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L1-Mediated Metacognitive Instruction and Listening Anxiety in Iranian EFL Learners: The Role of Gender

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Abstract

This study investigated the effects of L1-mediated metacognitive intervention on the listening anxiety and listening comprehension of Iranian EFL learners. Employing a quasi-experimental design, the study involved 70 elementary-level Iranian EFL learners who were randomly assigned to either an experimental group or a control group. The experimental group received L1-mediated metacognitive instruction. Findings revealed a significant reduction in listening anxiety among learners who received L1-mediated metacognitive instruction. However, no statistically significant gender differences were observed in the effectiveness of the intervention on listening comprehension. These findings indicate that incorporating metacognitive instruction in learners' L1 can be an effective pedagogical approach for alleviating listening anxiety in EFL contexts. The study underscores the pedagogical value of integrating L1-based metacognitive support into listening instruction and highlights the potential of such interventions to foster a more supportive learning environment. Further research is recommended to examine the long-term effects of metacognitive interventions and to explore gender-related variables in diverse instructional contexts.

Keywords: metacognitive intervention, EFL learners, anxiety level, gender, listening comprehension

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1. Introduction

Research suggests that listening plays a central role in communication, occupying nearly half of conversational time (Mendelsohn, 1995) and functioning as an essential element of interaction (Kök, 2018). As Chamot (2004) observed, language learners employ a range of conscious and unconscious strategies during listening, underscoring the complex and active nature of this skill.

Within this context, metacognitive strategy use has emerged as a key area of inquiry in contemporary listening research. Metacognition broadly refers to higher-order cognitive processes such as “thinking about thinking” and awareness of one’s own cognitive functioning (Veenman et al., 2006). Scholars generally agree that metacognition consists of two interrelated components: knowledge about cognition and regulation of cognition (Sánchez-Munilla et al., 2025; Schraw & Dennison, 1994). This includes learners’ awareness of task difficulty, strategy effectiveness, and the need to verify or revise understanding. In language learning contexts, metacognition manifests in learners’ ability to plan, monitor, and evaluate their learning processes, particularly in receptive skills such as listening.

Research indicates that explicit instruction in listening strategies can enhance learners’ academic performance and engagement with listening tasks (McKenney & Reeves, 2018). In this regard, metacognitive instruction encourages learners to anticipate challenges, monitor comprehension, and evaluate outcomes, thereby promoting greater autonomy and self-regulation. However, despite its recognized value, metacognitive instruction has not yet become an integral component of classroom practice. Wilson and Conyers (2016) noted that many teachers continue to prioritize content delivery over teaching learners how to learn, often due to a limited understanding of metacognition and its instructional applications. As a result, learners may struggle to apply cognitive, metacognitive, and emotional strategies effectively, leading to reduced self-reliance and increased difficulty in overcoming learning obstacles.

Although a growing body of research has explored the role of metacognitive strategies in second language learning (e.g., Alamdari & Bozorgian, 2022; Bozorgian et al., 2022; Fakhri Alamdari & Bozorgian, 2022; Faradisa, 2021; Zhang et al., 2022; Zhang & Zhang, 2024), relatively little attention has been paid to the mode of delivery of metacognitive instruction, particularly instruction delivered in learners’ L1. Moreover, while prior studies have highlighted the predictive value of metacognitive awareness for listening achievement (Goh & Vandergrift, 2021; Vandergrift & Goh, 2009), the interaction between metacognitive instruction, listening anxiety, and gender remains underexplored.

Gender has long been considered a potential factor influencing foreign language learning outcomes (Cohen & Dörnyei, 2002). Nevertheless, existing research has not sufficiently examined whether metacognitive strategy instruction delivered in learners’ L1 differentially affects male and female learners, particularly in relation to listening anxiety. Given that listening anxiety can

significantly hinder learners' comprehension and performance, understanding how instructional interventions interact with affective and individual-difference variables is essential.

Accordingly, the present study seeks to address this gap by investigating the effects of L1-delivered metacognitive instruction on Iranian EFL learners' listening comprehension anxiety while also examining the role of gender. Accordingly, the following Research Questions were formulated:

- Q1: Does metacognitive strategy instruction delivered in L1 affect listening anxiety of elementary Iranian EFL learners significantly?
- Q2: Is there a significant difference between listening comprehension of elementary Iranian EFL learners across gender affected by metacognitive intervention delivered in L1?

2. Review of Literature

2.1. The Role of L1 in L2 Listening Comprehension

The influence of learners' first language (L1) on second language (L2) acquisition has long been discussed in applied linguistics. Listening comprehension is cognitively demanding because learners must process auditory input, interpret meaning, and integrate linguistic information with prior knowledge in real time (Field, 2008; Vandergrift & Goh, 2012). For learners with limited proficiency, the strategic use of L1 can reduce cognitive load and facilitate comprehension of spoken language.

Pedagogically, L1 can also help explain the complex cognitive and metacognitive processes involved in listening. Metacognitive listening instruction requires learners to understand abstract processes such as planning, monitoring, and evaluating comprehension. When these concepts are presented only in L2, learners may struggle to fully grasp them, which may reduce instructional effectiveness (Vandergrift & Goh, 2012). The strategic use of L1 can, therefore, help learners better understand and apply these processes during listening activities.

Empirical studies support the pedagogical value of L1 in strategy instruction. Macaro (2005) argued that strategic L1 use can clarify instructional goals and reduce confusion. Similarly, Swain and Lapkin (2000) found that learners' use of L1 during task-based activities increased cognitive engagement and problem-solving. Vandergrift and Tafaghodtari (2010) further demonstrated that explicit instruction in metacognitive listening strategies significantly improved learners' listening performance, suggesting that clear conceptual understanding, often facilitated through L1, supports effective strategy use.

In addition to cognitive benefits, L1 may also reduce affective barriers to listening. Listening anxiety is common among EFL learners due to time pressure, fear of misunderstanding, and limited control over spoken input (Kim, 2005). When learners cannot fully understand instructions or tasks in L2, anxiety may increase and negatively affect performance. The strategic use of L1 can therefore

create a more supportive learning environment by improving clarity, increasing learners' sense of control, and reducing anxiety (Horwitz, 2017; MacIntyre, 1995).

Overall, research suggests that L1 should not be viewed in terms of strict inclusion or exclusion. When used purposefully, it can facilitate cognitive processing, support metacognitive development, and regulate affective factors in L2 listening. In EFL contexts such as Iran, where exposure to English outside the classroom is limited, integrating L1 into metacognitive listening instruction may help learners develop strategic competence and reduce listening anxiety.

2.2. Metacognition

Metacognition refers to the awareness and understanding of one's own thinking processes and the ability to monitor and regulate them to improve learning and problem-solving (Flavell, 1979; Fleur et al., 2021; Stanton, 2021). It involves both knowledge about cognitive processes and the regulation of those processes during learning activities.

In education, metacognition is considered a key factor in effective learning and academic success. By developing awareness of their learning processes, learners can become more independent and strategic learners. Teachers can promote metacognitive development through explicit instruction in learning strategies, encouraging reflection, and providing opportunities for students to monitor and regulate their learning (Dinsmore et al., 2008; Schunk & Greene, 2018). A growing body of evidence confirms the effectiveness of metacognitive strategy instruction (de Boer et al., 2018; Hattie et al., 2017).

2.3. Foreign Language Listening Anxiety

Research on listening anxiety around the year 2000 marked a turning point, as scholars began to treat listening anxiety as a distinct construct separate from general language anxiety (Kim, 2005). Studies between 2000 and 2014 examined listening anxiety from psychological, situational, and social perspectives. For instance, listening anxiety has been described as feelings of worry, tension, and fear associated with listening tasks (Chang, 2008; Kim, 2005).

The social approach emphasizes that listening anxiety can be shaped by learners' communication experiences and social interactions rather than by listening tasks alone (Kimura, 2011). Since 2014, research has increasingly examined the relationship between listening anxiety and other individual factors such as motivation (Bang & Hiver, 2016), self-efficacy (Fathi et al., 2020), metacognitive awareness (Xu & Huang, 2018), and listening achievement (Namaziandost et al., 2018).

Recent studies have focused on examining the relationship between listening anxiety and learning outcomes (Vafaei et al., 2019), as well as educational interventions aimed at reducing anxiety (Namaziandost et al., 2018). For example, Liu and Yuan (2021) investigated the development of foreign language classroom anxiety (FLCA) and foreign language listening anxiety

(FLLA) among Chinese EFL learners during the COVID-19 period. Their results showed that both forms of anxiety remained high throughout the semester and were strongly correlated. Fathi et al. (2020) investigated the impact of listening strategy instruction on Iranian EFL learners. Using IELTS listening tests, the Foreign Language Listening Anxiety Scale (FLLAS), and the Second Language Listening Self-Efficacy Questionnaire (SLLSQ), the study found that strategy instruction significantly improved listening comprehension and reduced anxiety, although it did not increase learners' self-efficacy. Similarly, Hidayati et al. (2020) examined listening anxiety among Indonesian university students. Their findings showed that 54.6% of participants experienced high listening anxiety, mainly due to low listening proficiency and difficulties in understanding fast speech and unfamiliar topics.

2.4. Gender and Listening Strategy Use

Gender has received relatively limited attention in recent second language acquisition research. However, some studies suggest that female learners often outperform male learners in L2 learning and tend to use language learning strategies more frequently (Saville-Troike & Barto, 2016). The influence of gender on L2 outcomes appears to be context-dependent (Chen et al., 2026; Sandsør & Brevik, 2024). Research on language learning strategies has also explored gender differences in the use of cognitive and metacognitive strategies (Ahsanah, 2020; Viriya & Sapsirin, 2014), including listening strategy use (Al-Khresheh & Alruwaili, 2024).

More recent research has continued to explore gender differences in listening and metacognitive awareness. For example, Alamdari and Bozorgian (2022) reported that female students outperformed male students in both listening comprehension and metacognitive awareness.

3. Methodology

3.1. Research Design

This quasi-experimental research study was designed to analyze the effects of metacognitive intervention in L1 on Iranian EFL learners' anxiety levels and listening comprehension across gender. The intervention consisted of ten sessions of listening strategy instruction in an authentic classroom setting over the course of thirteen sessions. To explore these effects, pretest and posttest data were collected using a listening test.

3.2. Participants

Seventy male and female elementary EFL learners participating in this study were selected from a larger number of learners ($n = 115$) based on their Oxford Placement Test (OPT) results. Their ages ranged from 14 to 17 years. They were all native Persian speakers who had not studied

abroad in an English-speaking community and seldom had the chance to communicate in English outside the classroom. The participants were divided by gender ($n = 35$ for each gender), and each gender group was assigned to two groups: experimental and control. They were assured of the confidentiality and anonymity of the data.

3.3. Instruments

3.3.1. Oxford Placement Test (OPT)

The second version of the Oxford Placement Test was utilized to measure the participants' language proficiency. The OPT consists of 60 multiple-choice items in two sections: grammar and vocabulary, and reading. The first section includes 50 questions measuring learners' mastery of fundamental grammar and vocabulary at the beginner, intermediate, and advanced levels. The reading text in the second section includes ten graded comprehension questions. The entire Oxford Placement Test lasted 40 minutes. The responses of 30 learners in the pilot test were analyzed to determine the reliability of the test. The results showed that the test had a reliability coefficient of .89, as determined using the KR-21 formula.

3.3.2. Listening Comprehension Tests

The IELTS listening test, containing four sections, was used to assess the participants' listening abilities. Each section of the test contained ten questions. The first section was a dialogue between two speakers, and the second was a monologue. The last two sections dealt with educational and training-related situations. Multiple-choice, matching, plan/map/diagram labeling, form completion, note completion, table completion, flowchart completion, sentence completion, and short-answer questions were among the question types used. The IELTS listening test was taken from Test 7 of *Cambridge IELTS 12 Academic Student's Book with Answers: Authentic Examination Papers (IELTS Practice Test)*, published by Cambridge University Press and UCLES (2017).

3.3.3. Foreign Language Listening Anxiety Scale (FLLAS)

The participants' listening anxiety was measured using the Foreign Language Listening Anxiety Scale (FLLAS) (Elkhafaifi, 2005). The FLLAS is a 20-item scale designed to assess listening anxiety. Responses are rated on a five-point Likert scale (from 1 = strongly disagree to 5 = strongly agree). Elkhafaifi (2005) reported high internal consistency reliability for the scale (Cronbach's $\alpha = .96$, $N = 233$). The reliability of the FLLAS in the current study was acceptable, with a Cronbach's alpha of .86.

3.4. Procedure

An English language institute served as the setting for the research. The pretest and posttest were used to elicit details about the students' listening proficiency levels. In the first session, the Oxford Placement Test (OPT) was used to measure the participants' general language proficiency level. The participants were randomly divided into experimental and control groups ($n = 35$). The participants were then divided into four classes: two classes for the experimental group (Classes A and B) and two classes for the control group (Classes C and D). Class A included 18 students, Class B 17 students, Class C 16 students, and Class D 19 students.

In Session 2, they took the listening test as a pretest in 40 minutes. After the answer sheets were collected, the FLLAS was administered.

The intervention implemented for the experimental groups was grounded in the metacognitive instruction (MI) framework proposed by Goh and Vandergrift (2021). The teacher and students followed pre-listening or warm-up, listening, and post-listening or cool-down stages in the classroom. Accordingly, from Session 3 through Session 12, a pedagogical cycle was employed to implement MI for 30 minutes in each session in L1. Planning/predicting, first verification, second verification, final verification, and reflection were the five steps of the pedagogical cycle. The researchers translated these five steps into the participants' L1 (Persian), and a professional translator checked the translation and confirmed its quality. The researchers met with the teacher on a weekly basis to discuss any concerns that might arise during the strategy lessons.

The first phase entailed some planning and making estimates. The instructor briefed the class on metacognition and the accompanying MI. He also provided examples of how learners might generate ideas about the topics they were going to listen to. They were able to anticipate the next set of words and information they were going to hear and even provide some indication of what they might be. The participants' understanding of the planning process was enhanced during the planning/predicting stage, especially when carrying out their normal classroom tasks.

Second, there was the first verification. The instructor played the listening-related audio file for the first time, allowing the EFL students to reflect on their initial estimates about the topics and words they would hear. They learned something new even as they were exposed to the audio file for the first time. In this initial stage of verification, the EFL participants could monitor their own performance, that of their peers, and their comprehension of the listening material. This kind of attentive listening also helped them pay closer attention to the subtleties of the listening material. This sequential activity explained the idea of focused listening to the students.

The third stage included the second verification. The participants were introduced to a specific metacognitive method in this lesson. They then listened to the audio file a second time. They discovered that they had overlooked certain aspects during the second stage. They could now examine the challenges they confronted while listening by using a monitoring method. They later informed their peers or other participants about their listening experiences. They could all keep

track of one another's progress and, as a result, develop a thorough understanding of the listening material.

Phase four involved the final verification, during which the participants focused on information they might have missed during the earlier verification stages. This was followed by the fifth step, reflection, in which the participants analyzed the strategies they had employed to complete the listening tasks and evaluated their effectiveness. In contrast to the experimental group, the participants in the control group were not exposed to metacognitive instruction; instead, they followed the conventional three-stage listening procedure commonly used in listening classrooms.

Finally, the listening posttest and questionnaire were administered to the participants in Session 13, one week after the intervention in Session 12. The posttest followed the same format as the pretest.

During the instructional cycle, the participants in the control group were exposed to the conventional method often used in high schools, which included pre-, during-, and post-listening stages. The teacher used a few comprehension and follow-up questions related to the topic of the listening activity as a warm-up during the pre-listening stage to set the scene and activate the participants' prior knowledge to improve their listening comprehension.

In the second phase, known as while-listening, the instructor gave the learners a task while they listened to the CD. Throughout the book, the participants were permitted to listen to the auditory text as many times as the relevant instructions in each unit required. The instructor asked the students to read their responses to the task when they had finished listening to the material. The instructor then played the CD again and asked the participants to review their responses if necessary.

Post-listening was the third step, during which the instructor asked one or two participants to summarize what they had heard. They were questioned in depth and engaged in a discussion regarding the material.

3.5. Data Analysis

The IELTS listening test and the FLLAS, administered to the participants in the experimental and control groups, were analyzed using the Statistical Package for the Social Sciences (SPSS) version 26 (IBM SPSS Statistics 26.0). First, the Kolmogorov–Smirnov test was performed to check the normal data distribution. Then, the data were analyzed using paired sample t-tests and independent sample t-tests to determine the answers to the study questions.

4. Results

To ascertain whether metacognitive intervention in L1 affected Iranian students' anxiety levels and listening comprehension across gender, a number of analyses were performed to determine whether participants who received instruction in metacognitive strategies differed from pretest to posttest. Different statistical approaches were used depending on the properties of each construct.

4.1. Investigating the First Research Question

As part of our exploration of anxiety levels, we used SPSS version 26 to examine how metacognitive strategy instruction in L1 affected them. To assess differences in anxiety levels before and after the intervention, we used paired-samples *t* tests on the learners' pretest and posttest results.

Table 1

Pre- and Post-test Differences in Anxiety Level

Tests	Mean (SD)	t-value	p-value
Pre-test	58.31 (10.52)	3.236	.000
Post-test	45.09 (8.31)		

The findings of the paired-samples *t* test for the participants' pretest and posttest anxiety levels are shown in Table 1. The findings indicated significant differences in the participants' anxiety levels between the pretest and posttest. It can be concluded that the participants' anxiety scores decreased following metacognitive instruction in L1.

4.2. Investigating the Second Research Question

The second research question explored whether the effects of metacognitive intervention delivered in L1 on elementary Iranian EFL students' listening comprehension differed by gender. Table 2 indicates the results of the independent-samples *t* test. The results showed that there were no significant differences between male and female participants in either the pretest ($p = .442$) or posttest ($p = .562$). We can infer from the descriptive statistics that there were some differences between the pretest and posttest listening performance of both male and female learners. It can be concluded that both male and female participants might have had similar levels of metacognitive awareness and listening comprehension skills, which made them equally responsive to the metacognitive intervention.

Table 2*Differences in Listening Comprehension Test between the Male and Female Learners*

Tests	Listening Comprehension Test			
	Males	Females		
	Mean (SD)	Mean (SD)	t-value	p-value
Pre-test	4.08 (1.47)	4.03 (1.52)	.489	.442
Post-test	5.81 (1.41)	5.87 (1.44)	.417	.562

5. Discussion and Conclusion

The results of this study indicate that metacognitive intervention delivered in learners' L1 positively contributes to reducing anxiety among elementary Iranian EFL students during listening comprehension. This finding is consistent with previous research demonstrating that metacognitive strategy instruction enhances learners' awareness and control over the listening process, which in turn helps alleviate listening anxiety and improve listening performance. For example, Movahed (2014) found that Iranian EFL learners who received metacognitive listening strategy instruction experienced significantly lower levels of listening anxiety and higher listening comprehension scores than those receiving traditional instruction. Similarly, Fathi et al. (2020) reported that explicit listening strategy instruction significantly reduced listening anxiety while enhancing related affective variables, such as self-efficacy, among Iranian EFL learners. Collectively, these findings support the effectiveness of metacognitive interventions, particularly when implemented in L1, as a means of reducing listening anxiety and facilitating more effective listening comprehension.

Research indicates that employing L1 can help learners better understand and internalize cognitive and metacognitive strategies, particularly at lower proficiency levels, thereby reducing cognitive overload and affective barriers during listening tasks (Macaro, 2005; Vandergrift & Goh, 2012). Moreover, metacognitive strategy instruction in listening has consistently been shown to enhance learners' comprehension skills and strategic awareness (Movahed, 2014; Vandergrift & Tafaghodtari, 2010). Metacognitive intervention delivered in L1 can therefore support learners in becoming more aware of their cognitive and affective processes and in developing effective strategies for managing listening anxiety and enhancing comprehension. The present study adds to the growing body of research supporting the effectiveness of metacognitive interventions in improving language learning outcomes.

One explanation for why delivering metacognitive intervention in L1 may be effective is that it can help learners better understand and internalize the metacognitive strategies being taught. When learners are taught metacognitive strategies in a language in which they are not fully proficient, it may be more difficult for them to fully comprehend and utilize these strategies. By delivering the intervention in the learners' L1, the instructions and strategies may be more easily understood and internalized, leading to more effective implementation of these strategies during listening comprehension tasks. Furthermore, the finding that metacognitive intervention delivered

in L1 effectively reduced anxiety levels suggests that anxiety reduction may be a key factor in enhancing listening comprehension. Anxiety has been identified as a significant barrier to successful language learning and has been found to negatively affect listening comprehension (Wang & MacIntyre, 2021). Therefore, reducing anxiety levels through the use of metacognitive intervention delivered in L1 may be an essential strategy for improving listening comprehension in EFL contexts.

Overall, the findings of this study suggest that metacognitive intervention delivered in L1 can be an effective strategy for reducing anxiety levels among elementary Iranian EFL students and potentially enhancing their listening comprehension. Moreover, no significant gender differences were observed in the listening comprehension of elementary Iranian EFL students, which is consistent with previous research (Alamdari & Bozorgian, 2022; Vandergrift, 1997). Similarly, some other studies have indicated that gender might affect learners' utilization of cognitive and metacognitive strategies (e.g., Al-Khresheh & Alruwaili, 2024; Nurhanipah & Karmina, 2024).

One possible explanation for this result could be that both male and female students may have similar levels of metacognitive awareness and listening comprehension skills, which make them equally responsive to metacognitive intervention. It is also possible that the sample size or the specific context of this study did not provide sufficient statistical power to detect gender differences. Therefore, further research with a larger and more diverse sample is needed to investigate the potential influence of gender on the effectiveness of metacognitive intervention in L1 for EFL listening comprehension.

In conclusion, while the present study did not find significant gender differences in the effects of metacognitive intervention delivered in L1 on elementary Iranian EFL students' listening comprehension, the results do not negate the importance of metacognitive strategies in language learning. The study highlights the need for further research on individual differences and alternative methods of teaching metacognitive strategies. Ultimately, the goal is to provide effective tools for language learners to enhance their listening comprehension abilities and reduce anxiety, regardless of gender.

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