss. match the type of strategy with its importance.
Homework: Using strategies while listening: Ss do one listening activity from Randal's and mention the strategies they will apply. Ss. reflect on their strategy use.

Handout

Listening Strategies

Metacognitive Strategies

Listen and fill in the blank with the type of metacognitive strategy.

1: Developing 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 a task		
Advance organization	Clarifying the objectives of an anticipated listening task and/or proposing strategies for handling it	• *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 pre-pare for my listening paper.*
Self-management	Understanding the conditions that help one successfully accomplish listening tasks, and arranging for the presence of those conditions	• *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.*
________________	Attending in **general**to the listening task and ignoring distraction; maintaining attention while listening	• *I listen really hard.* • *I pick out the words that are familiar so that…* • *I tried to concentrate on carrying out my plan.*
________________	Attending to **specific aspects**of language input or situational details that assist in understanding and/or	• *I listen for the key words.* • *I pay special attention to adjectives.*

	task completion	• *Because I hear "also," then I concentrate on the word after "also."*
2. ___________: Checking, verifying, or correcting one's comprehension or performance in the course of a task		
______________	Checking, verifying, or correcting understanding at the local level	• *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.*
______________	Checking, verifying, or correcting understanding across the task during the second time through the oral text	• *If I could listen to 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.*
Auditory monitoring	Learners make decisions as to whether something sounds "right" or not	• *I use my knowledge of Portuguese, primarily sound (in combination with* ***transfer****).* • *I use the sound of words to relate to other words I know.*

3. ____________: Checking the outcomes of listening comprehension or a listening plan or against an internal or an external measure of completeness, reasonableness, and accuracy		
_____________	Judging one's overall execution of the task	• *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 under-standing and comprehen-sion.*
_______________	Judging one's strategy use	• *I don't concentrate too much to the point of translation of individual words because then you just have lot of words and not how they're strung together into some kind of meaning.*
______________	Identifying what needs resolution or what part of the task still needs to be completed	• *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 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.
________________ (substitution)	Selecting alternative approaches, revised plans, or different words or phrases to accomplish a listening task	• *That way of listening didn't help me. I'm now watching many video re-cordings instead.* • *I should stop translating so much…maybe guess more.* • *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.*

Based on Oxford (1990, pp. 16-21), Vandergrift (2003, pp. 494-496; 2008, pp. 392-395)

Lesson 3: Metacognitive Strategies

Objectives: *By the end of the lesson the students will have …* • Been introduced to the cognitive strategies and their definitions • Practiced memorizing the different types of meta-cognitive strategies
Materials: Presentation not sheet, memorizing sheet, data show, handout
Activities: • T. outlines the class activities. • T. starts activity 1 by outlining and defining the four types of meta-cognitive strategies- planning, monitoring, evaluation, and problem-identification. • T. presents the different activities that come under the umbrella of planning. • T. outlines and defines different types of planning activities. • Ss. match the activity with the definition. • T. gives the right matching. • T. outlines and defines the different types of monitoring activities. • Ss. match the strategy with the definition. • T. gives the right matching. • T. outlines and defines the different types of monitoring activities. • T. provides the activity with the right answers. • T. defines problem identification.
Homework: Using meta-cognitive strategies while listening: Ss do one listening activity from Randal's and complete the form (planning, monitoring, evaluation). Ss.reflect on their strategy use.

Handout

METACOGNTIVE STRATEGIES

Match the strategy with its definition.

STRATEGY		**DEFINITION**
Metacognitive Strategies 1. Planning 2. Problem Identification 3. Problem-Solving 4. Managing Your Own Learning 5. Monitoring 6. Prediction 7. Evaluation	_ _ _ _ _ _ _	**a**. Developing an awareness of what needs to be done to accomplish a listening task, developing an appropriate action plan or contingency plan to overcome difficulties that may interfere with successful completion of the task. تطوير الوعي بما يحتاج القيام به لإنجاز تمرين إستماعي و تطوير خطة عمل مناسبةأو خطّة إحتياطيةللتّغلّب على الصعاب التي قد تعترض سبيل إنجاز التّمرين. **b**. Checking, verifying, or correcting one's comprehension or performance in the course of a listening task التأكد من و تدقيق أو تصحيح الإنسان لفهمه الشخصي أو لداءه خلال مجريات التمرين الإستماعي **c.** Checking the outcomes of one's listening comprehension against an Internal measure of completeness and accuracy تأكد الإنسان من مخرجات فهمه الإستماعي بمقارنتها بمعيار داخلي من التمام والدقة. **d.** Explicitly identifying the central point needing resolution in a task or identifying an aspect of the task that hinders its successful

		completion تحديد بوضوح النقطة المركزية التي تحتاج للمعالجة في التمرين أو تجديد جانب من التمرين و الذي يعرقل إتمامه بنجاح. **e**. Anticipating information to come and making logical guesses about what will happen in a written or oral text. تنبّؤ ما سيأتي من الأخبار و القيام بتخمينات معقولة عما سيحدث في نصّ مكتوب أو شفوي. **f**. Finding solutions to the listening comprehension problems the listener faceswhile listening to an oral text حل المشاكل المتعلّقة بالإنصات والفهم التي تواجه المستمع خلال الإنصات إلى نصّ شفويّ. **g.** Determining how you learn best, arranging conditions that help you to learn, seeking opportunities for practice, and focus your attention on the task تحديد الطريقة المثلى للتّعلّم و توفير الظّروف المناسبة لمساعدتك على التّعلّم و اليحث عن الفرص المناسبة للتّدريب وتركيز إنتباهك على التمرين

Lesson 4: Factors Underlying the Metacognitive Awareness Listening Questionnaire (MALQ)

Objectives: *By the end of the lesson the students will have …* • Been shown the different factors underlying the Meata-cognitive Awareness Listening Questionnaire (MALQ) • Been shown the different strategies or beliefs related to each factor underlying the Meta-cognitive Awareness Listening Questionnaire (MALQ) • Been familiarized with what each strategy allows listeners to do • Been familiarized with what each strategy represents • Practiced memorizing what each strategy related to each metacognitivestrategy • Practiced memorizing what each strategy represents • Practiced memorizing what each strategy allows listeners to do
Materials: Presentation not sheet, memorizing sheet, data show, meta-cognitivefactors sheet
Activities: • T. outlines the class activities. • T. starts activity 1 by eliciting some meta-cognitive factors. • Ss. brainstorm as many factors as possible. • T. takes notes on the board. • T. shows the slides dealing with the different types of factors. • T. explains the matching activity. • Ss. match the factor with the right strategies. • T. provides Ss. with the right matching and shows the slides dealing with they allow listeners to do. • T. explains the third matching activity. • Ss. match the strategies with what they represent. • T. provides Ss. with the right matching and shows the slides that show what each

strategy represents. • T. wraps up the activity by asking Ss. to do the fourth matching activity. • Ss. match meta-cognitive factor with the right strategies.
Homework: Applying meta-cognitive factors while listening: Ss do one listening activity from Randal's and reflect on their use of the meta-cognitive factors while listening.

Handout

Factors underlying the Metacognitive Awareness Listening Questionnaire

Fill in the blank with the type of knowledge from the box.

Person Knowledge	Directed Attention	Problem-Soving
Person Knowledge		Planning and Evaluation

Factor	Strategy or belief / perception	These strategies allow listeners to	What these strategies represent
1. ______ ______	a. I use the words I understand to guess the meaning of the words I don't understand. b. As I listen, I compare what I understand with what I know about the topic. c. I use my experience and knowledge to help me understand. d. As I listen, I quickly adjust my interpretation if I realize that it is not correct. e. I use the general idea of the text to help me guess the meaning of the words that I don't understand. f. 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.	a. inference (guess at what listeners do not understand) b. monitor these inferences	a. the problem-solving processes b. the knowledge retrieval processes c. the accompanying verification (monitoring)
2. ______ ______	a. Before I start to listen, I have a in my head for how I am going to listen. b. Before listening, I think of similar texts that I may have listened to.	a. prepare themselves for listening b. evaluate the	a. the purposeful nature of the comprehension process b. the outline appraisal

	c. After listening, I think back to how I listened and about what I might do differently next time. d. As I listen, I periodically ask myself if I am satisfied with my level of comprehension. e. I have a goal in my mind as I listen.	results of their efforts	of whether comprehension goals were/are being realized.
3. ________ ________	a. I translate in my head as I listen. b. I translate key words as I listen. c. I translate word by word, as I listen.	These represent the strategies that listeners must learn to avoid if they are to	These strategies represent an inefficient approach to listening comprehension that beginning level listeners often feel compelled to use, but which they must overcome in order to become skilled L2 listeners.
4. ________ ________	a. I find that listening in English is more difficult than reading, speaking, or writing in Arabic. b. I feel that listening comprehension in English is a challenge for me. c. I don't feel nervous when	a. assess the perceived difficulty of listening compared with the three other skills, learners linguistic confidence in L2 listening	a. listeners' perceptions concerning the difficulty presented by L2 listening and their self-efficacy in L2 listeners

	I listento English.		
5. ________ ________	a. I focus harder on the text when I have trouble understanding. b. When my mind wanders, I recover my concentration right away. c. I try to get back on track when I lose concentration. d. When I have difficulty understanding what I hear, I give up and stop listening.	a. concentrate and to stay on task	the important roles played by attention and concentration in the process of listening comprehension.

(Adapted from Vandergrift , 2008, pp. 392-395)

Lesson 5: Cognitive Strategies

Objectives: *By the end of the lesson the students will have …* • Been shown the types of cognitive strategies and their definitions • Practiced memorizing the different types of cognitive strategies
Materials: Presentation not sheet, handout, memorizing sheet, data show, cognitive strategies sheet
Activities: • T. outlines the class activities. • T. starts activity 1 by outlining the different types of cognitive strategies. • Ss. guess matching inferencing strategies with their definitions. • T. shows the slides dealing with inferencing strategies and their definitions. • Ss. guess matching elaboration strategies with their definitions. • T. shows the slides dealing with elaboration strategies and their definitions. • T. shows the slides dealing with the remaining cognitive strategies with their definitions. • T. explains the matching activity. • Ss. match the strategies with their definitions.
Homework: Using cognitive strategies: Ss. do one listening activity from Randals and reflect on their use of cognitive strategies.

Handout

COGNTIVE STRATEGIES

Fill in the blank with the right type of strategy from the box

1. Elaborationa. Personal elaboration
b. World elaboration
c. Academic elaboration
d. Questioning elaboration
e. Creative elaboration
f. Imagery
2. Inferencinga.
a. Linguistic inferencing
b. Voice inferencing
c. Paralinguistic or kinesic inferencing
d. Extra linguistic inferencing
e. Inferencing between parts

3. Summarization
4. Translation
5. Transfer
6. Substitution
7. Induction
8. Grouping
9. Note-taking
10. Resoucing
11. Repetition

Cognitive strategies الإستراتيجيات الذهنية	Definition تعريفها
1. ______________________	
a. ______________________	Guessing the meaning of unknown words by linking them to known words وهو تخمين معاني المفردات المجهولة للطالب يربطها بكلمات معلومة لديه
	Guessing by means of the tone of voice وهو نخمين المعنى عن طريف نبرة الصوت
b. _____________________	Guessing the meaning by referring to paralinguistic clues وهو تخمين المعنى بالرجوع إلى المؤشرات المجارية للغة.
c. _____________________	
d. ______________________	Guessing based on other clues, such as what is required in the text وهو تخمين المعنى المبني على المؤشرات اللغوية الإضافية مثل ما هو مطلوب في النص
e. _____________________	Making use of certain words in the text that may not be related to the task to get more information about the task إستعمال بعض الكلمات في النص والتي قد لا يكون لها علافة بالتمرين من أجل الحصول على معلومات إضافية حول التمرين
2. ______________________	

a. ____________________________ b. ___________________________ c. ___________________________ d. ___________________________ e. ____________________________ f. ____________________________	Using prior personal experience to comprehend the text وهو إستعمال الخبرة الشخصية لفهم النص Using world knowledge to comprehend the task وهو إستعمال المعرفة بالعالم الذي يحيط بنا لفهم النص Using knowledge gained during the learners' formal learning experiences وهو إستعمال المعرفة المتحصل عليها خلال الخبرات التعلمية الرسمية للمتعلمين Questioning one's self about what one knows, and what one does not know about the topic وهو أن يسأل الطالب نفسه عما يعرف و عما لا يعرف حول الموضوع Trying to adapt what one hears to make the story more interesting to him or her و هو أن يحاول الطالب أن يؤقلم ما يسمعه ليجعل القصة أكثر متعة له أو لها Using mental imagery to create a picture of what is happening وهو إستعمال التخيل الذهني لرسم صورة لما يحدث
3. ___________________________	Writing a short summary to organize the concept in mind or on paper وهو كتابة ملخص قصير لتنظيم المفهوم في الذهن أو على الورق
4. ___________________________	Transforming the target language into the native language وهي تحويل اللغة المستهدف تعلمها إلى اللغة الأصلية
5. ____________________________	Using linguistic knowledge to guess the meaning of unknown words, predict outcomes, or filling in information

	وهو إستعمال المعرفة اللغوية لتخمين معاني الكلمات المجهولة والتنبؤ بالمخرجات أو إضافة المعلومات
6. ______________________	Repeating or practicing some words that have been heard وهو إعادة أو التدرب على بعض المفردات التي قد سمعها الطالب
7. ______________________	Using resources or dictionaries to help comprehend the target language وهو إستعمال المصادر التعليمية أو القواميس
8. ______________________	Clarifying material to facilitate recalling of some grouped information and to enhance comprehension وهو توضيح المادة لتسهيل إسترجاع بعض المعلومات المجمعة للرفع من مستوى الفهم
9. ______________________	Writing down some ideas and keywords وهو كتابة بعض اللأفكار والكلمات الرءيسية
10. _____________________	Using grammar rules to understand the text وهو إستعمال القواعد النحوية لفهم النص
11. _____________________	Choosing alternative techniques, words, or phrases to accomplish a language task وهو إختيار طرق فنية بديلة أو كلمات، أو مقاطع من جمل لإنجاز تمرين لغوي

(Adapted from Flowerdew & Miller, 2005, pp. 108-110)

Lesson 6: Cognitive Strategies and Metacognitive Strategies

(Revision)

Objectives: *By the end of the lesson the students will have …* • Been revisited the different types of cognitive strategies • Been revisited the different types of meta-cognitive strategies
Materials: Memorizing sheet, data show, meta-cognitive factors sheet
Activities: • T. outlines the class activities. • T. starts activity 1 by eliciting the different types of cognitive strategies. • Ss. brainstorm as many cognitive strategies as possible. • T. starts activity 2 by eliciting the different types of meta-cognitive strategies. • Ss. brainstorm as many types of meta-cognitive strategies as possible. • T. explains activity 3. • Ss. match the strategy with its type – cognitive or meta-cognitive. • Ss. brainstorm as many types of meta-cognitive strategies as possible. • T. gives the right matching.
Homework: Using cognitive and meta-cognitive strategies while listening: Ss. do one listening activity from Randals and reflect on their use of cognitive and meta-cognitive strategies.

Handout

COGNITIVE STRATEGIES & METACOGNTIVE STRATEGIES

1. Match the strategy with its type by writing (a) or (b).

STRATEGY		**TYPE**
1. Planning (التّخطيط) 2. Monitoring (مراقبةو توجيه الآداء) 3. Using background knowledge (إستعمال المعرفة المسبقة) 4. Prediction (Making prediction) (التنّبوء) 5. Using Images (إستعمال الصور الذهنية) 6. Note-Taking (تسجيل المفّكرات) 7. Managing Your Own Learning (إدارة تعّلمك الذاتي) 8. Problem Identification (تحديد المشكل) 9. Summarizing (التلخيص) 10. Problem-Solving (حّل المشكلات) 11. Elaboration (الّتفصيل)	– – – –	a. **Cognitive Strategy** خطّة ذهنيّة للدّراسة، لحلّ مشكلة أو للتّعامل مع موقف... الخ. b. **Metacognitive Strategy** السّتراتيجية ماوراء الذّهنية (Metacognition) وعي الفرد و معرفته بالعمليات العقليةبما يؤدي إلى إستطاعته أن ينظّم ويراقب ويوجّه تلك العمليّات نحو غاية مستهدفة أو الهدف.

2. Match the strategy with its definition.

STRATEGY		DEFINITION
I- Metacognitive Strategies 1. Planning 2. Problem Identification 3. Problem-Solving 4. Managing Your Own Learning 5. Monitoring 6. Prediction 7. Evaluation	 _ _ _ _ _ _ _	**a**. Developing an awareness of what needs to be done to accomplish a listening task developing an appropriate action plan or contingency plan to overcome difficulties that may interfere with successful completion of the task. تطوير الوعي بما يحتاج القيام به لإنجاز تمرين إستماعي و تطوير خطة عمل مناسبةأو خطّة إحتياطيةللتّغلّب على الصعاب لتي قد تعترض سبيل إنجاز التّمرين. **b**. Checking, verifying, or correcting one's comprehension or performance in the course of a listening task التأكد من و تدقيق أو تصحيح الإنسان لفهمه الشخصي أو لداءه خلال مجريات التمرين الإستماعي **c.** Checking the outcomes of one's listening comprehension against an internal measure of completeness and accuracy تأكد الإنسان من مخرجات فهمه الإستماعي بمقارنتها بمعيار داخلي من التمام والدقة. **d.** Explicitly identifying the central point needing resolution in a task or identifying an aspect of the task that hinders its successful completion تحديد بوضوح النقطة المركزية التي تحتاج للمعالجة في التمرين أو تجديد جانب من التمرين و الذي يعرقل إتمامه بنجاح.

		e. Anticipating information to come and making logical guesses about what will happen in a written or oral text. تنبّؤ ما سيأتي من الأخبار و القيام بتخمينات معقولة عما سيحدث في نصّ مكتوب أو شفوي. **f**. Finding solutions to the listening comprehension problems the listener faces while listening to an oral text حل المشاكل المتعلّقة بالإنصات والفهم التي تواجه المستمع خلال الإنصات إلى نصّ شفويّ.
II- Cognitive Strategies 1. Using Background Knowledge 2. Using Images 3. Note-Taking 4. Summarizing 5. Elaboration		**g.** Determining how you learn best, arranging conditions that help you to learn, seeking opportunities for practice, and focus your attention on the task تحديد الطريقة المثلى للتّعلّم و توفير الظّروف المناسبة لمساعدتك على التّعلّم و اليحث عن الفرص المناسبة للتّدريب وتركيز إنتباهك على التمرين **إستراتيجيات التعلّم** **a**. Thinking about and using what you already know to help you do the task **b**. Using personal, world, academic, questioning and creative elaboration as well as imagery **c**. Writing a short summary to organize the concept in mind or a paper. d. Writing down some ideas and keywords. e. Using mental imagery to create a picture of what is happening

Lesson 7: Cognitive and Metacognitive Strategies

(Revision)

Objectives: *By the end of the lesson the students will have …* • Been revisited the different types of cognitive strategies and their definitions • Been revisited the different types of meta-cognitive strategies and their definitions
Materials: Presentation note sheet, memorizing sheet, data show, metacogntive strategies
Activities: • T. outlines the class activities. • T. starts activity 1 by eliciting the different types of cognitive strategies. • Ss. brainstorm as many types of cognitive strategies as possible. • T. explains matching activity 1. • Ss. match the cognitive strategies with their definitions. • T. takes notes of the Ss' responses and gives the right answers. • T. elicits the different types of meta-cognitive strategies. • Ss. brainstorm as many types of meta-cognitive strategies as possible. • T. explains matching activity 2. • Ss. match the meta-cognitive strategies with their definitions. • T. takes notes on the board and then gives the right answers. • T. wraps up the activity by asking Ss. to do the fourth matching activity. • Ss. match meta-cognitive factor with the right strategies.
Homework: Using cognitive and meta-cognitive strategies while listening. Ss. do one listening activity from Randals and reflect on their use of cognitive and meta-cognitive strategies.

Handout

COGNITIVE STRATEGIES & METACOGNTIVE STRATEGIES

1. Match the strategy with its type.

STRATEGY		TYPE
1. Planning (التّخطيط) 2. Monitoring (مراقبةو توجيه الأداء) 3. Using background knowledge (إستعمال المعرفة المسبقة) 4. Prediction (Making prediction) (التّنبوء) 5. Using Images (إستعمال الصور الذهنية) 6. Note-Taking (تسجيل المفّكرات) 7. Managing Your Own Learning (إدارة تعّلمك الذاتي) 8. Problem Identification (تحديد المشكل) 9. Summarizing (التلخيص) 10. Problem-Solving (حّل المشكلات) 11. Elaboration (الّتفصيل)	_	a. **Cognitive Strategy** خطّة ذهنّية للدّراسة، لحلّ مشكلة أو للتّعامل مع موقف... الخ. b. **Metacognitive Strategy** السّتراتيجية ماوراء الذّهنية (Metacognition) وعي الفرد و معرفته بالعمليات العقليةبما يؤدي إلى إستطاعته أن ينظّم ويراقب ويوجّه تلك العمليّات نحو غاية مستهدفة أو الهدف.

2. Match the strategy with its definition.

STRATEGY		DEFINITION
I- Metacognitive Strategies		
1. Planning	_	**a**. Developing an awareness of what needsto be done to accomplish a listening task,
2. Problem Identification	_	developing an appropriate action plan or

3. Problem-Solving 4. Managing Your Own Learning 5. Monitoring 6. Prediction 7. Evaluation	_ _ _ _ _	contingency plan to overcome difficultie that may interfere with successful completion of the task. تطوير الوعي بما يحتاج القيام به لإنجاز تمرين إستماعي و تطوير خطة عمل مناسبةأو خطّة إحتياطيةللتّغلّب على الصعاب التي قد تعترض سبيل إنجاز التّمرين. **b**. Checking, verifying, or correcting one's comprehension or performance in the course of a listening task التأكد من و تدقيق أو تصحيح الإنسان لفهمه الشخصي أو لداءه خلال مجريات التمرين الإستماعي **c.** Checking the outcomes of one's listening comprehension against an Internal measure of completeness and accuracy تأكد الإنسان من مخرجات فهمه الإستماعي بمقارنتها بمعيار داخلي من التمام والدقة. **d.** Explicitly identifying the central point needing resolution in a task or identifying an aspect of the task that hinders its successful completion تحديد بوضوح النقطة المركزية التي تحتاج للمعالجة في التمرين أو تجديد جانب من التمرين و الذي يعرقل إتمامه بنجاح. **e**. Anticipating information to come and making logical guesses about what will happen in a written or oral text. تنبّؤ ما سيأتي من الأخبار و القيام بتخمينات معقولة عما سيحدث في نصّ مكتوب أو شفوي. **f**. Finding solutions to the listenin comprehension problems the listener faces

II- Cognitive Strategies 1. Using Background Knowledge 2. Using Images 3. Note-Taking 4. Summarizing 5. Elaboration		while listening to an oral text حل المشاكل المتعلّقة بالإنصات والفهم التي تواجه المستمع خلال الإنصات إلى نصّ شفويّ. **g.** Determining how you learn best, arranging conditions that help you to learn, seeking opportunities for practice, and focus your attention on the task تحديد الطريقة المثلى للتّعلّم و توفير الظّروف المناسبة لمساعدتك على التّعلّم و البحث عن الفرص المناسبة للتّدريب وتركيز إنتباهك على التمرين **إستراتيجيات التعلّم** **a**. Thinking about and using what you already know to help you do the task **b**. Using personal, world, academic, questioning, and creative elaboration as well as imagery **c**. Writing a short summary to organize the concept in mind or a paper. d. Writing down some ideas and keywords. e. Using mental imagery to create a picture of what is happening

MetaSBM Treatment: Phase 2 (Part 2)

Lesson Plans

Lesson 1: Extreme fashion

(p. 5)

Objectives: *By the end of the lesson the students will have …* • Been introduced to and practiced the strategies of goal setting • Been introduced to and practiced the strategies of checking goals • Been listening for main ideas • Been practiced listening for details • Listened to and discussed the topic: Extreme fashion (p. 5)
Materials: Goal setting and checking information sheet, data show, CD1/track 3
Activities: • T. elicits types of cognitive and meta-cognitive strategies. • Ss. brainstorm as many types of cognitive and meta-cognitive strategies as possible. • T. takes notes on the board. • T. tells students that they are going to practice using some planning activities, namely goal setting and checking goals. • T. elicits some goal setting and checking goals activities. • Ss. brainstorm as many goal setting and goal checking activities. • T. tells Ss that they are going to listen to a game developer give a speech about “the Game of life” (p. 60). • T. (Before listening) writes the word “goal” on the board and asks Ss if theyknow this word, then asks Ss if they set goals for themselves before they listen or do other tasks.

- Ss. produce as many responses as possible.
- T. goes through ‘goal setting’ sheet and tells Ss that this week he will set goals, but in the future the students will try to set their own.
- T. asks a volunteer to read the question under ‘listen’ for the main idea.
- T. elicits the goal of the task.
- Ss. should mention that they are going to listen for main ideas and explainwhat it means.
- Ss. brainstorm how they are going to listen for main ideas by mentioning the term ‘topic sentence(s)’.
- T. elicits how the students are going to do the task.
- Ss. should reply that they are going to write T opposite the right statementand false opposite the wrong statement.
- T. plays the track.
- Ss. listen and answer the questions.
- T. elicits the right answers and writes them on the board.
- T. tells Ss what they are going listen for and how?
- Ss. should reply that they are going to listen for details and explain what itmeans.
- Ss. brainstorm how they are going to listen for details by mentioning the differences between main ideas and details and where they are in the passage.
- T. elicits how the students are going to do the task.
- Ss. should reply that they are going to circle the right answer.
- T. plays the track.
- Ss. listen and circle the right answer.
- T. elicits the right answers and writes them on the board.
- T. asks students if they met their goals.

• Ss. answer the reflection questions.
Homework: Practicing setting and checking goals: Ss. do one listening activity from Randal's and reflect on how they set goals checked them.

SETTING GOALS

WHAT is Setting Goals?
Setting Goals is understanding an activity and deciding what you want to gain/learnfrom that activity.

EXAMPLE: You are going to watch a video asking people about global warming, so yourgoal might be to understand each person's opinion.WHY: Setting goals gives you a purtpose for listening and helps you to choose the beststrategies.

WHY: Use the setting goal strategy any time you have an activity to do.

CHECKING GOALS

WHAT is Checking Goals?
Checking goals is deciding if you met your goal or not.

EXAMPLE: After you watched the interview video, tell yourself what each person's opinion was, then ask yourself the question if you are confident about your understanding. If your friend also watched the video, you could share your idea with her to see if she agrees.

WHY: Checking goals is knowing if you met your goal or not. That helps you decide if youneed to listen again or try a different strategy, and can build your confidence when goalsare met.
WHEN: After learning avtivities, OR anytime you set a goal

Lesson 2:

Fashionomics

(pp. 8-10)

Objectives: *By the end of the lesson the students will have …* • Practiced bottom-up processing skills • Been introduced to the strategy of **selective attention** • Practiced selective attention to focus on key vocabulary words • Completed a cloze activity with the key vocabulary words and focused on sound- symbol correspondence
Materials: Selective attention strategies sheet, data show, CD1/track 7 & 32, list of key vocabulary, transcripts
Activities: • T. elicits types of cognitive and meta-cognitive strategies. • Ss. brainstorm as many types of cognitive and meta-cognitive strategies aspossible. • T. takes notes on the board. • T. revisits the strategies of goal setting by asking Ss what setting goals means, when and why they should set goals. • Ss. brainstorm as much information as possible. • T. introduces the selective attention strategies and discuss the paper. • T. asks Ss if they already use this strategy, when they can use it, and why. • T. tells students that they are going to listen to part of a college businessclass. The professor is discussing something called "Fashionomics". • T. reminds Ss to activate their background knowledge before they listen.They cando this by reading their notes and thinking about what they heard/talked yesterday. • T. asks Ss to listen to the CD and use selective attention to focus on thewords on

the list. • Ss. listen carefully and tick the words they can hear. • T. elicits the answers. • T. asks students to listen to the passage a second time and complete each sentence with the correct word (vocabulary exercise, unit 1, p. 8). • T. elicits the correct answers and writes them on the board. • T. asks Ss to answer the reflection questions. • Ss. reflect on their selective attention strategy performance by answering the reflection questions on the worksheet. • T. asks some volunteers to read their answers.
Homework: Practicing using selective attention strategies: Ss. do onelistening activity from Randal's and reflect on their use of the strategies of selective attention.

SELECTIVE ATTENTION

WHAT is Selective Attention?

Selective attention is choosing to focus on specific parts of the listening. You can focus on a part that was difficult to understand, listen for certain words, or certain sounds.

EXAMPLE:You are taking the TOEFL. The question is "What time did the man leave the station?" and the choices are: A. 2:00, B. 12:00, and C. 2:12. While you listen, you can focus your attention on any numbers that you hear, and listen for the words "man", "leave", and "station."

WHYSelective Attention?

Focusing on specific information makes it easier to hear the important information.

Focusing on difficult parts of the listening can help you understand why it was difficult and can help you understand better.

WHEN Using Selective Attention?

This strategy is useful any time you need to answer questions about details, or focus on specific parts of the listening.

Lesson 3:

The Game of Life

(pp. 37-38)

Objectives:*By the end of the lesson the students will have …* • Been introduced to and practiced the strategies of activating background knowledge **(making predictions) and evaluating performance (verifying predictions)** • Brainstormed situations in which these strategies can be used and cannot beused • Listened to a speech about how "the game of Life" has changed over time. • Made predictions about what they might hear. • Listened to verify predictions.
Materials: worksheet, data show, making predictions & activating background sheet, listening activity handout, CD 1 / tracks 37-38
Activities: • T. elicits the different types of cognitive and meta-cognitive strategies. • Ss. brainstorm as many types of cognitive and meta-cognitive strategies aspossible. • T. takes notes on the board. • T. outlines the activities of the day. • T. introduces the "Prediction" strategy and goes through information in "Making predictions" sheet and asks Ss if they already use this strategy (note who already uses it in notebook). • T. explains that in order to "make predictions", we have to activate background knowledge. • T. goes through information on "activating background knowledge" sheet and asksSs if they already use this strategy, when and how?

• Ss. brainstorm as many ideas as possible.

• T. tells student they will listen to a speech about how “the Game of Life”haschanged over time.

• T. explains activity 1 and how to use the answer sheet.

• Ss. predict topics and words they might hear. They also predict the problems they might face and finally, they select the appropriate strategyfor coping with these problems. They take notes in the “prediction” sectionof their liatening paper.

• Ss. discuss their predictions in pairs.

• T. asks to listen for the first time to check their predictions. T. stops the CD player after each paragraph and gives Ss a chance to write down what they could understand in the “first listening” section of the listening paper.

• Ss. listen carefully and check their predictions. Then, they compare notes with their partners. (Do they have the same or different?). They talk about the differences. They also note down what they also understood. In the second listening columns, Ss take notes on what they are going to focus anddetermine the parts of the text that need most careful attention.

• T. plays the CD a second time and stops the CD player after each paragraph togive Ss a chance to write down what they could understand in the “secondlisten”.

• Ss. make corrections and note down additional content in “This Time I Understood” section.

• T. asks Ss to discuss their corrections.

• Ss. share and compare what they have understood with each other and modify as required after discussing they strategies they used.

• T. distributes the transcripts among Ss and explains the activity.

• Ss. listen to the whole conversation and compare the aural form of the complete news item with the transcript. • Ss. evaluate their performance and strategic approach and consider strategies forthe next time.
Homework: Practicing making predictions: Ss. do one listening activity from Randal'sand reflect on how they made predictions.

Handout

Listening 1

The Game of Life

(pp. 57-62)

PLANNING

What is your goal?

____

What do you know about the topic

____

Predict the information that you might hear.

____

Predict the words and phrases that you might hear.

____

Predict the problems you might face.

____

Select the appropriate strategies for coping with these problems.

____

Activity 2: Write down the topic of the listening. Then write what you know about the topic

Topic: ____		
WHAT I KNOW ABOUT THE TOPIC	WHAT I WANT TO KNOW ABOUT THE TOPIC	WHAT I LEARNED

PREDICTION Write the words that you think you will hear. ____ Write some ideas that you think the passage will deal with. ____

MONITORING

First Listen

- Listen to the text and underline or circle the words and phrases that you have predictedcorrectly.
- Write down new information. Then answer the questions dealing with the main ideas and details.

____

- (Pair-work) Compare what you have understood with what your partner has understood.
- (Pair-work) Explain the strategies you used for arriving at your understanding.

____

- (Pair-work) Identify the parts of the text that cause confusion and disagreemen

____

- (Pair-work) Make a note of the parts of the text that require special attention in the Second Listen.

____

EVALUATION

Second Listen

- Listen to those parts that have caused confusion or disagreement and make notes on any new information you hear.

- (Pair-work) Identify the parts of the text that cause confusion and disagreement.

____

- (Pair-work) Identify the parts of the text that cause confusion and disagreement.

____

- (Pair-work) Identify the parts of the text that cause confusion and disagreement.

____

- (Class-discussion)

____

____

____

PROBLEM-SOLVING

Third Listen

- If you haven't used any strategy or your strategy didn't work, use another strategy or a combination of strategies. Then listen a third time I correct your understanding.

Script-sound Recognition

- Read the text while listening. Then pronounce the underlined words.

Personal reflection

Circle the statement you think is right for you and answer the question. Then complete the statement about what you will do in the next listening comprehension task.

I found the task (**easy**, **hard**, **neither asy nor hard**.)

Why? ____

____

In the next listening task, I will pay attention to:

____

____

MAKING PRADICTIONS

WHAT is prediction?

Thinking of the words, phrases, and information that you might hear

EXAMPLE: You want to buy a coffee. Think about what you need to say, and predictwhatthe cashier will say to you.

WHY: Predicting what you might hear makes it easier to understand what you hear.

WHEN: Use **prediction** when you have knowledge of the topic.
When you get new information (during listening) you can change your predictions or makenew ones.

ACTIVATING BACKGROUND KNOWLEDGE

WHAT is activating prior-knowledge?

Bringing information that you already know about a topic into your mind before you.

EXAMPLE: Your teacher tells you that you will listen to a radio program about fastfood.Think about everything you know about fast food: where you buy it, howmuch it costs, howit tastes, how healthy it is, how popular it is, etc.

WHY: Thinking about what you already know helps you get ready to listen. Having this informationin your mind makes it easier to understand the new information coming in while you listen.WHEN: Activate background knowledge when you know what the topic will be, and you already know something about the topic.

CHECKING PREDICTIONS

WHAT is checking predictions?
Deciding whether your predictions were true or not. Did you hear things you expected to hear? What was different?

EXAMPLE: You predicted that you would hear the words “snow,” “cold,”

WHY: Thinking back about the predictions you made and connecting them to what you listened to make it easier to **activate background knowledge**. It also helps you understand what you listened to better.

WHEN: **Check predictions** after every listening activity, and while you are listening, as new information comes to you.

Lesson 4:

Be Polite

(Unit 3 / pp. 42-44)

Objectives: *By the end of the lesson the students will have …* • Practiced using selective attention to focus on problem spots in the second listening • Been introduced to the strategies of **problem identification** • Reflected on their use of the strategies of problem identification
Materials: Listening worksheet, data show, CD1/track 29
Activities: • T. elicits types of cognitive and meta-cognitive strategies. • Ss. brainstorm as many types of cognitive and meta-cognitive strategies as possible. • T. takes notes on the board. • T. tells Ss that they are going to practice using some monitoring strategies, namely problem identification strategies. • T. asks Ss of the 'problem identification' sheet. • Ss. go through the 'problem identification' sheet with the help of the teacher. • T. shows Ss the 'now I need to focus on' area and asks them to write down at least TWO things that they need to focus on . _ IDENTIFY TWO PROBLEMS. • T. reminds Ss that while they do this, they should read their notes from yesterday to fall their mind with what they already know. • T. asks Ss to tell the strategy they can use to listen carefully for those problems. • T. asks Ss to reflect on their performance.

• Ss. answer the reflection question. • T. asks some volunteers to read their reflections.
Homework: Practicing identifying problems and setting goals: Ss. do one listening activity from Randal's and reflect on how their goal setting and problem identificationstrategies.

PROBLEM IDENTIFICATION

WHAT is Problem Identification?

Problem Identification is finding specific parts of the listening that you could not understand well or could not catch the first time you listened.

EXAMPLE*:* During the first listening, you heard the number "26" and the words "restaurants and "coffee shops," but you are not sure if there 26 restaurants, 26 coffee shops, or 26 restaurants and coffee shops. You need to listen carefully to this part next time.

WHY Problem Identification?
Identifying (finding) the problem areas helps you know where to use **SELECTIVE ATTENTION**, and can help you understand these parts the second time.

WHEN Using Problem Identification?
You use Problem Identification anytime you have more than one chance to hear something, OR when you will participate in the same kind of listening activity in the future.

Lesson 5:

Classroom Etiquette

(pp. 45-46)

Objectives: *By the end of the lesson the students will have …* • Been introduced to and practiced the strategies of directed attention • Been revisited the strategies of **goal setting and checking goals**, selective attention, and problem solving • Been listening for main ideas • Been practiced listening for details • Listened to and discussed the topic: Extreme fashion (p. 5) • Reflected on their use of directed attention strategies
Materials: Directed attention strategies sheet, data show, CD1/tracks 31 & 32
Activities: • T. elicits types of cognitive and meta-cognitive strategies. • Ss. brainstorm as many types of cognitive and meta-cognitive strategies as possible. • T. takes notes on the board. • T. elicits how, why, and when Ss can apply strategies of goal setting, selective attention, note-taking, and problem-identification. • Ss. brainstorm as much information as possible. • T. takes notes on the board. • T. tells Ss that they are going to practice using directed attention. • T. elicits some information about directed attention (why? How? When?). • Ss. brainstorm as many responses as possible. • T. tells Ss that they are going to listen to a news report about teaching etiquette in the classroom.

- T. asks Ss if they already use this strategy.
- Ss. respond to the T's request.
- T. goes through the strategies of directed attention sheet.
- T. reminds Ss that before listening they should focus their attention on The listening task and not to think about anything else until after they have finished.
- T. asks Ss how they are going to direct their attention.
- Ss. respond to the T's request.
- T. asks Ss to listen for the main ideas, but they should tell how they are going to direct their attention before starting to listen.
- Ss. listen and circle the best answer that completes each statement (pp. 45-46).
- T. elicits the right answers and writes them on the board.
- T. tells Ss to listen for details, but they should tell how they are going direct their attention before listening.
- Ss. listen to details and report again by writing short notes to help themselves remember what they hear.
- Ss. compare their notes with their partners.
- T. elicits the right answers and writes them on the board.
- T. asks Ss to reflect on their use of the strategies of directed attention.
- Ss. answer the reflection questions on the worksheet.

Homework: Practicing using directed attention strategies:: Ss. do one listening activity from Randal's and reflect on how their use of the strategies of directed attention.

SETTING GOALS

WHAT is Setting Goals?

Setting Goals is understanding an activity and deciding what you want to gain/learnfrom that activity.

EXAMPLE: You are going to watch a video asking people about global warming, so yourgoal might be to understand each person's opinion.WHY: Setting goals gives you a purtpose for listening and helps you to choose the beststrategies.

WHY: Use the setting goal strategy any time you have an activity to do.

CHECKING GOALS

WHAT is Checking Goals?

Checking goals is deciding if you met your goal or not.

EXAMPLE: After you watched the interview video, tell yourself what each person's opinion was, then ask yourself the question if you are confident about your understanding. If your friend also watched the video, you could share your idea with her to see if she agrees.

WHY: Checking goals is knowing if you met your goal or not. That helps you decide if youneed to listen again or try a different strategy, and can build your confidence when goalsare met.

WHEN: After learning avtivities, OR anytime you set a goal

Lesson 6:

Business Is a Game

(pp. 64-65)

Objectives: *By the end of the lesson the students will have …* • Been introduced to and practiced **monitoring and double-checking monitoring** • Brainstormed situations in which these strategies can be used • Listened to a conversation about an assignment for a business class and noted could be understood • listened for main ideas and detail • Reflected on their checking of predictions
Materials: working sheet, data show, monitoring and double-checking monitoring sheet
Activities: • T. distributes the checking predictions sheet and the working sheet among Ss. • T. asks Ss if they can remember what they worked on the previous lesson. • T. brings Ss attention to the monitoring and double-checking monitoring sheet and tells them that this is another strategy. • T. goes over the sheet and highlights the importance of this strategy *If you make a prediction, you must check it and see it is correct.* • T. asks Ss if they already use this strategy. • Ss. look at the “listening” page and write the title of the listening and the date at the top. • T. plays the CD for the first time. • Ss. get together with the same partner and verify monitoring. • T. tells Ss they will listen to a conversation between two friends about an assignment class. • T. explains activity 1 and how to use the answer sheet.

- Ss. predict topics and words they might hear. They also predict the Problems they might face and finally, they select the appropriate strategy for coping with these problems. They take notes in the “prediction” section of their listening paper.
- T. plays CD1/track 40 for the first time.
- Ss. listen to check their predictions and add what they also understood in the first listen (Ss think aloud to make their monitoring and double-heard by the teacher.) checking monitoring
- T. asks Ss to check and discuss their predictions with a partner. Do they have thesame predictions checked? Are their notes the same or different? They talk about the differences.
- T. tells Ss that they will listen again to the news.
- T. plays the CD and stops after every paragraph so that Ss can write down anything else they understood in the final box on the paper.
- Ss. circle the correct answers.
- T. elicits the correct answers and writes them on the board.
- T. asks Ss to listen for details.
- Ss. write T or F and correct the wrong statements.
- T. elicits the correct answers and writes them on the board.

Homework: Practicing checking predictions: Ss. do one listening activity from Randal’s and reflect on how they made predictions and checked them.

COMPREHENSION MONITORING

WHATt is Comprehension Monitoring?

Comprehension Monitoring is checking that you understand what you are hearing while you listening, and checking for the connections between things that you understand.

EXAMPLE: You hear “First --- travel --- bus ---Dubai” and you quickly ask yourself “Does thismake sense?” and/or translate the words that you understand “ first = أوّلا; travel= يسافر; bus = حافلة; Dubai = دبي. Then check the relationship between these these words and guess the meaning of the sentence.

WHY Comprehension Monitoring?

Checking what you understand helps you to identify problems & be aware of you yourprogress as a listener.

WHEN Using Comprehension Monitoring?

You use Comprehension Monitoring anytime you are listening, especially when the listening is difficult.

DOUBLE-CHECKING MONITORING

WHAT is Double-Checking Monitoring?

Double-Checking Monitoring is using information that comes later in the listening to check that you understand what came before.

EXAMPLE: Early in the listening, you heard “First --- travel --- bus --- Dubai” so you thought you would travel to Dubai by bus, but much later in the listening you hear --- arrive --- Dubai,” so you need to use this new information to help you understand the early part of the listening.

WHY Double-Checking Comprehension Monitoring?Using all the available information will make you a more effective listener.

Connecting information later in the listening to earlier information will also help you understand themain idea more clearly.

WHEN Using Double-Checking Comprehension Monitoring?

You use Double-Checking Comprehension Monitoring anytime you are listening, butespecially in longer listening activities.

Lesson 7:

Sustainable Dave

(Unit 8 / pp. 136-137)

Objectives: *By the end of the lesson the students will have …* • Reviewed the main features of cognitive and meta-cognitive strategies • Been introduced to strategies of Direted attention • Been introduced to the strategies of linguistic inferencing and between parts inferencing • Written a summary to demonstrate understanding of a listening text. • Reviewed note-taking strategies • Listened for main ideas • listened for details
Materials: Listening worksheet, data show, CD2/track 23 & 24, inferencing information sheet
Activities: • T. outlines the class activities. • T. elicits the different types of cognitive and meta-cognitive strategies. • T. invites Ss. to recall what they learned from note-taking strategies lesson they took on the previous day. • Ss. brainstorm how to apply note-taking strategies. • T. introduces new strategies: Directed Attention and models it. • Ss. say whether or not they already do this and highlight the importance of guessing. • T. asks Ss to read the paragraph (unit 8/p. 136) in order to make the difference between direct statements and making inferences. • Ss. brainstorm as much information as possible. • T. hands the listening worksheet and asks Ss to plan for their first listen.

• t. contextualizes the listening (who, what, when, where)

• Ss. start to plan for their first listen (They shoud state how they are goung to direct their attention to the task.)

• T. elicits information and writes it on the board.

• T. plays tracks 5 and 6 for the first time.

• Ss. (in pairs) listen and check their performance and evaluate it.

• T. explains activity A, p. 136.

• Ss. read the sentences then listen to the news story “Bear Eats Oatmeal”, then write I (Inference) or D (Direct statement).

• T. plays track 5.

• Ss. listen then compare answers in pairs.

• T. elicits the right answers and writes them on the board.

• T. explains Activity B/ p. 137.

• Ss. listen to the conversation and circle the best inferences on each conversation.

• T. goes over the answers with class.

• T. writes prompting questions on the board (1. Check your goal. Did you meet it?

If you did, put a check and ask yourself “Why was this possible? What strategies helped me?” If you did not, cross it out and ask yourself: “Why couldn’t I do this?What listening level?” “What can I do next time to improve my comprehension/understanding?”

• Ss. (WG) discuss the self-evaluation/goal checking activity and the importance of directing their attention to the passage.

Homework: Practicing self-evaluation: Ss do an activity from Randall’s and evaluate their performance. Reflect on how ypu directed your attention while listening for comprehension.

Lesson 8:

The Great Banana

(Unit: 8 / pp. 13-14)

Objectives: *By the end of the lesson the students will have …* • Revised the use of inferencing strategies • Been introduced to and practiced the strategy of elaboration • Activated background knowledge about a topic • Made predictions about a topic • Shared information with a partner • Determined which listening strategies to use during listening & practiced using them • Listened for main ideas and details • Reflected on their performance
Materials: Elaboration sheet, data show, CD1/Track 2 (Interactions 1, pp. 13-14), listening sheet
Activities: • T. outlines the class activities. • T. elicits the different types of cognitive and meta-cognitive strategies. • Ss brainstorm as many types of cognitive and meta-cognitive as possible. • T. invites Ss to recall what they learned from making inferences strategies lessons they took the previous day. • Ss. brainstorm how to apply inferencing strategies. • T. introduces new strategies: elaborations and discusses what elaboration Is, how it works, and when to use them. • Ss. say whether or not they already do this and highlight the importance of elaboration. • T. models this strategy and points out when he is using elaboration.

• T. contextualizes the listening (who, what, when, where). • Ss. make predictions about vocabulary and topics in small groups. • T. plays tracks 7 and 8 for the first time. • Ss. check their predictions in pairs. • T. plays tracks 7 and 8 for the second time. • Ss. evaluate their performance and write notes in the columns. • Ss. listen carefully and take notes. • T. asks students to elaborate on the information they hear by using their background knowledge during listening to fill in gaps in what they can understand. • Ss. discuss their elaborations. • T. asks Ss. to evaluate their performance. • Ss. reflect on their performance by answering the guiding questions on the listening sheet. • T. explains the second activity. • Ss. listen for the main ideas and details.
Homework: Practicing making elaborations: Students do an activity from Randall's and reproduce the information they hear in an elaborated way.

Lesson 9:

Presentation: School Orientation

Interactions 1

(pp. 13-14)

Objectives: *By the end of the lesson the students will have …* • Reviewed the main features of cognitive and meta-cognitive strategies • Reviewed and practiced the strategy of taking notes • Reviewed and practiced the stages of prediction and checking prediction • Listened for main ideas and details • Reflected on their performance
Materials: Note-taking sheet, data show, CD1/Track 2 (Interactions 1, pp. 13-14)
Activities: • T. outlines the class activities. • T. elicits the different types of cognitive and meta-cognitive strategies. • Ss brainstorm as many types of cognitive and meta-cognitive as possible. • T. takes notes on the board. • T. distributes handouts among Ss and asks Ss to match the type of strategy with its different activities. • Ss do the activity. • T. elicits the answers and writes them on the board. • T. outlines the activities of the day. • T. introduces the note-taking activity by asking Ss if they already know this strategy. (Why? When? How they can use the note-taking strategy. • T. asks Ss to do the planning activity by answering the questions on the worksheet. • Ss. answer the questions.

• T. elicits some answers. • T. tells the Ss that they are going to hear a short speech by a school advisor on the first day of an English language programme. • T. tells Ss that they are going to listen carefully and take notes on the main ideas of the talk. • Ss. listen carefully and take notes. • T. elicits the three main ides of the talk and gives the right answers. • T. tells Ss. that they are going to listen to the talk a second time to take notes on the details. • Ss. listen carefully and take notes. • T. elicits the answers and gives the right ones. • T. asks Ss. to reflect on their listening performance by answering the questions on the worksheet.
Homework: Practicing taking-notes: Ss. do one listening activity from Randal's and reflect on the taking-notes performance

NOTE-TAKING

Presentation: School Orientation

(pp. 13-14)

1. GOAL

*What is your goal?*____

*What do you know about the topic*______________________________________

Write the types of words you will hear. ___________________________________

Predict the problems you might face. _____________________________________

Select the appropriate strategies for coping with these problems. _______________

____

Activity 2: Write down the topic of the listening. Then write what you know about the topic

Topic: ____		
WHAT I KNOW ABOUT THE TOPIC	WHAT I WANT TO KNOW ABOUT THE TOPIC	WHAT I LEARNED
PREDICTION Write the words that you think you will hear. ____ Write some ideas that you think the passage will deal with. ____		

2. MONITORING

First Listen

- Listen to the text and underline or circle the right words.
- Write down new information. Then answer the questions dealing with the main ideas and details.
- (Pair-work) Compare what you have understood with what your partner has understood.
- (Pair-work) Explain the strategies you used for arriving at your understanding.

___

___

- (Pair-work) Identify the parts of the text that cause confusion and disagreement.

___

- (Pair-work) Make a note of the parts of the text that require special attention in the second listen.

___

3. EVALUATION

Second Listen

- Listen to those parts that have caused confusion or disagreement and make notes on any new information you hear.

- (Pair-work) Identify the parts of the text that cause confusion and disagreement.

- (Pair-work) Identify the parts of the text that cause confusion and disagreement.

- (Pair-work) Identify the parts of the text that cause confusion and disagreement.

- (Class-discussion)

4. PROBLEM-SOLVING

Third Listen

- If you haven't used any strategy or your strategy didn't work, use another strategy or a combination of strategies. Then listen a third time I correct your understanding.

Personal reflection

Circle the statement you think is right for you and answer the question. Then complete the statement about what you will do in the next listening comprehension task.

I found the task (***easy***, ***hard***, ***neithereasy nor hard***.)

Why? ____

In the next listening task, I will pay attention to:

____

____

APPENDIX E

The Oxford Quick Placement Test (Version 1)

Part 1Questions 1 – 5

.Where can you see these notices?

. For questions 1 to 5, mark one letter A, B or C on your Answer Sheet.

1.

Please leave your room key at Reception

A. in a shop B. in a hotel C. in a taxi

2.

Foreign money changed here

A. in a library B. in a bank C. in a police station

3.

AFTERNOON SHOW BEGINS AT 2PM

A. outside a theatreB. outside a supermarket C. outside a restaurant

4.

CLOSED FOR HOLIDAYS Lessons start again on 8th January

A. at a travel agent’s B. at a music school C. at a restaurant

5.

Price per night £10 a tent £5 a person

A. at a cinema B. in a hotel C. at a camp-site

Questions 6-10

. In this section you must choose the word which best fits each space in the text below.

. For questions 6 to 10, mark one letter A, B, or C on your Answer Sheet.

Scotland
Scotland is the north part of the island of Great Britain. The Atlantic Ocean is on the west and the North Sea on the east. Some people (6) ………. Scotland speak a different language called Gaelic. There are (7) ………. Five million people in Scotland, and Edinburg is (8) ………. most famous city. Scotland has many mountains; the highest one is called 'Ben Nevis'. In the south of Scotland, there are a lot of sheep. A long time ago, there (9)………. Many forests, but now there only a (10)……….. Scotland is only a small country, but it is quite beautiful.

6.	A on	B in	C at
7.	A about	B between	C among
8.	A his	B your	C its
9.	A is	B were	C was
10.	A few	B little	C lot

Questions 11 - 20

. In this section you must choose the word which best fits each space in the text below.

. For questions 6 to 10, mark one letter A, B, or C on your Answer Sheet.

Alice Guy Blaché
Alice Guy Blaché was the first female film director. She first became involved in cinema whilst working for the Gaumont Film Company in the late 1890s. This was a period of great change in the cinema and Alice was the first to use many new inventions, (11)………. Sound and colour. In 1970, Alice (12) ………. To New York where she started her own film company. She was (13) ………. Successful, but, when Hollywood became the centre of the film world, the best days of the independent New York film company. She was (14)……….. When Alice died in 1968, hardly anybody (15)………. .

11.	A bringing	B including	C containing	D supporting
12.	A moved	B ran	C entered	D transported
13.	A next	B once	C recently	D recently
14.	A after	B down	C over	D over
15.	A remembered	B realised	C repeated	D repeated

UFOs – do they exist?
UFO is short for 'unidentified flying object'. UFOs are popularly known as flying saucers, (16) ………. That is often the (17) ………. They are reported to be. The (18)………. 'flying saucers' were seen in 1947 by an American pilot, but experts who studied his clain decided it had been a trick of the light. Even people experienced at watching the sky, (19)………. As pilots, report seeing UFOs. In 1978 a pilot reported a collection of UFOs off the coast of New Zealand. A television (20)………. Went up with the pilot and filmed the UFOs. Scientists studying this phenomenon later discovered that in this case they were simply lights on boats out fishing.

16.	A because	B therefore	C although	D so

17. A look B shape C size D type

18. A last B next C first D oldest

19. A like B that C so D such

20. A cameraman B director C actor D announcer

Questions 21 – 40

In this sectionyou must choose the word or phrase which best completetes each for questions 21 to 40, mark one letter A, B, C, or D on your Answer Sheet.

21 The teacher encouraged her students ………. to an English pen-friend.

A should write B write C wrote D to write

22They spent a lot of time ………. at the pictures in the museum.

A looking B for looking C to look D to looking

23 Shirley enjoys science lessons, but all her experiments seem to ……….wrong.

A turn B come C end D go

24 ………. from Michael, all the group arrived on time.

A Except B Other C Besides D Apart

25 She ………. her neighbour’s children for the broken window.

A accused B complained C blamed D denied

26 As I had missed the history lesson, my friend went ………. the homework with me.

A by B after C over D on

27 Whether she’s a good actress or not is a ………. of opinion.

A matter B subject C point D case

28 The decorated roof of the ancient palace was ………. up by four thin columns.

A built B carried C held D supported

29 Would it ………. you if we came on Thursday?

A agree B suit C like D fit

30This form ………. be handed in until the end of the week

A doesn’t need B doesn’t have C needn’t D hasn’t got

31 If you make a mistake when you are writing, just ……… it out with your pen.

A cross B clear C do D wipe

32 Although our opinions on many things ………., we're good friends.

A differ B oppose C within D divide

33 This product must be eaten ………. two days.

A by B before C within D under

34 The newspaper report contained ………. important information.

A many B another C an D a lot of

35 Have you considered ………. to London?

A move B to move C to be moving D moving

36 It could be a good idea for people who lead an active life to increase their ………. .

A upturn B input C upkeep D intake

37 I thought there was a ………. of jealousy in his reaction to my good fortune.

A piece B part C shadow D touch

38 Why didn't you ………. That you were feeling ill?

A advise B mention C remark D tell

39 James was not sure exactly where his best interests ………. .

A stood B rested C lay D centered

40 He's still getting ………. the shock of losing his job.

A across B by C over D through

APPENDIX F
Listening Comprehension Test (LCT)

Passage 1

1. Two people know each other. Who are they?

A. Jack and Peter
B. Bruce and Jack
C. Bruce and Peter
D. Jack and John

2. Who has just moved into the building?
A. Jack
B. Bruce
C. Peter
D. John

3. What will Bruce and Jack do after the conversation?
A. Get something to eat
B. Join their class
C. Meet their new classmates.
D. Go to Hong Kong

4. Where was Bruce born?
A. China
B. Hong Kong
C. San Francisco
D. England

5. What does Peter plan to do?
A. Go to San Francisco
B. Go to Hong Kong
C. Take a Chinese class
D. Join another university

6. Where will Jack and Peter live?
A. In their parents' house
B. In two different rooms
C. In Hong Kong
D. In the same room

Passage 2

1. Why does Peter want to go on vacation?
A. He is very sick.
B. He wants to make new friends.
C. He is sick of studying.
D. He has not travelled for a long time.

2. Where does Bruce prefer to go on vacation?
A. to the beach
B. to Hawaii
C. to the mountains
D. to Florida

3. What do Jack and Peter agree about?
A. Going to a hot place
B. Going to a warm place.
C. Going to a cold place
D. Going to a mountainous place

4. When is the conversation taking place?
A. The beginning of the year
B. The end of the school year
C. The end of the year
D. The beginning of the school year

5. What is the sport that Jack doesn't want to do?
A. swimming
B. skiing
C. snorkeling
D. snowboarding

6. What will the weather look like tomorrow?
A. Not better
B. Not hotter
C. Not worse
D. Not colder

Passage 3

1. What do Jack and Bruce think about watching TV?
A. They agree.
B. They don't completely disagree.
C. They don't completely agree.
D. They disagree.

2. Where does Bruce prefer to get the news from?
A. The radio or Internet
B. The radio or magazine
C. The internet or newspaper
D. The TV or Internet

3. What does Jack usually do when there are commercials on TV a day?
A. Turn off TV and listens to the radio
B. Turns off TV and reads a book
C. Turns down the volume down or changes the channel
D. Watches them carefully and writes about them

4. How many hours does the average American watch TV?
A. Three
B. Four
C. Five
D. Six

5. What doesn't Jack like?
A. Soap opera
B. Newspapers
C. Cartoons
D. Films

6. What doesn't Bruce hate watching on TV?
A. Cartoons
B. Films
C. Commercials
D. Soap operas

Audioscript

Passage 1
Jack: Hi. How are doing?
Peter: Hi. You're …Jack, right?
Jack: Yeah, And sorry, you're …?
Peter: Peter Riley.
Jack: Oh, yeah, we met on campus last week.
Peter, this is my friend, Bruce Lee. He's just moved into the building.
Peter: Hi, Bruce Lee.
Bruce: Nice to meet you. You can just call me Bruce Lee. Lee's my last name.
Peter: Oh. Lee. That sounds…
Bruce: Chinese.
Peter: Oh. So, you're from …
Bruce: … from San Francisco. My parents came over from Hong Kong before I was born.
Peter: Oh, that's cool. Actually, uh, I was thinking of taking Chinese this term. Maybe you could help me.
Bruce: Well, my Chinese really isn't very good…
Jack: Uh, listen Peter. We're really hungry. Do you want to get something to eat with us?
Peter: Sorry, I can't. I have to go meet my new classmates.
Jack: Oh, OK. Well, stop by sometime. I'm up in 212.
Peter: Hey, I'm on the same floor. I'm in 220.
Jack: No kidding…
Peter: Well, nice meeting you, Bruce. I'm sure I'll see you soon
Bruce: See you soon.

Passage 2
Peter: Wow. Look. It's raining cats and dogs- again! I hate this weather. When does winter break start?
Jack: Winter break, it's only October.
Peter: I know, but I'm sick of studying. I want to go someplace warm and lie on the beach for a week. Someplace where it's sunny and dry.Florida or Hawaii, maybe.
Jack: Yeah. Where we can go swimming and snorkeling and get a great tan. Now that's my idea of a perfect vacation.Bruce: Not mine. I can't swim very well, and I don't like lying in the sun.
Peter: Oh, yeah? How come?
Bruce: I don't know. I just prefer the mountains, especially in winter. I love snowboarding. In fact, I'm planning to Bear Mountain with some friends in December. Do you want to come?Jack: No thanks. I went there last year. I was freezing the whole time. Anyway, I don't
know how to ski very well. Last year, I fell about a hundred times.
Bruce: Peter, how about you?
Peter: Sorry, I'm like Jack. I don't want to anyplace where it's below 70 degrees.
Jack: By the way, what's the weather forecast for tomorrow?
Bruce: The same as today. Cloudy, cold, and a 90 per cent chance of rain.
Jack: Oh, no! I left my umbrella at the library.
Bruce: You can borrow mine. I've got an extra one.

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Passage 3
Bruce: Hey, listen to this. The average American watches four hours of TV a day.
Jack: A day? You're kidding.
Bruce: No it says so right here in this newspaper. Hmm, I guess you're an average Jack. You always have your TV on.
Jack: Come on. Are you saying I'm a couch potato?
Bruce: Yeah. I really think watching TV is a waste of time.
Jack: Oh, come on some programs are bad, like those soap operas. But what about sports or the news? You watch those sometimes, don't you?
Bruce: Well, actually, for the news, I prefer the newspaper. Or the Internet.
Jack: Why?
Bruce: First, because they give you a lot more information. And I read them any time want. Plus I hate all the commercials.
Jack: I know what you mean. That's why, when the commercials come on, I just turndown volume the volume or change channels.
Bruce: Yeah, I noticed that. Channels surfing drives me crazy.
Jack: Ok, next time you come over, I'll let you have the remote control.
Bruce: Oh, that's so sweet. But I have a better idea. Next time I come over, let's just turn the TV off.

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APPENDIX G
Vocabulary Level Test (online)

Part I

VOCABULARY TEST: 1000 LEVEL TEST A

<u>Instructions</u>: There are 39 questions. Click "T" if a sentence is true. Click "N" if a sentence is not true. Click "X" if you do not understand the sentence. At the end of the test, click *"Check"* at the bottom of the web page to see your score.

The first one has been answered for you.	<u>Example</u>: We cut time into minutes, hours, and days. T (This is **True**) N (This is **Not true**) X (I do **Not understand** the question)

1. This one is little. T N X	ere. T N X
3. Some children call their mother Mama. T	**4.***Show me the way to do it* means 'show me how to do it.' T

N X	N X
5. This country is part of the world. T N X	**6.** This can keep people away from your house. T N X
7. When something falls, it goes up. T N X	**8.** Most children go to school at night. T N X
9. It is easy for children to remain still. T N X	**10.** One person can carry this. T N X
11. A scene is part of a play.	**12.** People often think of their home, when they are away fro

T N X	T N X
13. There is a mountain in every city. T N X	**14.** Every month has the same number of days. T N X
15. A chief is the youngest person in a group. T N X	**16.** Black is a colour. T N X
17. You can use a pen to make marks on paper. T N X	**18.** A family always has at least two people. T N X
19. You can go by road from London to New York. T	**20.** Silver costs a lot of money. T N

N X	X
21. This is a hill. T N X	**22.** This young person is a girl. T N X
23. We can be sure that one day we will die. T N X	**24.** A society is made up of people living together. T N X
25. An example can help you understand. T N X	**26.** Some books have pictures in them. T N X
27. When some people attack other people, they try	**28.** When something is ancient, it is very big.

to hurt them. T N X	T N X
29. Big ships can sail up a stream. T N X	**30.** It is good to keep a promise. T N X
31. People often dream when they are sleeping. T N X	**32.** This is a date - 10 o'clock. T N X
33. When something is impossible, it is easy to do it. T N X	**34.** Milk is blue. T N X
35. A square has five sides. T	**36.** Boats are made to travel on land. T

N X	N X
37. Cars cannot pass each other on a wide road. T N X	**38.** When you look at something closely, you can see the det T N X
39. This part is a handle. T N X	

Part 2

Vocabulary Level Test: 2000 LEVEL TEST

1. I'm glad we had this opp   to talk.

2. There are a doz   eggs in the basket.

3. Every working person must pay income t   .

4. The pirates buried the trea   on a desert island.

5. Her beauty and ch   had a powerful effect on men.

6. La   of rain led to a shortage of water in the city.

7. He takes cr   and sugar in his coffee.

8. The rich man died and left all his we   to his son.

9. Pup   must hand in their papers by the end of the week.

10. This sweater is too tight. It needs to be stret   .

11. Ann intro   her boyfriend to her mother.

12. Teenagers often adm   and worship pop singers.

13. If you blow up that balloon any more it will bu   .

14. In order to be accepted into the university, he had to impr   his grades.

15. The telegram was deli   two hours after it had been sent.

16. The differences were so sl   that they went unnoticed.

17. The dress you're wearing is lov   .

18. He wasn't very popu   when he was a teenager, but he has many friends now.

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APPENDIX H
Metacognitive Awareness Listening Questionnaire (MALQ)

QUESTIONNAIRE

Name: ____ Level ________

Meta-cognitive Awareness Listening Comprehension Questionnaire (MALQ)

1 Strongly Disagree / 2 Partially Disagree / 3 Disagree / 4 Neutral / 5 Partially Agree / 6 Agree / 7 Strongly Agree	For each item, write the number that allows what you think.
1. Before I start to listen, I have a plan in my head for how I am going to listen.	
2. I pay more attention to the text when I have trouble understanding.	
3. Listening in English is more difficult that 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 words I I don't understand. .	
1. While listening, if I realize I am thinking about other things, I pay attention again right away.	
7. As I listen, I compare what I understand with what I already know	

about the topic.	
8. It is a challenge for me to understand when I listen in English.	
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 keywords as I listen.	
12. When I realize I am not paying attention I quickly try to pay attention again.	
13. As I listen, I quickly change my interpretation if I realize that it was not correct.	
14. After listening, I think back to how I listened and about what I I might do differently next time.	
15. I am not 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 thewords that I don't understand.	
18. I translate word-by-word as I listen.	
19. When I guess the meaning of a word, I think back to everything I have heard to check my guess.	
20. As I listen, I ask myself if I am happy with my level of	

understanding.	
21. I have a goal in my mind as I listen.	

Reprinted from “The metacognitive awareness listening questionnaire: Development and validation,” by L. Vandergrift, C. C. M. Goh, L. J. Mareschal and M. H. Tafaghodtari, 2006, *Language Learning*, 60(2), p. 462. Copyright 2006 by Language Learning. Reprinted with permission.

APPENDIX I

Working Memory Span Test (WMST)

(Listening Span Test)

Name: ____ Level:_____ Section:

Direction: Circle **T (True)** for the **meaningful sentence** or **F(False)** for the**meaninglesssentence**. Then write the **final word** of each sentence on the line provided. You can change the order of the words, except that you can't begin with the last word.

A. Two-Sentence Set

1.1. T / F ___________ 1.2. T / F ___________

2.1. T / F ___________ 2.2. T / F ___________

3.1. T / F ___________ 3.2. T / F ___________

B. Three-Sentence Set

1.1. T / F ___________ 1.2. T / F ___________ 1.3. T / F ___________

2.1. T / F ___________ 2.2. T / F ___________ 2.3. T / F ___________

3.1. T / F ___________ 3.2. T / F ___________ 3.3. T / F ___________

C. Four-Sentence Set

1.1. T / F ___________ 1.2. T / F ___________ 1.3.T / F ___________ 1.3. T / F ___________

2.1. T / F ___________ 2.2. T / F ___________ 2.3.T / F ___________ 2.3. T / F ___________

3.1. T / F ___________ 3.2. T / F ___________ 3.3.T / F ___________ 3.3. T / F ___________

D. Five-Sentence Set

1.1. T / F ___________ 1.2. T / F ___________ 1.3.T / F ___________ 1.4.T / F ___________ 1.5. T / F ___________

2.1. T / F ___________ 2.2. T / F ___________ 2.3.T / F ___________ 2.4.T / F ___________ 2.5. T / F ___________

3.1. T / F ___________ 3.2. T / F ___________ 3.3.T / F ___________ 3.4.T / F ___________ 3.5. T / F ___________

Listening Span Pre-Test

1. (a)
- There are hundreds of dangerous animals in the sea.
- In a restaurant, the person who serves food is the customer.

(b)
- It is very hard for a friendly person to make friends.
- If you have a good sense of humour, you are funny.

(c)
- Many animals, such as cats, can see at night.
- You should write new words in a notebook to remember them.

2. (a)
- People buy cars to take them from one place to another.
- If you don't have a passport, you can't travel.
- The most important habit for good health is smoking.

(b)
- A student who depends on the bus never takes it.
- William Shakespeare was a very famous English football player.
- Most people who succeed in school study very hard.

(c)
- People always go to the fish market to buy books.
- Three of our senses are smelling, tasting, and seeing.
- To lose weight, you should eat more at each meal.

3. (a)
- Having free time to relax is important for people.
- A group of cows would probably live in a shop.
- Someone who writes children's books must be good at telling stories.
- When students miss the bus, they usually feel happy.

(b)
- To make a sandwich, you need two slices of bread.
- Doctors and nurses usually work in clinics and hospitals.
- Drinking too much coffee may help people to sleep.
- To protect your house from a thief, open your windows.

(c)
- It is very easy for people to fly like birds.
- When there is an earthquake, people stay in the house.

- Modern medicine helps people live much longer than before.
- The details of a story are what happens in the story.

4. (a)

- Parents don't want their children to learn good things.
- People like to live in big cities because they are quite.
- Doctors say that milk is not good for children.
- People use their free time to rest and relax.
- In the past people used some birds to send messages.

(b)

- It is dangerous to make telephone calls while driving.
- When the weather is bad, you probably plan a picnic.
- It is not good to help your friends when they have problems.
- We all know that it is dangerous to drive fast.
- People always swim in the sea when the weather is cold.

(c)

- People, animals, and plants always need air and water.
- Driving for a long time may make you tired.
- It is helpful to have a map when we travel.
- We all know that the weather in the desert is usually cold.
- Parents shouldn't provide their children with what they need.

Listening Span Pre-Test
(Listening Comprehension)

Test (A)

John lived with his mother in a rather big house, and when she died, the house became too big for him so he bought a smaller one in the next street. There were two very nice old clocks in his first house, and when the two men came to take his furniture to the new house, John thought 'I'm not going to let them carry my beautiful old clocks in their trucks. Perhaps they'll break them then repairing them will be very expensive'. So he picked them up and kept looking at them.

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1. What did John keep looking at?

a. the two trucks
b. the two clocks
c. the two men
d. the two houses

2. What did John buy?
a. two clocks
b. a house
c. two trucks
d. new furniture

3. Who came to John's house?
a. two men
b. his mother
c. no one
d. his neighbours

4. Choose a title.
a. John's Two Houses
b. John's valuable things
c. John's Strong Guests
d. John's Old Mother

Test (B)

Alan is forty, but could never forget his old days. When he was young, he played a lot of football and he was very good at it, but then he went and worked in a town, and there was no team for him there, so he stopped playing. Then he began to get rather fat, so he thought, 'I've stopped playing football, and now I'm getting fat. This is a problem. What am I going to do?' He thought about it for a few days. Then he said to himself, I am getting mad. I really have to stop thinking a bout it.'

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Questions
What does Alan have to stop doing?
a. thinking about football
b. thinking about working
c. thinking about getting fat
d. thinking about walking

How old is Alan?
a. forty
b. fifty
c. thirty
d. twenty
Why did Alan go to the town?
a. to play football

b. to work
c. to relax
d. to study

Choose a title to the passage.
a. Alan’s Happy Days
b. Alan’s Old Age
c. Alan’s Job
d. Alan’s Family

Test (C)

Mr. an Mrs. Smith married thirty years ago, and they have lived in a small house since then. They have a ten-year old daughter who goes to a primary school. Mr. Smith goes to work at eight o’clock every morning, and gets home at half past seven every evening from Monday to Friday. There are quite a lot of houses in their street, and most of the neighbours are nice. But the old lady in the house opposite Mr. and Mrs. Smith died. After a few weeks a young man and woman came to live in it.

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Questions
1. Where did the young man and woman come to live?
a. in Mr. and Mrs. Smith’s house
b. in the old lady’s house
c. in a house in another street
d. in a house near a primary school

2. Where do Mr. and Mrs. Smith live?
a. in a big house
b. in a new house
c. in a small house
d. in a cheap house

3. What does Mr. Smith do in the morning?
a. Mr. Smith goes to work.
b. Mr. Smith takes his daughter to school
c. Mr. Smith stays at home.
d. Mr. Smith goes shopping

4. Chose a title for the passage.
a. Mr. Smith’s Family
b. Mr. Smith’s House
c. Mr. Smith’s Neighbours
d. Mr. Smith’s Wife

APPENDIX J

Participant Information Sheet and Consent Form

Why do this study? – I am interested in teaching polysemous words (multi-meaning words such as break, push, pull..) in two different methods. I need to collect data before and after the treatment and compare the effectiveness of both methods.

What will participation involve? - This research involves studying the figurative meanings of eight polysemous words with the help of the researcher (treatment), taking a pre-treatment test and a post treatment test on these words, and completing two questionnaires, one on vocabulary learning strategies and the other on processing styles.

How long will participation take? These words meanings will be taught over a period of six weeks and the questionnaires and the tests will take one hour and a half.

As an informed participant of this experiment, I understand that:

1. My participation is voluntary and I may cease to take part in this experiment at any time by not taking the planned tests or completing the questionnaires, without penalty.
2. I am aware of what my participation involves.
3. The pre- and post-tests marks won't be part of my final term grades.
4. All my questions about the study have been satisfactorily answered.

I have read and understood the above, and give consent to participate:

Participant's Signature:_________________________________

Date:________

APPENDIX K

Statistical Analysis of the Pre-treatment Collected Data

	Variables	U	P
1.	Language Proficiency (OQPT)	234.60	.842
2.	Listening Comprehension (LC)	207.00	.392
3.	Working Memory Span (WMS)	218.00	.577
4.	Vocabulary Knowledge (K1) (VKK1)	224.00	.652
5.	Vocabulary Knowledge (K2) (VKK2)	231.00	.731
6.	Aural Word Recognition (AWR)	237.00	.903
7.	Orthographic Word Recognition (OWR)	239.00	.942
8.	MALQ (Planning/Evaluation) (PE)	210.50	.456
9.	MALQ (Problem-Solving) (PS)	169.00	.085
10.	MALQ (Mental Translation) (MT)	200.00	.312
11.	MALQ (Person Knowledge) (PK)	205.00	.340
12.	MALQ (Directed Attention) (DA)	199.00	.304

APPENDIX L

Differences between the Pre-treatment and Post-treatment

Wilcoxon Signed-Ranks Test Scores for the Experimental Group

	Variables	Z	P
1.	Listening Comprehension Test (LCT)	-4.142	<.001
2.	Vocabulary Knowledge (K1) (VKK1)	-2.227	.023
3.	Vocabulary Knowldege (K2) (VKK2)	-4.148	<.001
4.	Working Memory Span (WMS)	-4.109	<.001
5.	Aural Word Recognition (AWR)	-4.158	<.001
6.	Orthographic Word Recognition (OWR)	-4.075	<.001
7.	MALQ (Planning/Evaluation) (PE)	-4.135	<.001
8.	MALQ (Problem-Solving) (PS)	-4.114	<.001
9.	MALQ (Mental Translation) (MT)	-4.142	<.001
10.	MALQ (Person Knowledge) (PK)	-4.041	<.001
11.	MALQ (Directed Attention)	-4.128	<.001

Descriptive Statistics & Wilcoxon Signed Ranks Test (Pre-test)

(Experimental Group)

```
/WILCOXON=LCPRTEXP VKK1PRTEXP VKK2PRTEXP WMSPRTEXP AWRPRTEXP
OWRPRTEXP WITH LCPSTEXP VKK1PSTEXP VKK2PSTEXP WMPSTEXP AWRPSTEXP
OWRPSTEXP (PAIRED)
  /STATISTICS DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
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Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
LCPRTEXP	22	7.5000	1.01183	6.00	9.00
VKK1PRTEXP	22	24.5931	1.56116	22.00	26.00
VKK2PRTEXP	22	2.2727	.45584	2.00	3.00
WMSPRTEXP	22	56.1364	3.09062	51.00	61.00
AWRPRTEXP	22	1881.8155	58.84194	1800.00	1950.00
OWRPRTEXP	22	2190.9064	86.78245	2100.00	2350.00
LCPSTEXP	22	11.3145	1.35769	8.00	13.00
VKK1PSTEXP	22	25.0455	1.83206	22.00	27.00
VKK2PSTEXP	22	2.3627	.49893	2.00	3.00
WMPSTEXP	22	76.6364	6.19174	66.00	87.00
AWRPSTEXP	22	2154.5421	43.3932	2100.00	2200.00
OWRPSTEXP	22	2290.9021	71.77552	2150.00	2400.00

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
LCPSTEXP - LCPRTEXP	Negative Ranks	0[a]	.00	.00
	Positive Ranks	22[b]	11.50	253.00
	Ties	0[c]		
	Total	22		
VKK1PSTEXP -	Negative Ranks	0[d]	.00	.00

VKK1PRTEXP	Positive Ranks	7[e]	4.00	28.00
	Ties	15[f]		
	Total	22		
VKK2PSTEXP - VKK2PRTEXP	Negative Ranks	0[g]	.00	.00
	Positive Ranks	11[h]	6.00	66.00
	Ties	11[i]		
	Total	22		
WMPSTEXP - WMSPRTEXP	Negative Ranks	0[j]	.00	.00
	Positive Ranks	22[k]	11.50	253.00
	Ties	0[l]		
	Total	22		
AWRPSTEXP - AWRPRTEXP	Negative Ranks	0[m]	.00	.00
	Positive Ranks	22[n]	11.50	253.00
	Ties	0[o]		
	Total	22		
OWRPSTEXP - OWRPRTEXP	Negative Ranks	0[p]	.00	.00
	Positive Ranks	21[q]	11.00	231.00
	Ties	1[r]		
	Total	22		

a. LCPSTEXP < LCPRTEXP

b. LCPSTEXP > LCPRTEXP

c. LCPSTEXP = LCPRTEXP

d. VKK1PSTEXP < VKK1PRTEXP

e. VKK1PSTEXP > VKK1PRTEXP

f. VKK1PSTEXP = VKK1PRTEXP

g. VKK2PSTEXP < VKK2PRTEXP

h. VKK2PSTEXP > VKK2PRTEXP

i. VKK2PSTEXP = VKK2PRTEXP

j. WMPSTEXP < WMSPRTEXP

k. WMPSTEXP > WMSPRTEXP

l. WMPSTEXP = WMSPRTEXP

m. AWRPSTEXP < AWRPRTEXP

n. AWRPSTEXP > AWRPRTEXP

o. AWRPSTEXP = AWRPRTEXP

p. OWRPSTEXP < OWRPRTEXP

q. OWRPSTEXP > OWRPRTEXP

r. OWRPSTEXP = OWRPRTEXP

Test Statistics[a]

	LCPSTEXP - LCPRTEXP	VKK1PSTEXP - VKK1PRTEXP	VKK2PSTEXP - VKK2PRTEXP	WMPSTEXP - WMSPRTEXP	AWRPSTEXP - AWRPRTEXP	OWRPSTEXP – OWRPRTEXP
Z	-4.142[b]	-2.227[b]	-4.148[b]	-4.109[b]	-4.158[b]	-4.075[b]
Asymp. Sig. (2-tailed)	.000	.023	.000	.000	.000	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

```
NPAR TESTS
  /WILCOXON=PEPRTEXP PSPRTEXP MTPRTEXP PKPRTEXP DAPRTEXP WITH
PEPSTEXP PSPSTEXP MTPSTEXP PKPSTEXP DAPSTEXP (PAIRED)
  /STATISTICS DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

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[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
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Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
PEPRTEXP	22	21.7727	1.19514	19.00	26.00
PSPRTEXP	22	26.2727	3.14993	20.00	30.00
MTPRTEXP	22	18.3182	1.83579	15.00	21.00
PKPRTEXP	22	11.0900	.95270	10.00	13.00
DAPRTEXP	22	15.3636	2.12794	11.00	18.00
PEPSTEXP	22	29.1364	1.20694	27.00	31.00
PSPSTEXP	22	34.7673	1.86048	30.00	37.00
MTPSTEXP	22	12.9545	1.17422	9.00	15.00
PKPSTEXP	22	12.8591	1.29120	10.00	14.00
DAPSTEXP	22	19.4745	1.16340	18.00	21.00

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
PEPSTEXP - PEPRTEXP	Negative Ranks	0[a]	.00	.00
	Positive Ranks	22[b]	11.50	253.00
	Ties	0[c]		
	Total	22		
PSPSTEXP - PSPRTEXP	Negative Ranks	0[d]	.00	.00
	Positive Ranks	22[e]	11.50	253.00
	Ties	0[f]		
	Total	22		
MTPSTEXP - MTPRTEXP	Negative Ranks	2 2[g]	11.50	253.00
	Positive Ranks	0[h]	.00	.00

		N	Mean Rank	Sum of Ranks
	Ties	0[i]		
	Total	22		
PKPSTEXP - PKPRTEXP	Negative Ranks	0[j]	.00	.00
	Positive Ranks	21[k]	11.00	231.00
	Ties	1[l]		
	Total	22		
DAPSTEXP - DAPRTEXP	Negative Ranks	0[m]	.00	.00
	Positive Ranks	22[n]	11.50	253.00
	Ties	0[o]		
	Total	22		

a. PEPSTEXP < PEPRTEXP

b. PEPSTEXP > PEPRTEXP

c. PEPSTEXP = PEPRTEXP

d. PSPSTEXP < PSPRTEXP

e. PSPSTEXP > PSPRTEXP

f. PSPSTEXP = PSPRTEXP

g. MTPSTEXP < MTPRTEXP

h. MTPSTEXP > MTPRTEXP

i. MTPSTEXP = MTPRTEXP

j. PKPSTEXP < PKPRTEXP

k. PKPSTEXP > PKPRTEXP

l. PKPSTEXP = PKPRTEXP

m. DAPSTEXP < DAPRTEXP

n. DAPSTEXP > DAPRTEXP

o. DAPSTEXP = DAPRTEXP

Test Statistics[a]

	PEPSTEXP - PEPRTEXP	PSPSTEXP - PSPRTEXP	MTPSTEXP - MTPRTEXP	PKPSTEXP - PKPRTEXP	DAPSTEXP - DAPRTEXP
Z	-4.135[b]	-4.114[b]	-4.142[c]	-4.041[b]	-4.128[b]
Asymp. Sig. (2-tailed)	.000	.000	.000	.000	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

c. Based on positive ranks.

APPENDIX M

Differences between the Pre-treatment and Post-treatment Wilcoxon Signed-Ranks Test Scores for the Control Group

	Variables	Z	P
1.	Listening Comprehension (LC)	-3.640	<.001
2.	Vocabulary Knowledge(K1) (VKK1)	-3.530	<.001
3.	Vocabulary Knowledge (K2) (VKK2)	-1.000	.317
4.	Working Memory Span (WMS)	-4.136	<.001
5.	Aural Word Recognition (AWR)	-3.572	<.001
6.	Orthographic Word Recognition (OWR)	-4.058	<.001
7.	MALQ (Planning/Evaluation (PE)	-2.483	.023
8.	MALQ (Problem-Solving (PS)	-2.928	<.001
9.	MALQ (Mental Translation (MT)	-3.782	<.001
10.	MALQ (Person Knowledge)(PK)	-2.924	<.001
11.	MALQ (Directed Attention) (DA)	-2.514	.028

Descriptive Statistics & Wilcoxon Signed Ranks Test (Pre-test)

(Control Group)

```
NPAR TESTS
  /WILCOXON=LCPRTCON VKK1PRTCON VKK2PRTCON WMSPRTCON AWRPRTCON
OWRPRTCON WITH LCPSTCON VKK1PSTCON VKK2PSTCON WMPSTCON AWRPSTCON
OWRPSTCON (PAIRED)
  /STATISTICS DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

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Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
LCPRTCON	22	7.2273	1.06600	6.00	9.00
VKK1PRTCON	22	24.6809	1.70324	22.00	26.00
VKK2PRTCON	22	2.2227	.42584	2.00	3.00
WMSPRTCON	22	55.0436	3.88555	49.00	59.00
AWRPRTCON	22	1879.5482	61.06899	1800.00	1950.00
OWRPRTCON	22	2188.6391	86.26979	2100.00	2300.00
LCPSTCON	22	7.6818	1.46015	6.00	10.00
VKK1PSTCON	22	25.0455	1.81815	22.00	28.00
VKK2PSTCON	22	2.3636	.49237	2.00	3.00
WMPSTCON	22	56.2090	3.48034	55.00	62.00
AWRPSTCON	22	2018.1891	58.84312	195.00	2100.00
OWRPSTCON	22	2275.0091	86.9406	2200.00	2400.00

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
LCPSTCON - LCPRTCON	Negative Ranks	0[a]	.00	.00
	Positive Ranks	8[b]	4.50	36.00
	Ties	14[c]		
	Total	22		

	Negative Ranks	0[d]	.00	.00
VKK1PSTCON - VKK1PRTCON	Positive Ranks	6[e]	3.50	21.00
	Ties	16[f]		
	Total	22		
	Negative Ranks	1[g]	2.50	2.50
VKK2PSTCON - VKK2PRTCON	Positive Ranks	3[h]	2.50	7.50
	Ties	18[i]		
	Total	22		
	Negative Ranks	0[j]	.00	.00
WMPSTCON - WMSPRTCON	Positive Ranks	22[k]	11.50	253.00
	Ties	0[l]		
	Total	22		
	Negative Ranks	1[m]	22.00	22.00
AWRPSTCON - AWRPRTCON	Positive Ranks	21[n]	11.00	231.00
	Ties	0[o]		
	Total	22		
	Negative Ranks	0[p]	.00	.00
OWRPSTCON - OWRPRTCON	Positive Ranks	21[q]	11.00	231.00
	Ties	1[r]		
	Total	22		

a. LCPSTCON < LCPRTCON

b. LCPSTCON > LCPRTCON

c. LCPSTCON = LCPRTCON

d. VKK1PSTCON < VKK1PRTCON

e. VKK1PSTCON > VKK1PRTCON

f. VKK1PSTCON = VKK1PRTCON

g. VKK2PSTCON < VKK2PRTCON

h. VKK2PSTCON > VKK2PRTCON

i. VKK2PSTCON = VKK2PRTCON

j. WMPSTCON < WMSPRTCON

k. WMPSTCON > WMSPRTCON

l. WMPSTCON = WMSPRTCON

m. AWRPSTCON < AWRPRTCON

n. AWRPSTCON > AWRPRTCON

o. AWRPSTCON = AWRPRTCON

p. OWRPSTCON < OWRPRTCON

q. OWRPSTCON > OWRPRTCON

r. OWRPSTCON = OWRPRTCON

Test Statistics[a]

	LCPSTCON - LCPRTCON	VKK1PSTCON - VKK1PRTCON	VKK2PSTCON - VKK2PRTCON	WMPSTCON - WMSPRTCON	AWRPSTCON - AWRPRTCON	OWRPSTCON – OWRPRTCON
Z	-3.640[b]	-3.530[b]	-1.000[b]	-4.136[b]	-3.572[b]	-4.058[b]
Asymp. Sig. (2-tailed)	.000	.000	.317	.000	.000	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

```
NPAR TESTS
  /WILCOXON=PEPRTCON PSPRTCON MTPRTCON PKPRTCON DAPRTCON WITH
PEPSTCON PSPSTCON MTPSTCON PKPSTCON DAPSTCON (PAIRED)
  /STATISTICS DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

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[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
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Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
PEPRTCON	22	20.7709	3.94798	13.00	27.00
PSPRTCON	22	24.2745	3.58206	19.00	32.00
MTPRTCON	22	18.0000	1.44749	15.00	21.00
PKPRTCON	22	11.0927	1.34513	10.00	13.00
DAPRTCON	22	15.0909	1.60087	12.00	18.00
PEPSTCON	22	21.1364	3.50911	15.00	26.00
PSPSTCON	22	24.7282	3.59413	20.00	33.00
MTPSTCON	22	13.5054	1.20421	12.00	15.00
PKPSTCON	22	11.9545	1.10016	10.00	13.00
DAPSTCON	22	15.5455	1.33550	12.00	18.00

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
PEPSTCON - PEPRTCON	Negative Ranks	3[a]	8.50	25.50
	Positive Ranks	14[b]	9.11	127.50
	Ties	5[c]		
	Total	22		
PSPSTCON - PSPRTCON	Negative Ranks	0[d]	.00	.00
	Positive Ranks	8[e]	4.50	36.00
	Ties	14[f]		
	Total	22		
MTPSTCON - MTPRTCON	Negative Ranks	17[g]	9.00	153.00
	Positive Ranks	0[h]	.00	.00

	Ties	5[i]		
	Total	22		
PKPSTCON - PKPRTCON	Negative Ranks	3[j]	5.50	16.50
	Positive Ranks	12[k]	8.63	103.50
	Ties	7[l]		
	Total	22		
DAPSTCON - DAPRTCON	Negative Ranks	0[m]	.00	.00
	Positive Ranks	8[n]	4.50	36.00
	Ties	14[o]		
	Total	22		

a. PEPSTCON < PEPRTCON

b. PEPSTCON > PEPRTCON

c. PEPSTCON = PEPRTCON

d. PSPSTCON < PSPRTCON

e. PSPSTCON > PSPRTCON

f. PSPSTCON = PSPRTCON

g. MTPSTCON < MTPRTCON

h. MTPSTCON > MTPRTCON

i. MTPSTCON = MTPRTCON

j. PKPSTCON < PKPRTCON

k. PKPSTCON > PKPRTCON

l. PKPSTCON = PKPRTCON

m. DAPSTCON < DAPRTCON

n. DAPSTCON > DAPRTCON

o. DAPSTCON = DAPRTCON

Test Statistics[a]

	PEPSTCON - PEPRTCON	PSPSTCON - PSPRTCON	MTPSTCON - MTPRTCON	PKPSTCON - PKPRTCON	DAPSTCON - DAPRTCON
Z	-2.483[b]	-2.928[b]	-3.782[c]	-2.294[b]	-2.514[b]
Asymp. Sig. (2-tailed)	.023	.000	.000	.001	.028

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

c. Based on positive ranks.

Appendix N

Statistical Analysis of the Differences between the Two Groups for the Post-tests

	Variables	U	P
1.	Listening Comprehension	37.500	<.001
2.	Working Memory Span (WMS)	.000	<.001
3.	Vocabulary Knowledge K1 (VKK1)	230.00	.774
4.	Vocabulary Knowledge K2 (VKK2)	30.00	<.001
5.	Aural Word Recognition (AWR)	17.500	<.001
6.	Orthographic Word Recognition (OWR)	217.00	.549
7.	MALQ (Planning/Evaluation) (PE)	.000	<.001
8.	MALQ (Problem-Solving) (PS)	3.500	<.001
9.	MALQ (Mental Translation) (MT)	4.000	<.001
10.	MALQ (Person Knowledge) (PK)	6.000	<.001
11.	MALQ (Directed Attention) (DA)	5.000	<.001

APPENDIX O

Multiple Regression (Experimental Group)

```
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT LCPSTTSEXP
  /METHOD=BACKWARD WMSTOSPSTCONEXP VKK1PSTCONEXP VKK2PSTCONEXP
AWREXPSTTTTLSCCONEXP MALQPLANEVALPST MALQPROBSOLPST
MALQMENTTRANSPST MALQPERSNKNOWPST MALQDIRECTEDATTENTIONPST
OWREXPSTTTLCONEXP.
```

Regression

Notes

Output Created		02-Dec-2014 21:04:06
Comments		
Input	Data	C:\Users\HP\Desktop\MAIN STUDY_1.sav
	Active Dataset	DataSet1
	Filter	group = 1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	22
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.

Syntax		REGRESSION /DESCRIPTIVES MEAN STDDEV CORR SIG N /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA COLLIN TOL CHANGE ZPP /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT LCPSTTSEXP /METHOD=BACKWARD WMSTOSPSTCONEXP VKK1PSTCONEXP VKK2PSTCONEXP AWREXPSTTTTLSCCONEXP MALQPLANEVALPST MALQPROBSOLPST MALQMENTTRANSPST MALQPERSNKNOWPST MALQDIRECTEDATTENTIONPST OWRLEXPSTTTLCONEXP.
Resources	Processor Time	00 00:00:00.032
	Elapsed Time	00 00:00:00.032
	Memory Required	21200 bytes
	Additional Memory Required for Residual Plots	0 bytes

[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav

Descriptive Statistics

	Mean	Std. Deviation	N
LCPSTTSEXP	11.3145	1.35769	22
WM(PostExp)	76.6364	6.19174	22
VKK1(PostExp)	25.0455	1.83206	22
VKK2(PostExp)	2.3627	.48937	22
AWR(PostExp)	2154.5421	43.39832	22
MALQPLANEVALPST	29.1364	1.20694	22
MALQPROBSOLPST	34.7673	1.86048	22

MALQMENTTRANSPST	12.9545	1.29120	22
MALQPERSNKNOWPST	12.8591	1.2912	22
MALQDIRECTEDATTENTIONPST	19.4745	1.16340	22
OWR(PostExp)	2290.0000	71.77552	22

Correlations

		LCPSTTSEXP	WM(PostExp)	VKK1(PostExp)
Pearson Correlation	LCPSTTSEXP	1.000	.413	.420
	WM(PostExp)	.413	1.000	.144
	VKK1(PostExp)	.420	.144	1.000
	VKK2(PostExp)	.169	.372	.301
	AWR(PostExp)	.902	.553	.394
	MALQPLANEVALPST	.501	.406	.403
	MALQPROBSOLPST	.723	.328	.338
	MALQMENTTRANSPST	-.731	-.246	-.245
	MALQPERSNKNOWPST	-.539	-.088	-.651
	MALQDIRECTEDATTENTIONPST	.582	.239	.343
	OWR(PostExp)	.760	.537	.491
Sig. (1-tailed)	LCPSTTSEXP	.	.028	.026
	WM(PostExp)	.028	.	.262
	VKK1(PostExp)	.026	.262	.
	VKK2(PostExp)	.227	.044	.087
	AWR(PostExp)	.000	.004	.035
	MALQPLANEVALPST	.009	.031	.031
	MALQPROBSOLPST	.000	.068	.062
	MALQMENTTRANSPST	.000	.134	.136
	MALQPERSNKNOWPST	.005	.348	.001
	MALQDIRECTEDATTENTIONPST	.002	.142	.059
	OWR(PostExp)	.000	.005	.010
N	LCPSTTSEXP	22	22	22
	WM(PostExp)	22	22	22
	VKK1(PostExp)	22	22	22
	VKK2(PostExp)	22	22	22

	AWR(PostExp)	22	22	22
	MALQPLANEVALPST	22	22	22
	MALQPROBSOLPST	22	22	22
	MALQMENTTRANSPST	22	22	22
	MALQPERSNKNOWPST	22	22	22
	MALQDIRECTEDATTENTIONPST	22	22	22
	OWR(PostExp)	22	22	22

Correlations

		VKK2(PostExp)	A_Lex(PostExp)	MALQPLANEVALPST
Pearson Correlation	LCPSTTSEXP	.169	.902	.501
	WM(PostExp)	.372	.553	.406
	VKK1(PostExp)	.301	.394	.403
	VKK2(PostExp)	1.000	.090	-.030
	AWR(PostExp)	.090	1.000	.668
	MALQPLANEVALPST	-.030	.668	1.000
	MALQPROBSOLPST	.228	.703	.678
	MALQMENTTRANSPST	-.052	-.711	-.484
	MALQPERSNKNOWPST	.102	-.522	-.661
	MALQDIRECTEDATTENTIONPST	.119	.474	.451
	OWR(PostExp)	.056	.721	.605
Sig. (1-tailed)	LCPSTTSEXP	.227	.000	.009
	WM(PostExp)	.044	.004	.031
	VKK1(PostExp)	.087	.035	.031
	VKK2(PostExp)	.	.346	.447
	AWR(PostExp)	.346	.	.000
	MALQPLANEVALPST	.447	.000	.
	MALQPROBSOLPST	.154	.000	.000
	MALQMENTTRANSPST	.408	.000	.011
	MALQPERSNKNOWPST	.325	.006	.000
	MALQDIRECTEDATTENTIONPST	.300	.013	.018
	OWR(PostExp)	.403	.000	.001
N	LCPSTTSEXP	22	22	22
	WM(PostExp)	22	22	22
	VKK1(PostExp)	22	22	22

	VKK2(PostExp)	22	22	22
	AWR(PostExp)	22	22	22
	MALQPLANEVALPST	22	22	22
	MALQPROBSOLPST	22	22	22
	MALQMENTTRANSPST	22	22	22
	MALQPERSNKNOWPST	22	22	22
	MALQDIRECTEDATTENTIONPST	22	22	22
	OWR(PostExp)	22	22	22

Correlations

		MALQPROBSOLPST	MALQMENTTRANSPST	MALQPERSNKNOWPST
Pearson Correlation	LCPSTTSEXP	.723	-.731	-.539
	WM(PostExp)	.328	-.246	-.088
	VLK1(PostExp)	.338	-.245	-.651
	VLK2(PostExp)	.228	-.052	.102
	AWR(PostExp)	.703	-.711	-.522
	MALQPLANEVALPST	.678	-.484	-.661
	MALQPROBSOLPST	1.000	-.634	-.536
	MALQMENTTRANSPST	-.634	1.000	.344
	MALQPERSNKNOWPST	-.536	.344	1.000
	MALQDIRECTEDATTENTIONPST	.448	-.317	-.455
	OWR(PostExp)	.610	-.571	-.584
Sig. (1-tailed)	LCPSTTSEXP	.000	.000	.005
	WM(PostExp)	.068	.134	.348
	VKK1(PostExp)	.062	.136	.001
	VKK2(PostExp)	.154	.408	.325
	AWR(PostExp)	.000	.000	.006
	MALQPLANEVALPST	.000	.011	.000
	MALQPROBSOLPST	.	.001	.005
	MALQMENTTRANSPST	.001	.	.058
	MALQPERSNKNOWPST	.005	.058	.
	MALQDIRECTEDATTENTIONPST	.018	.075	.017
	OWR(PostExp)	.001	.003	.002
N	LCPSTTSEXP	22	22	22
	WM(PostExp)	22	22	22

	VKK1(PostExp)	22	22	22
	VKK2(PostExp)	22	22	22
	AWR(PostExp)	22	22	22
	MALQPLANEVALPST	22	22	22
	MALQPROBSOLPST	22	22	22
	MALQMENTTRANSPST	22	22	22
	MALQPERSNKNOWPST	22	22	22
	MALQDIRECTEDATTENTIONPST	22	22	22
	OWR(PostExp)	22	22	22

Correlations

		MALQDIRECTEDATTENTIONPST	OWR(PostExp)
Pearson Correlation	LCPSTTSEXP	.582	.760
	WM(PostExp)	.239	.537
	VKK1(PostExp)	.343	.491
	VKK2(PostExp)	.119	.056
	AWR(PostExp)	.474	.721
	MALQPLANEVALPST	.451	.605
	MALQPROBSOLPST	.448	.610
	MALQMENTTRANSPST	-.317	-.571
	MALQPERSNKNOWPST	-.455	-.584
	MALQDIRECTEDATTENTIONPST	1.000	.369
	OWR(PostExp)	.369	1.000
Sig. (1-tailed)	LCPSTTSEXP	.002	.000
	WM(PostExp)	.142	.005
	VKK1(PostExp)	.059	.010
	VKK2(PostExp)	.300	.403
	AWR(PostExp)	.013	.000
	MALQPLANEVALPST	.018	.001
	MALQPROBSOLPST	.018	.001
	MALQMENTTRANSPST	.075	.003
	MALQPERSNKNOWPST	.017	.002
	MALQDIRECTEDATTENTIONPST	.	.045
	OWR(PostExp)	.045	.

N	LCPSTTSEXP	22	22
	WM(PostExp)	22	22
	VKK1(PostExp)	22	22
	VKK2(PostExp)	22	22
	AWR(PostExp)	22	22
	MALQPLANEVALPST	22	22
	MALQPROBSOLPST	22	22
	MALQMENTTRANSPST	22	22
	MALQPERSNKNOWPST	22	22
	MALQDIRECTEDATTENTIONPST	22	22
	OWR(PostExp)	22	22

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	OWR(PostExp), VKK2(PostExp), MALQDIRECTEDATTENTIONPST, VKK1(PostExp), MALQMENTTRANSPST, MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, MALQPERSNKNOWPST, AWR(PostExp)	.	Enter
2	.	MALQMENTTRANSPST	Backward (criterion: Probability of F-to-remove >= .100).

3	.	MALQPERSNKNOWPST	Backward (criterion: Probability of F-to-remove >= .100).
4	.	VKK1(PostExp)	Backward (criterion: Probability of F-to-remove >= .100).
5	.	VKK2(PostExp)	Backward (criterion: Probability of F-to-remove >= .100).

a. All requested variables entered.

b. Dependent Variable: LCPSTTSEXP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.979[a]	.959	.922	.40776
2	.978[b]	.957	.924	.40246
3	.977[c]	.954	.926	.39784
4	.976[d]	.952	.928	.39228
5	.973[e]	.948	.927	.39543

Model Summary

Model	Change Statistics				
	R Square Change	F Change	df1	df2	Sig. F Change
1	.959	25.828	10	11	.000
2	-.003	.690	1	11	.424
3	-.003	.703	1	12	.418
4	-.002	.612	1	13	.448
5	-.004	1.242	1	14	.284

a. Predictors: (Constant), OWR(PostExp), VKK2(PostExp), MALQDIRECTEDATTENTIONPST, VKK1(PostExp), MALQMENTTRANSPST, MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, MALQPERSNKNOWPST, AWR(PostExp)

b. Predictors: (Constant), OWR(PostExp), VKK2(PostExp), MALQDIRECTEDATTENTIONPST, VKK1(PostExp), MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, MALQPERSNKNOWPST, AWR(PostExp)

c. Predictors: (Constant), OWR(PostExp), VKK2(PostExp), MALQDIRECTEDATTENTIONPST, VKK1(PostExp), MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, AWR(PostExp)

d. Predictors: (Constant), OWR(PostExp), VKK2(PostExp), MALQDIRECTEDATTENTIONPST, MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, AWR(PostExp)

e. Predictors: (Constant), OWR(PostExp), MALQDIRECTEDATTENTIONPST, MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, AWR(PostExp)

ANOVA[f]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.944	10	4.294	25.828	.000[a]
	Residual	1.829	11	.166		
	Total	44.773	21			
2	Regression	42.829	9	4.759	29.380	.000[b]
	Residual	1.944	12	.162		
	Total	44.773	21			
3	Regression	42.715	8	5.339	33.735	.000[c]
	Residual	2.058	13	.158		
	Total	44.773	21			
4	Regression	42.618	7	6.088	39.565	.000[d]
	Residual	2.154	14	.154		
	Total	44.773	21			
5	Regression	42.427	6	7.071	45.222	.000[e]
	Residual	2.346	15	.156		
	Total	44.773	21			

ANOVA[f]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.944	10	4.294	25.828	.000[a]
	Residual	1.829	11	.166		
	Total	44.773	21			
2	Regression	42.829	9	4.759	29.380	.000[b]
	Residual	1.944	12	.162		
	Total	44.773	21			
3	Regression	42.715	8	5.339	33.735	.000[c]
	Residual	2.058	13	.158		
	Total	44.773	21			
4	Regression	42.618	7	6.088	39.565	.000[d]
	Residual	2.154	14	.154		
	Total	44.773	21			
5	Regression	42.427	6	7.071	45.222	.000[e]
	Residual	2.346	15	.156		
	Total	44.773	21			

a. Predictors: (Constant), OWR(PostExp), VKK2(PostExp), MALQDIRECTEDATTENTIONPST, VKK1(PostExp), MALQMENTTRANSPST, MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, MALQPERSNKNOWPST, AWR(PostExp)

b. Predictors: (Constant), OWR(PostExp), VKK2(PostExp), MALQDIRECTEDATTENTIONPST, VKK1(PostExp), MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, MALQPERSNKNOWPST, AWR(PostExp)

c. Predictors: (Constant), OWR(PostExp), VKK2(PostExp), MALQDIRECTEDATTENTIONPST, VKK1(PostExp), MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, AWR(PostExp)

d. Predictors: (Constant), OWR(PostExp), VKK2(PostExp), MALQDIRECTEDATTENTIONPST, MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, AWR(PostExp)

e. Predictors: (Constant), OWR(PostExp), MALQDIRECTEDATTENTIONPST, MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, AWR(PostExp)

f. Dependent Variable: LCPSTTSEXP

Coefficients[a]

Model		Unstandardized Coefficients	
		B	Std. Error
1	(Constant)	-29.544	7.253
	WM(PostExp)	-.158	.096
	VKK1(PostExp)	-.085	.082
	VKK2(PostExp)	.392	.273

AWR(PostExp)	.018	.003
MALQPLANEVALPST	-.144	.045
MALQPROBSOLPST	.039	.046
MALQMENTTRANSPST	-.101	.122
MALQPERSNKNOWPST	-.130	.133
MALQDIRECTEDATTENTIONPST	.227	.080
OWR(PostExp)	.005	.002
2 (Constant)	-33.715	5.166
WM(PostExp)	-.185	.089
VKK1(PostExp)	-.089	.081
VKK2(PostExp)	.406	.269
AWR(PostExp)	.020	.003
MALQPLANEVALPST	-.142	.044
MALQPROBSOLPST	.046	.045
MALQPERSNKNOWPST	-.108	.129
MALQDIRECTEDATTENTIONPST	.226	.079
OWR(PostExp)	.006	.002
3 (Constant)	-35.957	4.369
WM(PostExp)	-.199	.087
VKK1(PostExp)	-.053	.068
VKK2(PostExp)	.343	.255
AWR(PostExp)	.020	.003
MALQPLANEVALPST	-.130	.041
MALQPROBSOLPST	.051	.044
MALQDIRECTEDATTENTIONPST	.237	.077
OWR(PostExp)	.006	.002
4 (Constant)	-36.663	4.215
WM(PostExp)	-.168	.076
VKK2(PostExp)	.238	.213
AWR(PostExp)	.019	.003
MALQPLANEVALPST	-.140	.039
MALQPROBSOLPST	.062	.041
MALQDIRECTEDATTENTIONPST	.229	.075
OWR(PostExp)	.005	.002
5 (Constant)	-37.165	4.224

WM(PostExp)	.126	.066
AWR(PostExp)	.019	.003
MALQPLANEVALPST	.154	.037
MALQPROBSOLPST	.081	.038
MALQDIRECTEDATTE TIONPST	.239	.075
OWR(PostExp)	.005	.002

Coefficients[a]

Model	Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	Beta			Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)		4.073	.002					
WM(PostExp)	.177	1.656	.126	.413	-.447	-.101	.326	3.072
VKK1(PostExp)	.105	1.035	.323	.420	-.298	-.063	.360	2.781
VKK2(PostExp)	.132	1.437	.178	.169	.398	.088	.439	2.277
AWR(PostExp)	.744	5.705	.000	.902	.865	.348	.218	4.577
MALQPLANEVA PST	.346	2.717	.008	.501	-.696	-.196	.320	3.121
MALQPROBSOL PST	.095	.832	.423	.723	.243	.051	.284	3.522
MALQMENTTRA NSPST	.081	.831	.424	-.731	-.243	-.051	.388	2.580
MALQPERSNK NOWPST	.115	1.977	.349	-.539	-.283	-.060	.268	3.734
MALQDIRECTED ATTENTIONPST	.208	2.832	.012	.582	.649	.173	.689	1.451
OWR(PostExp)	.324	2.851	.016	.760	.652	.174	.288	3.469
2 (Constant)		6.526	.000					
WM(PostExp)	.192	2.071	.061	.413	-.513	-.125	.365	2.738
VKK1(PostExp)	.110	1.098	.294	.420	-.302	-.066	.361	2.771
VKK2(PostExp)	.137	1.513	.156	.169	.400	.091	.441	2.268
AWR(PostExp)	.797	7.133	.000	.902	.900	.429	.290	3.454
MALQPLANEVA PST	.341	2.618	.007	.501	-.681	-.194	.321	3.112

	MALQPROBSOLPST	.112	2.010	.332	.723	.280	.061	.293	3.410
	MALQPERSNKNOWPST	.095	.838	.418	-.539	-.235	-.050	.279	3.583
	MALQDIRECTEDATTENTIONPST	.206	2.851	.010	.582	.635	.171	.689	1.450
	OWR(PostExp)	.348	3.213	.007	.760	.680	.193	.309	3.240
3	(Constant)		-8.231	.000					
	WM(PostExp)	.199	2.297	.039	.413	-.537	-.137	.379	.639
	VKK1(PostExp)	-.066	-.782	.448	.420	-.212	-.046	.498	.006
	VKK2(PostExp)	.116	1.346	.201	.169	.350	.080	.479	.088
	AWR(PostExp)	.795	7.197	.000	.902	.894	.428	.290	.452
	MALQPLANEVALPST	.313	3.151	.008	.501	-.658	-.187	.359	.782
	MALQPROBSOLPST	.226	2.565	.042	.723	.307	.069	.300	.330
	MALQDIRECTEDATTENTIONPST	.217	3.078	.006	.582	.649	.183	.711	.406
	OWR(PostExp)	.363	3.443	.004	.760	.691	.205	.318	.148
4	(Constant)		-8.699	.000					
	WM(PostExp)	.202	2.472	.024	.413	-.509	-.130	.479	2.087
	VKK2(PostExp)	.080	1.115	.284	.169	.285	.065	.664	1.507
	AWR(PostExp)	.781	7.165	.000	.902	.889	.426	.297	3.366
	MALQPLANEVALPST	.337	3.640	.003	.501	-.697	-.213	.400	2.499
	MALQPROBSOLPST	.254	2.718	.021	.723	.376	.089	.335	2.985
	MALQDIRECTEDATTENTIONPST	.230	3.244	.005	.582	.631	.178	.723	1.382
	OWR(PostExp)	.325	3.524	.003	.760	.686	.207	.404	2.474
5	(Constant)		-8.798	.000					
	WM(PostExp)	.218	2.490	.000	.413	-.440	-.112	.634	1.576
	AWR(PostExp)	.760	7.125	.000	.902	.879	.421	.307	3.257
	MALQPLANEVALPST	.369	4.151	.000	.501	-.731	-.245	.442	2.262
	MALQPROBSOLPST	.280	3.149	.000	.723	.485	.127	.403	2.482
	MALQDIRECTEDATTENTIONPST	.242	3.362	.000	.582	.632	.187	.732	1.365
	OWR(PostExp)	.332	3.534	.000	.760	.655	.198	.416	2.404

a. Dependent Variable: LCPSTTSEXP

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constan)	WM(PostE)	VKK1(PostE	VKK2(PostE	AWR(PosTE
	1	10.900	1.000	.00	.00	.00	.00	.00
	2	.044	15.788	.00	.00	.00	.06	.00
	3	.034	17.957	.00	.00	.00	.37	.00
	4	.008	36.984	.00	.00	.05	.02	.00
	5	.006	42.519	.00	.00	.02	.05	.00
	6	.004	51.010	.00	.00	.07	.01	.00
	7	.003	64.048	.00	.00	.08	.00	.00
	8	.001	99.656	.00	.04	.52	.09	.01
	9	.000	189.273	.06	.00	.01	.01	.21
	10	.000	238.866	.18	.74	.25	.37	.02
	11	9.119E-5	345.738	.75	.22	.00	.01	.76
	1	9.909	1.000	.00	.00	.00	.00	.00
	2	.042	15.434	.00	.00	.00	.16	.00
	3	.030	18.062	.00	.00	.00	.29	.00
	4	.007	36.639	.00	.00	.07	.01	.00
	5	.006	40.710	.00	.00	.01	.05	.00
	6	.004	48.986	.00	.00	.09	.01	.00
	7	.001	94.908	.00	.05	.54	.09	.01
	8	.000	171.278	.24	.01	.03	.01	.10
	9	.000	225.617	.57	.56	.24	.28	.04
	10	.000	240.044	.18	.39	.02	.10	.84
	1	8.927	1.000	.00	.00	.00	.00	.00
	2	.038	15.382	.00	.00	.00	.39	.00
	3	.020	21.024	.00	.00	.00	.09	.00
	4	.006	37.185	.00	.00	.02	.06	.00
	5	.004	44.751	.00	.00	.00	.00	.00
	6	.003	54.038	.00	.01	.63	.05	.00
	7	.000	142.618	.27	.00	.04	.01	.02

	8	.000	211.604	.68	.43	.17	.17	.19
	9	.000	224.864	.04	.55	.14	.24	.79
	1	7.931	1.000	.00	.00		.00	.00
	2	.038	14.498	.00	.00		.53	.00
	3	.020	20.065	.00	.00		.11	.00
	4	.006	35.590	.00	.00		.11	.00
	5	.004	42.196	.00	.00		.00	.00
	6	.000	129.931	.20	.01		.01	.01
	7	.000	174.097	.40	.90		.20	.01
	8	.000	207.239	.39	.08		.03	.98
	1	6.966	1.000	.00	.00			.00
	2	.022	17.971	.00	.00			.00
	3	.007	31.367	.00	.00			.00
	4	.004	9.544	.00	.00			.00
	5	.000	120.420	.15	.06			.01
	6	.000	145.355	.33	.92			.04
	7	.000	192.290	.51	.01			.95

Collinearity Diagnostics[a]

		Variance Proportions					
Model	Dimension	MALQPLANEVALPST	MALQPROBSOLPST	MALQMENTTRANSPST	MALQPERSNKNOWPST	MALQDIRECTEDATTENTIONPST	OWR(PostExp)
	1	.00	.00	.00	.00	.00	.00
	2	.07	.02	.00	.01	.00	.00
	3	.00	.01	.00	.01	.00	.00
	4	.01	.27	.02	.10	.02	.00
	5	.66	.11	.00	.04	.17	.00
	6	.05	.09	.01	.02	.74	.00
	7	.00	.20	.41	.05	.00	.01
	8	.08	.12	.00	.44	.02	.07
	9	.01	.01	.03	.17	.05	.62
	10	.11	.15	.00	.01	.00	.21
	11	.00	.02	.51	.15	.00	.08
	1	.00	.00		.00	.00	.00
	2	.07	.01		.01	.00	.00
	3	.01	.02		.02	.00	.00
	4	.00	.34		.07	.05	.00

5	.68	.20		.04	.13	.00
6	.04	.04		.02	.74	.00
7	.08	.11		.48	.02	.07
8	.00	.00		.28	.05	.65
9	.11	.05		.03	.00	.25
10	.01	.23		.04	.00	.02
1	.00	.00			.00	.00
2	.05	.00			.00	.00
3	.14	.08			.00	.00
4	.52	.51			.00	.00
5	.01	.02			.95	.00
6	.09	.03			.01	.00
7	.04	.06			.01	.64
8	.15	.01			.00	.32
9	.01	.30			.01	.03
1	.00	.00			.00	.00
2	.05	.00			.00	.00
3	.15	.08			.01	.00
4	.63	.61			.00	.00
5	.01	.01			.96	.00
6	.05	.07			.00	.85
7	.09	.05			.01	.09
8	.02	.16			.02	.05
1	.00	.00			.00	.00
2	.25	.08			.00	.00
3	.59	.69			.00	.00
4	.02	.02			.97	.01
5	.06	.08			.00	.90
6	.03	.01			.01	.01
7	.05	.13			.01	.09

a. Dependent Variable: LCPSTTSEXP

Excluded Variables[e]

Model	Beta In	t	Sig.	Partial Correlation
2 MALQMENTTRANSPST	-.081[a]	-.831	.424	-.243
3 MALQMENTTRANSPST	-.062[b]	-.649	.529	-.184
MALQPERSNKNOWPST	-.095[b]	-.838	.418	-.235
4 MALQMENTTRANSPST	-.073[c]	-.799	.439	-.216
MALQPERSNKNOWPST	-.030[c]	-.305	.765	-.084
VKK1(PostExp)	-.066[c]	-.782	.448	-.212
5 MALQMENTTRANSPST	-.076[d]	-.825	.423	-.215
MALQPERSNKNOWPST	-.033[d]	-.337	.741	-.090
VKK1(PostExp)	-.006[d]	-.082	.935	-.022
VKK2(PostExp)	.080[d]	1.115	.284	.285

Excluded Variables[e]

Model	Collinearity Statistics		
	Tolerance	VIF	Minimum Tolerance
2 MALQMENTTRANSPST	.388	2.580	.218
3 MALQMENTTRANSPST	.404	2.476	.220
MALQPERSNKNOWPST	.279	3.583	.279
4 MALQMENTTRANSPST	.418	2.390	.232
MALQPERSNKNOWPST	.385	2.594	.296
VKK1(PostExp)	.498	2.006	.290
5 MALQMENTTRANSPST	.419	2.388	.239
MALQPERSNKNOWPST	.386	2.592	.306
VKK1(PostExp)	.690	1.448	.306
VKK2(PostExp)	.664	1.507	.297

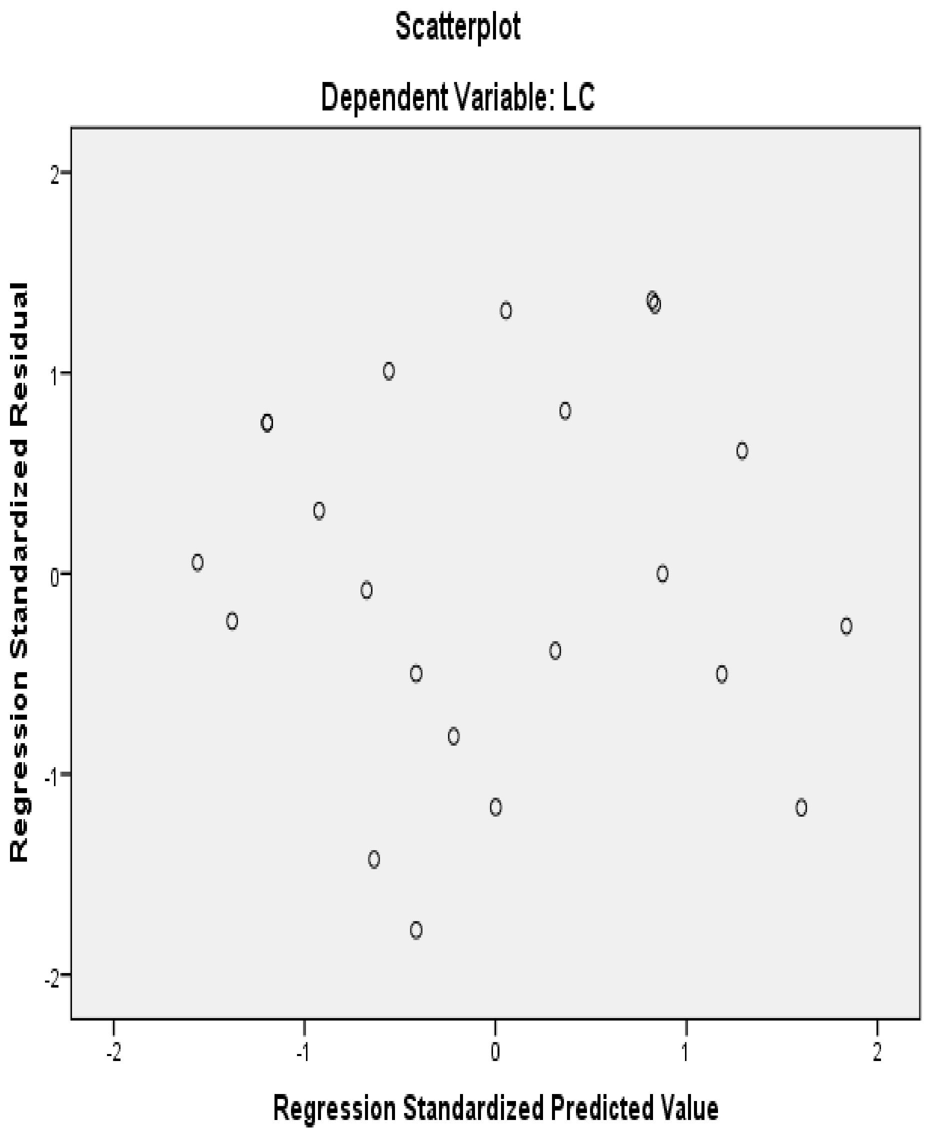
a. Predictors in the Model: (Constant), OWR(PostExp), VKK2(PostExp), MALQDIRECTEDATTENTIONPST, VKK1(PostExp), MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, MALQPERSNKNOWPST, AWR(PostExp)

b. Predictors in the Model: (Constant), OWR(PostExp), VKK2(PostExp), MALQDIRECTEDATTENTIONPST, VKK1(PostExp), MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, AWR(PostExp)

c. Predictors in the Model: (Constant), OWR(PostExp), VKK2(PostExp), MALQDIRECTEDATTENTIONPST, MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, AWR(PostExp)

d. Predictors in the Model: (Constant), OWR(PostExp), MALQDIRECTEDATTENTIONPST, MALQPLANEVALPST, WM(PostExp), MALQPROBSOLPST, AWR(PostExp)

e. Dependent Variable: LCPSTTSEXP


Scatterplot
Dependent Variable: LC
Regression Standardized Residual
Regression Standardized Predicted Value
2
1
0
-1
-2
-2
-1
0
1
2

Appendix P

Multiple Regression (Control Group)

```
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT LCPSTTSCON
  /METHOD=BACKWARD WMSTOSPSTCON VKK1PSTCON VKK2PSTCON
AWRPSTTTTLSCCON OWRPSTTTLCON MALQPLANEVALPST MALQPROBSOLPST
MALQMENTTRANSPST MALQPERSNKNOWPST MALQDIRECTEDATTENTIONPST.
```

Regression

Notes

Output Created		02-Dec-2014 23:26:23
Comments		
Input	Data	C:\Users\HP\Desktop\MAIN STUDY_1.sav
	Active Dataset	DataSet1
	Filter	group = 2 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	22
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.

Syntax		REGRESSION /DESCRIPTIVES MEAN STDDEV CORR SIG N /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA COLLIN TOL CHANGE ZPP /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT LCPSTTSCON /METHOD=BACKWARD WMSTOSPSTCONEXP VKK1PSTCONEXP VKK2PSTCONEXP AWRPSTTTTLSCCONEXP OWRPSTTTLCONEXP MALQPLANEVALPST MALQPROBSOLPST MALQMENTTRANSPST MALQPERSNKNOWPST MALQDIRECTEDATTENTIONPST.
Resources	Processor Time	00 00:00:00.031
	Elapsed Time	00 00:00:00.048
	Memory Required	21200 bytes
	Additional Memory Required for Residual Plots	0 bytes

[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav

Descriptive Statistics

	Mean	Std. Deviation	N
LCPSTTSCON	7.6818	1.46015	22
WM(PostCont)	56.2009	3.48304	22
VKK1(PostCont)	25.0436	1.81237	22
VKK2(PostCont)	2.3619	.49644	22
AWR(PostCont)	2275.0000	72.94812	22
OWR(PostCont)	2018.1818	58.84899	22
MALQPLANEVALPST	20.7764	3.94911	22
MALQPERSKNOWPST	24.2782	3.58413	22
MALQPROBSOLPST	18.0045	1.44422	22
MALQMENTTRANSPST	13.5086	1.24834	22

Descriptive Statistics

	Mean	Std. Deviation	N
LCPSTTSCON	7.6818	1.46015	22
WM(PostCont)	56.2009	3.48304	22
VKK1(PostCont)	25.0436	1.81237	22
VKK2(PostCont)	2.3619	.49644	22
AWR(PostCont)	2275.0000	72.94812	22
OWR(PostCont)	2018.1818	58.84899	22
MALQPLANEVALPST	20.7764	3.94911	22
MALQPERSKNOWPST	24.2782	3.58413	22
MALQPROBSOLPST	18.0045	1.44422	22
MALQMENTTRANSPST	13.5086	1.24834	22
MALQDIRECTEDATTENTI ONPST	15.0955	1.60550	22

Correlations

		LCPSTTSCON	WM(PostCont)	VKK1(PostCont
Pearson Correlation	LCPSTTSCON	1.000	.687	.204
	WM(PostCont)	.687	1.000	.309
	VKK1(PostCont)	.204	.309	1.000
	VKK2(PostCont)	-.092	.015	.099
	AWR(PostCont)	.861	.409	-.025
	OWR(PostCont)	.813	.656	.176
	MALQPLANEVALPST	.432	.527	.590
	MALQPERSONKNOWPST	.333	.190	.008
	MALQPROBSOLPST	-.062	.245	.224
	MALQMENTTRANSPST	-.167	-.031	-.091
	MALQDIRECTEDATTENTI ONPST	.290	.464	.389
Sig. (1-tailed)	LCPSTTSCON	.	.000	.187
	WM(PostCont)	.000	.	.087
	VKK1(PostCont)	.187	.087	.
	VKK2(PostCont)	.345	.475	.334
	AWR(PostCont)	.000	.003	.457
	OWR(PostCont)	.000	.001	.223
	MALQPLANEVALPST	.025	.007	.002
	MALQPERSONKNOWPST	.070	.205	.486
	MALQPROBSOLPST	.395	.142	.165
	MALQMENTTRANSPST	.235	.447	.347

	MALQDIRECTEDATTENTIONPST	.101	.017	.041
N	LCPSTTSCON	22	22	22
	WM(PostCont)	22	22	22
	VKK1(PostCont)	22	22	22
	VKK2(PostCont)	22	22	22
	AWR(PostCont)	22	22	22
	OWR(PostCont)	22	22	22
	MALQPLANEVALPST	22	22	22
	MALQPROBSOLPST	22	22	22
	MALQMENTTRANSPST	22	22	22
	MALQPERSNKNOWPST	22	22	22
	MALQDIRECTEDATTENTIONPST	22	22	22

Correlations

		VLK2(PostCont)	AWR(PostCont)	OWR(PostCont)
Pearson Correlation	LCPSTTSCON	-.092	.813	.861
	WM(PostCont)	.015	.656	.409
	VKK1(PostCont)	.099	.176	-.025
	VKK2(PostCont)	1.000	-.038	-.135
	AWR(PostCont)	-.135	.740	1.000
	OWR(PostCont)	-.038	1.000	.740
	MALQPLANEVALPST	.023	.245	.181
	MALQPERSONKNOWPST	-.196	.336	.170
	MALQPROBSOLPST	.030	-.136	-.261
	MALQMENTTRANSPST	.017	-.197	-.060
	MALQDIRECTEDATTENTIONPST	-.061	.179	.071
Sig. (1-tailed)	LCPSTTSCON	.345	.000	.000
	WM(PostCont)	.475	.001	.033
	VKK1(PostCont)	.334	.223	.457
	VKK2(PostCont)	.	.434	.280
	AWR(PostCont)	.280	.000	.000
	OWR(PostCont)	.434	.000	.000
	MALQPLANEVALPST	.460	.142	.216
	MALQPERSONKNOWPST	.198	.068	.230
	MALQPROBSOLPST	.449	.278	.127

	MALQMENTTRANSPST	.471	.196	.398
	MALQDIRECTEDATTENTIONPST	.397	.218	.379
N	LCPSTTSCON	22	22	22
	WM(PostCont)	22	22	22
	VKK1(PostCont)	22	22	22
	VKK2(PostCont)	22	22	22
	AWR(PostCont)	22	22	22
	OWR(PostCont)	22	22	22
	MALQPLANEVALPST	22	22	22
	MALQPROBSOLPST	22	22	22
	MALQMENTTRANSPST	22	22	22
	MALQPERSNKNOWPST	22	22	22
	MALQDIRECTEDATTENTIONPST	22	22	22

Correlations

		MALQPLANEVALPST	MALQPROBSOLPST	MALQMENTTRANSPST
Pearson Correlation	LCPSTTSCON	.432	.333	-.062
	WM(PostCont)	.527	.190	.245
	VKK1(PostCont)	.590	.008	.224
	VKK2(PostCont)	.023	-.196	.030
	AWR(PostCont)	.181	.170	.261
	OWR(PostCont)	.245	.336	-.136
	MALQPLANEVALPST	1.000	.397	.200
	MALQPERSONKNOWPST	.397	1.000	-.186
	MALQPROBSOLPST	.200	-.186	1.000
	MALQMENTTRANSPST	.245	.195	-.125
	MALQDIRECTEDATTENTIONPST	.610	.467	.055
Sig. (1-tailed)	LCPSTTSCON	.025	.070	.395
	WM(PostCont)	.007	.205	.142
	VKK1(PostCont)	.002	.486	.165
	VKK2(PostCont)	.460	.198	.449
	AWR(PostCont)	.216	.230	.127
	OWR(PostCont)	.142	.068	.278
	MALQPLANEVALPST	.	.037	.193

	MALQPERSONKNOWPST	.037	.	.209
	MALQPROBSOLPST	.193	.209	.
	MALQMENTTRANSPST	.142	.198	.294
	MALQDIRECTEDATTENTIONPST	.002	.016	.406
N	LCPSTTSCON	22	22	22
	WM(PostCont)	22	22	22
	VKK1(PostCont)	22	22	22
	VKK2(PostCont)	22	22	22
	AWR(PostCont)	22	22	22
	OWR(PostCont)	22	22	22
	MALQPLANEVALPST	22	22	22
	MALQPROBSOLPST	22	22	22
	MALQMENTTRANSPST	22	22	22
	MALQPERSNKNOWPST	22	22	22
	MALQDIRECTEDATTENTIONPST	22	22	22

Correlations

		MALQPERSNKNOWPST	MALQDIRECTEDATTENTIONPST
Pearson Correlation	LCPSTTSCON	-.167	.290
	WM(PostCont)	-.031	.464
	VKK1(PostCont)	-.091	.389
	VKK2(PostCont)	.017	-.061
	AWR(PostCont)	-.060	.071
	OWR(PostCont)	-.197	.179
	MALQPLANEVALPST	.245	.610
	MALQPERSONKNOWPST	.195	.467
	MALQPROBSOLPST	-.125	.055
	MALQMENTTRANSPST	1.000	.513
	MALQDIRECTEDATTENTIONPST	.513	1.000
Sig. (1-tailed)	LCPSTTSCON	.235	.101
	WM(PostCont)	.447	.017
	VKK1(PostCont)	.347	.041
	VKK2(PostCont)	.471	.397
	AWR(PostCont)	.398	.379

	OWR(PostCont)	.196	.218
	MALQPLANEVALPST	.142	.002
	MALQPERSONKNOWPST	.198	.016
	MALQPROBSOLPST	.294	.406
	MALQMENTTRANSPST	.	.009
	MALQDIRECTEDATTENTIONPST	.009	.
N	LCPSTTSCON	22	22
	WM(PostCont)	22	22
	VKK1(PostCont)	22	22
	VKK2(PostCont)	22	22
	AWR(PostCont)	22	22
	OWR(PostCont)	22	22
	MALQPLANEVALPST	22	22
	MALQPROBSOLPST	22	22
	MALQMENTTRANSPST	22	22
	MALQPERSNKNOWPST	22	22
	MALQDIRECTEDATTENTIONPST	22	22

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	MALQDIRECTEDATTENTIONPST, MALQMENTTRANSPST, VKK2(PostCont, AWR(PostCo), VKK1(PostCont, MALQPROBLPST, MALQPERSNKNOWPST, MALQPLANEVALPST, OWR(PostCont), WM(PostCont)	.	Enter

2	.	OWR(PostCo)	Backward (criterion: Probability of F-to-remove >= .100).
3	.	VKK1(PostCont)	Backward (criterion: Probability of F-to-remove >= .100).
4	.	MALQPROBSOLPST	Backward (criterion: Probability of F-to-remove >= .100).
5	.	VKK2(PostCont)	Backward (criterion: Probability of F-to-remove >= .100).
6	.	MALQDIRECTEDATTENTIONPST	Backward (criterion: Probability of F-to-remove >= .100).
7	.	MALQPLANEVALPST	Backward (criterion: Probability of F-to-remove >= .100).

a. All requested variables entered.

b. Dependent Variable: LCPSTTSCON

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.967[a]	.934	.868	.49333
2	.966[b]	.934	.880	.47112
3	.966[c]	.934	.889	.45192
4	.966[d]	.933	.897	.43631
5	.966[e]	.932	.903	.42291
6	.963[f]	.927	.903	.42263
7	.958[g]	.917	.896	.43816

Model Summary

Model	Change Statistics				
	R Square Change	F Change	df1	df2	Sig. F Change
1	.934	14.183	10	10	.000

2	.000	.032	1	10	.863
3	.000	.042	1	11	.841
4	-.001	.118	1	12	.738
5	-.001	.153	1	13	.702
6	-.005	.980	1	14	.339
7	-.011	2.197	1	15	.159

a. Predictors: (Constant), MALQDIRECTEDATTENTIONPST, MALQMENTTRANSPST, VKK2(PostCont), AWR(PostCont), VKK1(PostCont), MALQPROBSOLPST, MALQPERSNKNOWPST, MALQPLANEVALPST, OWR(PostCont), WM(PostCont)

b. Predictors: (Constant), MALQDIRECTEDATTENTIONPST, MALQMENTTRANSPST, VKK2(PostCont), VKK1(PostCont), MALQPROBSOLPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

c. Predictors: (Constant), MALQDIRECTEDATTENTIONPST, MALQMENTTRANSPST, VKK2(PostCont), MALQMENTTRANSPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

d. Predictors: (Constant), MALQDIRECTEDATTENTIONPST, VKK2(PostCont), MALQMENTTRANSPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

e. Predictors: (Constant), MALQDIRECTEDATTENTIONPST, MALQMENTTRANSPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

f. Predictors: (Constant), MALQMENTTRANSPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

g. Predictors: (Constant), MALQPROBSOLPST, MALQPERSNKNOWPST, AWR(PostCont), WM(PostCont)

ANOVA[h]

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	34.519	10	3.452	14.183	.000[a]
Residual	2.434	10	.243		
Total	36.952	20			
2 Regression	34.511	9	3.835	17.277	.000[b]
Residual	2.441	11	.222		
Total	36.952	20			
3 Regression	34.502	8	4.313	21.117	.000[c]
Residual	2.451	12	.204		
Total	36.952	20			
4 Regression	34.478	7	4.925	25.873	.000[d]
Residual	2.475	13	.190		
Total	36.952	20			
5 Regression	34.448	6	5.741	32.101	.000[e]

Residual	2.504	14	.179		
Total	36.952	20			
6 Regression	34.273	5	6.855	38.376	.000[f]
Residual	2.679	15	.179		
Total	36.952	20			
7 Regression	33.881	4	8.470	44.119	.000[g]
Residual	3.072	16	.192		
Total	36.952	20			

a. Predictors: (Constant), MALQDIRECTEDATTENTIONPST, MALQMENTTRANSPST, VKK2(PostCont), AWR(PostCont), VKK1(PostCont), MALQPROBSOLPST, MALQPERSNKNOWPST, MALQPLANEVALPST, OWR(PostCont), WM(PostCont)

b. Predictors: (Constant), MALQDIRECTEDATTENTIONPST, MALQMENTTRANSPST, VKK2(PostCont), VKK1(PostCont), MALQPROBSOLPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

c. Predictors: (Constant), MALQDIRECTEDATTENTIONPST, MALQMENTTRANSPST, VKK2(PostCont), MALQPROBSOLPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

d. Predictors: (Constant), MALQDIRECTEDATTENTIONPST, VKK2(PostCont), MALQMENTTRANSPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

e. Predictors: (Constant), MALQDIRECTEDATTENTIONPST, MALQMENTRANSPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

f. Predictors: (Constant), MALQMENTTRANSLPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

g. Predictors: (Constant), MALQMENTRANSPST, MALQPERSNKNOWPST, AWR(PostCont), WM(PostCont)

h. Dependent Variable: LCPSTTSCON

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	28.327	9.232		3.068	.012					
WM(PostCont)	.059	.034	.730	1.719	.116	.687	.478	.139	.257	3.893
VKK1(PostCont)	.025	.102	.033	.250	.808	.204	.079	.020	.380	2.630

VKK2(PostCont)	.103	.267	.033	.386	.708	-.092	.121	.031	.893	1.120
AWR(PostCont)	-.014	.003	.802	5.112	.000	.861	.850	.415	.324	3.089
OWR(PostCont)	.001	.006	.034	.178	.863	.813	.056	.014	.181	5.516
MALQPLANEVALPST	.079	.178	.068	.446	.665	.432	.140	.036	.284	3.522
MALQPERSONKNOWPST	.106	.092	.501	1.150	.277	.333	.342	093	.410	2.438
MALQPROBSOLPST	.036	.120	.029	.298	.772	.062	.094	024	683	1.464
MALQMENTTRANSPST	.296	.160	.362	.610	.095	.167	-.504	-.150	495	2.020
MALQDIRECTEDATTENTIONPST	.120	.172	.103	.701	.499	.290	.216	.057	.303	.304
2 (Constant)	-29.640	5.282		-5.612	.000					
WM(PostCont)	.055	.025	.715	2.210	.049	.687	.555	.171	.445	2.246
VKK1(PostCont)	.018	.089	.024	.205	.841	.204	.062	.016	.450	2.223
VKK2(PostCont)	.096	.253	.031	.381	.711	.092	.114	.030	.913	1.096
AWR(PostCont)	.013	.002	.797	7.301	.000	.861	.910	.566	.633	1.580
MALQPLANEVALPST	.092	156	.079	.591	.567	.432	.175	.046	.338	2.955
MALQPERSONKNOWPST	.097	.075	.370	1.302	.219	.333	.365	.101	.569	1.759
MALQMENTTRANSPST	.039	.114	.031	.338	.742	.062	.101	.026	.693	1.442
MALQMENTTRANSPST	-.294	.153	.360	.585	081	-.167	-.502	-.149	.497	2.010
MALQDIRECTEDATTENTIONPST	.127	.161	.109	.788	.447	290	231	.061	.316	3.169
3 (Constant)	-29.442	4.981		-5.911	.000					
WM(PostCont)	.054	.024	.710	2.298	.040	.687	.553	.171	.456	2.195
VKK2(PostCont)	.099	.242	.032	.411	.688	.092	.118	.031	.916	1.091
AWR(PostCont)	.013	.002	.995	7.630	.000	.861	.911	.567	.640	1.564
MALQPLANEVALPST	.110	123	.094	.898	387	.432	.251	.067	502	1.993
MALQPERSONKNOWPST	.092	.067	.320	1.377	.194	.333	.369	.102	.660	1.515
MALQPROBSOLPST	.038	.109	.031	.343	.738	.062	.099	.025	.695	1.439

MALQMENTTRANSPST	.308	.131	.340	-2.359	.036	.167	.563	.175	.626	1.597
MALQDIRECTEDATTENTIONPST	.139	.143	.119	.971	.351	.290	.270	.072	.366	2.730
4 (Constant)	-28.534	4.073		-7.006	.000					
WM(PostCont)	.057	.022	.699	2.596	.022	.687	.584	.186	.497	.010
VKK2(PostCont)	.091	.232	.029	.391	.702	.092	.108	.028	.926	.080
AWR(PostCont)	.013	.002	.970	8.501	.000	.861	.921	.610	.768	.302
MALQPLANEVALPST	.120	.116	.102	1.034	.320	.432	.276	.074	.527	.896
MALQPERSONKNOWPST	.086	.062	.295	1.382	.190	.333	.358	.099	.701	.427
MALQMENTTRANSPST	.313	.125	.335	2.499	.027	.167	.570	.179	.634	.577
MALQDIRECTEDATTENTIONPST	.136	.138	.117	.989	341	.290	.265	.071	.367	.723
5 (Constant)	-28.079	3.784		-7.421	.000					
WM(PostCont)	.058	.021	.692	2.719	.017	.687	.588	.189	.501	1.997
AWR(PostCont)	.013	.001	.890	8.802	.000	.861	.920	.612	.784	1.276
MALQPLANEVALPST	.124	.112	.106	1.113	.285	.432	.285	.077	.533	1.877
MALQPERSONKNOWPST	.082	.060	.270	1.376	.190	.333	.345	.096	.722	1.385
MALQMENTTRANSPST	-.310	.121	.320	-2.556	.023	.167	.564	.178	.637	.1569
MALQDIRECTEDATTENTIONPST	.132	.133	.113	.990	.339	.290	.256	.069	.370	2.704
6 (Constant)	-27.913	3.777		-7.390	.000					
WM(PostCont)	.066	.019	.562	3.431	.004	.687	.663	.239	.602	1.660
AWR(PostCont)	.013	.001	.701	8.785	.000	.861	.915	.611	.816	1.226
MALQPLANEVALPST	.158	.106	.135	1.482	.159	.432	.357	.103	.586	1.706
MALQPERSONKNOWPST	.102	.056	.198	1.824	.038	.333	.426	.127	.817	1.224
MALQMENTTRANSPST	.246	.102	.210	2.400	.030	.167	.527	.167	.891	1.122
7 (Constant)	-25.481	3.527		-7.224	.000					
WM(PostCont)	.081	.017	.375	4.708	.000	.687	.762	.339	.817	1.224

	AWR(PostCont)	.012	.001	.668	8.395	.000	.861	.903	.605	.820	1.220
	MALQPERSONKNOWPST	.129	.055	.149	2.342	.029	.333	.505	.169	.911	1.098
	MALQMENTTRANSPST	.207	.103	.177	2.610	.000	.167	.451	.146	.952	1.051

a. Dependent Variable: LCPSTTSCON

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions					
				(Constant)	WM(PostCont)	VKK1(PostCont)	VKK2(PostCont)	AWR(PostCont)	OWR(PostCont)
	1	10.952	1.000	.00	.00	.00	.00	.00	.00
	2	.022	22.188	.00	.00	.00	.84	.00	.00
	3	.009	34.564	.00	.01	.01	.00	.00	.00
	4	.006	43.656	.00	.05	.01	.01	.00	.00
	5	.004	52.759	.00	.12	.02	.00	.01	.00
	6	.004	53.334	.00	.12	.29	.01	.00	.00
	7	.002	74.343	.00	.01	.03	.06	.02	.00
	8	.001	120.611	.01	.07	.04	.00	.01	.00
	9	.000	156.083	.00	.10	.34	.00	.03	.01
	10	.000	205.663	.24	.05	.09	.07	.51	.01
	11	.000	496.316	.75	.48	.17	.01	.41	.98
	1	9.952	1.000	.00	.00	.00	.00	.00	.00
	2	.022	21.208	.00	.00	.00	.85	.00	.00
	3	.009	32.952	.00	.02	.01	.00	.00	.00
	4	.006	42.065	.00	.11	.01	.01	.00	.00
	5	.004	50.806	.00	.32	.27	.01	.00	.00
	6	.004	53.258	.01	.07	.11	.00	.03	.00
	7	.002	73.036	.02	.01	.02	.06	.09	.00
	8	.001	116.040	.02	.13	.06	.00	.06	.00
	9	.000	153.442	.01	.18	.46	.00	.00	.00
	10	.000	200.277	.93	.16	.05	.06	.82	.00
	1	8.956	1.000	.00	.00		.00	.00	.00
	2	.022	20.148	.00	.00		.85	.00	.00
	3	.009	31.909	.00	.03		.00	.00	.00
	4	.006	40.201	.00	.16		.01	.01	.00
	5	.004	49.851	.01	.28		.00	.02	.00
	6	.002	68.187	.02	.04		.04	.10	.00

7	.001	96.376	.01	.25		.01	.01	.00
8	.001	118.745	.01	.00		.01	.05	.00
9	.000	187.295	.94	.24		.07	.82	.00
1	7.963	1.000	.00	.00		.00	.00	.00
2	.022	19.037	.00	.00		.85	.00	.00
3	.007	33.481	.00	.17		.00	.00	.00
4	.004	47.002	.02	.31		.00	.02	.00
5	.002	63.564	.03	.02		.06	.10	.00
6	.001	86.756	.03	.30		.03	.00	.00
7	.001	108.845	.01	.01		.02	,14	.00
8	.000	152.823	.92	.19		.05	.74	.00
1	6.985	1.000	.00	.00		.00	.00	.00
2	.007	31.356	.00	.17		.85	.00	.00
3	.004	43.964	.02	.31		.00	.03	.00
4	.002	57.771	.03	.02		.00	.08	.00
5	.001	80.202	.03	.30		.00	.01	.00
6	.001	101.111	.00	.01		.03	.17	.00
7	.000	139.802	.91	.19		.02	.72	.00
1	5.987	1.000	.00	.00		.00	.00	.00
2	.007	29.124	.00	.20		.00	.00	.00
3	.003	41.836	.02	.46		.00	.02	.02
4	.002	58.374	.06	.04		.00	.10	.00
5	.001	83.181	.00	.11		.02	.17	.00
6	.000	129.043	.92	.20		.03	.70	.00
1	4.987	1.000	.00	.00		.00	.00	.00
2	.007	26.654	.00	.29		.00	.00	.00
3	.003	38.239	.02	.60		.00	.02	.00
4	.002	53.281	.07	.05		.02	.10	.00
5	.000	108.620	.91	.06		.05	.87	.00

Collinearity Diagnostics[a]

Model	Dimension	Variance Proportions				
		MALQPLANEVALPST	MALQPERSONKNOWPST	MALQPROBSOLSPST	MALQMENTTRANSTPST	MALQ DIRECTEDATTENTIONPST
	1	.00	.00	.00	.00	.00
	2	.00	.00	.00	.00	.00

	3	.00	.00	.18	.17	.00
	4	.00	.01	.41	.13	.00
	5	.00	.03	.01	.06	.03
	6	.00	.00	.03	.01	.00
	7	.00	.29	.04	.12	.06
	8	.09	.14	.00	.26	.77
	9	.64	.18	.01	.22	.07
	10	.05	.09	.29	.04	.00
	11	.22	.27	.03	.00	.05
	1	.00	.00	.00	.00	.00
	2	.00	.00	.00	.00	.00
	3	.00	.01	.19	.17	.00
	4	.00	.01	.42	.12	.00
	5	.00	.00	.02	.02	.00
	6	.00	.10	.01	.09	.03
	7	.00	.33	.04	.09	.10
	8	.08	.21	.00	.29	.80
	9	.90	.28	.01	.20	.06
	10	.01	.07	.30	.03	.00
	1	.00	.00	.00	.00	.00
	2	.00	.00	.00	.00	.00
	3	.00	.01	.25	.20	.00
	4	.00	.01	.35	.17	.00
	5	.00	.10	.00	.16	.02
	6	.00	.26	.02	.14	.15
	7	.08	.60	.06	.31	.47
	8	.90	.01	.04	.02	.32
	9	.01	.02	.28	.00	.03
	1	.00	.00		.00	.00
	2	.00	.00		.00	.00
	3	.00	.00		.37	.00
	4	.00	.10		.15	.02
	5	.00	.33		.14	.14
	6	.14	.56		.28	.34
	7	.72	.01		.06	.48
	8	.14	.00		.00	.02
5	1	.00	.00		.00	.00
	2	.00	.00		.37	.00
	3	.00	.10		.15	.03

	4	.00	.38		.11	.13
	5	.16	.50		.30	.33
	6	.65	.02		.07	.50
	7	.19	.01		.00	.01
6	1	.00	.00		.00	
	2	.00	.00		.54	
	3	.00	.14		.38	
	4	.00	.74		.00	
	5	.74	.12		.08	
	6	.26	.00		.00	
7	1		.00		.00	
	2		.00		.56	
	3		.16		.40	
	4		.82		.00	
	5		.02		.04	

a. Dependent Variable: LCPSTTSCON

Excluded Variables[g]

Model	Beta In	t	Sig.	Partial Correlation
2OWR(PostCont)	-.034[a]	-.178	.863	-.056
3OWR(PostCont)	-.015[b]	-.090	.930	-.027
VKK1(PostCont)	.024[b]	.205	.841	.062
4OWR(PostCont)	-.022[c]	-.138	.893	-.040
VKK1(PostCont)	.022[c]	.198	.847	.057
MALQPROBSOLPST	.031[c]	.343	.738	.099
5OWR(PostCont)	-.011[d]	-.073	.943	-.020
VKK1(PostCont)	.025[d]	.231	.821	.064
MALQPROBSOLPST	.027[d]	.312	.760	.086
VKK2(PostCont)	.029[d]	.391	.702	.108
6OWR(PostCont)	-.019[e]	-.125	.902	-.033
VKK1(PostCont)	.057[e]	.576	.574	.152
MALQPROBSOLPST	.023[e]	.274	.788	.073
VKK2(PostCont)	.023[e]	.310	.761	.083
MALQDIRECTEDATTENTIONPST	.113[e]	.990	.339	.256

7 OWR(PostCont)	-.070[f]	-.466	.648	-.119
VKK1(PostCont)	.104[f]	1.379	.188	.335
MALQPROBSOLPST	.047[f]	.552	.589	.141
VKK2(PostCont)	.031[f]	.408	.689	.105
MALQDIRECTEDATTENTIONPST	.152[f]	1.381	.188	.336
MALQPLANEVALPST	.135[f]	1.482	.159	.357

Excluded Variables[g]

Model	Collinearity Statistics		
	Tolerance	VIF	Minimum Tolerance
2 OWR(PostCont)	.181	5.516	.181
3 OWR(PostCont)	.214	4.663	.214
VKK1(PostCont)	.450	2.223	.316
4 OWR(PostCont)	.218	4.585	.218
VKK1(PostCont)	.451	2.219	.316
MALQPROBSOLPST	.695	1.439	.366
5 OWR(PostCont)	.225	4.448	.225
VKK1(PostCont)	.453	2.208	.319
MALQPROBSOLPST	.702	1.424	.369
VKK2(PostCont)	.926	1.080	.367
6 OWR(PostCont)	.225	4.435	.225
VKK1(PostCont)	.525	1.906	.354
MALQPROBSOLPST	.703	1.422	.551
VKK2(PostCont)	.933	1.072	.583
MALQDIRECTEDATTENTIONPST	.370	2.704	.370
7 OWR(PostCont)	.240	4.159	.240
VKK1(PostCont)	.869	1.151	.717
MALQPROBSOLPST	.735	1.360	.669
VKK2(PostCont)	.939	1.066	.805
MALQDIRECTEDATTENTIONPST	.407	2.457	.407
MALQPLANEVALPST	.586	1.706	.586

a. Predictors in the Model: (Constant), MALQDIRECTEDATTENTIONPST, MALQMENTTRANSPST, VKK2(PostCont), VKK1(PostCont), MALQPROBSOLPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

b. Predictors in the Model: (Constant), MALQDIRECTEDATTENTIONPST, MALQMENTTRANSPST, VKK2(PostCont), MALQPROBSOLPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

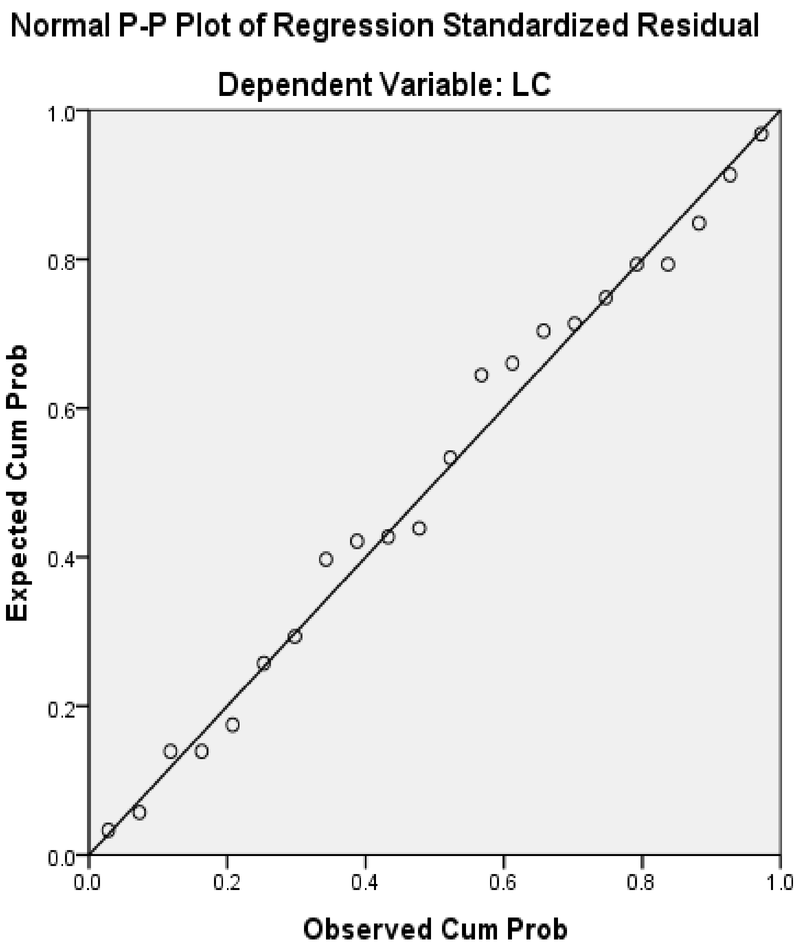
c. Predictors in the Model: (Constant), MALQDIRECTEDATTENTIONPST, VKK2(PostCont), MALQMENTTRANSPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

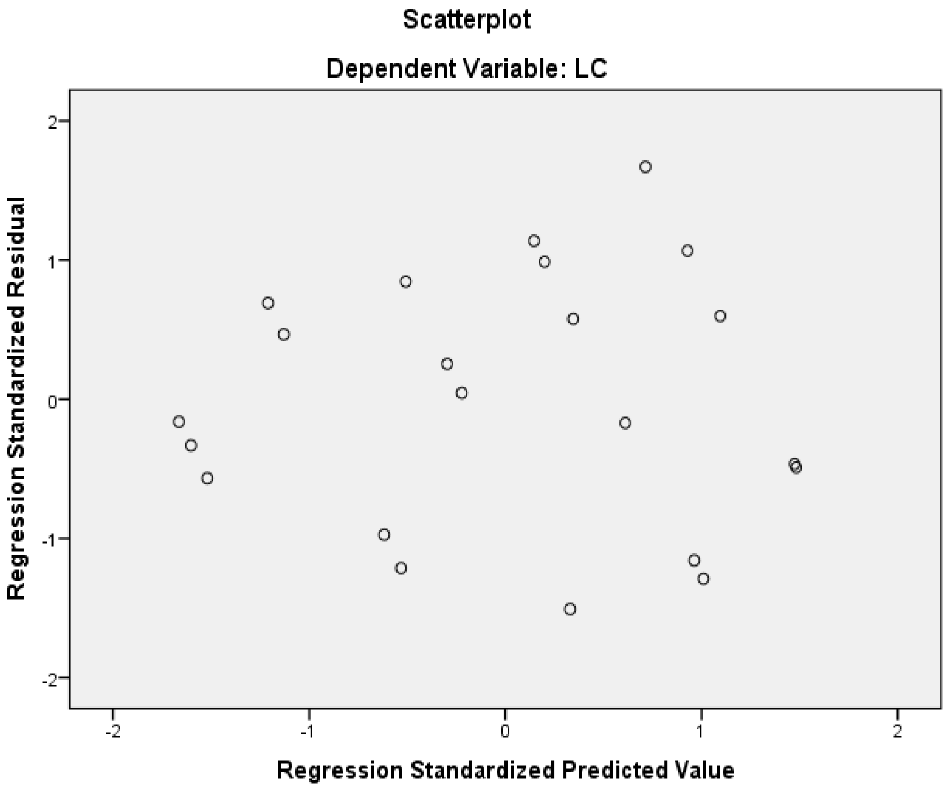
d. Predictors in the Model: (Constant), MALQDIRECTEDATTENTIONPST, MALQMENTTRANSPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

e. Predictors in the Model: (Constant), MALQMENTTRANSPST, MALQPERSNKNOWPST, MALQPLANEVALPST, AWR(PostCont), WM(PostCont)

f. Predictors in the Model: (Constant), MALQMENTTRANSPST, MALQPERSNKNOWPST, AWR(PostCont), WM(PostCont)

g. Dependent Variable: LCPSTTSCON




Scatterplot
Dependent Variable: LC
Regression Standardized Residual
Regression Standardized Predicted Value
2
1
0
-1
-2
-2
-1
0
1
2

APPENDIX Q

Descriptive Stsatistics & Mann-Whitney U Test (Pre-test) (Experimental & Control)

1.LGPT / LC/ VKK1 / VKK2 / WM / AWR / OWR

```
NPAR TESTS
  /M-W= LGPROFICIENCYexpcon BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
LGPROFICIENCYexp group	22	12.0482	.78940	11.00	13.00
LGPROFICIENCYcon group	22	12.0921	.81235	11.00	13.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
LGPROFICIENCYexpcon group	1	22	22.86	503.00
	2	22	22.14	487.00
	Total	44		

Test Statistics[a]

	LGPROFICIENCYexpcon
Mann-Whitney U	234.000
Wilcoxon W	487.000
Z	-.200
Asymp. Sig. (2-tailed)	.842

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= LCPRT BY group(1 2)
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
LCTexp group	22	7.5000	1.0145	6.00	9.00
LCTcon group	22	7.2284	1.0612	6.00	9.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
LCPRT	1	22	20.91	460.00
	2	22	24.09	530.00
	Total	44		

Test Statistics[a]

	LCPRT
Mann-Whitney U	207.000
Wilcoxon W	460.000
Z	-.855
Asymp. Sig. (2-tailed)	.392

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= VKK1PRT BY group(1 2)
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
VKK1exp group	22	24.5931	1.5623	22.00	26.00
VKK1con group	22	24.6811	1.7012	22.00	26.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
VKK1PRT	1	22	23.32	513.00
	2	22	21.68	477.00
	Total	44		

Test Statistics[a]

	VKK1PRT
Mann-Whitney U	224.000
Wilcoxon W	477.000
Z	-.451
Asymp. Sig. (2-tailed)	.652

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= VKK2PRT BY group(1 2)
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
VKK2exp group	22	2.2736	.4518	2.00	3.00
VKK2con group	22	2.2269	.4210	2.00	3.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
VKK2PRT	1	22	22.00	484.00
	2	22	23.00	506.00
	Total	44		

Test Statistics[a]

	VKK2PRT
Mann-Whitney U	231.000
Wilcoxon W	484.000
Z	-.344
Asymp. Sig. (2-tailed)	.731

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= WMSPRT BY group(1 2)
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
WMSexp group	22	56.1321	3.0921	51.00	61.00
WMScon group	22	55.0498	3.8822	49.00	59.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
WMSPRT	1	22	21.43	471.50
	2	22	23.57	518.50
	Total	44		

Test Statistics[a]

	WMSPRT
Mann-Whitney U	218.500
Wilcoxon W	471.500
Z	-.558
Asymp. Sig. (2-tailed)	.577

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= AWRPRT BY group(1 2)
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
AWR exp group	22	1881.8125	58.8423	1800.00	1950.00
AWRcon group	22	1879.5479	61.0634	1800.00	1950.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
AWRPRT	1	22	22.27	490.00
	2	22	22.73	500.00
	Total	44		

Test Statistics[a]

	AWRPRT
Mann-Whitney U	237.000
Wilcoxon W	490.000
Z	-.122
Asymp. Sig. (2-tailed)	.903

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= OWRPRT BY group(1 2)
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
OWRexp group	22	2190.90	86.7811	2100.00	2350.00
OWRcon group	22	2188.63	72.2635	2100.00	2300.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
OWRPRT	1	22	22.64	498.00
	2	22	22.36	492.00
	Total	44		

Test Statistics[a]

	OWRPRT
Mann-Whitney U	239.000
Wilcoxon W	492.000
Z	-.072
Asymp. Sig. (2-tailed)	.942

a. Grouping Variable: group

B. MALQ PE / PS / MT / PK / DA

```
NPAR TESTS
  /M-W= PEPRT BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
PEexp group	22	21.77	1.95	19.00	26.00
PEcon group	22	.94	.506	17.00	27.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
	1	22	21.07	463.50
PEPST	2	22	33.50	526.50
	Total	44		

Test Statistics[a]

	PEPST
Mann-Whitney U	210.500
Wilcoxon W	463.500
Z	-.746
Asymp. Sig. (2-tailed)	.456

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= PSPRT BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
PSexp group	22	26.27	3.14	20.00	30.00
PScon group	22	24.27	3.58	19.00	32.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
PSPST	1	22	19.18	422.00
	2	22	25.82	568.00
	Total	44		

Test Statistics[a]

	PSPST
Mann-Whitney U	169.00
Wilcoxon W	22.000
Z	-1.724
Asymp. Sig. (2-tailed)	.085

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= MTPST BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
MTexp group	22	18.31	1.83	15.00	21.00
MTcon group	22	18.00	1.44	15.00	21.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
MTPST	1	22	20.59	453.00
	2	22	24.41	537.00
	Total	44		

Test Statistics[a]

	MTPST
Mann-Whitney U	200.000
Wilcoxon W	453.000
Z	-1.011
Asymp. Sig. (2-tailed)	.312

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= PKPRT BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
PKexp group	22	11.40	.95	10.00	13.00
PKcon group	22	11.09	1.34	10.00	13.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
PKPST	1	22	20.84	458.50
	2	22	24.16	531.50
	Total	44		

Test Statistics[a]

	PKPST
Mann-Whitney U	205.500
Wilcoxon W	458.500
Z	-.954
Asymp. Sig. (2-tailed)	.340

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= DAPRT BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
DAexp group	22	15.36	2.12	11.00	18.00
DAcon group	22	15.09	1.60	12.00	18.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
	1	22	20.55	452.00
DAPST	2	22	24.45	538.00
	Total	44		

Test Statistics[a]

	DAPST
Mann-Whitney U	199.000
Wilcoxon W	452.000
Z	-1.029
Asymp. Sig. (2-tailed)	.304

a. Grouping Variable: group

APPENDIX R

Descriptive Statistics & Mann-Whitney U Test (Post-test)

(Experimental & Control Groups)

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

		N	Mean	Std. Deviation	Minimum	Maximum
LCexp	group	22	11.3145	1.357695	8.00	13.00
LCcon	group	22	7.6818	1.46015	6.00	10.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
LCPST	1	22	13.20	699.50
	2	22	31.80	290.50
	Total	44		

Test Statistics[a]

	LCPST
Mann-Whitney U	37.500
Wilcoxon W	699.500
Z	-4.864
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: group

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

		N	Mean	Std. Deviation	Minimum	Maximum
VKK1exp	group	22	25.0455	1.83206	22.00	27.00
VKK1con	group	22		1.81815		

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
VKK1 PST	1	22	23.05	507.00
	2	22	21.95	483.00
	Total	44		

Test Statistics[a]

	VKK1 PST
Mann-Whitney U	230.000
Wilcoxon W	507.000
Z	-.287
Asymp. Sig. (2-tailed)	.774

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= VKK2PST BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

		N	Mean	Std. Deviation	Minimum	Maximum
VKK2exp	group	22	2,3627	,49893	2.00	3.00
VKK2con	group	22	2.3636	.49237	2.00	3.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
	1	22	18.00	594.00
VKK2PST	2	22	27.00	396.00
	Total	44		

Test Statistics[a]

	VKK2PST
Mann-Whitney U	30.000
Wilcoxon W	594.000
Z	-2.708
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: group

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

		N	Mean	Std. Deviation	Minimum	Maximum
WMexp	group	22	76.6364	6.19174	66.00	87.00
WMcon	group	22	56.2090	3.48034	55.00	62.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
WMPST	1	22	33.50	737.00
	2	22	11.50	253.00
	Total	44		

Test Statistics[a]

	WMPST
Mann-Whitney U	.000
Wilcoxon W	737.000
Z	-5.716
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= AWRPST BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

		N	Mean	Std. Deviation	Minimum	Maximum
AWexp	group	22	2154.5421	43.39322	2100.00	2200.00
AWcon	group	22	2018.1891	86.94065		

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
AWRPST	1	22	32.70	719.50
	2	22	12.30	270.50
	Total	44		

Test Statistics[a]

	AWRPST
Mann-Whitney U	17.500
Wilcoxon W	719.50
Z	-5.372
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= OWR BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

Descriptive Statistics

		N	Mean	Std. Deviation	Minimum	Maximum
OWRexp	group	22	2290.9021	71.77552	2150.00	2400.00
OWRcon	group	22				

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
OWRPST	1	22	21.36	470.00
	2	22	23.64	520.00
	Total	44		

Test Statistics[a]

	OWRPST
Mann-Whitney U	217.000
Wilcoxon W	470.000
Z	-.599
Asymp. Sig. (2-tailed)	.549

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= PEPST BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
PEexp group	22	29.1364	1.20694	24.00	31.00
PEcon group	22	21.1304	3.50911	15.00	26.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
PEPST	1	22	11.50	253.00
	2	22	33.50	737.00
	Total	44		

Test Statistics[a]

	PEPST
Mann-Whitney U	.000
Wilcoxon W	253.000
Z	-5.713
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= PSPST BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
PSexp group	22	26.2727	3.14008	30.00	37.00
PScon group	22	24.7282	1.59413	20.00	33.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
PSPST	1	22	11.66	256.50
	2	22	33.34	733.50
	Total	44		

Test Statistics[a]

	PSPST
Mann-Whitney U	3.500
Wilcoxon W	256.500
Z	-5.619
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= MTPST BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
MTexp group	22	10.5045	.95117	9.00	13.00
MTcon group	22	13.5023	1.2042	12.00	15.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
MTPST	1	22	33.32	733.00
	2	22	11.68	257.00
	Total	44		

Test Statistics[a]

	MTPST
Mann-Whitney U	4.000
Wilcoxon W	257.000
Z	-5.667
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= PKPST BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
PKexp group	22	12.8591	1.29683	10.00	14.00
PKcon group	22	11.9545	1.10016	10.00	13.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
PKPST	1	22	24.91	548.00
	2	22	20.09	259.00
	Total	44		

Test Statistics[a]

	PKPST
Mann-Whitney U	6.000
Wilcoxon W	259.000
Z	-5.293
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: group

```
NPAR TESTS
  /M-W= DAPST BY group(1 2)
  /STATISTICS=DESCRIPTIVES
  /MISSING ANALYSIS.
```

NPar Tests

```
[DataSet1] C:\Users\HP\Desktop\MAIN STUDY_1.sav
```

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
DAexp group	22	19.4745	1.16340	18.00	21.00
DAcon group	22	15.5115	1.33550	12.00	18.00

Mann-Whitney Test

Ranks

	group	N	Mean Rank	Sum of Ranks
DAPST	1	22	11.73	258.00
	2	22	33.27	732.00
	Total	44		

Test Statistics[a]

	DAPST
Mann-Whitney U	5.000
Wilcoxon W	258.000
Z	-5.646
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: group

APPENDIX S

Validity& Reliability FACETS Analyses Resultsofthe WMST Part 1 (A) Reasoning(Candidates' Abilities Report)

```
-----------------------------------------------------------------
|Measr|+Candidate |-Gender|-Test Type      |-Rater   |-Test Item|
-----------------------------------------------------------------
+   4 +           +       +                +         +          +
|     |           |       |                |         |          |
|     |           |       |                |         | *        |
|     |           |       |                |         |          |
|     |           |       |                |         |          |
|     |           |       |                |         |          |
|     |           |       |                |         |          |
+   3 +           +       +                +         + **       +
|     |           |       |                |         |          |
|     |           |       |                |         |          |
|     |           |       |                |         |          |
|     |           |       |                |         |          |
|     |           |       |                |         | *        |
+   2 +           +       +                +         +          +
|     |           |       |                |         |          |
|     |           |       |                |         | **       |
|     |           |       |                |         | *        |
|     | *         |       |                |         | **       |
|     |           |       |                |         | *        |
|     | ***       |       |                |         |          |
+   1 + ********* +       +                +         +          +
|     | ****      |       |                |         |          |
|     |           |       |                |         | **       |
|     | ********  |       |                |         | **       |
|     | ****      |       |                |         |          |
|     | *****     |       |                |         | **       |
|     | ***       |       |                |         | **       |
*   0 * ******    * Male  * Reasoning Test * rater 1 * **       *
|     | ****      |       |                |         | *        |
|     |           |       |                |         | *        |
|     | ***       |       |                |         | *****    |
|     |           |       |                |         | ***      |
|     |           |       |                |         | ***      |
|     |           |       |                |         |          |
+  -1 +           +       +                +         +          +
|     |           |       |                |         | *        |
|     |           |       |                |         | *        |
|     |           |       |                |         | *        |
|     |           |       |                |         |          |
|     |           |       |                |         |          |
|     |           |       |                |         | *        |
+  -2 +           +       +                +         +          +
|     |           |       |                |         |          |
|     |           |       |                |         |          |
|     |           |       |                |         | ****     |
|     |           |       |                |         |          |
|     |           |       |                |         |          |
|     |           |       |                |         | *        |
+  -3 +           +       +                +         +          +
-----------------------------------------------------------------
|Measr| * = 1     |-Gender|-Test Type      |-Rater   | * = 1    |
-----------------------------------------------------------------
```

APPENDIX T

Validity & Reliability FACETS Analyses Results of the WMST Part 1 (A) Reasoning (Items Analyses Report Arranged by 5MN)

Obsvd Score	Obsvd Count	Obsvd Average	Fair-M Avrage	Measure	Model S.E.	Infit MnSq	Infit ZStd	Outfit MnSq	Outfit ZStd	Estim. Discrm	PtBis	Nu	Test Item
48	50	1.0	.96	-2.85	.72	1.01	.2	.97	.2	.99	-.01	3	3
47	50	.9	.95	-2.42	.60	1.01	.1	.91	.0	1.00	.03	4	4
47	50	.9	.95	-2.42	.60	1.01	.1	.91	.0	1.00	.03	5	5
47	50	.9	.95	-2.42	.60	.99	.1	1.35	.7	.99	.01	10	10
46	49	.9	.94	-2.41	.60	1.02	.2	1.00	.2	.99	-.02	1	1
45	50	.9	.91	-1.86	.48	1.12	.4	1.70	1.5	.85	-.38	15	15
43	50	.9	.87	-1.47	.41	.95	.0	1.02	.1	1.03	.15	24	24
42	50	.8	.85	-1.30	.39	1.12	.5	1.42	1.3	.82	-.32	18	18
41	50	.8	.83	-1.16	.37	1.04	.2	1.09	.4	.94	-.05	9	9
37	50	.7	.75	-.67	.33	.94	-.3	.90	-.4	1.13	.21	21	21
37	50	.7	.75	-.67	.33	.99	.0	.97	.0	1.02	.08	23	23
37	50	.7	.75	-.67	.33	1.03	.2	1.09	.5	.91	-.02	25	25
36	50	.7	.73	-.56	.32	1.07	.5	1.05	.3	.86	-.07	8	8
36	50	.7	.73	-.56	.32	1.12	.8	1.17	1.0	.72	-.20	19	19
36	50	.7	.73	-.56	.32	.97	-.1	.94	-.3	1.09	.15	22	22
35	50	.7	.71	-.46	.32	1.15	1.1	1.22	1.3	.57	-.27	6	6
35	50	.7	.71	-.46	.32	1.12.5		1.42.82		.33	-.36	17	17
34	50	.7	.69	-.37	.31	1.10	.8	1.13	.9	.67	-.15	7	7
34	50	.7	.69	-.37	.31	1.10	.8	1.12	.8	.68	-.16	16	16
34	50	.7	.69	-.37	.31	.82	-3.0	.81	-2.78	.51	.75	30	30
33	50	.7	.67	-.27	.31	1.07.5		1.05.3.86			-.07	2	2
31	50	.6	.63	-.09	.30	1.04.2		1.05	-.04.94		-.05	11	11
30	50	.6	.60	.00	.30	1.00	.0	1.03	.3	.97	.08	28	28
30	50	.6	.60	.00	.30	.77	-3.0	.77	-2.6	2.35	.63	29	29
29	50	.6	.58	.09	.29	.83	.2	.80	-.6	1.10	.86	32	32
28	50	.6	.56	.17	.29	.99	.0	1.00	.0	1.04	.10	13	13
27	50	.5	.54	.26	.29	.86	-2.2	.85	-2.1	2.29	.41	26	26
26	50	.5	.52	.34	.29	1.04	.5	1.05	.6	.61	-.01	20	20
24	50	.5	.48	.51	.29	1.15	1.1	1.21	1.3	.57	.27	12	12
24	50	.5	.48	.51	.29	.82	-3.0	.81	-2.9	2.78	.51	31	31
22	50	.4	.44	.68	.29	1.01	.1	1.00	.0	.95	.06	27	27
21	50	.4	.42	.77	.29	1.06	.7	1.08	.9	.57	-.06	14	14
15	50	.3	.29	1.32	.32	.94	.3	.93	-.4	.94	.05	42	42
14	50	.3	.27	1.42	.32	.95	-.3	.92	-.4	1.13	.19	39	39

```
        |     14      50       .3     .27|   1.42    .32 |  .93  -.4    .93  -.3| 1.16 |    .22 | 40 40
|
        |     12      50       .2     .23|   1.63    .34 |  .97  -.1    .94  -.2| 1.06 |    .13 | 38 38
|
        |     11      50       .2     .21|   1.75    .35 |  .93  -.3    .84  -.7| 1.13 |    .26 | 35 35
|
        |     11      50       .2     .21|   1.75    .35 |  .89  -.5    .80  -.8| 1.19 |    .34 | 41 41
|
        |      8      50       .2     .15|   2.16    .39 |  .93  -.2    .80  -.6| 1.10 |    .26 | 37 37
|
        |      4      50       .1     .07|   2.96    .53 |  .94   .0    .66  -.6| 1.07 |    .27 | 33 33
|
        |      4      50       .1     .07|   2.96    .53 | 1.00   .1  1.02    .2| 1.00 |    .02 | 36 36
|
        |      2      50       .0     .04|   3.70    .72 |  .94   .1    .55  -.4| 1.06 |    .25 | 34 34
|
        -----------------------------------------------------------------------------------------------
----------
        |  ObsvdObsvdObsvd  Fair-M|        Model | Infit      Outfit   |Estim.|       |
|
        |  Score  Count Average Avrage|Measure  S.E. | MnSqZStdMnSqZStd|Discrm| PtBis | Nu Test Item
|
        -----------------------------------------------------------------------------------------------
----------
        |    29.0    50.0    .6     .58|    .00    .38 | 1.00   .0  1.01    .0|      |    .07 | Mean
(Count: 42)    |
        |    13.0      .2    .3     .27|   1.51    .12 |  .12  1.3    .22  1.4|      |    .29 | S.D.
(Populn)       |
        |    13.1      .2    .3     .27|   1.53    .12 |  .12  1.3    .22  1.4|      |    .29 | S.D.
(Sample)       |
        -----------------------------------------------------------------------------------------------
----------
        Model, Populn: RMSE .40  Adj (True) S.D. 1.45  Separation 3.64  Reliability .93
        Model, Sample: RMSE .40  Adj (True) S.D. 1.47  Separation 3.69  Reliability .93
        Model, Fixed (all same) chi-square: 427.1  d.f.: 41  significance (probability): .00
        Model,  Random (normal) chi-square: 36.7  d.f.: 40  significance (probability): .62
        -----------------------------------------------------------------------------------------------
----------
```

.

Obsvd Obsvd Obsvd Fair-M |Model Infit Outfit Estim N Test

score Count Aver. |Aver. Measure S.E. |MnSq Zstd MnsSq ZstdDiscrmPtBisItem

48	50	1.0	.96	-2.85	.72	1.01	.2	.97	.2	.99	-.01	3 3
47	50	.9	.95	-2.42	.60	1.01	.1	.91	.0	1.00	.03	4 4
47	50	.9	.95	-2.42	.60	1.01	.1	.91	.0	1.00	.03	5 5
47	50	.9	.95	-2.42	.60	.99	.1	1.35	.7	.99	.01	10 10
46	50	.9	.94	-2.41	.60	1.02	.2	1.00	.2	.99	-.02	1 1
45	50	.9	.91	-1.86	.48	1.12	.4	1.70	1.5	.85	-.38	15 15
43	50	.9	.87	-1.47	.41	.95	.0	1.02	.1	1.03	.15	24 24
42	50	.8	.85	-1.30	.39	1.12	.5	1.42	1.3	.82	-.32	18 18
41	50	.8	.83	-1.16	.37	1.04	.2	1.09	.4	.94	-.05	9 9

37	50	.7	.75	-.67	.33	.94	-.3	.90	-.4	1.13	.21	21 21
37	50	.7	.75	-.67	.33	.99	.0	.97	.0	1.02	.08	23 23
37	50	.7	.75	-.67	.33	1.03	.2	1.09	.5	.91	-.02	25 25
36	50	.7	.73	-.56	.32	1.07	.5	1.05	.3	.86	-.07	8 8
36	50	.7	.73	-.56	.32	1.12	.8	1.17	1.0	.72	-.20	19 19
36	50	.7	.73	-.56	.32	.97	-.1	.94	-.3	1.09	.15	22 22
35	50	.7	.71	-.46	.32	1.15	1.1	1.22	1.3	.57	-.27	6 6
35	50	.7	.71	-.46	.32	1.12	.5	1.42	1.3	.82	-.07	17 17
34	50	.7	.69	-.37	.31	1.10	.8	1.13	.9	.67	-.15	7 7
34	50	.7	.69	-.37	.31	1.10	.8	1.12	.8	.68	-.16	16 16
34	50	.7	.69	-.37	.31	.82	-3.0	.81	-2.9	2.78	.51	30 30
33	50	.7	.67	-.27	.31	1.07	.5	1.05	.5	.86	-.07	2 2
31	50	.6	.63	-.09	.30	1.04	.2	1.09	.4	.94	-.05	11 11
30	50	.6	.60	.00	.30	1.00	.0	1.03	.3	.97	.08	28 28
30	50	.6	.60	.00	.30	.77	-3.0	.77	-2.6	2.35	.63	29 29
29	50	.6	.58	.09	.29	.93	-.2	.80	-.6	1.10	.26	32 32
28	50	.6	.56	.17	.29	.99	.0	1.00	.0	1.04	.10	13 13
27	50	.5	.54	.26	.29	.86	-2.2	.85	-2.1	2.29	.41	26 26
26	50	.5	.52	.34	.29	1.04	.5	1.05	.6	.61	-.01	20 20
24	50	.5	.48	.51	.29	1.15	1.1	1.25	1.3	.57	-.27	12 12
24	50	.5	.48	.51	.29	.82	-3.0	.85	-2.9	2.78	.51	31 31
22	50	.4	.44	.68	.29	1.01	.1	1.00	.0	.95	.06	27 27
21	50	.4	.42	.77	.29	1.06	.7	1.08	.9	.57	-.06	14 14
15	50	.3	.29	1.32	.32	.94	-.3	.90	-.4	.94	-.05	42 42
14	50	.3	.27	1.42	.32	.95	-.3	.92	-.4	1.13	.19	39 39
14	50	.3	.27	1.42	.32	.93	-.4	.93	-.3	1.16	.22	40 40
12	50	.2	.23	1.63	.34	.97	-.1	.94	-.2	1.06	.13	38 38
11	50	.2	.21	1.75	.35	.93	-.3	.84	-.7	1.13	.26	35 35
11	50	.2	.21	1.75	.35	.89	-.5	.80	-.8	1.19	.34	41 41
8	50	.2	.15	2.16	.39	.93	-.2	.80	-.6	1.10	.26	37 37
4	50	.1	.07	2.96	.53	.94	.0	.66	-.6	1.07	.27	33 33
4	50	.1	.07	2.96	.53	1.00	.1	1.02	.2	1.00	.02	36 36
2	50	.0	.04	3.70	.72	.94	.1	.55	-.4	1.06	.25	34 34

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Obsvd score	Obsvd Count	Obsvd Aver.	Fair-M Aver.	Measure	Model S.E.	Infit MnSq	Infit Zstd	Outfit MnsSq	Outfit Zstd	Estim Discrm	PtBis	Num Test Item
29.0	50.0	.6	.58	.00	.38	1.00	.0	1.99	.0	.07		Mean (count: 42)
13.0	.2	.3	.27	1.51	.12	.12	1.3	.22	1.4	.29		S.D. (Populn)
13.1	.2	.3	.27	1.53	.12	.12	1.3	.22	1.4	.29		S.D. (Sample)

Model, Populn: RMSE .40 Adj (True) S.D. 1.45Separation 3.64 Reliability .93

Model, Sample: RMSE .40 Adj (True) S.D. 1.47Separation 3.69 Reliability .93

Model, Fixed (all the same) chi-square: 427.1 d.f.: 41Significance (probability):.00

Model, Random (normal) chi-square:36.7d.f.: 40 Significance (probability):.62

APPENDIX U

Validity & Reliability FACETS Analyses Results of the WMST (Part 1 A) Recalling(Candidates' Abilities Report)

```
-----------------------------------------------------------------
|Measr|+Candidate|-Gender |-Test Type      |-Rater   |-Test Item|
-----------------------------------------------------------------
+   3 +          +        +                +         + *        +
|     |          |        |                |         |          |
|     |          |        |                |         | **       |
|     |          |        |                |         |          |
|     |          |        |                |         | ****     |
|     |          |        |                |         | **       |
|     |          |        |                |         |          |
+   2 +          +        +                +         + *        +
|     |          |        |                |         | **       |
|     |          |        |                |         |          |
|     |          |        |                |         |          |
|     |          |        |                |         |          |
|     | **       |        |                |         | *        |
|     | **       |        |                |         | *        |
+   1 + *******  +        +                +         + *        +
|     |          |        |                |         |          |
|     | *****    |        |                |         |          |
|     | *******  |        |                |         | **       |
|     | ****     |        |                |         |          |
|     | *******  |        |                |         | *        |
|     | **       |        |                |         | ***      |
*   0 * *****    * Female * Recalling Test * rater 1 * *        *
|     | ***      |        |                |         | ***      |
|     | ******   |        |                |         |          |
|     |          |        |                |         |          |
|     |          |        |                |         |          |
|     |          |        |                |         |          |
|     |          |        |                |         | ******   |
+  -1 +          +        +                +         + ***      +
|     |          |        |                |         |          |
|     |          |        |                |         | *        |
|     |          |        |                |         | *        |
|     |          |        |                |         |          |
|     |          |        |                |         |          |
|     |          |        |                |         |          |
+  -2 +          +        +                +         +          +
|     |          |        |                |         |          |
|     |          |        |                |         |          |
|     |          |        |                |         | *        |
|     |          |        |                |         |          |
|     |          |        |                |         |          |
|     |          |        |                |         | *        |
+  -3 +          +        +                +         +          +
|     |          |        |                |         |          |
|     |          |        |                |         |          |
|     |          |        |                |         |          |
|     |          |        |                |         | ****     |
|     |          |        |                |         |          |
|     |          |        |                |         |          |
+  -4 +          +        +                +         +          +
-----------------------------------------------------------------
|Measr| * = 1    |-Gender |-Test Type      |-Rater   | * = 1    |
-----------------------------------------------------------------
```

APPENDIX V

Validity & Reliability FACETS Analyses Results of the WMST Part 1 (A) Recalling (Test Item Analyses Arranged by 5MN)

Obsvd Score	Obsvd Count	Obsvd Average	Fair-M Avrage	Measure	Model S.E.	Infit MnSq	Infit ZStd	Outfit MnSq	Outfit ZStd	Estim. Discrm	PtBis	Nu	Test Item
98	100	1.0	.98	-3.58	.72	.98	.2	.62	-.3	1.03	.16	1	1
98	100	1.0	.98	-3.58	.72	1.03	.2	1.86	1.1	.95	-.18	4	4
98	100	1.0	.98	-3.58	.72	.99	.2	.72	-.1	1.02	.11	9	9
98	100	1.0	.98	-3.58	.72	1.01	.2	1.15	.4	.98	-.04	22	22
96	100	1.0	.96	-2.86	.51	.98	.1	.67	-.5	1.03	.20	8	8
94	100	.9	.95	-2.43	.42	.99	.0	.94	.0	1.01	.11	7	7
86	100	.9	.87	-1.48	.29	1.07	.4	1.18	.7	.92	-.09	19	19
84	100	.8	.85	-1.31	.28	1.14	.8	1.32	1.4	.82	-.26	3	3
80	100	.8	.81	-1.03	.25	1.01	.1	1.02	.1	.99	.10	2	2
80	100	.8	.81	-1.03	.25	1.12	.8	1.27	1.4	.81	-.19	10	10
80	100	.8	.81	-1.03	.25	1.07	.5	1.14	.8	.89	-.06	17	17
76	100	.8	.77	-.79	.24	1.13	1.0	1.19	1.2	.77	-.17	14	14
76	100	.8	.77	-.79	.24	.88	-.9	.82	-1.2	1.22	.41	15	15
76	100	.8	.77	-.79	.24	1.17	1.3	1.26	1.7	.69	-.26	18	18
76	100	.8	.77	-.79	.24	.89	-.8	.90	-.7	1.18	.36	23	23
76	100	.8	.77	-.79	.24	.95	-.4	.99	.0	1.07	.22	24	24
76	100	.8	.77	-.79	.24	.85	-1.3	.80	-1.4	1.27	.48	28	28
64	100	.6	.65	-.19	.21	1.20	2.6	1.27	3.0	.11	-.29	13	13
64	100	.6	.65	-.19	.21	.91	-1.2	.91	-1.0	1.35	.32	25	25
62	100	.6	.63	-.10	.21	.85	-2.3	.84	-2.2	1.72	.46	27	27
60	100	.6	.60	-.01	.21	.85	-2.5	.86	-2.1	1.81	.45	29	29
58	100	.6	.58	.08	.21	1.05	.8	1.03	.5	.73	.05	5	5
58	100	.6	.58	.08	.21	1.17	2.9	1.17	2.7	-.13	-.21	11	11
58	100	.6	.58	.08	.21	.79	-4.1	.78	-4.0	2.43	.61	31	31
54	100	.5	.54	.25	.21	.88	-2.5	.88	-2.4	2.03	.40	32	32
48	100	.5	.48	.50	.21	1.19	3.9	1.21	4.0	-.85	-.26	6	6
48	100	.5	.48	.50	.21	1.12	.8	1.27	1.4	.81	-.19	16	16
38	100	.4	.37	.94	.21	.93	-1.1	.91	-1.2	1.37	.30	12	12
32	100	.3	.31	1.21	.22	.96	-.5	.92	-.7	1.16	.25	30	30
30	100	.3	.29	1.31	.22	1.10	1.0	1.13	1.1	.73	-.08	21	21

```
|    20    100      .2    .19|   1.87   .25 | 1.06   .4  1.13   .7|  .90 |  -.04 | 20 20 |
|    20    100      .2    .19|   1.87   .25 |  .99   .0   .97  -.1| 1.02 |   .15 | 26 26 |
|    18    100      .2    .17|   2.01   .26 |  .86  -.8   .72 -1.5| 1.18 |   .45 | 35 35 |
|    14    100      .1    .13|   2.31   .29 |  .99   .0   .95  -.1| 1.01 |   .13 | 33 33 |
|    14    100      .1    .13|   2.31   .29 |  .95  -.1   .79  -.8| 1.07 |   .27 | 36 36 |
|    12    100      .1    .11|   2.49   .31 |  .93  -.2   .72 -1.0| 1.09 |   .32 | 34 34 |
|    12    100      .1    .11|   2.49   .31 |  .98   .0   .88  -.3| 1.03 |   .17 | 37 37 |
|    12    100      .1    .11|   2.49   .31 | 1.02   .1  1.06   .3|  .98 |   .04 | 38 38 |
|    12    100      .1    .11|   2.49   .31 |  .96   .0   .81  -.6| 1.05 |   .23 | 39 39 |
|    10    100      .1    .09|   2.70   .34 |  .95  -.1   .77  -.7| 1.06 |   .25 | 40 40 |
|    10    100      .1    .09|   2.70   .34 |  .90  -.3   .62 -1.3| 1.11 |   .40 | 41 41 |
|     0    100      .0    .00|(  6.33  1.83)|Maximum             |      |   .00 | 42 42 |
------------------------------------------------------------------------------------------------------------
|  ObsvdObsvdObsvd  Fair-M|        Model | Infit      Outfit   |Estim.|       |                |
|  Score  Count Average Avrage|Measure  S.E. | MnSqZStdMnSqZStd|Discrm| PtBis | Nu Test Item |
------------------------------------------------------------------------------------------------------------
|   54.2   100.0    .5    .54|    .15   .34 | 1.00   .1   .99   .0|      |   .12 | Mean (Count: 42)    |
|   31.0      .0    .3    .32|   2.08   .27 |  .11  1.6   .24  1.7|      |   .25 | S.D. (Populn)       |
|   31.4      .0    .3    .32|   2.10   .28 |  .11  1.6   .24  1.7|      |   .25 | S.D. (Sample)       |
------------------------------------------------------------------------------------------------------------
   With extremes, Model, Populn: RMSE .44  Adj (True) S.D. 2.03  Separation 4.62  Reliability .96
   With extremes, Model, Sample: RMSE .44  Adj (True) S.D. 2.06  Separation 4.68  Reliability .96
Without extremes, Model, Populn: RMSE .34  Adj (True) S.D. 1.83  Separation 5.38  Reliability .97
Without extremes, Model, Sample: RMSE .34  Adj (True) S.D. 1.85  Separation 5.45  Reliability .97
With extremes, Model, Fixed (all same) chi-square: 1068.5  d.f.: 41  significance (probability): .00
With extremes, Model,  Random (normal) chi-square: 35.7  d.f.: 40  significance (probability): .66
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Obsvd score	Obsvd Count	Obsvd Aver.	Fair-M |Aver.	Measure	|Model S.E.	Infit |MnSq	Zstd	Outfit MnsSq	Zstd	Estim Discrm	PtBis	N Test Item
98	100	1.0	.98	-3.58	.72	.98	.2	.62	-.3	1.03.	.16	11
98	100	1.0	.98	-3.58	.72	1.03	.2	1.86	1.1	.95	-.18	4 4
98	100	1.0	.98	-3.58	.72	.99	.2	.72	-.1	1.02	.11	9 9
98	100	1.0	.98	-3.58	.72	1.01	.2	1.15	.4	.98	-.04	22 22
96	100	1.0	.96	-2.86	.51	.98	.1	.67	-.5	1.03	.20	8 8
94	100	.9	.95	-2.43	.42	.99	.0	.94	.0	1.01	.11	7 7
86	100	.9	.87	-1.48	.29	1.07	.4	1.18	.7	.92	-.09	19 19
84	100	.8	.85	-1.31	.28	1.14	.8	1.32	1.4	.82	-.26	3 3
80	100	.8	.81	-1.03	.25	1.01	.1	1.02	.1	.99	.10	2 2
80	100	.8	.81	-1.03	.25	1.12	.8	1.27	1.4	.81	-.19	10 10
80	100	.8	.81	-1.03	.25	1.07	.5	1.14	.8	.89	-.06	17 17
76	100	.8	.77	-.79	.24	1.13	1.0	1.19	1.2	.77	-.17	14 14
76	100	.8	.77	-.79	.24	.88	-.9	.82	-1.2	1.22	.41	15 15
76	100	.8	.77	-.79	.24	1.17	1.3	1.26	1.7	.69	-.26	18 18
76	100	.8	.77	-.79	.24	.89	-.8	.90	-.7	1.18	.36	23 23
76	100	.8	.77	-.79	.24	.95	-.4	.99	.0	1.07	.22	24 24
76	100	.8	.77	-.79	.24	.85	-1.3	.80	-1.4	1.27	.48	28 28
64	100	.6	.65	-.19	.21	1.20	2.6	1.27	3.0	.11	-.29	13 13
64	100	.6	.65	-.19	.21	.90	-1.2	.91	-1.0	1.35	.32	25 25
62	100	.6	.63	-.10	.21	.85	-2.3	.84	-2.2	1.72	.46	27 27
60	100	.6	.60	-.01	.21	.85	-2.5	.86	-2.1	1.81	.45	29 29
58	100	.6	.58	.08	21	1.05	.8	1.03	.5	.73	.05	5 5
58	100	.6	.58	.08	.21	1.17	2.9	1.17	2.7	-.13	-.21	11 11
58	100	.6	.58	.08	.21	.79	-4.1	.78	-4.0	2.43	.61	31 31
54	100	.5	.54	.25	.21	.88	-2.5	.88	-2.4	2.03	.40	32 32
48	100	.5	.48	.50	.21	1.19	3.9	1.21	4.0	-.85	-.20	6 6
48	100	.5	.48	.50	.21	1.12	.8	1.27	1.4	-.81	-.19	16 16
38	100	.4	.37	.94	.21	.93	-1.1	.91	-1.2	1.37	.30	12 12
32	100	.3	.31	1.21	.22	.96	-.5	.92	-.7	1.16	.25	30 30
30	100	.3	.29	1.31	.22	1.10	1.0	1.13	1.1	.73	-.08	21 21

20	100	.2	.19	1.87	.25	1.06	.4	1.13	.7	.90	-.04	20 20
20	100	.2	.19	1.87	.25	.99	.0	.97	-.1	1.02	.15	26 26
18	100	.2	.17	2.01	.26	.86	-.8	.72	-1.5	1.18	.45	35 35
14	100	.1	.13	2.31	.29	.99	.9	.95	-.1	1.01	.13	33 33
14	100	.1	.13	2.31	.29	.95	-.1	.79	-.8	1.07	.27	36 36
12	100	.1	.11	2.49	.31	.93	-.2	.72	-1.0	1.09	.32	34 34
12	100	.1	.11	2.49	.31	.98	.0	.88	-.3	1.03	.17	37 37
12	100	.1	.11	2.49	.31	1.02	.1	1.06	.3	.98	.04	38 38
12	100	.1	.11	2.49	.31	.96	.0	.81	-.6	1.05	.23	39 39
10	100	.1	.09	2.70	.34	.95	-.1	.77	-.7	1.06	.25	40 40
10	100	.1	.09	2.70	.34	.90	-.3	.62	-1.3	1.11	.40	41 41
0	100	.0	.00	6.33	1.83	Maxim					.00	42 42

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Obsvd Obsvd Obsvd Fair-M |Model Infit Outfit Estim Num

score Count Aver.|Aver. Measure S.E. |MnSq Zstd MnsSq Zstd Discrm PtBis Candidate

54.2 100.0 .5 .54 .15 .34 1.00 .1 .99 .0 .12Mean (count: 42)

31.0 .0 .3 .32 2.08 .27 .111.6 .24 1.7 .25 S.D. (Populn)

31.4 .0 .3 .32 2.10.28 .111.6 .241.7 .25S.D. (Sample)

W.extr.Model, Populn: RMSE.44 Adj (True) S.D. 2.03Separation 4.62 Reliability .96

W.extr. Model, Sample: RMSE .44 Adj (True) S.D.2.06 Separation 1.68 Reliability .96

Wt.extr. Model, Populn: RMSE .34Adj(True) S.D. 1.83Separation5.38 Reliability .97

W.extr. Model, Fixed (all the same)chi-square:1068.5d.f.: 41Significance (probability):.00

W.extr. Model, Random (normal) chi-square:35.7d.f.: 40 Significance (probability):.66

APPENDIX W

Validity & Reliability FACETS Analyses Results of the WMST Part 1 (A) & (B) Reasoning & Recalling (Candidates’ Abilities Report)

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-------------------------------------------------------------------
|Measr|+Candidate|-Gender |-Test Type      |-Rater    |-Test Item|
-------------------------------------------------------------------
+   3 +          +        +                 +          +          +
|     |          |        |                 |          |          |
|     |          |        |                 |          | *        |
|     |          |        |                 |          | *        |
|     |          |        |                 |          | **       |
|     |          |        |                 |          | *        |
|     |          |        |                 |          | *        |
+   2 +          +        +                 +          + **       +
|     |          |        |                 |          | **       |
|     |          |        |                 |          |          |
|     |          |        |                 |          |          |
|     |          |        |                 |          |          |
|     |          |        |                 |          |          |
|     |          |        |                 |          | **       |
+   1 + *****    +        +                 +          +          +
|     | ****     |        |                 |          |          |
|     | *****    |        |                 |          | *        |
|     | *******  |        |                 |          | **       |
|     | ***      |        |                 |          |          |
|     | ******   |        |                 |          |          |
|     | *****    |        | Recalling Test  |          | ****     |
*   0 * ****     * Female *                 * rater 1  * *        *
|     | *****    |        | Reasoning Test  |          | ***      |
|     | ***      |        |                 |          | *        |
|     | ***      |        |                 |          | *        |
|     |          |        |                 |          | **       |
|     |          |        |                 |          |          |
|     |          |        |                 |          | **       |
+  -1 +          +        +                 +          + **       +
|     |          |        |                 |          | **       |
|     |          |        |                 |          | *        |
|     |          |        |                 |          | *        |
|     |          |        |                 |          | *        |
|     |          |        |                 |          | **       |
|     |          |        |                 |          | *        |
+  -2 +          +        +                 +          +          +
|     |          |        |                 |          |          |
|     |          |        |                 |          | *        |
|     |          |        |                 |          |          |
|     |          |        |                 |          |          |
|     |          |        |                 |          |          |
|     |          |        |                 |          |          |
+  -3 +          +        +                 +          +          +
|     |          |        |                 |          | **       |
|     |          |        |                 |          |          |
|     |          |        |                 |          |          |
|     |          |        |                 |          |          |
|     |          |        |                 |          |          |
|     |          |        |                 |          |          |
+  -4 +          +        +                 +          +          +
-------------------------------------------------------------------
|Measr| * = 1    |-Gender |-Test Type      |-Rater    | * = 1    |
-------------------------------------------------------------------
```

APPENDIXX

Validity & Reliability FACETS Analyses Results of the WMST Part 1 (A) & (B) Reasoning & Recalling(Test Items AnalysesArranged by 5MN)

Obsvd Score	Obsvd Count	Obsvd Average	Fair-M Avrage	Model Measure	Model S.E.	Infit MnSq	Infit ZStd	Outfit MnSq	Outfit ZStd	Estim. Discrm	PtBis	Num	Candidate
54	126	.4	.40	-.42	.22	.92	-.8	.78	-1.2	1.19	.42	123	123
54	126	.4	.40	-.42	.22	.86	-1.4	.68	-1.8	1.30	.44	136	136
54	126	.4	.40	-.42	.22	.86	-1.4	.68	-1.8	1.30	.44	150	150
56	126	.4	.42	-.32	.22	.84	-1.7	.70	-1.7	1.33	.46	126	126
56	126	.4	.42	-.32	.22	.76	-2.7	.60	-2.5	1.47	.49	147	147
58	126	.5	.44	-.23	.22	.81	-2.0	.72	-1.6	1.36	.47	141	141
59	126	.5	.45	-.18	.22	1.13	1.3	1.22	1.2	.74	.32	103	103
59	126	.5	.45	-.18	.22	.80	-2.2	.64	-2.2	1.40	.47	145	145
60	126	.5	.47	-.13	.22	.78	-2.4	.62	-2.4	1.43	.48	109	109
61	126	.5	.48	-.09	.22	1.09	.9	1.00	.0	.88	.37	114	114
61	126	.5	.48	-.09	.22	.74	-2.8	.66	-2.1	1.46	.50	117	117
62	126	.5	.49	-.04	.22	.81	-2.0	.72	-1.7	1.35	.47	127	127
62	126	.5	.49	-.04	.22	.99	.0	.86	-.7	1.06	.41	130	130
63	126	.5	.50	.01	.22	.92	-.7	.94	-.2	1.14	.43	138	138
64	126	.5	.51	.05	.22	1.01	.1	1.13	.7	.97	.40	111	111
65	126	.5	.53	.10	.22	.76	-2.5	.69	-1.9	1.41	.50	121	121
65	126	.5	.53	.10	.22	.75	-2.6	.64	-2.2	1.43	.50	139	139
66	126	.5	.54	.15	.22	.77	-2.3	.84	-.9	1.37	.50	137	137
67	126	.5	.55	.20	.22	1.38	3.3	1.60	2.9	.34	.24	106	106
67	126	.5	.55	.20	.22	.85	-1.4	.72	-1.7	1.29	.46	110	110
68	126	.5	.56	.24	.22	1.34	2.9	1.49	2.4	.45	.26	102	102
68	126	.5	.56	.24	.22	.82	-1.8	.75	-1.5	1.31	.48	149	149
69	126	.5	.57	.29	.22	1.20	1.8	1.18	1.0	.69	.32	105	105
69	126	.5	.57	.29	.22	.69	-3.2	.59	-2.6	1.50	.53	125	125
69	126	.5	.57	.29	.22	.97	-.2	1.19	1.0	1.00	.41	132	132
70	126	.6	.58	.34	.22	.87	-1.2	.86	-.7	1.19	.45	119	119
71	126	.6	.60	.39	.22	.96	-.3	1.28	1.4	.98	.42	129	129
72	126	.6	.61	.44	.22	1.21	1.8	1.31	1.5	.65	.31	146	146
73	126	.6	.62	.49	.22	.86	-1.2	.84	-.8	1.20	.46	120	120
75	126	.6	.64	.58	.22	.79	-1.9	.74	-1.3	1.30	.48	113	113
75	126	.6	.64	.58	.22	1.02	.2	1.08	.4	.94	.39	124	124
75	126	.6	.64	.58	.22	.81	-1.7	.84	-.8	1.26	.47	148	148
75	125	.6	.65	.63	.22	.86	-1.2	.78	-1.1	1.22	.46	116	116
76	126	.6	.65	.63	.22	1.37	2.9	1.31	1.5	.49	.26	107	107

```
        |     76    126      .6    .65|    .63    .22 |  .96  -.3  1.00    .0| 1.04 |   .42 | 134 134
|
        |     76    126      .6    .65|    .63    .22 |  .80 -1.8   .88   -.5| 1.25 |   .48 | 144 144
|
        |     77    126      .6    .66|    .68    .22 | 1.30  2.4  1.36   1.6|  .55 |   .28 | 128 128
|
        |     77    126      .6    .66|    .68    .22 |  .80 -1.7   .85   -.7| 1.26 |   .47 | 143 143
|
        |     78    126      .6    .68|    .74    .23 | 1.11   .9  1.00    .0|  .88 |   .37 | 115 115
|
        |     78    126      .6    .68|    .74    .23 |  .86 -1.1   .83   -.7| 1.19 |   .45 | 133 133
|
        |     78    126      .6    .68|    .74    .23 |  .82 -1.6   .90   -.4| 1.23 |   .46 | 142 142
|
        |     79    126      .6    .69|    .79    .23 | 1.201.8  1.181.1|  .19 |   .36 | 131 131
|
        |     79    126      .6    .69|    .79    .23 |  .89  -.8  1.02    .1| 1.10 |   .44 | 140 140
|
        |     81    126      .6    .71|    .89    .23 | 1.372.9  1.311.5|  .49 |   .26 | 101 101
|
        |     81    126      .6    .71|    .89    .23 | 1.34  2.5  1.48   1.9|  .52 |   .26 | 135 135
|
        |     82    126      .7    .72|    .94    .23 | 1.29  2.2  1.22    .9|  .64 |   .29 | 104 104
|
        |     82    126      .7    .72|    .94    .23 | 1.16  1.2  1.11    .5|  .80 |   .35 | 118 118
|
        |     83    126      .7    .73|    .99    .23 | 1.211.2  1.31  1.5| -.65 |   .31 | 108 108
|
        |     84    126      .7    .74|   1.05    .23 | 1.11   .8  1.11    .5|  .85 |   .35 | 112 112
|
        |     84    126      .7    .74|   1.05    .23 | 1.11   .9  1.05    .2|  .87 |   .36 | 122 122
|
        --------------------------------------------------------------------------------------------
----------
        |  ObsvdObsvdObsvd  Fair-M|        Model | Infit      Outfit   |Estim.|       |
|
        |  Score  Count Average Avrage|Measure  S.E. | MnSqZStdMnSqZStd|Discrm| PtBis | Num Candidate
|
        --------------------------------------------------------------------------------------------
----------
        |    69.9   126.0    .6    .58|    .34    .22 | 1.00  -.2  1.01  -.2|      |   .40 | Mean
(Count: 50)    |
        |     8.8      .1    .1    .10|    .43    .00 |  .25  2.1   .36  1.7|      |   .10 | S.D.
(Populn)       |
        |     8.9      .1    .1    .10|    .43    .00 |  .26  2.1   .37  1.7|      |   .10 | S.D.
(Sample)       |
        --------------------------------------------------------------------------------------------
----------
        Model, Populn: RMSE .22  Adj (True) S.D. .37  Separation 1.66  Reliability .73
        Model, Sample: RMSE .22  Adj (True) S.D. .37  Separation 1.68  Reliability .74
        Model, Fixed (all same) chi-square: 185.9  d.f.: 49  significance (probability): .00
        Model,  Random (normal) chi-square: 39.2  d.f.: 48  significance (probability): .81
        --------------------------------------------------------------------------------------------
----------
```

.

Obsvd score	Obsvd Count	Obsvd Aver.	Fair-M |Aver.	|Model Measure	S.E.	Infit |MnSq	Zstd	Outfit MnsSq	Zstd	Estim Discrm	PtBis	N Test Item
54	126	.4	.40	-.42	.22	.92	-.8	.78	-1.2	1.19	.42	123 123
54	126	.4	.40	-.42	.22	.86	-1.4	.68	-1.8	1.30	.44	136 136
54	126	.4	.40	-.42	.22	.86	-1.4	.68	-1.8	1.30	.44	150 150
56	126	.4	.42	-.32	.22	.84	-1.7	.70	-1.7	1.33	.46	126 126
56	126	.4	.42	-.32	.22	.76	-2.7	.60	-2.5	1.47	.49	147 147
58	126	.5	.44	-.23	.22	.81	-2.0	.72	-1.6	1.36	.47	141 141
59	126	.5	.45	-.18	.22	1.13	1.3	1.22	1.2	.74	.32	103 103

59	126	.5	.45	-.18	.22	.80	-2.2	.64	-2.2	1.40	.47	145 145
60	126	.5	.47	-.13	.22	.70	-2.4	.62	-2.2	1.43	.48	109 109
61	126	.5	.48	-.09	.22	1.09	.9	1.00	.0	.88	.37	114114
61	126	.5	.48	-.09	.22	.74	-2.8	.66	-2.1	1.46	.50	117 117
62	126	.5	.49	-.04	.22	.81	-2.0	.72	-1.7	1.35	.47	127 127
62	126	.5	.49	-.04	.22	.99	.0	.86	-.7	1.06	.41	130 130
63	126	.5	.50	.01	.22	.92	-.7	.94	-.2	1.14	.43	138 138
64	126	.5	.51	.05	.22	1.01	.1	1.13	.7	.97	.40	111 111
65	126	.5	.53	.10	.22	.76	-2.5	.69	-1.9	1.41	.50	121 121
65	126	.5	.53	.10	.22	.75	-2.6	.64	-2.2	1.43	.50	139 139
66	126	.5	.54	.15	.22	.77	-2.3	.84	-.9	1.37	.50	137 137
67	126	.5	.55	.20	.22	1.38	3.3	1.60	2.9	.34	.24	106 106
67	126	.5	.55	.20	.22	.85	-1.4	.72	-1.7	1.29	.46	110 110
68	126	.5	.56	.24	.22	1.34	2.9	1.49	2.4	.45	.26	102 102
68	126	.5	.56	.24	.22	.82	-1.8	.75	-1.5	1.31	.48	149 149
69	126	.5	.57	.29	.22	1.20	1.8	1.18	1.0	.69	.32	105 105
69	126	.5	.57	.29	.22	.69	-3.2	.59	-2.6	1.50	.53	125 125
69	126	.5	.57	.29	.22	.97	-.2	1.19	1.0	1.00	.41	132 132
70	126	.6	.58	.34	.22	.87	-1.2	.86	-.7	1.19	.45	119 119
71	126	.6	.60	.39	.22	.96	-.3	1.28	1.4	.98	.42	129 129
72	126	.6	.61	.44	.22	1.21	1.8	1.31	1.5	.65	.31	146 146
73	126	.6	.62	.49	.22	.86	-1.2	.84	-.8	1.20	.46	120 120
75	126	.6	.64	.58	.22	.79	-1.9	.74	-1.3	1.30	.48	113 113
75	126	.6	.64	.58	.22	1.02	.2	1.08	.4	.94	.39	124 124
75	126	.6	.64	.58	.22	.81	-1.7	.84	-.8	1.26	.47	148 148
75	126	.6	.65	.63	.22	.86	-1.2	.78	-1.1	1.22	.46	116 116
76	126	.6	.65	.63	.22	1.37	2.9	1.31	1.5	.49	.26	107 107
76	126	.6	.65	.63	.22	.96	-.3	1.00	.0	1.04	.42	134 134
76	126	.6	.65	.63	.22	.80	-1.8	.88	-.5	1.25	.48	144 144
77	126	.6	.66	.68	.22	1.30	2.4	1.36	1.6	.55	.28	128 128
77	126	.6	.66	.68	.22	.80	-1.7	.85	-.7	1.26	.47	143 143
78	126	.6	.68	.74	.23	1.11	.9	1.00	.0	.88	.37	115 115
78	126	.6	.68	.74	.23	.86	-1.1	.83	-.7	1.19	.45	133 133

78	126	.6	.68	.74	.23	.82	-1.6	.90	-.4	1.23	.46	142 142
79	126	.6	.69	.79	.23	1.20	1.8	1.18	1.0	.69	.36	131 131
79	126	.6	.69	.79	.23	.89	-.8	1.02	.1	1.10	.44	140 140
81	126	.6	.71	.89	.23	1.37	2.9	1.31	1.5	.49	.26	101 101
81	126	.6	.71	.89	.23	1.34	2.5	1.48	1.9	.52	.26	135 135
82	126	.7	.72	.94	.23	1.29	2.2	1.22	.9	.64	.29	104 104
82	126	.7	.72	.94	.23	1.16	1.2	1.11	.5	.80	.35	118 118
83	126	.7	.73	.99	.23	1.21	1.8	1.31	1.5	.65	.31	108 108
84	126	.7	.74	1.05	.23	1.11	.8	1.31	.5	.65	.35	112 112
84	126	.7	.74	1.05	.23	1.11	.9	1.05	.2	.87	.36	122 122

.

Obsvd Obsvd Obsvd Fair-M |Model Infit Outfit Estim Num

score Count Aver.|Aver. Measure S.E. |MnSq Zstd MnsSq Zstd Discrm PtBis Candidate

69.9 126.0 .6 .58 .34 .22 1.00 -.2 1.01 -.2 .40 Mean (count: 50)

8.8 .1 .1 .10 .43 .00 .25 2.1 .36 1.7 .10 S.D. (Populn)

8.9 .1 .1 .10 .43 .00 .26 2.1 .37 1.7 .10 S.D. (Sample)

Model, Populn: RMSE .22 Adj (True) S.D. .37 Separation 1.66 Reliability .73

Model, Sample: RMSE .22 Adj (True) S.D. .37 Separation 1.68 Reliability .74

Model, Fixed (all same) chi-square: 185.9 d.f.: 49 Significance (probability): .00

Model, Random (normal) chi-square: 39.2 d.f.: 48 Significance (probability): .81

APPENDIX Y

Validity & Reliability FACETS Analyses Results of the WMST PART 2

Listening Comprehension Component of the WMST

Candidates' Abilities Report

First Piloting

```
------------------------------------------------------------------
|Measr|+Candidate |-Gender |-WMST    |-Rater   |-Test Item       |
------------------------------------------------------------------
+   1 +           +        +         +         +                 +
|     |           |        |         |         |                 |
|     |           |        |         |         |                 |
|     | .         |        |         |         |                 |
|     |           |        |         |         |                 |
|     |           |        |         |         |                 |
|     |           |        |         |         |                 |
|     | ********* |        |         |         | 10              |
|     |           |        |         |         | 6               |
|     |           |        |         |         | 7               |
*   0 * ******    * Female * WMSTest * rater 1 * 3   4   5   8   *
|     |           |        |         |         | 1   11  2   9   |
|     |           |        |         |         |                 |
|     | *         |        |         |         | 12              |
|     |           |        |         |         |                 |
|     |           |        |         |         |                 |
|     |           |        |         |         |                 |
|     |           |        |         |         |                 |
|     |           |        |         |         |                 |
|     |           |        |         |         |                 |
+  -1 +           +        +         +         +                 +
------------------------------------------------------------------
|Measr| * = 3     |-Gender |-WMST    |-Rater   |-Test Item       |
------------------------------------------------------------------
```

Second Piloting

```
Measr|+Candidate |-Gender |-WMST    |-Rater   |-Test Item      |
-------------------------------------------------------------------
+   3 + ****   +        +         +         + 10             +
|     |            |        |         |         |                |
|     |            |        |         |         |                |
+   2 + ******* ++++12             |
|     |            |        |         |         |                |
|     |            |        |         |         |       |
|     | ******* |        |         |         |                |
+   1 + *******++++4              |
|     | ********   |        |         |         | 5              |
|     |            |        |         |         | 7              |
*   0 * ***        * Female * WMSTest * rater 1 * 3    *
|     |            |        |         |         | 1    |
+  -1 + **** ++          |         +2              |
|     | ****   |        |         |         | 12             |
|     |            |        |         |         | 11             |
+  -2 + **   ++++6              |
|     |            |        |         |         |           |
|     |            |        |         |         |                |
|+ -3 + **** ++++9              |
|     |            |        |         |         |                |
|     |            |        |         |         |                |
-------------------------------------------------------------------
|Measr| * = 3      |-Gender |-WMST    |-Rater   |-Test Item      |
-------------------------------------------------------------------
```

APPENDIX Z

Validity & Reliability FACETS Analyses Results of the WMST PART 2

Listening Comprehension Component of the WMST

Test Item Measurement Report(Arrnaged by 5MN)

Obsvd Score	Obsvd Count	Obsvd Average	Fair-M Avrage	Model Measure	Model S.E.	Infit MnSq	Infit ZStd	Outfit MnSq	Outfit ZStd	Estim. Discrm	Nu Test Item
24	50	.5	.48	.27	.28	.99	-.2	.99	-.2	1.33	10 10
25	50	.5	.50	.19	.28	1.01	.3	1.01	.3	.55	6 6
26	50	.5	.52	.11	.28	.99	-.2	.99	-.1	1.26	7 7
27	50	.5	.54	.03	.29	1.00	.0	1.00	.0	1.02	3 3
27	50	.5	.54	.03	.29	1.04	1.0	1.04	1.0	-.09	4 4
27	50	.5	.54	.03	.29	1.04	1.0	1.04	1.0	-.09	5 5
27	50	.5	.54	.03	.29	.99	-.3	.99	-.2	1.34	8 8
28	50	.6	.56	-.05	.29	1.02	.4	1.02	.4	.60	1 1
28	50	.6	.56	-.05	.29	.99	-.1	.99	.0	1.11	9 9
29	50	.6	.58	-.14	.29	.96	-.7	.96	-.7	1.54	2 2
29	50	.6	.58	-.14	.29	1.00	.0	1.00	.0	.99	11 11
31	50	.6	.62	-.30	.29	.96	-.5	.95	-.5	1.30	12 12
27.3	50.0	.5	.55	.00	.29	1.00	.1	1.00	.1		Mean (Count: 12)
1.8	.0	.0	.04	.15	.00	.02	.5	.03	.5		S.D. (Populn)
1.9	.0	.0	.04	.15	.00	.03	.6	.03	.6		S.D. (Sample)

Model, Populn: RMSE .29 Adj (True) S.D. .00 Separation .00 Reliability .00

Model, Sample: RMSE .29 Adj (True) S.D. .00 Separation .00 Reliability .00

Model, Fixed (all same) chi-square: 3.1 d.f.: 11 significance (probability): .99

Model, Random (normal) chi-square: 2.6 d.f.: 10 significance (probability): .99

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Permission 1: Fig. 2.1. Cognitive processes in L2 listening and their interrelationships
Fig. 2.2. Cognitive processes and knowledge sources in listening comprehension
Fig. 6.2. Stages in the metacognitive pedagogical sequence for listening instruction
(source: Vandergrift & Goh, 2012, pp. 17, 27 & 109)
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Permission 2: Fig. 1. X-Lex test format
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(source: Milton & Hopkins, 2006, p. 134 & p. 136 respectively)
(see thesis Fig. 4.2., p. 136)

27 September 2016

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(source: Tanka & Most, 2007, pp. 5, 25, 26, 145-146, 208, 211 & 228)

(see thesis, Appendix F: Listening Comprension Test, pp. 358-361)

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(see thesis, Appendix G: VKK1 & VKK2 Test, pp. 361-362)

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(source: Vandergrift et al., 2006, p. 462)

(see thesis, Appendix H: MALQ, pp. 369-371)

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(B) Figure 1.3. Diagram of the strategy system showing two classes, six groups, and 19 sets

(C) Figure 1.4. Diagram of the strategy system showing all the Strategies

(source: Oxford, 1990, pp. 16, 17 & 18-21 respectively)

(see thesis: Appendix A, pp. 250-258)

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(source: Vandergrift, 2003, Appendix, pp. 494-496)

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(source: Flowerdew & Miller, 2005, pp. 108-110)

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