The Relationship between the Use of Language Learning Strategies by Iranian Learners of English, Their Foreign Language Proficiency, and the Learners' IQ Scores

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Abstract

The present study was conducted with the aim of shedding light on the learning strategy use of Iranian learners of English across three proficiency levels. The following three research questions were addressed in this project:

1. Which language learning strategies are more frequently used by Iranian English learners?
2. Are there any relationships between the type and the number of language learning strategies used by Iranian learners of English and their L2 proficiency level?
3. Is the frequency of L2 strategy use related to the learners' intelligence test scores?

One hundred and twenty eight English major Iranian university students (83 female, 45 male) participated in this study. Data analysis of the results of the study showed that there is a positive relationship between the use of L2 learning strategies by the subjects and their proficiency scores and that the category of Compensatory learning strategies is the best predictor of the subjects' L2 proficiency. No significant relationship was found between the subjects' strategy use and their IQ scores, while the statistical analysis of the findings indicated that learners of different proficiency levels had different patterns of L2 learning strategy use.

Keywords: Language learning strategies, IQ, L2 proficiency, Iranian EFC students.

Introduction

The field of foreign/second language teaching became familiar with the concept of language learning strategies through the work of Rubin (1975). The behaviors good language learners engaged in (Naiman et al. 1978) became the focus of research in the hope of making some

generalizations and recommendations about how to increase the efficiency of L2 learning/teaching. Since then, numerous studies and textbooks addressing the different aspects of the use of learning strategies in language learning situations have been published, and many MA and Ph.D. dissertations have been devoted to the topic.

Language learning strategies are defined by Cohen (1998) as " the conscious thoughts and behaviors used by learners with the explicit goal of improving their knowledge of a target language" (p. 68). Such strategies are usually contrasted with communication strategies, which are, unlike learning strategies, concerned with the production of L2 output, not its acquisition and internalization. Language learning strategies are also contrasted with learning styles due to their problem-oriented nature: Strategies are used when a learner is faced with a specific learning difficulty, and his/her strategic approach may change in accordance with the nature of the learning problem faced. Styles, on the other hand, are relatively fixed and do not change dramatically from one learning task to the next (Brown, 1994).

There are now different classification systems available for language learning strategies. O'Malley and Chamot (1990) divide learning strategies into three groups of Meta-cognitive, Cognitive, and Social/Affective. Meta-cognitive learning strategies are "higher order executive skills that may entail planning for, monitoring, or evaluating the success of a learning activity"(p.44), while Cognitive learning strategies "operate directly on incoming information, manipulating it in ways to enhance learning" (ibid.). Social/Affective strategies are concerned with the control of affect and interaction with the others. In another classification, Oxford (1990) makes a distinction between two broad classes of language learning strategies: Direct and Indirect. Direct language learning strategies deal with "language itself in a variety of specific tasks and situations" (p.14) while Indirect learning strategies are for "the general management of learning" (p.15). Direct language learning strategies include Memory strategies (for storing and retrieving new information), Cognitive strategies (for comprehending and producing language), and compensation strategies (for overcoming gaps in the learner's L2 knowledge). In the Indirect

category, Oxford refers to Meta-cognitive learning strategies (dealing with the coordination of the learning process), Affective strategies (concerned with the emotional regulation of second language learning), and Social strategies (related to learning through interaction with others). Cohen (1998) has another classification which is to a large extent similar to the one offered by O'Malley and Chamot, (1990).

Various research projects have investigated the relationship between the use of language learning strategies and either Cognitive, Affective, linguistic, or instructional variables, with sometimes contradictory results. There is no published research project, as far as the present researcher knows, addressing the language learning strategy use of Iranian learners of English as a foreign language (an exception is Lachini, 1997, referred to in the review section of the present paper). The researcher in this study aimed at finding the answer to the three following questions:

1. ***Which language learning strategies are more frequently used by Iranian English learners?***
2. ***Are there any relationships between the type and the number of language learning strategies used by Iranian learners of English and their L2 proficiency level?***
3. ***Is the frequency of L2 strategy use related to the learners' intelligence test scores?***

The inclusion of the variable of intelligence in the second research questions is due to the fact that intelligence itself can be viewed as the ability to solve problems. In other words, one can assume that language learning strategies and intelligence are of the same nature, one dealing with problems at a broad level (intelligence) and the other tackling just language learning problems (language learning strategies). It is a hypothesis in this study that those who make frequent use of language learning strategies are of a higher IQ score compared to the less efficient users of language learning strategies. Frequency of strategy use here is defined as the learners'

performance on Strategy Inventory for Language Learning (SILL), a likert-type questionnaire used for measuring the learners' reported use of language learning strategies.

Review of the related literature

The available literature on the use of language learning strategies is rather bulky and exhaustive, and it is not possible to present the readers with a detailed chronological report of findings in a short paper. Consequently, only a selection of the recent published research is treated here. There seems to be, however, similarities and differences in the strategy use pattern of the learners according to their nationality, age, and proficiency level, and it is the belief of the present researchers that the following synopsis is a relatively good representation of the available research.

Ehrman and Oxford (1995), in an impressive study, investigated the effect of cognitive aptitude, learning strategies, learning styles, personality type, motivation, and anxiety on the speaking and reading proficiency of 885 learners of Spanish, Cantonese, German, and Romanian as a foreign language. The study found that among the factors addressed, Cognitive aptitude showed the highest correlation with both L2 speaking and reading. Using SILL (Strategy Inventory for Language Learning) developed by Oxford (1990) to measure the strategy use of the learners, the researchers found that only Cognitive learning strategies had a significant correlation with the subjects' proficiency.

Lachini (1997) studied the learning and communication strategy use of intermediate, upper-intermediate, and advanced Iranian learners of English as a foreign language. Sixty subjects participated in this study. The subjects were divided into different proficiency groups with reference to their scores and the standard deviation of the results. Basing his strategy model on that of O'Malley and Chamot (1990) and using a likert-type questionnaire developed by the researcher to measure the strategy use of the learners, Lachini found that Cognitive strategies were the most frequently used learning strategies, followed by Meta-cognitive and Social Affective strategies. The researcher also found that the upper-intermediate learners used more learning

strategies compared to the other proficiency groups. There are a number of problems associated with Lachini's research, however. First, he does not specify on what grounds he has opted for O'Malley and Chamot's model, when there is a consensus in the literature that Oxford's classification is the most extensive strategy description available (Ellis, 1994). In addition, no information is given regarding the validity and the reliability of the instrument used by the researcher for the investigation of the strategy use of the subjects. Another problem with the research is the fact that the researcher has used nonparametric statistical techniques (basically chi-square) to determine and evaluate the strategy use of the learners participating in the study. The problem with this statistical technique is that it requires frequencies, and likert-type questionnaire assigns points or scores to different levels of strategy use: we do not have raw frequencies in likert–type questionnaire to make use of nonparametric procedures. Consequently, Lachini's findings must be interpreted with caution.

Sheorey (1999) investigated the strategy use pattern of Indian learners of English. Through the use of a learning strategy questionnaire developed by the researcher, he found that Indian learners of English relied more heavily on Meta-cognitive strategies and Cognitive-Memory learning strategies. He also found that female learners made more extensive use of language learning strategies compared to male learners, a point also reported by O'Malley and Chamot (1990).

Chamot and El-Dinary (1999) investigated the learning strategies of child L2 learners in immersion programs. The research question addressed in the study was: which learning strategies are used by more effective and less effective child learners in elementary foreign language immersion programs? Using a think-aloud method for data collection, the researchers found that low proficiency learners used a greater number of phonetic decoding strategies compared to high proficiency learners. They also found that high proficiency learners used a greater proportion of background strategies (such as

inferences, predictions, and elaboration) than did low proficiency students.

Bremner (1999) studied the strategic behavior of Hong Kong learners of English as a second language. Two research questions were addressed in this project:

1) What type of strategies do Hong Kong learners of English report themselves as using? and 2) What is the association between levels of strategy use and second language proficiency? The researcher divided a group of 149 learners into three proficiency groups based on their proficiency test scores. The strategic use of the learners was measured through the use of SILL. The study revealed that Hong Kong learners made extensive use of Meta-cognitive and Compensatory strategies. In addition, the researcher found that the use of language learning strategies changes according to the proficiency level of the students. Advanced students seemed to be using more Compensatory and Cognitive strategies compared to less proficient students.

Mochoizuki (1999) studied the strategy use behavior of university level Japanese learners of English as a foreign language. Three research topics were addressed in this study, namely, the kinds of strategies Japanese university students use, factors affecting the learners' choice of strategies, and the reliability of the learners' self-evaluation of their language proficiency. The researcher found that more proficient learners made more extensive use of Cognitive and Meta-cognitive learning strategies compared to their less proficient counterparts. Affective learning strategies were among the least used strategies. The study also found that one of the factors affecting the strategy use of the learners is major: English major students used Compensation strategies, Social strategies and Meta-cognitive strategies more frequently than non-English major students. Motivation and sex were the two strong predictors of strategy use, with highly motivated students using more language learning strategies, and female learners being more inclined to resort to language learning strategies compared to the male students. With regard to the learners' evaluation of their own language proficiency, the research found that such judgements were not reliable predictors

of strategy use. The instrument used for data collection in the study was SILL, the eighty-question version.

Intelligence

Turning now to intelligence, one finds that it has always been a thorny issue in education due to its negative and racial connotations (see, for example, Ceci, 1996; Oller, 1997). The results of intelligence tests have been used to exercise discriminatory policies against ethnic and linguistic minorities. The idea of intelligence, which has been socially linked to Darwin's theory of evolution, has had devastating effects on the lives of millions who due to linguistic or cultural differences have been labeled as "slow learner", "educationally subnormal" or " retarded in achievement" (Roleff, 1996).

But apart from the misinterpretations of intelligence test scores and the discriminatory connotations of the term, we cannot deny the existence of differential mental abilities in different individuals. Moreover, research has shown that what the intelligence tests measure is directly related to the students' academic success (Fontana, 1988). Since in all foreign language teaching situations all L2 learning takes place in formal classroom settings, intelligence becomes of special importance to the success or failure of the learners.

In L2 teaching literature, one of the first researchers addressing the relationship between intelligence and language was Oller (1978). Oller believed that IQ tests basically measure language proficiency, and that what is called intelligence is, in fact, the same as linguistic facility. In his words, "language proficiency, rather than innate intelligence, may account for the lion's share of variance in the so-called IQ tests and in achievement tests as well" (p. 1). In his article, Oller brings evidence supporting his idea of a close connection between language proficiency and intelligence: 1) statistical evidence indicating a close relationship between performance on intelligence tests and measures of language proficiency; 2) striking similarities between IQ tests and language proficiency tests in terms of their content; and 3) neurolinguistic evidence showing overlaps between the areas responsible for language and performance on IQ tests.

The same idea is more forcefully pronounced in Oller (1997). According to Oller, supporters of innate views of intelligence suffer from what he terms monoglottis, a term he defines as language or dialect blindness. People who suffer from this syndrome become impervious to the role language and dialectal variations play in the test performance of the testees. Oller believes that most of the advocates of the innate view of intelligence ignore the role of language in IQ measurement, incorrectly interpreting language proficiency for inborn problem solving ability or intelligence. According to Oller, all the verbal measures of intelligence, as well as all the pictorial or nonverbal measures are, in a sense, language dependent, related to the subjects' linguistic performance. In case of the nonverbal IQ tests, for example, Oller argues: " The strict theoretical argument demonstrates that access to any conceivable abstract idea (i.e., any comprehensible or translatable thought about objects, relations between objects, relations between relations, etc.) absolutely requires conventional signs of the linguistic kind" (p. 488). It is not in the scope of this paper to evaluate Oller's contentions regarding the innateness of intelligence. However, it seems that Oller is so averse to the concept of innateness that he ignores some observed facts put forward by the proponents of the genetic view of intelligence. If intelligence is really a matter of environment, and basically of language proficiency, as Oller claims, why doesn't it change during one's lifetime? We know that as children's age increases, so does their language proficiency. Then we should expect to find a steady increase in the IQ score of the children in accordance to their age. However, it is an established fact that one's IQ remains relatively constant during his/her lifetime. In addition, Oller must explain why children who are born and raised in the same family show different IQ scores, and why identical twins, who share the same set of genes, show correlations as high as %85 between their IQ measures?

The unfortunate fact related to the use and the interpretation of IQ measures is that the concept of intelligence has been tied to racial and discriminatory policies, especially in the USA, from its inception. It is the present researchers' contention that in academic situations and discussions the concept of intelligence must be interpreted without its

segregatory connotations. Language teachers as members of the academic community must not be barred from investigating the relationship between IQ and the various aspects of language as long as discriminatory decisions are not made based on their findings. Intelligence, as a cognitive variable, should receive its fair share in the foreign language teaching literature, and the impact of intelligence on the L2 linguistic/communicative performance of the learners must be addressed and studied.

The problem of measurement referred to by critics of IQ testing does not mean that the concept must be ignored altogether. In the measurement of any psychological trait one will be faced with the question of validity, and discussions of validity and reliability are among the most common issues of any language testing seminar and discussion. For example, there has been a relatively lengthy argument in language testing literature regarding the validity of TOEFL (see, for example, Al-Musavi and Al-Ansari, 1999). However, we see TOEFL is still being used as a basis for decision-making in many national and international contexts. The same argument can be put forward for the current tests of intelligence. The available instruments can be used for the measurement of intelligence of subjects provided that in the interpretation of the results the arguments of opponents are taken into account.

Method

Subjects

One hundred twenty eight English major Iranian university students (83 female, 45 male) participated in this study. The selection of the subjects was at a random basis to ensure that they represent a wide range of different proficiency levels. Some of the subjects were freshmen/sophomore BA students of English translation (76), while others were either senior BA or first year MA students of TEFL (52).

Instrumentation

The following research instruments were used to measure the variables studied in this project:

1. A retired version of a Michigan proficiency test, the listening section of which was omitted due to administration problems. There were one hundred multiple-choice questions in test, measuring the learners' vocabulary, structural, and reading comprehension ability in English. The reliability of the instrument for the sample, using KR-21, was found to be 0.89.
2. Strategy Inventory for Language Learning (SILL) developed by Oxford (1990). There are fifty likert-type statements in this questionnaire, each dealing with one of the strategic aspects of the subjects' behavior. The fifty statements in the inventory quantify the subjects' use of Memory, Cognitive, Meta-cognitive, Social, Affective, and Compensatory strategies. A number of studies using SILL for data collection purposes have found reliability indexes ranging from 0.91 to 0.95 (Oxford, 1996). Factor analysis of the instrument resulted in six factor loadings (ibid.). To remove any possible complexity resulting from the limited L2 proficiency of some of subjects, the instrument was translated into Persian, the subjects' mother tongue. The reliability of the instrument for the present study using test-retest with a sample of 30 of the subjects was found to be 0.81.
3. Cattell scale three intelligence test. The instrument is divided into four subtests, including a total of 50 items (subtest one = 13 items, subtest two = 14 items, subtest three = 13 items, and subtest four = 10 items). Cattell scale 3 intelligence test is a nonverbal, pictorial measure of intelligence. It is recommended for use with university students (Aiken, 1985), with a relatively high reliability. The nonverbal nature of the instrument makes it neutral to the linguistic differences which may affect the IQ score of the subjects. In addition, the absence of any language-related items in the test means that the instrument is culturally neutral, or culture fair, in its measurement. The test-retest reliability of the instrument with a sample of 30 of the subjects was calculated to be 0.79.

Procedures

All the participating subjects were first administered the Michigan test to determine their English proficiency. Based on the standard deviation of the scores obtained, the subjects were divided into three proficiency groups of elementary (half a standard deviation below the mean), intermediate (scores falling in the range of +/- 0.5 standard deviations above and below the mean), and advanced (more than .05 standard deviation above the mean). The descriptive statistic related to the language proficiency of the subjects is reported in table 1.

Table 1. The descriptive statistics of the subjects' proficiency test

	N	Minimum	Maximum	Mean	Std. Deviation
proficiency	128	7.00	68.00	29.9823	13.0671

With the mean of 30 and the standard deviation of 13, students whose scores fell within the range of 24 to 36 were regarded as intermediate (43 subjects), those scoring below 24 were taken to be elementary (45 subjects), and subjects with scores more than 36 were placed in the advanced category (40 subjects).

The subjects were also administered SILL to measure their use of language learning strategies. Table 2 presents the descriptive statistics related to the strategy use of the subjects:

Table 2. The descriptive statistics of the subjects' strategy use

	N	Minimum	Maximum	Mean	Std. Deviation
total SILL	128	13.00	28.60	20.0226	2.8590

With the interval of a week, the subjects were administered Cattell scale three intelligence test. Table 3 displays the descriptive statistics of the IQ scores of the subjects:

Table 3. The descriptive statistics of the subjects' intelligence

	N	Minimum	Maximum	Mean	Std. Deviation
intelligence score	128	51.00	123.00	89.8047	12.7112

Results and discussions

The results of the strategy use of the subjects in each strategy category is reported in Table 4:

Table 4. The results of the performance of the subjects on individual strategies

	N	Minimum	Maximum	Mean	Std. Devi.
Memory	128	1.9	4.7	3.3133	.5298
Affective	128	1.3	4.3	2.6727	.5932
Compensatory	128	1.6	5.0	3.3336	.7788
Cognitive	128	1.46	4.8	3.2805	.6358
Meta-cognitive	128	1.6	5.0	3.9734	.6429
Social	128	1.0	5.0	3.4500	.8027

A cursory examination of the results obtained indicates that Meta-cognitive learning strategies seem to be used more frequently compared to other strategy types. To answer the first research question which addressed the strategy use pattern of Iranian learners of English, the means of the separate strategy categories used by the learners were subjected to one-way ANOVA to determine whether there are significant differences in the strategy application of the subjects. The result of the analysis is reported in Table 5.

Table 5. One-way ANOVA of the strategy use of the subjects

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	110.456	5	22.091	49.075*	.000
Within Groups	343.012	762	.450		
Total	453.468	767			

* significant at $p < 0.01$ level .

The results of the analysis of variance indicated that there were significant differences in the strategy use pattern of the learners with reference to strategy type. To find out which strategies were more frequently used by the subjects, the ANOVA results were subjected to Scheffe test. The examination of the results indicated that Iranian learners of English used Meta-cognitive strategies most of the time while Affective learning strategies were used the least by the learners.

It seems that Iranian learners of English are aware of the importance of organizing and planning their learning activities. Part of this awareness can be attributed to Study Skills courses offered to Iranian BA students of English during their first two terms of study. However, the role of Affective learning strategies and their contribution to L2 proficiency is neglected by Iranian learners of English. The problem may stem from the fact that Iranian students do not receive any training as to how affective elements can influence their learning outcome. The present Iranian educational system aims at bringing about just Cognitive changes in the students, neglecting the affective dimension of the learners.

To determine whether there is any relationship between the overall strategy use of the learners and their second language proficiency in general, Pearson Product Moment correlation was conducted between the total strategy use of the subjects and their proficiency scores. The figures obtained indicate a significant correlation between the learners' use of language learning strategies and their L2 proficiency. The results are summarized in Table 6:

Table 6. The results of Pearson Product Moment correlation between total strategy use and the subjects' proficiency

		total SILL score	proficiency score
total SILL score		1.000	.248*
proficiency score		.248*	1.000
	N	128	128

* significant at $p< 0.01$ level (2-tailed).

Although no causal relationship can be established between the use of language learning strategies and the learners' proficiency, high use of learning strategies can be viewed as a potential factor in the L2 proficiency development of the learners.

To determine the contribution of different strategy categories (Memory, Social, Cognitive, Meta-cognitive, Compensatory, and Affective) to the subjects' proficiency, multiple regression analysis

was conducted with the proficiency as the dependent variable. (See table 7).

Table 7. The results of step wise multiple regression of strategy use of the subjects with the proficiency as the dependent variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.305a	.093	.085	12.4986

a) Predictor: (Constant), Compensatory SILL

The results of the regression analysis show that among the strategies studied, Compensatory learning strategies are found to be the most important predictor of the subjects' L2 proficiency. Such strategies are resorted to when learners are faced with a shortcoming or flaw in their L2 competence. The use of Compensatory strategies, it seems, keeps the flow of communication going, assisting learners to receive more L2 input and consequently achieve higher proficiency levels.

To find out whether learners at different proficiency levels (elementary, intermediate, advanced) made differential use of language learning strategies in terms of strategy type and frequency, the strategy use of each proficiency group was calculated, as reported in Tables 8 (a)-(c).

Table 8 (a). The descriptive statistics of the strategy use pattern of advanced subjects

	N	Minimum	Maximum	Mean	Std. Deviation
total SILL advanced	40	16.60	28.60	21.2430	2.3646
Memory SILL advanced	40	2.10	4.70	3.2567	.6146
Compensatory SILL advanced	40	2.50	5.00	3.7400	.6218
Affective SILL advanced	40	1.50	4.30	2.7800	.5933
Cognitive SILL advanced	40	2.50	4.80	3.6097	.5610
Meta-cognitive SILL advanced	40	2.80	5.00	4.2333	.5313
Social SILL advanced	40	2.30	5.00	3.6233	.6621

Table 8 (b). The descriptive statistics of the strategy use pattern of intermediate subjects

	N	Minimum	Maximum	Mean	Std. Deviation
total SILL intermediate	43	15.50	25.50	20.6025	2.5728
Memory SILL intermediate	43	2.30	4.60	3.4850	.4435
Compensatory SILL intermediate	43	2.00	4.80	3.3850	.7066
Affective SILL intermediate	43	1.50	4.00	2.7525	.6231
Cognitive SILL intermediate	43	2.00	4.50	3.3325	.5726
Meta-cognitive SILL intermediate	43	3.00	5.00	4.0575	.5665
Social SILL intermediate	43	1.60	4.80	3.5900	.8424

Table 8 (c). The descriptive statistics of the strategy use pattern of elementary subjects

	N	Minimum	Maximum	Mean	Std. Deviation
total SILL elementary	45	13.00	24.60	18.9914	2.9558
Memory SILL elementary	45	1.90	4.20	3.2241	.5179
Compensatory SILL elementary	45	1.60	4.80	3.0879	.8141
Affective SILL elementary	45	1.30	4.00	2.5621	.5625
Cognitive SILL elementary	45	1.46	4.50	3.0745	.6435
Meta-cognitive SILL elementary	45	1.60	4.80	3.7810	.6924
Social SILL elementary	45	1.00	4.80	3.2638	.8136

To find out whether the observed differences among the strategy use of the three proficiency levels are meaningful, the means of groups were exposed to one-way ANOVA. The results are reported in Table 9.

The results indicate that the difference among the means of the strategy use of different proficiency levels is statistically significant.

Table 9. The ANOVA results of total strategy use of the three proficiency levels

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	119.811	2	59.905	8.154*	.000
Within Groups	918.304	125	7.346		
Total	1038.115	127			

* significant at $p< 0.01$ level .

To specify exactly which strategies were more frequently used by the subjects according to their proficiency levels, six one-way ANOVAs were conducted among the strategy results of the learners, comparing their Memory, Cognitive, Meta-cognitive, Compensatory, Affective, and Social strategy application patterns across different proficiencies. (Tables 10 a to f).

Memory strategies

Table 10 (a). The ANOVA results of Memory strategy use of the three proficiency levels

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.737	2	.868	3.201	.044
Within Groups	33.911	125	.271		
Total	35.647	127			

$p<0.01$

Compensatory strategies

Table 10 (b). The ANOVA results of Compensatory strategy use of the three proficiency levels

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.561	2	4.280	7.815*	.001
Within Groups	68.465	125	.548		
Total	77.026	127			

* significant at $p< 0.01$ level .

Affective strategies

Table 10 (c). The ANOVA results of Affective strategy use of the three proficiency levels

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.310	2	.655	1.887	.156
Within Groups	43.384	125	.347		
Total	44.694	127			

$p< 0.01$

Cognitive strategies

Table 10 (d). The ANOVA results of Cognitive strategy use of the three proficiency levels

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.820	2	2.910	7.992*	.001
Within Groups	45.514	125	.364		
Total	51.335	127			

* significant at $p < 0.01$ level .

Meta-cognitive strategies

Table 10 (e). The ANOVA results of Meta-cognitive strategy use of the three proficiency levels

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.456	2	2.228	5.798*	.004
Within Groups	48.034	125	.384		
Total	52.490	127			

* significant at $p < 0.01$ level .

Social strategies

Table 10 (f). The ANOVA results of Social strategy use of the three proficiency levels

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.696	2	1.848	2.957	.056
Within Groups	78.124	125	.625		
Total	81.820	127			

$p < 0.01$

The results obtained indicate that advanced students make more use of Compensatory, Cognitive, and Meta-cognitive language learning strategies compared to the intermediate and elementary subjects. The same finding is also true about intermediate subjects compared to their elementary counterparts. However, no significant statistical difference was observed in the use of Memory, Affective, and Social learning strategies across the three proficiency levels.

To find the answer to the second research question, which investigated the relationship between the use of second language learning strategies and the subjects' IQ scores, Pearson-Product

Moment correlation was conducted. The results of the analysis are reported below. (Table 11)

Table 11. The results of Pearson Product Moment correlational analysis between the subjects' IQ and language learning strategy use

		total SILL score	intelligence score
total SILL score	Pearson Correlation	1.000	.015
	Sig. (2-tailed)	.	.867
	N	128	128
Intelligence score	Pearson Correlation	.015	1.000
	Sig. (2-tailed)	.867	.
	N	128	128

p< 0.01

The results of the correlational analysis indicate that there is no significant relationship between the strategy use of the learners and their IQ scores. Hence, the hypothesis stated at the beginning of the paper that there would be a relationship between L2 learning strategies and the subjects' IQ is rejected. A number of possible explanations can be offered for the observed lack of correlation between the two variables. It can be argued that intelligence and learning strategies, contrary to what was postulated in this study, are of two different categories, and the concept of problem solving in intelligence measurement is of a different nature compared to the concept of problem solving we have in strategy use. In addition, the lack of correlation can be attributed to the nonverbal nature of the intelligence instrument used in this study. As it was pointed out in the method section of the present study, the instrument used for testing the IQ of the subjects was Cattell scale three intelligence test which is a popular instrument for measuring the IQ of students at university level due to its pictorial, culture-free nature. In the case of language learning strategies, however, it seems that a verbal section may be of some relevance, and the absence of any correlation can be the result of the pictorial nature of the measurement instrument.

Conclusion

The present study was performed with the aim of shedding light on the learning strategy use of Iranian learners of English across three

proficiency levels. The results of the study show that there is a positive relationship between the use of L2 learning strategies by the subjects and their proficiency scores and that the category of Compensatory learning strategies is the best predictor of the subjects' L2 proficiency. No significant relationship was found between the subjects' strategy use and their IQ scores, while the statistical analysis of the findings indicated that learners of different proficiency levels had different patterns of L2 learning strategy use.

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