JCALS

Journal of Critical Applied Linguistics Studies

Revolutionizing Pronunciation Mastery in Persian: Impact of Gender, Age, and Educational Level on Learning Strategies

Gonbad Kavous University

Linguistics Society of Iran

¹Amirreza Vakilifard*ⁱᴰ ²Mahmood Atashgaranⁱᴰ

ABSTRACT

Despite the significance of pronunciation in second language acquisition, there has been limited research on strategies for pronunciation learning among Persian language learners with various gender, age and educational levels. This study aims to fill the gap in the literature among 119 learners, hailing from diverse national backgrounds. To gather data, a questionnaire encompassing six distinct strategy groups and 43 techniques was utilized. The analysis of the data revealed no significant difference between males and females in the use of memory, metacognitive, affective, and social strategies. While, the use of cognitive and compensation strategies in pronunciation learning was found to significantly differ between male and female language learners. There were no significant differences in the use of memory, cognitive, metacognitive, and affective strategies between individuals below and above 20 years of age. However, individuals above 20 years of age utilized compensation and social strategies more frequently than those below 20 years of age. The findings of this study found no significant difference in the average scores of the six pronunciation learning strategy components between undergraduate and graduate students. These results can assist educators and textbook authors in developing language learning curricula that take into consideration the impact of age and gender differences, thereby enhancing the overall effectiveness of language instruction.

1. **Corresponding Author:** Associate Professor, Teaching Persian to Speakers of Other Languages Department, Faculty of Humanities Imam Khomeini International University (IKIU), Qazvin, Iran, *Email: vakilifard@hum.ikiu.ac.ir* ORCID: https://orcid.org/0000-0002-4280-4539

2. M.A. in Teaching Persian to Speakers of Other Languages Department, Faculty of Humanities , Imam Khomeini International University (IKIU), Qazvin, Iran
Email: a.atashgaran.edu.ikiu.ac.ir ORCID: https://orcid.org/0009-0004-6465-991X

1. Introduction

The acquisition of a foreign language is a multifaceted process, extending beyond lexical and grammatical mastery to encompass critical components such as pronunciation. Pronunciation significantly impacts communication skills, making its effective learning essential for overall language proficiency. Despite its importance, pronunciation is often neglected in Persian language instruction, especially in classroom settings. This study addresses a notable gap in the literature by investigating pronunciation learning strategies (PLS) among Persian learners, examining the interactions of gender, age, and educational level. The insights derived from this research aim to enhance pronunciation instruction and improve learner outcomes.

Achieving oral proficiency is a complex and dynamic process involving various interrelated components, including vocabulary, grammar, pronunciation, and fluency. An in-depth understanding of these components is indispensable for effective communication in a foreign language context. Recent research by Vahdany, Divsar, and Alem (2022) suggests that mastering pronunciation may be more challenging than other aspects of language learning. Despite years of effort in both formal classroom settings and immersion environments, some learners struggle to attain native-like pronunciation. Factors such as language background, age, prior knowledge, and motivation play significant roles in pronunciation success or failure (Calka, 2011). The interplay of these factors highlights the need for targeted, effective instruction and learner autonomy in achieving successful language outcomes.

Extensive research in recent decades has explored the role of learning strategies in language acquisition. Studies consistently demonstrate that the use of diverse, context-appropriate strategies is crucial for successful language learning. The efficacy of teaching such strategies, particularly to struggling learners, has been well-documented. In the realm of pronunciation learning (Aghaei et al. 2022), research by Rokoszewska (2012) indicates that successful language learners employ both direct and indirect PLS more extensively than their less successful counterparts.

As Persian gains popularity among non-native speakers pursuing academic disciplines in Iran, effective communication with lecturers, university staff, and local residents becomes imperative. Consequently, language curricula, especially at elementary levels, prioritize pronunciation skills. However, as Pennington (1994) observes, attitudes towards pronunciation often emphasize linguistic accuracy over communicative competence, leading to its neglect even in courses designed to improve speaking skills.

The use of pronunciation learning strategies is crucial in second language acquisition, significantly enhancing learners' communicative competence and fluency. Persian language teachers, however, often prioritize main language skills over pronunciation due to the latter's perceived

complexity and time-consuming nature. Additionally, the lack of audio-visual aids hampers effective pronunciation instruction, leading to its further neglect. Traditional methods, such as repetition exercises and rule-based teaching, dominate, often leaving learners to pursue pronunciation improvement independently. This self-learning approach does not always yield consistent or accurate results, potentially undermining learners' self-confidence, social interactions, and overall communicative ability.

Few studies have explored the use of Pronunciation Learning Strategies (PLSs) among Persian language learners. This research aims to fill this gap by examining the utilization of PLSs among non-Iranian Persian learners, focusing on the impact of gender, age, and educational levels. The following research questions guide this study:

1. Which pronunciation learning strategy is most frequently utilized by female learners of Persian as a second language compared to male learners?

2. Which pronunciation learning strategy is more commonly used by learners under the age of 20 compared to those over 20?

3. Which pronunciation learning strategy is more frequently employed by undergraduate learners compared to graduate learners?

Previous studies (Rokoszewska, 2012; Peterson, 2000) indicate a reliance on cognitive pronunciation strategies among second language learners. Based on these findings and the research questions, the following hypotheses are proposed:

- H01: The cognitive strategy is most frequently utilized by female learners of Persian as a second language.

- H02: Learners under the age of 20 use the cognitive strategy more than learners over 20.

- H03: Undergraduate learners use the cognitive strategy more than graduate learners.

By providing targeted instruction on effective learning strategies and encouraging their use, language instructors can significantly enhance students' learning outcomes. The ability to employ a range of effective learning strategies is critical for language learners, enabling them to overcome challenges and achieve success. The outcomes of this study will offer valuable insights into language learning strategies, particularly pronunciation learning, validating the positive contribution of PLSs to the language learning process.

2. Theoretical Farmwork

The likelihood of acquiring a new language within a second language (L2) environment, where learners receive extensive amounts of comprehensible input daily, can significantly expedite the learning process compared to those constrained to acquiring a foreign language within the boundaries of their native country. This framework explores various factors influencing adult language acquisition, particularly focusing on pronunciation learning strategies (PLS) among Persian language learners.

a. Influencing Factors in Second Language Acquisition

A myriad of factors can affect the success of adult learners in acquiring a second language. Two paramount factors are the individual's personal characteristics and the learning environment. Motivation and drive are critical components in achieving success in language learning. Research indicates that learners with strong motivation and clear reasons to improve their pronunciation tend to be more successful in mastering the phonetic features and suprasegmental elements of the target language (Dörnyei, 2005).

When learners are immersed in an environment where the target language is spoken, they benefit from exposure to native speakers' accents and pronunciation. This immersion facilitates the acquisition of accurate phonetic and prosodic features. A positive attitude, professional motivation, and a desire to understand the culture of the target language significantly contribute to this process. Such attitudes enhance the learner's engagement and perseverance, leading to better pronunciation outcomes (Gardner, 1985).

b. Pronunciation & Phonetic Mastery

For adult language learners aiming to improve their speaking and listening proficiency, acquiring knowledge of the target language's sound system and phonetics, and learning to effectively produce these sounds, are crucial skills. Continuous improvement in pronunciation is essential, especially for those pursuing academic or professional success in language teaching (Derwing & Munro, 2005). Effective tools and strategies must be provided to help learners take control of their pronunciation. Celce-Murcia and Goodwin (2010) emphasize the importance of equipping learners with strategies that foster autonomy in pronunciation learning.

c. Realistic Goals in Pronunciation Learning

Recent discussions in language teaching suggest that expecting learners to perfectly mimic a native speaker's accent is unrealistic. Nevertheless, clear and recognizable pronunciation remains a critical goal. Burns (2003) argues that learners must be able to reproduce the phonetic patterns of the target

language correctly and accurately. Comprehensibility is vital; learners' speech should be understandable to both native and non-native speakers, ensuring effective communication.

Furthermore, the ability to translate and interpret speech is essential for conveying nuanced or indirect meanings. This interpretative skill enhances the learner's overall communicative competence, making their interactions more meaningful and effective. According to Burns (2003), successful communication involves not only producing accurate sounds but also ensuring that listeners can grasp the intended meaning and nuances of the speaker's words.

d. The Role of Learning Strategies in Pronunciation Improvement

Despite intensive language training, improvements in pronunciation are not always guaranteed. Eckstein (2007) discovered that incorporating learning strategies within a ten-week training period significantly enhanced learners' pronunciation. This finding underscores the importance of strategic instruction in pronunciation learning. Teaching learners' specific strategies can lead to remarkable advancements in their pronunciation skills, highlighting the value of integrating PLS into language curricula.

To sum up, the theoretical framework of this study underscores the importance of motivation, immersive environments, and effective learning strategies in second language pronunciation acquisition. By examining the interactions of gender, age, and educational levels, this research aims to provide a deeper understanding of how these factors influence the use and effectiveness of pronunciation learning strategies among Persian language learners. The insights derived from this study will contribute to the development of targeted instructional approaches that enhance pronunciation learning outcomes, ultimately leading to more effective and confident communicators in the Persian language.

3. Pronunciation Learning Strategy

Pawley (2010) defines pronunciation learning strategies as "deliberate and conscious actions and thoughts that are employed in a logical sequence to effectively learn and gain better control over various aspects of pronunciation" (p.191). According to his perspective, PLS are intentionally chosen by the learner and are not only applicable during the learning process but also when using pronunciation aspects to communicate effectively. As stated by Oxford (2002), special strategies for acquiring pronunciation involve specific decisions and actions that language learners utilize to expedite the learning process and achieve mastery of a new language's pronunciation within a shorter time frame. These strategies enhance the overall language learning experience, making it more enjoyable and enabling learners to apply these skills to new and unfamiliar situations with guidance and ease.

4. Classification of Pronunciation Learning Strategies

Within the field of language learning, Pronunciation Learning Strategies (PLS) have been identified as a critical component of language proficiency development. According to Oxford's (1990:15) classification, PLS can be divided into two groups: Direct and Indirect strategies.

Direct strategies can be divided into three categories: Memory, Cognitive, and Compensation strategies. Memory strategies are designed to help learners store information in their memory and connect it with their background knowledge. As stated by Vandergrift and Baker (2015), these strategies can include the use of mnemonics, repetition, and the creation of associations between the language and personal experiences. Cognitive strategies, on the other hand, are employed to help learners process, structure, and use the language. As noted by Arnaud and Besse (2013), these strategies can include the use of inferencing, the extraction of meaning through context, and the use of problem-solving techniques. The third type of direct strategies is known as Compensation strategies. This type of strategy assists the learners to overcome limitations in speaking and writing. As noted by Dornyei (2005), these strategies can include the use of circumlocution, the substitution of words, and the use of nonverbal communication to convey meaning.

Indirect strategies, in turn, can be further divided into three categories: Metacognitive, Affective, and social strategies. Metacognitive strategies, as noted by Flavell (1979), are employed to help learners manage the learning process. This may include tasks such as setting goals, organizing study materials, and monitoring one's own learning progress. Affective strategies, on the other hand, are designed to help learners arrange, plan, and evaluate their learning. According to Schunk and Zimmerman (2007), these strategies can include the use of motivation, self-efficacy, and goal-setting to enhance learning outcomes. Finally, Social strategies are employed to help learners improve their pronunciation by interacting with others. As noted by Rubin (1990), these strategies can include tasks such as engaging in conversation with native speakers, participating in language exchange programs, and collaborating with classmates to improve pronunciation skills.The educators suggest the existence of inter-relationships between direct and indirect strategies among the six strategy groups, as evident from Figure 1. It highlights the need for a comprehensive approach that integrates both direct and indirect strategies in language instruction. Such an approach can facilitate a more holistic and effective development of learners' pronunciation skills.
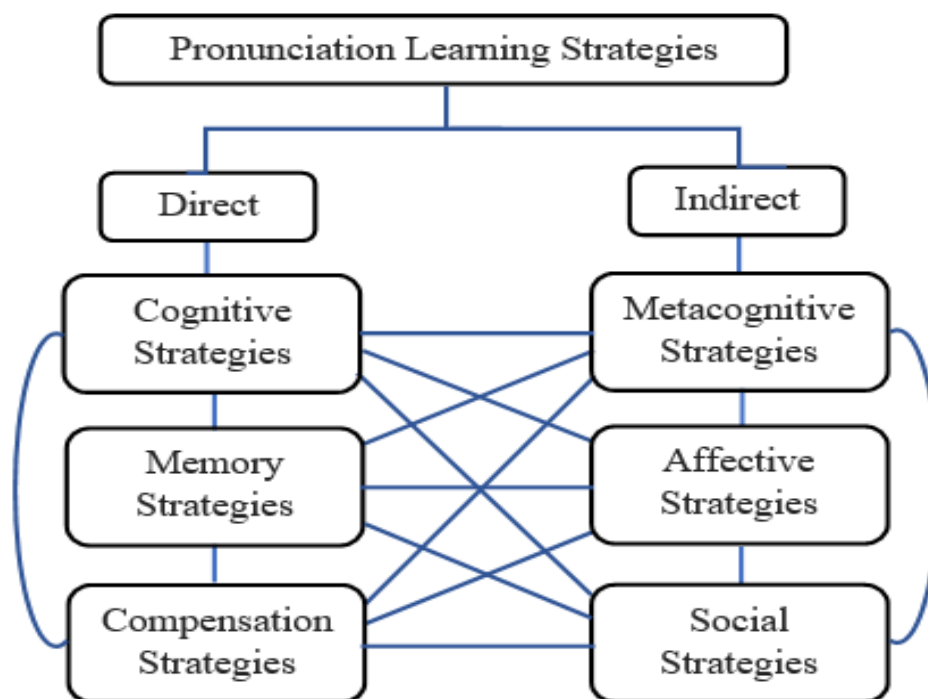
Figure 1: *Inter-relationships among the six strategy groups*

5. Pronunciation Learning Strategies & Learner Characteristics

The use of pronunciation learning strategies can be influenced by a range of variables, including but not limited to age, educational attainment, and gender. With appropriate pronunciation training, it is possible for adults to reach and approximate the pronunciation of the target language in a relatively brief period without significant disturbance to the second language education program. Shively (2008) posits that the ability to speak with accurate pronunciation is notably associated with various factors, including the age of exposure to language data, the extent of formal education, the period of residence in the target language environment, and the level of language communication with the speaker outside the classroom.

Marinova et al. (2000) conducted a study on language acquisition in adults, which revealed that the acquisition of native-like pronunciation is attainable for adults who are motivated and possess a strong desire to learn a language professionally. The study emphasizes the importance of intrinsic motivation in the learning process, as it can significantly contribute to the success of language acquisition in adults. Moreover, in line with previous research, Szyszka (2017:132) found that females demonstrated a greater use of pronunciation learning strategies (PLS) compared to males, both in the form-focused and meaning-focused activities. This was reflected in their heightened concern for accuracy and avoidance of errors.

Empirical evidence indicates that age plays a crucial role in the acquisition of pronunciation skills. Children possess an inherent ability to learn the phonemes of their mother tongue as well as those of foreign languages, whereas adults are often faced with greater challenges in mastering foreign phonemes, owing to their established phonological system in their primary language. The findings of Flege et al.'s (1995) investigation indicate that individuals who initiate the acquisition of a foreign language after the age of 12 often encounter challenges in accurately reproducing the phonemes of that language. The researchers attribute this phenomenon to the fact that adults have already developed established phonological patterns for their native tongue, which hinders the acquisition of new sounds. Best and Tyler's (2007) research likewise illustrated that children possess a more robust capacity to discern nuanced variances between the phonemes of a foreign language, which consequently facilitates their reproduction of said phonemes. Conversely, adults tend to experience greater difficulty perceiving these distinctions, which impairs their acquisition of proper pronunciation.

6. Research Backgrounds

One recent study on gender and pronunciation learning strategies was conducted by Kim (2021). The study aimed to investigate the relationship between gender and the use of pronunciation learning strategies by Korean EFL learners. The participants were 140 Korean EFL learners (70 males and 70 females) who were enrolled in a university in South Korea. The participants completed a questionnaire that assessed their use of pronunciation learning strategies based on the Oxford (2000) classification. The findings of the study revealed that there were significant differences in the use of pronunciation learning strategies between male and female Korean EFL learners. Specifically, female participants reported using more strategies related to cognitive, affective, and social strategies, while male participants reported using more strategies related to memory and compensation strategies. These findings suggest that gender differences may play a significant role in the development of pronunciation learning strategies among Korean EFL learners.

Rokoszewska (2012) explored the effectiveness of pronunciation learning strategies on acquiring English vowels. The results of the study indicated that the implementation of specific pronunciation learning strategies significantly improved learners' accuracy in producing English vowels. The participant pool for this study consisted of 66 first-year students enrolled in an English department, with three participants being excluded due to an extended stay in an English-speaking country. Thus, the results of 63 students (44 females and 19 males) were analyzed. The participants had a mean age of 20 years, with the youngest participant being 19 years old, and the oldest being 26 years old. Regarding direct pronunciation learning strategies (PLS), the students participating in the study exhibited comparable usage levels for three subgroups of strategies, namely memory, cognitive, and compensation strategies. However, the questionnaire revealed a higher incidence of cognitive

tactics compared to the other two groups. Additionally, the standard deviations (SDs) for all three strategy groups were low, indicating that the student participants' use of these strategies was relatively homogenous across the sample. With regards to indirect pronunciation learning strategies (PLS), the student participants demonstrated a higher frequency of metacognitive strategies than affective and social strategies. Notably, the use of metacognitive strategies was found to be the highest amongst all direct and indirect groups of PLS. However, it is worth mentioning that the questionnaire indicated a higher incidence of cognitive tactics than metacognitive tactics.

Calka (2011) examined the use and effectiveness of four different types of pronunciation learning strategies: cognitive, compensation, social, and meta-cognitive strategies. The study participants comprised 74 individuals, consisting of both full-time and part-time students, with a gender distribution of 11 males and 63 females. The age range of the participants was between 19 to 44 years, with a mean age of 24 years. The study found that the average use of each type of strategy varied significantly among learners. Cognitive strategies were found to be the most frequently used type of strategy, followed by compensation, meta-cognitive, and social strategies. However, the study found that the use of pronunciation learning strategies was highly dependent on individual learner preferences, needs, and learning styles.

To date, there appears to be a paucity of research exploring the correlation between distinct educational levels or age brackets and the employment of pronunciation learning strategies. Hence, this study holds the potential to offer a distinctive contribution to the current literature.

7. Research Methodology

This study adopts a quantitative research design to explore the pronunciation learning strategies among Persian language learners. The primary data collection tool is a structured questionnaire designed to gather detailed information on the strategies employed by these learners.

Participants

The study involved 119 Persian language learners from diverse nationalities, enrolled in the Farsi Language Center of the International University. The sample comprised 48 females (40.33%) and 71 males (59.66%). The age distribution showed that 52.5% of the participants were under 20 years old, while 47.5% were above 20 years old. Educationally, 73 participants (61.34%) were undergraduates, and 46 participants (38.65%) were engaged in graduate studies (master's and doctorate programs).

Data Collection Instrument

The questionnaire used in this study was specifically designed to elicit information on the pronunciation learning strategies employed by Persian learners. It included both closed and open-ended questions to capture a comprehensive range of strategies and perceptions.

Validity and Reliability of the Instrument

- **Face Validity:** To ensure the face validity of the questionnaire, a preliminary evaluation was conducted with 5 experts in the field. The experts reviewed the questionnaire for clarity, relevance, and appropriateness of the questions. Their feedback was incorporated into the final version to enhance the instrument's validity.

- **Reliability:** The reliability of the questionnaire was assessed using a preliminary sample of 20 participants. The collected data were analyzed using SPSS statistical software, and the Cronbach's alpha coefficient was calculated to determine the internal consistency of the questionnaire. The reliability coefficient was found to be 0.895, indicating high reliability.

Procedure

Pilot Testing: Prior to the main study, a pilot test was conducted with a small sample to refine the questionnaire and address any issues related to question clarity and comprehensiveness.

Data Collection: The final version of the questionnaire was administered to the 119 Persian language learners. Participation was voluntary, and the respondents were assured of the confidentiality and anonymity of their responses.

Data Analysis: The data collected from the questionnaires were subjected to rigorous statistical analysis using SPSS software. Descriptive statistics were used to summarize the demographic characteristics and the distribution of pronunciation learning strategies. Inferential statistics, including t-tests and ANOVA, were employed to explore the interactions of gender, age, and educational level with the use of pronunciation learning strategies.

Ethical Considerations

Ethical approval for the study was obtained from the relevant institutional review board. Informed consent was obtained from all participants, and they were informed about the purpose of the study, their right to withdraw at any time, and the measures taken to ensure confidentiality.

Research Limitations

While the study provides valuable insights into pronunciation learning strategies among Persian language learners, it is not without limitations. The reliance on self-reported data may introduce response bias. Additionally, the sample size, though adequate, may limit the generalizability of the findings to all Persian language learners. The methodology outlined ensures a systematic approach to exploring the pronunciation learning strategies among Persian language learners. The rigorous validation and reliability check of the research instrument, combined with comprehensive statistical analysis, contribute to the robustness of the findings.

8. Analysis of Research Hypotheses

This section delves into the examination of the research hypotheses related to the pronunciation learning strategies employed by Persian language learners. The analysis focuses on understanding how gender, age, and educational levels influence the utilization of these strategies. Statistical tests, including t-tests and ANOVA, are used to test the hypotheses and provide insights into the interactions of these demographic factors with pronunciation learning strategies.

First hypothesis: Comparing the various components of PSL based on gender

The initial hypothesis posited that cognitive strategy is employed more frequently by Persian second language learners. To verify this hypothesis, independent t-tests were employed. The outcomes of these tests are presented in Table 1.

Table 1: *Comparison of the mean & standard deviation of six components of PSL, differentiated by gender*

Variable \ Group	Male	Female	Result
Memory strategies	3/0±126/913	3/0±196/965	t=0/336 sig=0/737
Cognitive strategies	3/0±356/526	3/0±650/454	t=2/597 sig= 0/011
Compensation strategies	3/1±662/027	4/0±107/685	t=2/112 sig= 0/037
Metacognitive strategies	3/0±410/567	3/0±623/542	t=1/704 sig= 0/092
Affective strategies	3/1±000/003	2/1±982/075	t=0/078 sig= 0/938
Social strategies	3/0±498/679	3/0±614/659	t=0/769 sig= 0/444

As per the results presented in Table 4 and the independent t-tests conducted to compare the use of pronunciation learning strategies across genders, the mean scores for memory, metacognitive, affective, and social strategy components did not demonstrate a statistically significant difference

between males and females. Hence, the findings suggest that gender does not exert a discernible influence on the utilization of these four strategies in the context of pronunciation learning.

Nonetheless, it is noteworthy that the Cognitive and Compensation strategy components exhibited a statistically significant difference between male and female language learners. Specifically, the average score for female participants was higher in comparison to their male counterparts, implying that women tend to utilize these strategies to a greater extent in their pronunciation learning endeavors.

Secondary hypothesis: comparing the various components of PSL based on age

The second hypothesis posited that learners who are younger than 20 years of age would employ a higher level of cognitive strategies compared to those aged 20 years or above. The outcomes of the independent t-tests, which were conducted to examine the disparities in the use of pronunciation learning strategies by age, have been presented in the table.

Table 2: *Comparison of the mean & standard deviation of six components of PSL, differentiated by age*

Group Variable	Above 20 years old	Under 20 years old	Result
Memory strategies	3/0±287/913	3/0±019/923	t=1/450 sig=0/150
Cognitive strategies	3/0±484/554	3/0±399/492	t=0/807 sig= 0/421
Compensation strategies	4/0±000/884	3/0±596/995	t=2/137 sig= 0/035
Metacognitive strategies	3/0±475/565	3/0±465/570	t=0/082 sig=0/935
Affective strategies	2/1±936/101	3/0±048/945	t=0/544 sig= 0/588
Social strategies	3/0±672/637	3/0±403/684	t=2/014 sig= 0/047

It can be seen that the two components compensation strategies and social strategies have a significant difference between people under 20 years old and over 20 years old, and according to the average score of language learners, people over 20 years old have used these two components more than people under 20 years old. However, the average components of memory strategies, cognitive strategies, metacognitive strategies and affective strategies have no significant difference between people under 20 and over 20. This means that age has no effect on the use of these 4 strategies in learning pronunciation.

Third hypothesis: Comparing the components of PLS according to the level of education

The third hypothesis postulated that undergraduate language learners would exhibit a higher prevalence of cognitive strategy use compared to graduate learners. Table 6 illustrates the results of

independent t-tests employed to assess the differences in pronunciation learning strategy use according to education level.

Table 3: Comparing mean & standard deviation of six components of PSL, differentiated by educational levels

Variable \ Group	undergraduate	graduate	Result
Memory strategies	3/0±126/943	3/0±250/836	t=0/488 sig=0/627
Cognitive strategies	3/0±401/522	3/0±638/488	t=1/677 sig= 0/097
Compensation strategies	3/0±783/963	3/0±812/981	t=0/111 sig= 0/912
Metacognitive strategies	3/0±445/573	3/0±597/519	t=0/980 sig= 0/329
Affective strategies	2/1±975/026	3/1±093/003	t=0/422 sig= 0/674
Social strategies	3/0±491/695	3/0±737/504	t=1/345 sig= 0/182

The results indicated that there is no statistically significant difference between undergraduate and graduate students with respect to the average scores of the six pronunciation learning strategy components. Thus, it can be inferred that the level of education does not appear to exert a notable impact on the utilization of these six strategies for improving pronunciation skills.

9. Discussion & Conclusion

This study aimed to enhance Persian language teachers' understanding of second language pronunciation learning strategies, recognizing their critical role within the broader spectrum of language learning strategies. Pronunciation skills are essential for achieving communicative competence, especially outside the classroom (Gilakjani & Sabouri, 2016). Research suggests that learners who focus on pronunciation development are more likely to attain higher levels of fluency and communicative competence (Derwing & Munro, 2005).

Gender-Based Differences

Our findings reveal significant gender-based differences in pronunciation learning strategies, corroborating some observations made by Kim (2021) regarding Korean EFL learners. Female participants in our study employed higher levels of cognitive, affective, and social strategies. In contrast, male participants predominantly utilized memory and compensation strategies. These results align with the findings of Ehrman and Oxford (1995), who highlighted gender differences in language learning strategies, noting that females typically favor social and affective strategies.

These differences underscore the necessity of considering individual learner differences and preferences when designing pronunciation learning strategies. Tailoring instruction to meet diverse learner needs effectively can significantly enhance learning outcomes (Chamot, 2005). For instance, female learners might benefit from activities that involve social interaction and emotional engagement, while male learners might find memory aids and compensatory techniques more effective. Therefore, language educators should incorporate a variety of pronunciation learning strategies into their instruction, providing learners with a broad range of techniques to enhance their pronunciation skills.

Age-Based Differences

Although the literature does not directly compare the relationship between pronunciation learning strategies and age, our findings partially align with Calka (2011). Calka identified cognitive, compensatory, metacognitive, and social strategies as effective for language learners, with cognitive strategies being the most widely used. In our study, learners both below and above the age of 20 employed cognitive, metacognitive, affective, and memory-based strategies comparably. However, learners over 20 demonstrated a higher propensity for compensatory and social strategies.

This divergence from Calka's emphasis on cognitive strategies may be attributed to developmental and experiential differences between age groups. Older learners might leverage compensatory strategies to bridge gaps in their language proficiency, drawing on their broader life experiences and greater cognitive resources (Griffiths, 2013). These results suggest that the age cohort above 20 may benefit from a focused approach on compensatory and social strategies, highlighting the need for age-specific pronunciation instruction. Younger learners might benefit more from cognitive strategies that emphasize understanding and memory retention, while older learners might find social and compensatory strategies more applicable and effective.

Educational Level Differences

Our study also explored differences based on educational levels, finding that undergraduate students showed a tendency to use cognitive and metacognitive strategies more frequently, while graduate students favored compensatory and social strategies. This finding is consistent with Oxford and Nyikos (1989), who reported that higher educational levels are associated with a broader use of sophisticated language learning strategies.

Understanding these distinctions can help educators design curricula that cater to the specific needs of learners at different educational stages. For undergraduate students, incorporating cognitive and metacognitive strategies that promote active learning and self-regulation can be particularly effective. Graduate students, on the other hand, may benefit more from strategies that involve

85

compensation and social interaction, reflecting their advanced level of language proficiency and their need for practical application in professional and academic settings.

Implications for Persian Language Education

The findings of this study offer valuable insights for Persian language educators and academic centers, emphasizing the importance of pronunciation learning and the integration of diverse strategies into instruction. The apparent contradictions in research findings can be attributed to the employment of various research methods and unique contextual factors influencing outcomes (Dörnyei, 2005). Therefore, caution should be exercised in generalizing the results, acknowledging the limitations of the research design.

To advance Persian learners' communicative competence, it is essential to integrate pronunciation learning strategies into language training courses from the outset. This foundational approach would help learners acquire the phonetic characteristics of Persian, distinct from their mother tongue, facilitating advanced language skill development. Learners should be encouraged to utilize various strategies, such as imitation, visual aids, and feedback, to enhance their pronunciation skills (Celce-Murcia et al., 2010). Identifying the most effective strategies for individual learners is crucial for their language learning process.

Recommendations for Future Research

Achieving the goal of improved pronunciation hinges on dependable and sustained scientific and empirical investigations into the integration of pronunciation learning strategies within the Persian language education system. This study provides a basis for educational program designers to make informed decisions regarding pronunciation instruction methodology and content.

Specialized programs focusing on pronunciation learning strategies are essential in Persian language didactics. Emphasis on correct speech delivery is crucial for developing strong speaking skills, necessitating serious and effective teaching approaches (Thornbury, 2006). Teachers should support and encourage learners by providing explicit pronunciation instruction, modeling correct pronunciation, and offering ample practice opportunities in communicative contexts (Murphy, 2013).

Gender and Further Research

Our study highlights the importance of considering gender differences in language learning research and pedagogy. Future research should further investigate the role of gender in pronunciation learning strategies among foreign language learners. Additionally, exploring the direct relationship between taught pronunciation strategies and specific language performance outcomes would be beneficial. It is

also essential to assess whether these strategies are actively practiced by learners during language acquisition, as some studies in other languages have shown that general measures of effectiveness do not always reflect improvements in specific traits (Macaro, 2001).

Future research should also examine the influence of factors such as the duration of Persian language study and the proficiency level of learners on the effectiveness of pronunciation strategies. Understanding these influences will help refine pronunciation instruction, making it more effective for diverse learner demographics.

Conclusion

The study provides a comprehensive analysis of pronunciation learning strategies among Persian language learners, considering gender, age, and educational level. The insights gained can help educators tailor their teaching methods to better address the diverse needs of their learners, thereby enhancing overall language proficiency. By integrating a variety of pronunciation strategies and considering individual learner differences, Persian language education can significantly improve, fostering better communicative competence among learners. Through the augmentation of research and studies on pronunciation learning strategies and effective implementation of these strategies in language instruction, significant strides can be made towards empowering Persian learners to correctly and clearly articulate words and phrases. This would enhance their communicative competence and help them effectively engage with the target language in diverse settings. Therefore, to realize this objective, language training courses should include an introduction to pronunciation learning strategies from the very outset, helping Persian learners to acquire the phonetic characteristics of the Persian language rather than those of their mother tongue. This foundational approach enables learners to develop strong pronunciation and phonetic skills, facilitating the acquisition of more advanced language skills in the future. Instructors can design specialized programs that concentrate on the acquisition of pronunciation learning strategies. Emphasis on the correct delivery of speech is crucial for developing strong speaking skills, underscoring the importance of acquiring these skills and strategies for Persian language learners. Educators should approach the teaching of these strategies seriously and effectively, supporting and encouraging learners in their efforts to improve their pronunciation skills. This can be done by providing explicit instruction on pronunciation, modeling correct pronunciation, and offering opportunities for learners to practice their pronunciation in communicative contexts. This research is particularly relevant to those interested in developing a wide range of pronunciation learning techniques and strategies for language teaching centers. By integrating a variety of pronunciation strategies and considering individual learner differences, Persian language education can significantly improve, fostering better communicative competence among learners. The insights gained from this study can help educators

tailor their teaching methods to better address the diverse needs of their learners, thereby enhancing overall language proficiency.

Authors' Contributions

All authors contributed significantly to the research process.

Declaration

We declare that this manuscript is original and has not been submitted to any other journal for publication

Transparency Statements

The authors affirm that the data supporting the findings of this study are available within the article. Any additional data can be obtained from the corresponding author upon reasonable request.

Ethical Consideration

This manuscript adheres to the ethical guidelines provided by the Committee on Publication Ethics (COPE) for ensuring integrity and transparency in the research publication process.

References

Aghaei, K., Ahmadi Mousa Abad, M., & Mohammadi Sarab, M. (2022). Interplay Between Pronunciation-focused Corrective Feedback and Online Educational Synchronic Software in an ESP Course. *Iranian Journal of English for Academic Purposes*, *11*(3), 1-17

Arnaud, P. J. L., & Besse, H. (2013). Language learning strategies and individual learner characteristics: Situating strategy use in diverse contexts. *IRAL-International Review of Applied Linguistics in Language Teaching*, 51(2), 119-135.

Best, C., & Tyler, M. (2007). Nonnative and second-language speech perception: Commonalities and complementarities.

Burns, A. (2003). *Clearly speaking pronunciation in action for teachers*. National Center for English Language Teaching and Research, Macquarie University.

Calka, A. (2011). Pronunciation learning strategies - Identification and classification. In M. Pawlak, E. Waniek-Klimczak, & J. Majer (Eds.), *Speaking and instructed foreign language acquisition* (pp. 149-168). Multilingual Matters.

Celce-Murcia, M., Brinton, D. M., & Goodwin, J. M. (2010). *Teaching pronunciation: A course book and reference guide* (2nd ed.). Cambridge: Cambridge University Press.

Chamot, A. U. (2005). Language learning strategy instruction: Current issues and research. *Annual Review of Applied Linguistics, 25*, 112-130.

Derwing, T. M., & Munro, M. J. (2005). Second language accent and pronunciation teaching: A research-based approach. *TESOL Quarterly, 39*(3), 379-397.

Dornyei, Z. (2005). *The psychology of the language learner: Individual differences in second language acquisition*. Routledge.

Eckstein, G. (2007). A correlation of pronunciation learning strategies with spontaneous English pronunciation of adult ESL learners (Unpublished MA thesis). Brigham Young University.

Ehrman, M. E., & Oxford, R. L. (1995). Cognition plus: Correlates of language learning success. *Modern Language Journal, 79*(1), 67-89.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist, 34*(10), 906-911.

Flege, J. E. (1995). Second language speech learning: Theory, findings and problems. In W. Strange (Ed.), *Speech perception and linguistic experience: Issues in cross-language research* (pp. 233-277). Baltimore: York Press.

Gilakjani, A. P., & Sabouri, N. B. (2016). Why is English pronunciation ignored by EFL teachers in their classes? *International Journal of English Linguistics, 6*(6), 195-208.

Griffiths, C. (2013). *The strategy factor in successful language learning*. Multilingual Matters.

Kim, J. (2021). Pronunciation learning strategy use of EFL learners: Focused on fifth and sixth graders in primary school. *Modern English Education, 22*(2), 35-46.

Kim, S. H. O. (2021). Gender differences in the use of English learning strategies: A study of Korean EFL university students. *The Journal of Asia TEFL, 18*(2), 617-637.

Macaro, E. (2001). *Learning strategies in foreign and second language classrooms*. Continuum.

Marinova-Todd, S. H., Marshall, D. B., & Snow, C. E. (2000). Three misconceptions about age and L2 learning. *TESOL Quarterly, 34*(1), 9-34. https://doi.org/10.2307/3588095

Murphy, J. (2013). *Teaching pronunciation: Tips and techniques*. Cambridge University Press.

Oxford, R. L. (1990). *Language learning strategies: What every teacher should know*. Heinle & Heinle.

Oxford, R. L., & Nyikos, M. (1989). Variables affecting choice of language learning strategies by university students. *The Modern Language Journal, 73*(3), 291-300.

Pawlak, M. (2010). Designing and piloting a tool for the measurement of the use of pronunciation learning strategies. *Research in Language, 8*, 189-202.

Pennington, M. (1994). Recent research in L2 phonology: Implications for practice. In J. Morley (Ed.), *Pronunciation pedagogy and theory: New views, new directions* (pp. 92-108). Alexandria, VA: Teachers of English to Speakers of Other Languages.

Peterson, S. S. (2000). Pronunciation learning strategies: A first look. Retrieved from ERIC Database (ED450599).

Rokoszewska, K. (2012). The influence of pronunciation learning strategies on mastering English vowels. *Studies in Second Language Learning and Teaching, 2*(3), 391-413.

Rubin, J. (1990). Learner strategies: Theoretical assumptions, research findings, and pedagogical implications. In K. M. Bailey & D. Nunan (Eds.), *Voices from the language classroom* (pp. 15-30). Cambridge University Press.

Schunk, D. H., & Zimmerman, B. J. (2007). Influencing children's self-efficacy and self-regulation of reading and writing through modeling. *Reading and Writing Quarterly, 23*(1), 7-25.

Shively, R. L. (2008). L2 acquisition of [β], [δ], and [γ] in Spanish: Impact of experience, linguistic environment and learner variables. *Southwest Journal of Linguistics, 27*(2), 79-114.

Szyszka, M. (2017). *Pronunciation learning strategies and language anxiety: In search of an interplay*. Springer International Publishing.

Thornbury, S. (2006). *How to teach speaking*. Longman.

Vahdany, F., Divsar, H., & Alem, M. (2022). The interface between pronunciation learning strategies (PLS) and pronunciation achievement. *Iranian Journal of English for Academic Purposes, 11*(2), 56-73.

Vandergrift, L., & Baker, S. (2015). Learner variables in second language listening comprehension: An exploration of the interaction framework. *Language Teaching Research, 19*(3), 240-261.

Véliz-Campos, M. (2018). Pronunciation learning strategies, aptitude, and their relationship with pronunciation performance in pre-service English language teachers in Chile. *Iranian Journal of Language Teaching Research, 6*(2), 57-76.

Yetkin, R. (2017). Research into pronunciation learning strategies of pre-service English teachers. *Eurasian Journal of Applied Linguistics, 3*(2), 287-295.