

# Teaching Metacognitive Strategies through Anderson's Model: Does It Affect EFL Learners' Listening Comprehension?

Mania Nosratinia

Islamic Azad University at Central Tehran, Iran

Samira Ghavidel

Islamic Azad University at Central Tehran, Iran

Alireza Zaker

Islamic Azad University, Science and Research Branch, Tehran, Iran

**Abstract**—Metacognitive Strategies (MS), as one of the main categories of language learning strategies, are presumed to encourage higher-order thinking, autonomous learning, and, in all actuality, better learning. Based on this premise, this study attempts to investigate the effect of teaching MS on intermediate-level EFL (English as a Foreign Language) learners' Listening Comprehension (LC). To fulfill this objective, a group of 130 male and female EFL learners, attending a TOEFL test preparation course, took a sample of Preliminary English Test (PET) as a proficiency test, and 90 of them were selected as homogeneous learners. This homogeneous group, then, took a LC (pre)test whose scores functioned as the basis for selecting a number of 60 male and female students, between the ages of 18 to 35 ( $M_{age} = 26$ ), as the participants of this study. The participants were randomly assigned to two experimental groups and two control groups ( $n = 15$  in each class). These four classes were instructed by four EFL teachers, employing the same textbook and content, over 18 sessions. Only the two experimental groups received MS training based on Anderson's 2002 model. At the end of the training course, a listening posttest was administered to all four classes. Analyzing the data through a *t*-test revealed that the two experimental groups significantly outperformed the other two control groups; accordingly, it was confirmed that teaching MS has a significant and positive impact on EFL learners' LC in this context. The study concludes with stating some pedagogical implications and highlighting some avenues for future research.

**Index Terms**—listening comprehension, language learning strategies, metacognitive strategies, strategy instruction

## I. INTRODUCTION

Acquiring language proficiency, either in the first language (L1) or the second language (L2), is believed to be deeply dependent upon individuals' receptive skills, i.e. listening and reading (Al-Issa, 2000; Hirsch, 2003; Wu-ping, 2006). More specifically, the ability to comprehend the aural input is perceived to determine, to a large extent, the quality and quantity of L2 learning and successful L2 communication (Celce-Murcia, 1997; Lightbown & Spada, 2013; Nosratinia & Zaker, 2014a). This significant role has been highlighted in numerous studies which have explored the way listening comprehension contributes to and affects L2 learning (Atai & Ghotbeldin, 2011; Oxford, 1993; Vandergrift, 2008). That is why Celce-Murcia (ibid) maintains that listening comprehension "is not only an important skill by itself but also has a paramount role in oral proficiency" (p. 60).

Being able to decipher the aural input is believed to determine the ease with which ideas are exchanged among individuals and actual communication takes place (Rost, 2002). Anderson and Lynch (1988) confirm this notion by stating that "listening skills are as important as speaking skills; we cannot communicate face to face unless the two types of skill are developed in tandem" (p. 3). However, developing this skill might be difficult or even challenging for many L2 learners due to its unobservable and ephemeral nature (Vandergrift, 2008).

It is a widely-held opinion that language learners' unique mental factors and peculiarities are of paramount importance in the process of language learning (Fahim & Zaker, 2014; Nosratinia & Zaker, 2013, 2014b, 2015). Therefore, it can be argued that based on these individual-specific features, different listeners employ different mental processes and techniques in order to comprehend and give meaning to the input they are exposed to (Cohen, 2000). A major group of the mental capacities consists of the metacognitive techniques learners employ to facilitate dealing with the given task (O' Donnell, Reeve, & Smith, 2012). Therefore, on the basis of the abovementioned premises, it can be envisaged that different L2 learners vary in employing strategies and metacognitive processes in dealing with listening

tasks. Accordingly, offering a specific instruction on these higher-order thinking skills would assist L2 learners in dealing with the difficulty of comprehending the aural input (Chen, 2005; Dunkel, 1991).

According to Griffiths (2010), since 30 years ago and concurrent with the emergence of cognitive revolution, many researchers have explored the possibility that success in language learning might be related to the strategies students use, and many studies have investigated the way learning strategies and its components interact with learning and learner factors (e.g. Nosratinia, Saveiy, & Zaker, 2014; Nosratinia, Shakoori, & Zaker, 2013). In this new movement, it seems that behaviorism and behavioristic views have been overshadowed by cognitive views. Accordingly, many studies have attempted to explore the cognitive processes involved in different dimensions and types of learning, including language learning. Older studies in the domain of language learning mainly explored those behaviors of language learners which were externally observable. This trend was followed by the recognition of a strategic pattern in some learners' behaviors and attempts to study the way these strategic behaviors are related to language proficiency (Griffiths, 2007).

Strategies are defined as "the specific attacks that individuals make on a given problem, and that vary considerably within each individual" (Brown, 2007, p. 132). According to Chamot (2005, p. 112) strategies are "procedures that facilitate a learning task.... strategies are most often conscious and goal driven." When it comes to learning, strategies are defined as "any sets of operations, steps, plans, routines used by the learner to facilitate the obtaining, storage, retrieval, and use of information" (Wenden, 1987, p. 19). Learning strategies were also illustrated as "Special thoughts or behaviors that individuals use to help them comprehend, learn, or retain new information" (O'Malley, Chamot, Stewner-Manzanares, Russo, & Kupper, 1985, p. 1). Therefore, learning strategies were believed to be certain techniques employed to process different pieces of information which could develop comprehension, retention of the information, and learning.

Although previous accounts of learning strategies highlighted the products of learning and behaviors rooted in unobservable cognitive processes, more recent definitions provided a clearer understanding of the mental processes during language learning. To elaborate learning strategies further, Cohen (1998a) stated that:

Learning strategies are processes which are consciously selected by learners and which may result in actions taken to enhance the learning or use of a second or foreign language through the storage, retention, recall, and application of information about that language. (p. 4)

Language learning strategies have been classified by many professional experts. O'Malley et al. (1985, p. 582-584) categorized learning strategies under three main groups: a) Metacognitive Strategies, b) Cognitive Strategies, and c) Socioaffective Strategies.

**Cognitive Strategies:** Cognitive Strategies according to Brown (2007) are "more limited to specific learning tasks and they involve more direct manipulation of the learning material itself" (p. 134). It has been argued that repetition, resourcing, translation, grouping, note taking, deduction, recombination, imagery, auditory representation, key word, contextualization, elaboration, transfer, and inferencing are the major cognitive strategies.

**Metacognitive Strategies (MS):** O'Malley et al. (1985) argue that the term metacognitive indicates an executive function or a group of strategies which consists of planning for learning, reflection upon the learning process as it happens, self-assessment of production or comprehension, self-correction of mistakes, and evaluating learning after completing an activity. According to this classification, advance organizers, directed attention, selective attention, self-management, functional planning, self-monitoring, delayed production, and self-evaluation are among the major MS.

**Socioaffective Strategies:** Socioaffective strategies are closely related to social-mediating activity and interacting with others. The major socioaffective strategies are cooperation and question for clarification (Brown, 2007).

Among other taxonomies and models available, it seems that the most comprehensive taxonomy of language learning strategies is the one proposed by Oxford (1990). Oxford (1990) suggested two main categories for language learning strategies: Direct Strategies and Indirect Strategies; they are, subsequently, subdivided into six classes. Direct strategies include Memory, Cognitive and Compensation strategies, and indirect strategies include Metacognitive, Affective and Social strategies. Oxford's (1990) taxonomy of language learning strategies is summarized below:

#### **DIRECT STRATEGIES**

##### **I. Memory Strategies**

- a) Creating mental linkages, Grouping, Associating/Elaborating, Contextualizing words
- b) Applying images and sounds, Imagery, Semantic Mapping, Keywords, Sounds in Memory
- c) Reviewing well, Reviewing after increasingly longer intervals of time
- d) Employing action, Physical response or sensation, Mechanical techniques

##### **II. Cognitive Strategies**

- a) Practicing, Repeating, Formally, Formulaic, Recombining, Naturalistically
- b) Receiving and sending messages, Getting the idea quickly, Using resources
- c) Analyzing and reasoning, Deductive, Expression analyzing, Contrastively across languages, Translating, Transferring
- d) Creating structure for input and output, Taking notes, Summarizing, Highlighting

##### **III. Compensation Strategies**

- a) Guessing intelligently; Using linguistic and other clues
- b) Overcoming limitations in speaking and writing

Mother tongue, Help!, Gesture, Avoidance, Topic  
Selection, Approximating, Coining words, Circumlocution

## INDIRECT STRATEGIES

### I. Metacognitive Strategies

- a) Centering your learning, Overviewing and linking, Paying attention, Just listening
- b) Arranging and planning your learning, Meta-linguistics, Organizing, Setting goals, Identifying purposes, Planning for a task, Seeking times to practice
- c) Evaluating your learning, Self-monitoring, Self-evaluating

### II. Affective Strategies

- a) Lowering your anxiety, Relaxation/meditation, Music, Laughter
- b) Encouraging yourself, Positive statements, Wise risk-taking, Rewarding yourself
- c) Taking your emotional temperature, Body awareness, Emotion checklist, Diary, Sharing feelings

### III. Social Strategies

- a) Asking questions, Clarification/Verification, Correction
- b) Cooperating with others, Peer support, Interaction with native speakers
- c) Empathizing with others, Developing cultural understanding, Becoming aware of others' thoughts and feelings

Among the strategies mentioned above, MS are regarded as the most crucial strategies which affect learners' skills (Anderson, 1991). This point has been confirmed by O'Malley et al. (1985) who state that employing metacognitive approaches is essential for learners, enabling them to monitor their progress, accomplishments, and future learning directions. On the other hand, it has been stated that possessing high levels of metacognitive awareness enables learners to become more autonomous language learners (Hauck, 2005). Table 1 presents some of the main examples of MS involved in learning.

TABLE 1.  
METACOGNITIVE STRATEGIES (AS CITED IN RASHTCHI & KEYVANFAR, 2010, P. 181)

Metacognitive strategies	Examples
Planning and organizing for learning	<ul style="list-style-type: none"> <li>• Previewing the next unit of the course book</li> <li>• Deciding in advance to pay attention to general or specific aspects of language input</li> </ul>
Finding ways to make learning more effective	<ul style="list-style-type: none"> <li>• Making word cards</li> <li>• Categorizing words in semantic groups</li> </ul>
Self-monitoring while learning	<ul style="list-style-type: none"> <li>• Reviewing one's notes while studying</li> <li>• Monitoring one's production of tenses while speaking</li> </ul>
Evaluating one's work on language	<ul style="list-style-type: none"> <li>• Reading the teacher's comments and corrections on a written work</li> <li>• Checking one's writing for accuracy</li> </ul>

Regarding the interaction between MS and listening comprehension, Yang (2009) argues that increasing metacognitive awareness assists listeners to accomplish listening tasks more effectively. Moreover, Vandergrift (1997) argued that employing MS such as inspecting the requirements of a listening task, actuating the appropriate listening processes, making proper predictions, and monitoring comprehension are the most important differences between a skilled and a less skilled listener. In a similar vein, Goh (2008) lists some of the positive effects of MS on listening comprehension and that weak listeners in particular benefit much from the training.

### *Training Models of Language Learning Strategies*

Strategy training has been described as the process of explicitly teaching how, when, and why to exercise language learning strategies in order to improve learners' learning (Carrell, 1996; Cohen, 1998b; Ellis & Sinclair, 1989). However, regarding the explicitness of the purpose in such a training program, a major question that crops up is whether to inform students of the value and purpose of the training or not (Wenden, 1987). There are two main types of explicit instruction, namely direct instruction and embedded instruction (O'Malley & Chamot, 1990) or, put another way, informed training and blind training (Brown, Bransford, Ferrara, & Campione, 1983).

In direct/informed instruction, learners are advised of the advantage, intention, and importance of the strategies instructed. In other words, learners simultaneously become cognizant of the use of the strategy and its rationale (Oxford, 1989). In addition, learners are provided with feedback on their performance, enabling them to estimate the effectiveness of the process of training (Wenden, 1987). This type of has been favored by many researchers, such as Brown, Armbruster, and Baker (1986), Palincsar and Brown (1984), Weinstein and Mayer (1986), and Wenden (1987). On the other hand, in embedded instruction, learners are exposed to activities and materials intending to elicit the use of the target strategies, but the reasons are not clear for the learners (O'Malley & Chamot, 1990; Wenden, 1987). The strategy instruction administered in the present study is of the direct type, i.e. participants in the experimental group were informed of the value, purpose, and importance of the MS taught.

Different models have been developed and utilized to teach learning strategies explicitly. One of these models was proposed by Anderson (2002). According to Anderson (2002, p.1), "Metacognition combines various attended thinking and reflective processes." Anderson further adds that metacognition can be divided into the following five major components:

1. Preparing and planning for learning,
2. Selecting and using learning strategies,
3. Monitoring strategy use,
4. Orchestrating various strategies, and
5. Evaluating strategy use and learning.

Each of these components is briefly discussed below:

1. *Preparing and planning for learning*: Learners reflect on what they need or want to achieve and how they are going to achieve it. Teachers may assist this reflection by explicitly defining the particular learning goals which are set for the class and helping the learners in setting their own learning goals. If goals are clearly articulated, it will be easier for the learners to measure their progress.

2. *Selecting and using learning strategies*: This important component deals with selecting and using particular strategies in a given context for a specific purpose. It is based on learners' thinking and making conscious decisions about the learning process.

3. *Monitoring strategy use*: This component enables students to direct their own progress. This component primarily deals with revisiting the way strategies are employed and making sure that the strategies are implemented correctly.

4. *Orchestrating various strategies*: The mastery of employing a number of strategies together is a crucial and influential metacognitive skill. Being able to coordinate, organize, and relate different strategies can make a distinction between strong and weak learning strategy users. Teachers might develop this ability in learners through introducing various available strategies.

5. *Evaluating strategy use and learning*: At this stage "students attempt to evaluate whether what they are doing is effective by means of self-questioning, debriefing discussions after strategies practice" (Goksun, 2010, p. 38). This ability can be developed by teachers through asking students to answer: a) What is s/he is trying to accomplish? b) What strategies is s/he employing? c) How well is s/he employing the strategies? and d) What other strategies can s/he employ? These questions address all of the aspects of metacognition stated earlier. In fact, these questions enable learners to reflect through the cycle of learning. At this step, all the steps stated above are revisited and evaluated. This is in line with Anderson's (2002) idea, stating that teachers should attempt to encourage using all of the components of metacognition.

To yield dependable results, strategy training needs to be carried out with in a well-constructed model. A review of strategy training models led to the decision that Anderson's (2002) model would best fit this study because the components of this model could well lend themselves to the strategy training of the Iranian students.

Moreover, there seems to be a consensus among many of L2 researchers that L2 learners do not tackle listening tasks effectively through employing strategies (Cohen, 2000). Furthermore, many L2 listening researchers have stated the concern that listening should be dealt with like a skill which requires using strategies, and, as a result, teaching students how to use these strategies would lead to development in their listening ability (Coşkun, 2010). Nevertheless, very few studies have investigated the impact of teaching different types of strategies on EFL learners' listening comprehension. Some researches have explored EFL learners' MS awareness through employing pertinent questionnaires (Akbari, 2003; Pishghadam, 2009; Salarifar & Pakdaman, 2010; Salehi & Farzad, 2003; Serri, Jafarpour Boroujeni, & Hesabi, 2012) and a limited number of studies (Coskun, 2010; Selamat, & Kaur Sidhu, 2012; Tabeei, Tabrizi, & Ahmadi, 2013; Tavakoli, Hashemi, & Rezazade, 2012) have employed a mixed method design to explore the way MS affect different aspects of learning. However, no study has addressed the impact of explicit instruction of MS on listening comprehension through a solely quantitative experimental design and employing Anderson's (2002) model. That being the case, the present study attempted to investigate the impact of teaching MS through Anderson's model on EFL learners' listening comprehension. To fulfill this purpose, the following research question was formulated:

**Research Question:** Does teaching MS have any statistically significant effect on EFL learners' listening comprehension?

## II. METHOD

### *Participants*

To accomplish the purpose of this study, 130 intermediate-level male and female EFL learners who were attending a TOEFL test preparation course in a language school in Karaj, Iran were selected. They came from different socio-economic backgrounds, and their educational levels varied from high school diploma to bachelor's degrees as well as master's degrees in different fields. To ensure the homogeneity of the participants, a Preliminary English Test (PET) was administered to them. After analyzing the results, 90 students who scored within one SD above and below the mean were chosen as the homogeneous group and took the listening (pre)test whose scores functioned as the basis for selecting listening-wise homogeneous learners.

From the 90-member group, 60 learners (19 females, 32%, and 41 males, 68%) whose scores fell one SD above and below the mean were chosen as the participants of this study. Since 30 is a large number for the students in one class, these participants, who were between the ages of 18 to 35 ( $M_{age} = 26$ ), were randomly assigned to two experimental groups ( $n = 15$  in each class) and two control groups ( $n = 15$  in each class). These four classes were instructed by four experienced EFL teachers, employing the same textbook and content, over 18 sessions.

The EFL teachers who participated in this study were 2 male and 2 female, between the ages of 26 to 36 ( $M_{\text{age}} = 31$ ). One of the instructors, a female, was one of the researchers who with a male colleague delivered the instruction to the two experimental groups through Anderson's (1990) model whereas the control group had a 1 male and 1 female teachers (each teaching one 15-participant class) who followed the common teaching program.

Moreover, two trained raters who were MA holder in TEFL with five years of teaching experience attended in the assessment of the writing and speaking sections of PET based on the "General Mark Schemes for Writing" and "General Mark Schemes for Speaking" provided by Cambridge. Running a correlation coefficient between their given scores, on both writing and speaking sections, showed that there was a significant correlation between the two sets of scores; hence, the assumption of inter-rater reliability was met.

It should be mentioned that 30 other intermediate EFL learners, similar in their characteristics to the actual participants of this study, participated in the pilot study of the PET test, the listening pretest, and the listening posttest.

#### **Instrumentation**

All the participants in both experimental and control groups received 18 sessions of instruction based on *Longman Preparation Course for the TOEFL Test: The Paper Test, with Answer Key* by Phillips (2003) (parts A, B, C of listening section) as their course book.

#### **Language Proficiency Test**

The English language proficiency test used in the study for homogenizing the learners was a sample of the Preliminary English Test (PET) adopted from *PET Practice Tests with Key Pack* by Quintana (2004). The test consisted of three papers: paper 1 for reading/writing, paper 2 for listening, and paper 3 for speaking. The administration of the whole test took 120 minutes.

#### **Writing Rating Scale**

The rating scale employed in this study in order to rate the writing section of the PET test was the rating scale provided by Cambridge under the name of *General Mark Schemes for Writing*. The rating was done on the basis of the criteria stated in the rating scale, and scores ranged from 0 to 5.

#### **Speaking Rating Scale**

The employed rating scale for rating participants' oral proficiency was the official Cambridge *General Mark Schemes for Speaking*. Based on the introduced criterion in this rating scale, the speaking scores varied in the possible range of 0 to 5.

#### **Listening Tests**

Two listening tests were administrated in this study: a) a listening pretest for assessing participants' entry listening performance; and b) a listening posttest as the achievement test to estimate participants' exit listening performance. The first test was adopted from *Pre-test: TOEFL Diagnostic Pre-test*, Section 1, Part A; and the posttest from *Posttest: TOEFL Diagnostic Posttest*, Section 1, Part A. Each one has 30 four-option items.

#### **Procedure**

In order to select the homogenized participants of the study, the study began with piloting the PET test with 30 intermediate-level EFL learners with almost the same characteristics to the target sample before the actual administration. Once the test was modified following the piloting, it was administered to the 130 EFL learners. From this group, 90 EFL learners whose score fell between one SD below and above the mean were selected as homogeneous individuals. Thence, these 90 EFL learners took the listening pretest in order to ensure that those participating in the study are homogeneous in terms of their listening comprehension ability. The listening test had already been piloted using 30 students with almost the same characteristics to the target sample. Based on the obtained results, 60 learners whose scores fell one SD above and below the mean were chosen as the participants of this study.

Following this, the participants were randomly divided into two groups: experimental and control. Since it was not possible to have 30 participants in one class, there were two classes of 15 students in each group. All the participants were instructed employing the same material and the same amount of time. The only difference lay in the teaching of MS which was included in the experimental group. The course lasted for 18 sessions of 120 minutes, spanning over a period of six weeks.

Four experienced EFL teachers participated in this study to deliver the treatments. The first two teachers were assigned to teach the common teaching listening program for the control group. One of the researchers and the other teacher delivered the MS training for listening based on Anderson's (2002) model in the two experimental groups. Although the second MS teacher had enough experience in teaching listening comprehension courses, he was provided with three briefing sessions on the MS and Anderson's Model in order to make sure the treatment would be delivered as intended.

As mentioned before, metacognitive learning process, according to Anderson (2002, p. 1), can be divided into five primary components:

1. Preparing and planning for learning,
2. Selecting and using learning strategies,
3. Monitoring strategy use,
4. Orchestrating various strategies, and
5. Evaluating strategy use and learning.

Anderson (2002) believes that "teachers should model strategies for learners to follow in all five areas" (p. 1). A brief summary of each component is discussed below:

1. *Preparing and planning for learning*: Learners reflect on what they need or want to achieve and how they are going to achieve it. Teachers may assist this reflection by explicitly defining the particular learning goals which are set for the class and helping the learners in setting their own learning goals. If goals are clearly articulated, it will be easier for the learners to measure their progress.

2. *Selecting and using learning strategies*: This important component deals with selecting and using particular strategies in a given context for a specific purpose. It is based on learners' thinking and making conscious decisions about the learning process.

3. *Monitoring strategy use*: This component enables students to direct their own progress. This component primarily deals with revisiting the way strategies are employed and making sure that the strategies are implemented correctly.

4. *Orchestrating various strategies*: The mastery of employing a number of strategies together is a crucial and influential metacognitive skill. Being able to coordinate, organize, and relate different strategies can make a distinction between strong and weak learning strategy users. Teachers might develop this ability in learners through introducing various available strategies.

5. *Evaluating strategy use and learning*: At this stage "students attempt to evaluate whether what they are doing is effective by means of self-questioning, debriefing discussions after strategies practice" (Goksun, 2010, p. 38). This ability can be developed by teachers through asking students to answer: a) What is s/he is trying to accomplish? b) What strategies is s/he employing? c) How well is s/he employing the strategies? and d) What other strategies can s/he employ? These questions address all of the aspects of metacognition stated earlier. In fact, these questions enable learners to reflect through the cycle of learning. At this step, all the steps stated above are revisited and evaluated.

In every session, one or two pertinent metacognitive listening strategies were introduced, explained, demonstrated, and practiced. The main MS strategies consisted of: Planning and arranging for listening tasks; Identifying and organizing purposes; Analyzing the requirements of a listening task; Advance organizers; Meta-linguistics; Note-taking; Grasping the main idea; Using contextual cues; Prediction; Directed attention; Selective attention for special aspects of a listening task; Activating the appropriate listening processes required; Paying attention and making appropriate predictions; Monitoring information to be remembered; Evaluating comprehension of listening activity; Seeking times to practice; Reflecting on and questioning the effectiveness of his/her actions; Self-evaluating and self-monitoring comprehension, errors and one's progress; and delayed production are included among the major MS.

Put another way, students prepared for strategies instruction by identifying their prior knowledge about and the use of specific strategies. The presentation of the strategies followed a direct, explicit, and informed manner. In each session, the target strategy was labeled and given a rationale. Students practiced, using the strategy with regular class activities and adequate opportunities were offered to compare and evaluate the strategies. Students self-evaluate their use of the learning strategy and the way the strategy assists them (Self-monitoring, self-evaluating, evaluating their leaning). The teachers checked participants' responses; if the participants did not understand the whole sentence which had been played for them, the teacher would try to elaborate them with the help of strategies the teacher had taught them.

In the control group, the common teaching techniques of the language school were followed for tackling listening tasks, i.e. no MS instruction was provided and practiced. The participants in the control group listened to the tape and, based on their understanding, they chose the most appropriate options. For those who had problems in understanding or made mistakes in choosing the alternatives, the teachers played the tape for more than one time and if necessary, they asked the students to repeat the words, phrases, and sentences. Therefore, based on the situation, the teachers clarified the points, but no strategic attempt was introduced.

At the end of the course, the listening posttest was administered whose scores were used to determine whether there was a significant difference between the mean scores of experimental and control groups after the treatment. Next section reports the gathered data along with the statistical analyses conducted to answer the research question.

### III. RESULTS

This study set out to investigate the impact of MS instruction through Anderson's model (2002) on EFL learners' listening comprehension. In order to answer the research question of this experimental study, some statistical procedures were pursued which are thoroughly discussed below.

#### *Piloting the Language Proficiency Test (PET)*

At first, the PET test was piloted with 30 intermediate-level EFL learners whose characteristics were similar to that of the participants of the study. Thence, an NRT item analysis, including item facility and item discrimination, was carried out for each item. After omitting six malfunctioning items, the reliability of the test was estimated using Cronbach's alpha formula. The results of this analysis came out to be satisfactory (Cronbach's  $\alpha = .90$ ; No. of items = 37).

#### *Administering the PET Test*

After completing the piloting process, the PET test, including four sections (reading, writing, listening, and speaking) was administered to 130 intermediate level students. Based on the obtained descriptive statistics ( $n = 130$ ,  $M = 71.7$ ,  $SD$

= 10.17, *Skewness ratio* = 1.05) 90 students whose scores fell between one standard deviation below and above the mean were selected as the homogeneous group to take the listening test.

#### ***Inter-Rater Reliability of Scoring the PET Writing Section***

There were two writing tasks in the PET writing test which, both rated by two qualified raters using the PET rating scale. The rating scale used in this study was the official *Cambridge General Mark Schemes for Writing*. The rating was done on the basis of the criteria stated in the rating scale, and scores ranged from 0 to 5. In order to calculate the inter-rater reliability between the raters, the researchers used Pearson's product-moment correlation coefficient.

The results showed that there was a significant correlation between the raters' given scores on part two,  $r = .55$ ,  $n = 30$ ,  $p < .05$ , and part three,  $r = .42$ ,  $n = 30$ ,  $p < .05$ . This gave assurance to the researcher that the same raters can be used for the actual administration of the test.

#### ***Inter-Rater Reliability of Scoring the PET Speaking Section***

The speaking part of the proficiency piloting test was also rated by two qualified raters using the PET rating scale. The rating scale used for this aim was the official *Cambridge General Mark Schemes for speaking*. The rating was done on the basis of the criteria stated in the rating scale, and the obtained scores ranged from 0 to 5.

The researchers used Pearson's product-moment correlation coefficient in order to calculate the inter-rater reliability between the raters. The results showed that there was a significant correlation between the two raters  $r = .70$ ,  $n = 30$ ,  $p < .05$ . This gave assurance that the same raters can be used for the actual administration of the test.

#### ***Administering the Listening Pretest***

Before starting the treatment phase, a listening pretest was administered to make sure that the participants bore no significant difference in terms of their listening ability before the treatment. The test was adopted from the *Pre-test: TOEFL Diagnostic Pre-test*, Section 1, Part A, and the rating was done on the basis of the criteria stated in the rating scale of the book. Prior to its real administration, this listening test was piloted with 30 intermediate-level students bearing almost the same characteristics as the target sample ( $n = 30$ ,  $M = 22.43$ ,  $SD = 2.38$ , *Skewness ratio* = -1.49).

As stated earlier, based on the scores they obtained on the PET test, 90 EFL learners were selected as the homogeneous individuals. Then, they took a listening pretest whose results functioned as the basis for selecting listening-wise homogeneous EFL learners as the participants of the study ( $n = 90$ ,  $M = 23.5$ ,  $SD = 4.38$ , *Skewness ratio* = -1.23).

#### ***Descriptive Statistics of the Listening Posttest Piloting***

Prior to its real administration, the listening test was piloted with 30 intermediate-level students bearing almost the same characteristics as the target sample. After piloting, descriptive statistics was obtained ( $n = 30$ ,  $M = 19.43$ ,  $SD = 2.29$ , *Skewness ratio* = -1.49).

#### ***Descriptive Statistics of the Listening Posttest***

Following the piloting of the posttest which observed no malfunctioning items, it was administered at the end of the treatment to both control and experimental groups. Table 2 displays the descriptive statistics for this administration in both groups with the means being 23.43 and 19.95 for the experimental and control groups respectively.

TABLE 2.  
DESCRIPTIVE STATISTICS OF THE LISTENING POSTTEST SCORES OF EXPERIMENTAL AND CONTROL GROUPS

	N	Range	Min	Max	Mean	SD	Variance	Skewness		
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	
Experimental Group	30	4.50	20.50	25.00	23.4333	.28135	1.54101	2.375	-.638	.427
Control Group	30	9.00	16.00	25.00	19.9500	.46507	2.54731	6.489	.413	.427

As shown in Table 2, the mean of the experimental group (23.43) was higher than that of the control group (19.95). However, further statistical analyses were required to see whether this difference was significant or not.

#### ***t-test Analysis of the Listening Posttest***

In order to investigate the research question of this study, the researchers conducted an independent samples *t*-test. However, prior to this, the normality of distribution of the scores within each group had to be checked. Going back to Table 2, the skewness ratio was -1.49 (-0.638/ 0.427) while that of the Control group was 0.97 (0.413/ 0.427). Therefore, the distributions of scores in both groups were normal by virtue of the skewness ratios which fell within the normality range of  $\pm 1.96$ . Thus, the assumption of normality for *t*-test was met, and the researchers conducted an independent samples *t*-test. Table 3 presents the results of the *t*-test.

TABLE 3.  
INDEPENDENT SAMPLES T-TEST

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Listening:	Equal variances assumed	6.565	.013	6.408	58	.000	3.48333	.54355	2.39529	4.57137
	Equal variances not assumed			6.408	47.719	.000	3.48333	.54355	2.39028	4.57639

The results of running the independent-samples *t*-test (see Table 3) which was conducted to compare the scores of the listening posttest between the experimental group (MS instruction) and the control group (no MS instruction) suggested that there was a significant difference in scores for the experimental group ( $M = 23.43$ ,  $SD = 1.54$ ) and the control group ( $M = 19.95$ ,  $SD = 2.54$ ;  $t(48) = 6.40$ ,  $p = .001$ , two-tailed). The magnitude of the difference in the means (mean difference = 3.48,  $CI$ : 2.39 to 39) was very large (eta squared = .41). Therefore, it was concluded that teaching MS have a significant effect on EFL learners' listening comprehension in this context.

#### IV. DISCUSSION

It is an agreed-upon fact that the ability to comprehend the aural input, i.e. listening comprehension, plays a determining role in L2 learning and successful L2 communication (Atai & Ghotbeldin, 2011; Celce-Murcia, 1997; Lightbown & Spada, 2013; Oxford, 1993; Rost, 2002; Vandergrift, 2008). However, many have argued that developing this skill is challenging or even daunting for many L2 learners (Vandergrift, *ibid*). On the other hand, it is believed that MS, as a major group of the mental capacities (O' Donnell, Reeve, & Smith, 2012), and also the most essential one among language learning strategies (Anderson, 1991), can be employed to facilitate dealing with listening tasks. Therefore, offering a specific instruction on these higher-order thinking skills would assist L2 learners in dealing with the difficulty of comprehending the aural input (Chen, 2005; Dunkel, 1991).

Based on the abovementioned premises, this study attempted to investigate the effect of teaching MS, thought employing Anderson's (2002) model, on intermediate-level EFL learners' listening comprehension. To fulfill this purpose, the following research question was formulated:

**Research Question:** Does teaching MS have any statistically significant effect on EFL learners' listening comprehension?

This study began with administered a piloted PET test to 130 EFL learners. Based on learners' performance, 90 individuals were selected as homogeneous learners. Thence, they took a piloted listening (pre)test in order to ensure they are homogeneous in terms of their listening comprehension ability. Based on the obtained results, 60 learners were selected as the participants of this study and were randomly divided into two experimental and two control groups. The only treatment difference between the two groups lay in the teaching of MS in the two experimental groups.

At the end of the course, a piloted listening posttest was administered in order to investigate the effect of the treatments on the participants. The results of running an independent-samples *t*-test suggested that there was a significant difference in scores for the experimental group ( $M = 23.43$ ,  $SD = 1.54$ ) and the control group ( $M = 19.95$ ,  $SD = 2.54$ ;  $t(48) = 6.40$ ,  $p = .001$ , two-tailed). The magnitude of the difference in the means (mean difference = 3.48,  $CI$ : 2.39 to 39) was very large (eta squared = .41). Therefore, it was concluded that teaching MS has a significant and positive effect on EFL learners' listening comprehension in this context. In other words, the experimental group surpassed the control group in terms of listening performance at the end of the experiment.

This finding seems to confirm the results of another similar study in which Chamot and O'Malley's (1994) model was employed (Tabeei et al., 2013). Tabeei et al. (*ibid*) have delivered the MS instruction only in 6sessions which seems to bring about questions about the validity of findings (Lightbown & Spada, 2013; Springer, 2010). Although the effect size was not reported in their study, based on the data provided in their report, the researchers of the present study could calculate the eta squared of their study which would make it possible to compare the findings of the two studies.

The calculated eta squared for Tabeei et al. (2013) was 0.022 which is a small to moderate effect size. When compared to the findings of this study (.41 > .022), it can be argued that the present study has observed a very large effect size in comparison with the previous study. This might be due to the following possible reasons: a) the participant pool in the previous study was smaller than the present study; b) the duration of the treatment in the previous study was 6 sessions which is a very small number when compared to a 18-session treatment; and c) instead of Anderson's (2002) model, Chamot and O'Malley's (1994) model has been employed which might have a different impact on participants' performance.

Based on the findings of this study, it seems reasonable to argue that EFL teachers should be cognizant of the significant role that strategy training plays in learning English, especially developing listening comprehension. EFL teachers need to realize that teaching involves more than the delivery of instruction. More specifically, in an EFL

setting, the procedures for tackling learning tasks through employing strategies should be encouraged and emphasized. Therefore, English teachers should attempt to integrate strategy training into the process of teaching and inform EFL learners about the nature of metacognitive strategies, the way they affect learning, the way listening tasks can be tackled by using these strategies, and the way these strategies can be employed to deal with other language skills.

From a pedagogical perspective, it seems reasonable to argue that the traditional view of listening instruction in which EFL students are exposed to the listening task without introducing higher-order thinking skills should be challenged and substituted by an approach in which strategies are accepted as the important components of the curriculum. Perhaps, carrying out other studies on the impact of metacognitive strategy training can develop our understanding of the peculiarities of metacognitive strategy instruction in an EFL context. In this regard, we believe that other studies should investigate the impact of strategy training on other language skills and through employing other training models. This way, EFL teachers, EFL syllabus designers, and even EFL learners will achieve a higher level of understanding about the capacity, features, and teachability of metacognitive strategies.

The goal of strategy training, according to Cohen (1998b), is to empower learners and allow them to take control of the learning process. This control can be exercised through employing MS. The current study has shown that metacognitive training can be an effective way of improving the listening comprehension of EFL learners. This facilitative role might be addressed officially by teachers, educators, and material developers or by any well-informed teacher who recognizes the difference that metacognition can make to the process of language learning. However, it should be borne in mind that the objective of strategy training is to develop learners' strategy systems, autonomy, self-direction and self-evaluation (Cohen, 1998b), which all underpin the process of language learning. Thus, more process-oriented and qualitative studies are needed to make fair evaluation of strategy training programs.

According to Vandergrift (2003b), if teachers intend to have an effective teaching and outcome, they need to go one step beyond the simple and ordinary instructions done in the classrooms. Their success is fulfilled in case they introduce and exercise learning strategies to develop learners' understanding of what they have been exposed to and how they can deal with different tasks and tests. To do so, EFL teachers are expected to play an active role in exploring the results and features of various studies on instructing strategies in L2 contexts. Moreover, through attempting to test the practicality of employing different strategy training methods, they should develop their own understanding of the issue, the practicality of strategy training in each specific context, the role of first language culture, and the pedagogical concerns pertinent to strategy training.

Curriculum and material developers should infuse strategy training into EFL materials and teacher-related materials. It is also reasonable and well-justified to incorporate awareness of MS into the body of prognostic tests of English courses, namely placement tests. This way, EFL teachers will achieve a higher level of understanding about the present state of learners regarding using metacognitive strategies. Based on this information, teachers will be able to adapt the strategy training instruction using the data related to every specific context (Nosratinia & Zaker, 2014b).

There are certain points which should be considered when discussing and attempting to interpret the abovementioned findings. The main limitation imposed on the findings of this study is the fact that learners were aware of the intention behind the MS instruction. Being aware of participating in a study increases the possibility that learners' performance be affected by Halo Effect and Hawthorne effect (i.e. wanting to please the researcher and higher level of motivation due to participation in a study respectively) which would undermine the validity and generalizability of the findings (Best & Kahn, 2006).

Further studies may replicate this study with a larger sample size. Moreover, it is suggested to inspect the effectiveness of MS instruction through Anderson's model in a context with equal number of male and female participants so that gender might not function as a potential confound. Besides, inspecting the way mental and personality factors are affected by MS instruction would reveal the nature of strategy training more. This study can also be replicated employing some qualitative instruments, e.g. interviews, in order to increase the validity and generalizability of the findings. Finally, it is suggested to replicate this study among other age groups.

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**Mania Nosratinia** is Assistant Professor of Applied Linguistics at Islamic Azad University, Central Tehran Branch. She has been teaching at undergraduate and graduate levels in the areas of English language teaching methodology, language testing, and research methodology in language studies. She has published in national and international academic journals and presented in several national and international seminars.

**Samira Ghavidel** holds an MA in TEFL from Islamic Azad University at Central Tehran and is an English teacher at a number of language schools. Her main areas of research interest include psycholinguistics and language learning strategies.

**Alireza Zaker**, the corresponding author of this article, is currently a Ph.D. student of TEFL, Islamic Azad University, Science and Research Campus, Tehran. His specific areas of ELT research include Language Testing, Research Methodology, Teacher Education, and Critical Thinking. He has published in international academic journals and presented in several national and international ELT conferences.