

The Interface between Pronunciation Learning Strategies (PLS) and Pronunciation Achievement

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Abstract

One of the main challenges of learning English in a foreign language setting is mastering its pronunciation. Among different factors which could have their contribution to developing pronunciation such as age, background language, instructional program, and motivation, one can also refer to learning strategies. In fact, different learners may try a variety of strategies to develop better pronunciation skills. However, the extent to which EFL learners succeed could be connected to the type of pronunciation strategies and frequency with which they are used. Therefore, the purpose of this research project was to find out how different learners apply such strategies and use them at two levels of pronunciation achievement. To answer these questions, the researcher investigated the learners' pronunciation strategies under O'malley and Chamot's (1990) three-tier classification of learning strategies, namely cognitive, metacognitive and socio-affective strategies. The participants were 100 EFL learners majoring in English translation at Payame-Noor University. The data collection tools, developed by the researcher, were a test of pronunciation and a Likert-scaled questionnaire. Multiple regression, Beta, ANOVA and descriptive statistics were used to analyze the data. The findings indicated a slight relationship between achievement level and the number and types of strategies deployed by the learners. Moreover, among the three subcategories of PLS, meta-cognitive strategies contributed to this correlation more than the other two sub-categories. Implications were proposed for teaching and developing pronunciation.

Keywords: Cognitive Strategy, Metacognitive Strategy, Pronunciation Learning Strategies (PLS), Pronunciation Achievement, Socio-affective Strategy

1. Introduction

The ability to speak English is becoming increasingly important even in an EFL context like Iran. As such, pronunciation as an immediately visible component of speaking skill attracts attention. In fact, pronunciation can be an important criterion to judge one's speaking skill. On the other hand, poor pronunciation can decrease the learners' self-confidence, restrict social interactions, and negatively affect the speaker's credibility and abilities (Akyol, 2013).

While the significant impact of L1 habits cannot be ignored, learning strategies are among the most noteworthy factors, which can make a meaningful difference between poor and brilliant learners. (Oxford, 1990, 2011). Using efficient strategies is typical of good language learners, as Rubin (1975) mentioned. He highlighted that such learners are eager and precise guessers, are willing to communicate, and have intention to take risks while they are not afraid of making mistakes, analyze patterns by focusing on form, exploit all practice chances, monitor their own language and their peers', and concentrate on the semantic aspect of the language. (Cited in Tabatabaei, Sadighi & Sadegh Bagheri, 2020).

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In their classification, O'Malley and Chamot (1990) identified three types of strategies namely cognitive, meta-cognitive and socio-affective strategies. Cognitive strategies are strategies that "reflect mental manipulation of tasks", such as practicing and analyzing; they facilitate comprehension and production of language. Metacognitive strategies have been defined as "higher order executive skills that may entail planning for, monitoring, or evaluating the success of activity" (O'Malley & Chamot, 1990, p. 44) by the help of which learners manage, direct, regulate, and guide their learning (Wenden, 1991) (Cited in Mohamadpour, Talebinejad & Tabatabaei (2017)). The third category of strategies in their model are known as socio-affective strategies: the social nature of these strategies boost learning through interaction with others including peers and teachers. The affective dimension takes care of emotional well-being such as reducing anxiety and enhancing motivation.

Different learners may have their own preferences in how to practice and develop pronunciation. While some are so academically oriented and check every word in the dictionary with associated phonetic symbols, and use some pronunciation practice books involving a lot of focused rehearsal and repetition, others may not favor such a bookish approach. They only enjoy more natural ways like listening to songs and watching a lot of movies or conversing with native speakers. Some others, however, do not care about their pronunciation. By contrast, there are learners who are highly concerned about their own pronunciation and wish to promote it constantly. (Pawlak, M. 2010; Pawlak, M. & Szyszka, M. 2018).

As such, the present study investigated whether the type and frequency of pronunciation learning strategies affect pronunciation achievement. This study is significant from at least four points of views. On the one hand, it is bringing to the fore learning of a sub-skill, which is gaining more prominence in EFL classes as the need for oral communication is becoming a necessity. In fact, students and teachers find comprehensible pronunciation an indicator of high achievement in overall language learning.

On the other hand, focus on learning strategies for pronunciation has not been given due attention in the field. Although learning strategies have been extensively studied with connection to receptive skills, reading and listening, research on productive skills and pronunciation is still scarce (Peterson, 2000).

The third importance of this study is related to the effort being made to develop a reliable and content valid questionnaire, which could take into account modern technology in pronunciation development based on O'maly and Chamots' (1990) model of learning strategy. In fact, updating questionnaires and other data collection tools to incorporate recent technology of education and communication considering the realities of our classes today is inevitable.

Finally, the Methodological innovation which distinguishes the present study from those of the past is the specifically developed PLS questionnaire which has been developed by the researchers in a pilot study through observation and interviews with the participants. This last advantage was a pointed out by scholars in the field. Pawlak (2018), for instance, expressed concern about some limitations of data collection tools in measuring PLS, pointing out the need for updated tools to measure PLS with higher specificity and precision.

2. Literature Review

2.1. Theoretical Framework

The argument for the emphasis on what learners do in the process of language learning rather than how the teachers should teach them is supported from different perspectives. First, the emergence of Cognitive Psychology in 1970s initiated a shift of attention from environmental stimuli to internal and innate factors, from teachers to learners. The main assumption here is that learning is an internal process involving a meaningful mental mechanism predominantly taking place within the learner and thus is in control of the learner (Ausubel, 1963). As such, learners need to develop a self-awareness of their own learning faculties so as to take over the responsibility for their own progress. They simply need to learn how to learn which would grant them the autonomy in learning.

This principle was voiced by Gattegno (1972) in *Silent Way* in his widely-documented and well-said “subordination of teaching to learning”. Subsequent schools of thought in psychology including Humanism and Constructivism further placed learners and learning process in the center of attention. In Roger’s (1969) *Humanistic Psychology*, learners’ affective and emotional needs are highlighted. In *Social Constructivism*, learners are supposed to reconstruct or recreate knowledge often mediated through social interaction (Vygotsky, 1978).

On the other hand, progress in communication technology prepared the ground for more learner-oriented and autonomous activities. Online social media today is an indispensable part of our everyday life with striking potential to facilitate second language acquisition. This movement evidently adds another strong justification for learning strategy training. Learners need to learn how to employ electronic tools to speed up their progress in mastering a foreign language.

Still another theory supporting learner-centered practice concerns *Interlanguage Theory* (Selinker, 1972). The main theme in *Interlanguage theory* is that second language learners develop language competence over time through exposure to the target language. During their progress, they frequently make hypotheses about the rules of the target language and they test the hypotheses as they receive feedback or further evidence in their day-to-day exposure and interaction. In *Interlanguage theory*, the role of instruction is minimized in favor of a more active internal mechanism for second language acquisition.

The last theory which assigns a very active role to learners in the process of learning is *postmethod pedagogy* (Kumaravadivelu, 2003). In *postmethod paradigm*, learner autonomy is highly valued. Autonomy, according to Kumaravadivelu (2006), in its narrow sense, refers to academic autonomy which helps learners to take charge of their own learning via *learning to learn*; this quality is related to equipping language learners with learning strategies of different kinds including cognitive, metacognitive and socio-affective ones. The present research is concerned with this narrow concept of autonomy and self-regulation.

2.2. *Research into PLS*

So far, there have not been many research projects investigating PLSs choice and use. Taking into consideration the problems associated with poor pronunciation, such as “communication breakdown, anxiety, stereotyping, and discrimination” (Peterson, 2000, p. 3), Trendak (2016) contends that research into PLS has been scarce for a few reasons. To start with, learning target language (TL) pronunciation is a demanding task as it is susceptible to L1 influence and maturational limitations. In addition to this, learning about numerous aspects of TL pronunciation might seem less important when compared with, for instance, the lexis or grammar of the language. What is more, many practicing teachers complain about time limitation in their classes for teaching pronunciation. Hence, they cannot cover as much material connected with TL pronunciation as they would like to. That is not to say that no progress has been made in the corresponding PLS. As Pawlak (2010) reports researchers have started to investigate, among others, the effectiveness of particular instructional techniques and classroom practices or students’ as well as practitioners’ views on pronunciation (Trendak, 2015). The studies conducted so far can be divided into three main types with the first two being the dominant and frequent ones (Rokoszewska, 2012): studies focusing on the identification and description of PLS (e.g., Drożdźiał-Szelest, 1997; Naiman, Frohlich, Stern, & Todesco, 1978; Osborne, 2003, Pawlak, 2008); studies focusing on classifying PLS (e.g., Eckstein, 2007; Peterson, 2000); and studies investigating PLS training (e.g. Varasarin, 2007).

One of the first research projects exploring pronunciation learning strategies dates back to the 1970s. It was then that Naiman et al. (1978) and Rivers (1979) identified a group of tactics related to pronunciation learning. Nearly twenty years later Drożdźiał-Szelest (1997) identified six cognitive and four metacognitive PLSs. Repetition and selective attention were among the most frequent ones. Osborne (2003) identified eight classes of strategies intended to improve pronunciation including imitation and relying on memory. In one of his studies, Pawlak (2008) examined the techniques most frequently deployed by advanced learners of English. It turned out

that the PLSs which proved to be most popular were repeating after the teacher or the tape (58.5%), listening carefully to the target model (35.8%), and making use of phonetic transcription (21.7%). On the other hand, using a dictionary, reading aloud, noting down words, following instructions or highlighting appeared to be less popular among the respondents. Finally, 23% of the students relied on planning their learning, setting new goals, or self-evaluating their progress.

While there are several studies focusing on the identification and classification of pronunciation learning strategies, there are few which address the concept of strategic intervention. One of the few research projects that dealt with this aspect was the one carried out by Bukowski (2004). In his study, the researcher investigated strategy use among first-year EFL college students. When exploring the impact of PLS instruction, Bukowski (2004) concluded that providing the subjects with strategic intervention in metacognitive and affective strategies can result in considerable improvement in pronunciation. Another study is the one conducted by Vitanova and Miller (2002). They focused on the influence and the role of reflection in learning target language pronunciation. They tried to demonstrate how this can help students raise their awareness of PLS. The subjects were EFL students who participated in a graduate pronunciation course in a university setting at different proficiency levels. Based on the findings of the study, Vitanova and Miller (2002) suggested that practitioners should go beyond listen-and-repeat practice and incorporate activities that could teach the learners actually learn how to plan, monitor, evaluate and practice on their own. In other words, metacognitive strategies enhancing autonomous learning were thought to be of first priority in pronunciation development.

In her study investigating how good and poor language learners were different in their PLS, Rokoszewska (2012) found out that the good students used PLS, both the direct and indirect ones, at a higher level. Whereas strategy use for the poor students ranged from around 52% to 62%, for the good students it ranged from 70% to 99%. The differences were substantial in the use of all strategy subgroups. In terms of direct strategies, the good students used memory, cognitive and compensation strategies to a larger extent. More specifically, they were more efficient at memorizing, reviewing, and rote learning. They made memory associations better, reviewed more often, and practiced more regularly. They were involved in different pronunciation activities, like dialogues, drills, transcription exercises, talking to oneself with a focus on pronunciation, more often. They also made better notes. In addition, they were slightly better at compensating for the gaps in their knowledge. Yet, the main difference between the good and the poor students was observed in indirect strategies in that the good students made almost maximum use of metacognitive and social strategies and a very high use of affective strategies. This means that the good students were more efficient at centering, planning and evaluating their own pronunciation learning. In particular, they were aware of what they wanted to achieve, they looked for practice opportunities, and they knew what to focus on, how to divide the learning material into manageable parts, and how to monitor themselves. In addition, they encouraged themselves and had a sense of humor about their mispronunciations. Still, it is important to notice that the mean frequency of direct, indirect and total strategy use was rather low in both groups. This means that, in fact, both groups of students might benefit from strategy training on pronunciation in the future.

Trendak (2016) reported a research project investigating the pronunciation learning strategies deployed by 120 advanced learners of English who were second- and third-year English philology students. The author made use of a questionnaire, diaries and the Strategy Inventory for Language Learning (SILL) to obtain qualitative and quantitative information about the subjects' application of PLS. The study revealed that the most frequently applied pronunciation learning strategies were metacognitive ones. As far as strategies were concerned, more popular ones included paying attention to more proficient speakers' pronunciation, monitoring one's own pronunciation, and looking up pronunciation when preparing a speech in English, whereas planning pronunciation learning was not much attractive. Regarding Cognitive strategies, the participants expressed a strong inclination to use transcription, reading aloud, and looking up pronunciation in a dictionary. Furthermore, the strategy types which attracted less attention among the respondents were Memory, Social Strategies, and Affective strategies.

2.3. Some Studies on Pronunciation in Iran

Several studies on pronunciation have been conducted in Iran even though just a few of them focused on learning strategies. Faghani (2013) investigated the relationship between learners' strategies and pronunciation improvement among EFL learners. Thirty students of pre-intermediate levels in Safir English Institute took part in her research. To measure pronunciation, she had the participants read aloud some chosen words, sentences and a passage from their textbook. A standard checklist including 19 items of different learners' strategies was given to the students as a questionnaire. The questionnaire was researcher-made and was assured in terms of content validity. The strategies were classified into three categories: audio-based, dictionary-based and video-based strategies. In addition, five highly top learners and five of low-level learners took part in an open-ended and learner-oriented interview to indicate what useful strategies made them very successful or unsuccessful in acquiring the English pronunciation. Learners' strategies were ascertained by exploring their thinking model and their language background. The results provided counter-evidence for the claim that unsuccessful learners are not active in the learning process and they sometimes apply strategies inappropriately.

Nathan Doan (2013) investigated the effect of noticing on improving the pronunciation of Persian English language learners. In fact, he assumed that noticing can be created through explicit instruction. He found significant improvement in the experimental group as a result of the treatment. He claimed that the participants were able to improve their results on average by nearly five times. This progress was attributed to noticing as produced by explicit instruction of compound nouns.

Narmani and Karimnia (2015) ran a study of four generations of adult English learners' strategy use in Iran. Twenty learners from four different generations were selected via purposive sampling. The study adopted a mixed-methods design to find out the most frequently-used strategies and the reason(s) why they were popular. The results of this study indicated that memorization and rote learning were the most popular strategies while relying on L1 was the least attractive strategy.

There is some degree of subjectivity associated with these studies which might negatively affect both the internal as well as external validity of the findings. The researchers need to be wary of the fact that respondents often tend to interpret the items in the questionnaire in their own subjective and personalized manner. In fact, quantification of strategies is not a straightforward task. For instance, the same frequency for one given strategy use could be considered as 'very often' for one respondent and 'sometimes' for another. In other words, interpreting frequency is done with personal standards. In addition, these data collection tools usually focus on overall quantity while losing sight of the quality with which such strategies are used. To alleviate such problems, applying triangulation in data collection and opting for more quality-based data over a longer period of time are advisable. The present study seeks to find answers to the following questions:

Research Question One: Is there any relationship between pronunciation learning strategies (PLS) and pronunciation achievement of Iranian EFL learners?

Research Question Two: What PLS are mostly used by high achievers?

Research Question Three: What PLS are mostly used by low achievers?

3. Methodology

3.1. Design of the Study

The design of the study is both descriptive and correlational. On the other hand, this research project adopted an ex post facto design. The two main variables in focus are pronunciation learning strategies and pronunciation achievement. In addition, pronunciation level (low and high-achieving group) is considered as a moderator variable.

3.2. Participants

In order to conduct this study, 100 freshmen university students were selected, from two intact groups, majoring in English translation at Payame-Noor University of Guilan Province, Iran. The demographic data showed that they ranged between 19-30 in age and most of them had the experience of learning English in some language institutes before. The participants were in two classes taking a conversation course.

3.3. Instruments

In this study, two main instruments were used to obtain the necessary data to answer the research questions. These two instruments included a pronunciation test and a PLS questionnaire. The construction and administration process for each is explained below in detail.

3.3.1. Pronunciation Test

In order to assess the participants' pronunciation ability, a pronunciation test was developed by the researcher (Appendix A). The test included three sections. The first part consisted of 15 words with a variety of challenges in terms of difficulty level. The second section included seven sentences and the third was a passage. The sampling was made based on the textbook, Top Notch 2A. The test was reviewed and revised by two experts for content validity. On the other hand, a rating scheme was developed to incorporate different aspects of pronunciation including Segmentals (vowels and consonants) and suprasegmentals (stress, rhythm and intonation) as well as accent. The rating approach was analytic; it means different features of pronunciation were scored separately and the average score was considered as the final score for each individual. To reduce rating subjectivity, two informed and experienced raters carried out the scoring process. The students were scored based on a scale of 1 to 10. Those scoring above eight were considered as high achievers and those below six were deemed as low achievers. Twenty middle scores representing average achievers were excluded in the final data analysis resulting in 100 participants. The test was piloted for reliability through test-retest method resulting in an index of .98.

The administration of the test was online using WhatsApp media. The students were supposed to read aloud the given task, record their voices, and send the recorded files in very limited time. The recorded files were downloaded and rated by two judges for both segmental and suprasegmental features. Accent was taken into consideration as well. The inter-rater reliability was estimated as .91.

3.3.2. PLS Questionnaire

A questionnaire was developed by the researcher based on Omalay and Chamot's (1990) classification of learning strategies. Adopting Omalay and Chamot's (1990) rather than Oxford's (1990) model of strategies stemmed from some basic reasons. First of all, we should not lose sight of the fact that neither of these models was designed specifically for pronunciation skills. They are rather general strategies that could be used in learning any subjects or any language skill. The main issue, however, is which one is more adaptable to strategies commonly used in one area of knowledge or skill. As such, a six-level classification as proposed by Oxford seems rather redundant and overlapping for the purpose of this study; categories such as memory and compensation, for instance, could merge with cognitive strategies. As an example, guessing the pronunciation of a word is a simple cognitive strategy similar to inferencing as a cognitive strategy. Or writing the stress pattern on a new word as a reminder is not very much different from note-taking or highlighting which can reinforce better learning both during the activity and afterward.

As a result, the researcher constructed the related pronunciation strategies for each category. In order to produce more realistic statements, several learners were interviewed. In addition, the produced items were reviewed and refined by two other experts. Moreover, the reliability of the questionnaire was computed using Cronbach Alpha, and it proved reasonably reliable. The index was .78. The PLS questionnaire is accessible in Appendix B.

3.4. Procedure

The participants in this study were divided into two low and high-level learners based on a pronunciation test which consisted of reading aloud of some words, sentences and a text all of which were selected from the course book Top Notch 2A. The test was assured in terms of reliability. In fact, the test was administered two times and Pearson correlation of .98 was obtained which signifies high reliability. The test was administered through Whatsapp application. The students received the test in pdf format and recorded their voices and sent them back to the researcher through the same media. Its content validity was assured by two experienced reviewers. Furthermore, to score the participants' pronunciation ability, two raters were assigned for the scoring process.

On the other hand, based on Omalay and Chamot's (1990) classification of learning strategies, a researcher-made questionnaire, measuring pronunciation learning strategies of the participants was developed. A pilot study was carried out to confirm the reliability and validity of the questionnaire as well. The questionnaire consisted of 33 items in three subcategories: cognitive strategies, meta-cognitive strategies and socio-affective strategies. Unstructured interviews with the students were run so as to obtain information on likely PLSs used by them. Afterwards, the questionnaire items were developed and reviewed by two experts to ascertain its content validity. Its reliability was also measured via Cronbach's Alpha, as .78. The items were arranged on a Likert scale from 1 to 5, suggesting the lowest and highest frequency use for each given item respectively. In order to prevent any ambiguities, all the items were translated into the learners' L1 and the questionnaire was administered by the class instructor and thus his direct supervision in the data collection enhanced respondents' motivation to take the questionnaire seriously. The questionnaire was uploaded in Google Forms and administered through that site.

3.5. Data Analysis

To provide the answer to the first research question, multiple regression that is based on correlation was used to explore the possible relationship between the continuous dependent variable, namely, pronunciation scores and the independent variables including three types of language learning strategy use. Multiple regression provided information about the model as a whole (all subscales) and the relative contribution of each of the individual subscales. It was used to display how well the extent of strategy use was able to predict the participants' pronunciation ability. It also showed which type of strategy use was the best predictor of the pronunciation outcome.

To know which of the three types of strategies included in the model contributed more to the prediction of the dependent variable, Beta was used. To compare the three different strategies, the standardized coefficient was used. First, the values for each of the three strategies were converted to the same scale and then a comparison was made among the three types of strategy use. Beta values were used for comparing the contribution of each type of strategy.

To answer the second and the third question, concerning which strategies were more popular with the high and low achievers, the frequency and percentage for every type of strategy were computed and compared for the two groups.

4. Results

4.1. Inter-Rater Reliability

To score the participants' pronunciation ability, two raters were assigned for the scoring process. The measure of inter-rater reliability for the two raters, which was the Pearson product-moment correlation, is reported in Table 1. The Pearson correlation provided the overall agreement of the two primary raters. The inter-rater reliability measured by the Pearson correlation was ($r=.91$), which was considered to be strong based on Cohen's (1988) guidelines.

Table 1: Correlations Between the Two Raters (Inter- Rater Reliability)

Pronunciation score rater A (pilot study)	Pearson Correlation	Pronunciation score rater B (pilot study)
	Sig. (2-tailed)	.91**
	N	.000
		15

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

As the above table shows, there was a strong correlation between the two raters' scores for the pronunciation test ($p \leq .01$). Given the similarity of ratings by the two raters, the average of the two raters' scores was used as the respondent's pronunciation score.

4.2. The First Research Question

To provide the answer to the first research question, multiple regression that is based on correlation was used to explore the possible relationship between the continuous dependent variable, namely, pronunciation scores and the independent variables including three types of language learning strategy use. Multiple regression provided information about the model as a whole (all subscales) and the relative contribution of each of the individual subscales. It was used to display how well the extent of strategy use was able to predict the participants' pronunciation ability. It also showed which type of strategy use was the best predictor of the pronunciation outcome.

First, as the main assumptions of multiple regression test, issues such as sample size, multicollinearity and singularity, outliers, normality, linearity, and independence of residuals were examined. The sample size was satisfactory with respect to Steven's (1996) recommendation for sample size, since there were one hundred participants in this study. Concerning Multicollinearity, since the independent variables were not highly correlated ($r \leq .90$); this assumption was met for the model.

The next assumption that was examined was multicollinearity. According to Pallant (2011), singularity occurs when one independent variable is actually a combination of other independent variables. Table 2 shows the correlations among the independent variables that were computed for checking multicollinearity assumption as well as the correlation between each of the independent variables and the dependent variable.

Table 2: Correlations among the Three Types of Strategy Use and Pronunciation Ability

		Socio-Affective strategy	Metacognitive strategy	Cognitive strategy	pronunciation score
Socio affective strategy use	Correlation Coefficient	1.000	.157	-.009	.303**
	Sig. (2-tailed)	.	.119	.933	.002
Metacognitive strategy use	Correlation Coefficient	.157	1.000	.183	.563**
	Sig. (2-tailed)	.119	.	.068	.000
Cognitive strategy use	Correlation Coefficient	-.009	.183	1.000	.341**
	Sig. (2-tailed)	.933	.068	.	.001

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

Concerning the Multicollinearity assumption, since the independent variables were not highly correlated ($r \leq .90$); this assumption was met for the model. In addition, it was found that the three types of language strategy use showed a statistically significant relationship with the pronunciation scores ($P \leq .05$). Table 3 shows the strength of the relationship between the model and the dependent variable.

Table 3: Model summary b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.606 ^a	.368	.348	1.13216

a. Predictors: cognitive strategy use, socio-affective strategy use, metacognitive strategy use

b. Dependent Variable: pronunciation score

In the Model Summary table, the value of R Square was (.368). This indicated that the model with three types of strategy use could explain 36.8% of the variance in the pronunciation score. Table 4 presents the results of the ANOVA that was used for diagnosis of linear regression model.

Table 4: ANOVA (Dependent Variable: pronunciation score)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	71.588	3	23.863	18.617	.000 ^b
	Residual	123.052	96	1.282		
	Total	194.640	99			

a. Dependent Variable: pronunciation score

b. Predictors: (Constant), cognitive strategy use, socio-affective strategy use, metacognitive strategy use

As shown in Table 4, the results of ANOVA showed that the model reached the statistical significance ($\text{Sig.} = .00$; $p < .05$). This meant that the strategy use as a predictor could account for the differences in the dependent variable. Tolerance and VIF values were also computed to do collinearity diagnostics for the three types of the strategy use. The results are given in Table 5.

Table 5: Coefficients (Dependent Variable: pronunciation score)

Model		Standardized Coefficients Beta	T	Sig.	Correlations			Collinearity Statistics	
					Zero-order	Partial	Part	Tolerance	VIF
	Socio-affective strategy use	.23	2.86	.005	.27	.28	.23	.99	1.00
	Metacognitive strategy use	.45	5.43	.000	.52	.48	.44	.94	1.06
	Cognitive strategy use	.21	2.55	.012	.31	.25	.20	.95	1.05

Tolerance was computed to show the extent of the variability of socio-affective, metacognitive, and cognitive strategies that was not explained by the other independent variables in the model. Since these values for the three types of strategy use were higher than (.10) it indicated that the multiple correlations with other variables was low, rejecting the possibility of multicollinearity in the model. Variance inflation factor (VIF) was also computed for the types of strategy use. VIF values above (10) would indicate multicollinearity (Pallant, 2011). All three VIF values reported for the strategies were lower than (10), again nullifying the possibility of multicollinearity.

To know which of the three types of strategies included in the model contributed more to the prediction of the dependent variable, Beta was used. To compare three different strategies, the standardized coefficient was used. First, the values for each of the three strategies were converted to the same scale, and then a comparison was made among the three types of strategy use. Beta values were used for comparing the contribution of each type of strategy. The largest beta coefficient was for the metacognitive strategy use (beta= .45). This meant that in general, metacognitive strategy use made the strongest contribution to explaining the dependent variable (pronunciation score). The Beta value for socio-affective, and cognitive strategy use were (.23, and .21) respectively, indicating that metacognitive strategies made the highest unique contribution and cognitive strategies made the least unique contribution.

The Sig values indicated that all the three subscales made statistically significant unique contributions to the equation. Since the Sig values were all less than (.05), the three types of strategy use made a significant unique contribution to the prediction of the dependent variable which was pronunciation score. Part correlation coefficients indicated the extent of the total variance in the dependent variable that was uniquely explained by that strategy type. The highest part correlation (.44) was found for the metacognitive strategy use, again confirming that metacognitive strategy contributed more than cognitive and socio- affective strategies to the prediction of the pronunciation score. The results of the data analyses rejected the null hypothesis and showed that there was a positive relationship between using language learning strategies and EFL learners' pronunciation ability. The following scatterplot illustrates the relationship between total strategy use and pronunciation scores.

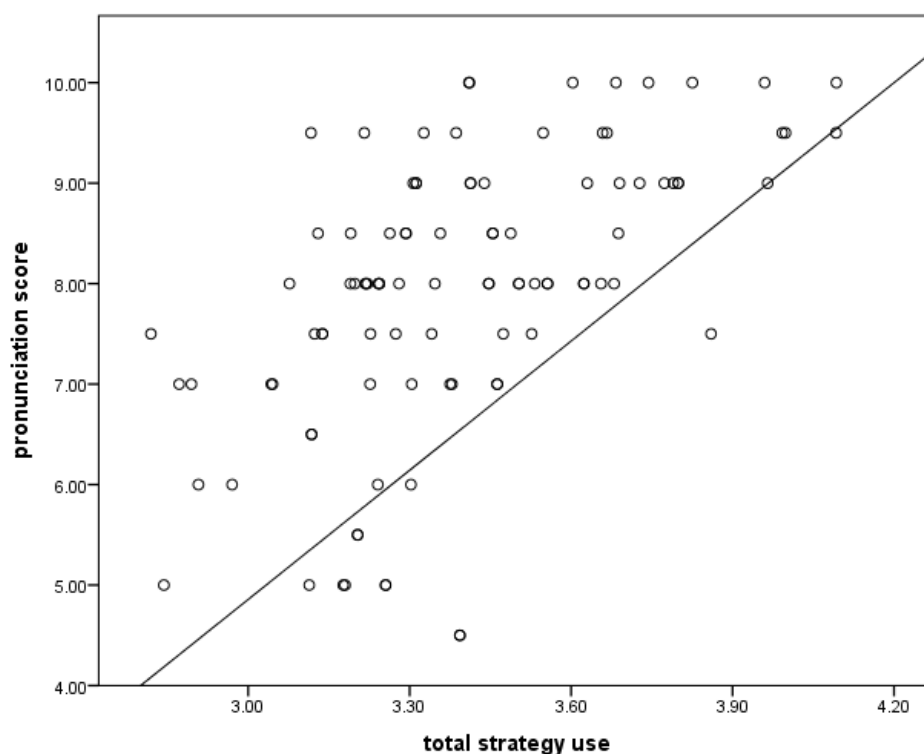


Figure 1: The Relationship between Total Strategy Use and Pronunciation Scores

There appeared to be a positive correlation between the two variables. The scatterplot suggested a definite relationship between the two variables, with larger values of pronunciation scores tending to be associated with larger values of foreign language strategy use.

4.3. The Second and Third Research Question

To provide answers to the second and third research questions, a cut point was set and the participants were divided into two categories. The total mean score for the pronunciation test was

($M= 7.97$) with standard deviation score of ($SD= 1.40$). Those who scored (<6) in the pronunciation test were considered low achievers. In contrast, the participants who scored (≥ 8) were high achievers. Table 6 shows the distribution of the participants in terms of pronunciation scores.

Table 6: Distribution of the Participants with Respect to their Pronunciation Scores

		Frequency	Percent
Valid	low achievers	36	36.0
	high achievers	64	64.0
	Total	100	100.0

Form among the total participants, there were ($n=64$, $P= 64\%$) high achievers who scored equal to or higher than (8) in the pronunciation test. In comparison, there were ($n=36$, $P= 36\%$) who scored lower than (6) and considered to be low achievers. Table 7 presents the results of the group statistics for the low achievers and high achievers' uses of strategies.

Table 7: Group Statistics for the Strategy Use of High and Low Achievers

Groups		N		Mean	SD
		Valid	Missing		
Socio-affective strategy use	low achievers	36	0	3.48	.35
	high achievers	64	0	3.81	.51
Metacognitive strategy use	low achievers	36	0	3.33	.25
	high achievers	64	0	3.68	.38
Cognitive strategy use	low achievers	36	0	2.82	.48
	high achievers	64	0	3.02	.42
Using bilingual dictionary	low achievers	36	0	3.33	1.12
	high achievers	64	0	2.46	1.28

Concerning the use of socio-affective strategies, low achievers ($M= 3.48$) used lower degrees of socio-affective strategies compared to those employed by high achievers ($M=3.81$). Furthermore, high achievers used higher metacognitive strategies ($M= 3.68$) compared to low achievers ($M= 3.33$). Additionally, for the cognitive strategies, higher achievers ($M= 3.02$) activated higher degree of cognitive strategies than low achievers ($M= 2.82$). However, when it comes to the application of bilingual dictionary, high achievers ($M= 2.46$) reflected lower utilization of bilingual dictionaries contrasted to low achievers ($M= 3.33$).

5. Discussion

The current study primarily focused on the relationship between pronunciation achievement and PLSs. Previous studies suggested that more proficient learners make use of a wider repertoire of strategies than less proficient learners (Dreyer & Oxford, 1996, Ehrman & Oxford 1990, Green and Oxford, 1995). On the other hand, some other researchers (Anderson, 2005) claimed that what could make a difference between good and poor learners is not just the number or type of strategies deployed by the learners, rather the quality with which the strategies are applied could have a more significant impact, especially on a long run. Thus, whether one uses monolingual or bilingual dictionary may not seem much different on a few occasions, but in a longer period of time, this alternative seems to be quite decisive in forming the building block of a learner's language positively or negatively.

The results of the present study can be compared with the results obtained by some researchers in the related literature, even though the main model employed by most of the studies was Oxford's (1990) classification and not that of O'Malley and Chamot's (1990).

The findings of this study contradicts those of Pawlak's (2006) who found preference for the cognitive strategies of repeating words and sentences as well as learning and applying pronunciation rules. However, the fact that Pawlak (2006) discovered some meta-cognitive strategies like "self-evaluation" as frequent could be said to be in line with the results of the current study.

Using Oxford's inventory of learning strategies, Olga Trendak (2016) explored the PLS of students in the Faculty of Philology in Poland. She found out that the most frequently applied pronunciation learning strategies were metacognitive ones. The most popular strategies within this group were paying attention to more proficient speakers' pronunciation (100%), monitoring one's own pronunciation (98.3%), and looking up pronunciation when preparing a speech in English. As for social strategies, nearly 80% of the participants reported asking others for help in case of pronunciation problems. Affective strategies proved to be the least popular among the six types with a mean of 2.5. However, Trendak (2016) did not consider any variable such as proficiency level which could contribute to the distinction between different learners in terms of their PLS.

The study of PLS with respect to taking or not taking a formal instruction pronunciation by Tugce Akyol (2013) revealed that the students without having special training relied on authentic input available such as movies and songs to improve their pronunciation. Whereas those given pronunciation instruction used more academic-oriented strategies such as recording one's voice and comparing it with a good model. Preparatory class students also favored affective strategies. It seems that affective strategies enhance the level of self-confidence regarding better pronunciation. As for cooperative strategies, the interesting finding was that while beginner learners depended on others to receive help for their pronunciation, higher-level learners tried to promote their own pronunciation via tutoring and helping others.

The results of the current research cannot lend support to that of Hişmanoğlu (2012). He used a questionnaire comprising 42 5-point Likert scale items and correlated it with pronunciation scores on the final examination. He discovered that metacognitive PLSs and affective strategy were most often used by high rather than low achievers. Such sharp contrast was not detected in the present research.

Rokoszewska (2012) who studied the influence of pronunciation learning strategies on mastering English vowels came up with similar findings. Regarding direct PLS, the students employed the three strategies (memory, cognitive and compensation strategies) roughly at the same level. As for indirect PLSs, metacognitive strategies were more attractive than affective and social strategies. It was important to notice that, in general, the use of metacognitive strategies in Rokoszewska's (2012) study was the highest of all among the direct and indirect groups of PLS. This result was somehow in line with the results in the current study where socio-affective and meta-cognitive PLS were more frequently used than the cognitive strategies.

The findings of the present study lend direct and explicit support to the findings in Faghany (2013). In her research, Faghany (2013) classified PLS into three categories namely, video-based, audio-based and dictionary-based strategies with 13 tactics. There was a "small" correlation between strategy use and pronunciation skill of Iranian EFL students. Accordingly, it could be said that If we accept the assumption that both high- and low-achieving EFL learners employ similar strategies with similar frequencies, the question remains what causes the actual difference between the two groups. Evidently, one single factor cannot cause a big significant difference. Other variables which could possibly influence the outcome include age, type of exposure, personal goals, language identity, type and intensity of motivation, instructional factors, aptitude as well as attitude. Moreover, the quality with which such strategies are used could be quite different. More proficient learners probably use their PLS more effectively.

Employing a semi-structured interviews Samalieva (2000) found out that more competent learners have a higher awareness of their own challenges and use more metacognitive PLS while less proficient ones prefer teacher or peer correction. It can be inferred that based on such findings low-achieving learners were more dependent on their teachers' for pronunciation practice and more

proficient ones tended to be more autonomous tendencies in this respect. However, such a contrast between less and more proficient learners were not found out in the current research.

The findings of the present study are also congruent with those of Vitanova and Miller (2002) who found out that most students believed in the importance of metacognitive PLS as well as affective factors including self-confidence in verbal communication. By contrast, the results of the present study are not in line with the study conducted by Pawlak (2011) who used a diary with participants responding to five prompts. In his study, the students showed a tendency towards more cognitive rather than metacognitive strategies. He found out that most learners focused on issues discussed during pronunciation classes, did not have long-term plans in pronunciation learning, and concentrated on immediate problems and solutions; most frequently used PLS were cognitive: repetition, transcription and consulting a dictionary.

As concerns the connection between pronunciation achievements and the type and frequency of PLS use, the results of the present study supported the findings in similar studies. Berkil (2008), for instance, found no significant correlation between overall PLS use and attainment; Similarly, Campos (2015) reported no major correlations between the frequency and duration of PLS use and pronunciation performance. Furthermore, Rokoszewska (2012) discovered low yet statistically significant positive correlation between PLS use and production of English sounds but no significant correlation between PLS use and sound perception. Accordingly, it seems that what makes a difference between high- versus low-achieving learners is a matter of quality rather than quantity and type of PLS preferred.

6. Conclusion and Pedagogical Implications

The present research tried to explore the PLS used by Iranian EFL learners at two proficiency levels. The findings did not show a very significant relationship between favored strategies and the corresponding levels. In other words, both groups displayed a tendency to use most of the strategies under the three subcategories of cognitive, metacognitive and socio-affective strategies. However, what could make a difference between low and high achievers was the quality with which such strategies were used. Accordingly, the implications for both teachers and learners are to enhance the quality and intensity of pronunciation practice for better results. On the other hand, textbook writers need to incorporate more communicative-oriented activities which could give the learners more authentic and interesting practice with pronunciation. Finally, a very important point to be always weary of is counterproductive learning strategy development. Strategies such as guessing word pronunciation based on their spelling, using bilingual or nonstandard dictionaries, and L1 transcription of target language words are some prevalent cases often observed in low achievers. Practicing teachers are advised to spend ample time raising awareness about such harmful strategies and to plan training sessions for better strategy development.

The current study presented some evidence about PLS used at two levels namely high- and low-achievers. The design of the study was descriptive-correlational based on a self-reported questionnaire following the three-tier classification of Omaly and Chamot's (1990). Nevertheless, this study and its corresponding data, could not present conclusive and compelling evidence about what exactly the learners do regarding developing their pronunciation. As such the following suggestions for further research are proposed:

1. The interested researchers can conduct a fully qualitative and case study investigating day-to-day progress of selected students across different proficiency levels, age, gender, personality, cultural identity, socioeconomic background, motivation, attitude and other related variables and their corresponding PLS. Such studies should have the power of delving into the intricate complexities of choosing and using PLS.
2. Preoccupation with frequencies and quantity should be supplemented with the concern for the efficiency and quality with which such strategies are actually deployed by the learners. Therefore, there is an urgent need in future research studies to adopt a deeper and more comprehensive approach in studying PLS.

3. The relationship between teaching strategies and learning strategies in the domain of pronunciation is another candidate for research. In such studies, a historical perspective to detect the contributions of different teachers over a longer period, rather than a single teacher over a short period of time under research condition, yields more reliable and valid results.

4. Counterproductive learning strategies such as using bilingual dictionaries and guessing the pronunciation of the words without checking them in a reliable dictionary or writing the pronunciation of new words using L1 alphabet system rather than using phonetic symbols, lack of knowledge of the phonetic alphabet, being exposed to and imitating nonstandard models of speaking in the target language can each have a negative impact on the pronunciation skill of the learners. Such strategies need to be taken into account in evaluating PLS in learners. In the current study, only one of these strategies, using bilingual dictionaries, was included in the questionnaire and the result obtained was noticeable. Future research, can take into account other less productive strategies.

5. Last but not least, trainability, as a technical term to be used for teachability, of PLS should be a topic of great appeal. It is important to find out how PLS develop over time and whether trainer's intervention can influence the adopted PLS on the part of the learners or not.

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9. Conflict of Interest

The Authors declare that there is no conflict of interest.

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Appendix A: PLS Test: Test of pronunciation

Part 1: Read the following words aloud.

1. customs	6. thrilling	11. powerful
2. examine	7. comfortable	12. congratulations
3. familiar	8. facial	13. message
4. exposure	9. thought-provoking	14. inattentive
5. satisfactory	10. determine	15. multitasking

Part II: Read the following sentences.

1. I've heard it is pretty violent.
2. Most clients give the stylist a Euro or two each.
3. It's true that liposuction can remove fat deposits that don't respond to dieting or exercise.
4. What have you been up to recently?
5. Maintain a safe following distance of three seconds behind the car in front of you.
6. What time can you pick me up?
7. Is there anything else you want to know?

Part III: Read the following passage.

Reading: Six tips for defensive driving (Top Notch 2A, Unit 4, page. 46)

Appendix B: PLS Questionnaire in English

Cognitive:

- | | |
|----|--|
| 1 | I use bilingual dictionary. |
| 2 | I use monolingual dictionary and read phonetic alphabet. |
| 3 | I use speaking monolingual dictionary in my mobile. |
| 4 | I use speaking monolingual dictionary in my computer. |
| 5 | I make a distinction between British and American accents. |
| 6 | I have the ability to read and write phonetic alphabet. |
| 7 | I practice using a pronunciation textbook to improve my pronunciation. |
| 8 | I write the phonetic form of the new words above the words in my book or in a notebook. |
| 9 | Paying attention to the pronunciation of actors/actresses while watching a movie in the Target language. |
| 10 | I listen to music in the Target language. |
| 11 | I record my own voice while reading a passage and compare my pronunciation with that of the model. |
| 12 | I read aloud to improve my pronunciation. |

Meta-cognitive:

- | | |
|----|---|
| 1 | I have a specific plan and schedule for improving pronunciation. |
| 2 | It is important for me to improve my pronunciation. |
| 3 | I am aware of how to improve my pronunciation. |
| 4 | I am aware of my strengths and weaknesses in pronunciation. |
| 5 | I compare my pronunciation with other students. |
| 6 | I monitor my own pronunciation accuracy |
| 7 | I try to adopt British or American accent. |
| 8 | When others speak, I evaluate their pronunciation accuracy. |
| 9 | I know what makes a good pronunciation |
| 10 | I am aware of the distinctions between British and American accent. . |

Socio-affective:

- | | |
|----|---|
| 1 | I welcome my teachers' correcting my pronunciation errors and try to avoid them in future. |
| 2 | I would like to follow live models of good pronunciation like our instructors and native speakers. |
| 3 | When others speak English, I pay attention to their pronunciation and notice their mistakes if any. |
| 4 | I would like to speak with English-speaking people face-to-face. |
| 5 | I would like to speak with English-speaking people via the internet or through social networks. |
| 6 | I would like to inform my classmates about their pronunciation errors. |
| 7 | I ask other people about the level of my pronunciation. |
| 8 | I make use of other people's ideas about the correct pronunciation of words. |
| 9 | I volunteer for reading aloud in my classes. |
| 10 | I enjoy presenting lectures in front of students in my classes. |
| 11 | I would like to sound like native speakers. |