# The Relationship Between Language Learning Strategies And Academic Self-Concept

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#### Abstract

The aim of this study was to determine the relationship between language learning strategies of secondary school students and the concept of academic self. The study was carried out with 522 students enrolled in an Anatolian high school in the central district of Ankara. In the study, Personal and Academic Self-Concept Inventory (PASCI), which was developed by Fleming and Whalen (1984), and the Turkish version of Strategy Inventory of Language Learning (SILL), which was developed by Oxford (1990) and adapted into Turkish by Cesur & Fer (2007), were used. Canonical correlation analysis was used in the study. As a result of the study, it was concluded that the scores obtained in certain sub-dimensions of language learning strategies were predicted by the scores obtained in some of the academic self-concept sub-dimensions; however, the effect of the scores concerning some sub-dimensions remained at low levels. In the study, the relationship between the strategies in the language learning strategies sub-dimension and the academic self-concept subdimensions was explained through two canonical variables for the 9th, 10th, and 11th Grades. Based on this result, it could be argued that the increase in scores obtained from academic self-concept led to an increase in scores obtained from language learning strategies. In addition, it was concluded that the best predictors in explaining memory strategies were academic and verbal skills; post-cognitive strategies had low power to predict language learning strategies; and, social anxiety and family acceptance dimensions had low powers in predicting academic self-concept perception.

**Keywords:** Language Learning Strategies, Academic Self, Canonical Correlation

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### **INTRODUCTION**

Today, people could aim to be a global citizen as a necessity of life. One of the most important things to be done to achieve this aim should be learning a foreign language. In order for a person to be a good language student, s/he needs to know how to take responsibility in the learning process, use the accurate strategy when accessing new information, and support language learning with activities outside the classroom. These also require students to know and apply foreign language learning strategies that are appropriate for them while learning a foreign language. Language learning strategies used while learning a foreign language refer to special actions and techniques that are used consciously and that help learning that language (Akmençe, 2019). Oxford - Burry Stock (1995) & Lessard-Clouston (1997) stated that language learning strategies used while learning foreign languages were very important tools in terms of strengthening the communicative competencies of individuals involved in the learning and teaching process as well as developing these competencies effectively and within self-control.

Language learning strategies are the approaches that students use regarding the language they learn (Stern, 1983). Chamot (1987) expressed that all the methods, which would allow the recalling of the language to be learned or the content of that language content easily, were language learning strategies. Cohen (1990) referred to the learning processes chosen by the students voluntarily as language learning strategies. On the other hand, Oxford (1999) defined language learning strategies as activities, behaviors, or techniques used to strengthen foreign language learning skills. Cohen (2003) defined the attitudes that the students used knowingly or unknowingly as language learning strategies to understand the language and increase their knowledge of that language while learning a second language different from their mother tongue. On the other hand, Açık (2012) defined language learning strategies as methods, behaviors, and thoughts that learners used to eliminate the complexity of learning a foreign language. Based on these definitions, language learning strategies could be defined as each of the ways that individuals consciously follow in order to use the efforts they spend while learning a foreign language and to get motivated towards the process.

Studies have shown that the most important role in foreign language education belongs to affective characteristics, level of intelligence, ability, age, attitude, and interest (Açık, 2012). Within the scope of affective characteristics, which is one of these characteristics, the most important variable that predicts the success of the student is the concept of academic self-concept (Bloom, 2016). Before examining the concept of the academic self, we need to take a look at the concept of self. The self, which is acquired through having certain experiences, generally refers to the physical and psychological characteristics of individuals (Lawrence, 2006). Another definition of self is the perception that the individual creates with his/her belief in him/herself through interacting with his environment (Chiu & Klassen, 2010). On the other hand, Erdem (2019) defined the self as the opinion of individuals about themselves and their characteristics.

Looking at the definitions related to the concept of self, the common point of all definitions is that it is unique to a person (Erdoğan, 2019). When this concept is examined in depth, we see that it has been classified in various ways in the literature. Shavelson, Hubner & Stanson (1976) dimensioned the concept of self hierarchically as academic self-concept and non-academic self. In addition, academic self-concept is divided into four as history, mathematics, language, and science (Cited by Uzunoğlu, 2019). In another definition, we see the academic self-concept as the perception of a student of him/herself as positive or negative academically (Çakır, Şahin & Şahin, 2000). Senemoğlu (2012) defined the concept of academic self-concept as the thoughts of a learner about him/herself regarding whether s/he could learn any knowledge, skill or characteristic in accordance with his/her background. Arastamam & Özdemir (2019) defined academic self-concept as the belief of the learner that s/he would succeed academically.

In order to improve the academic self-concept in individuals, it is necessary to ensure that they progress positively within learning and teaching processes. Hence, it should be ensured that the

student experiences success. In order to ensure that students experience success, their learning needs should be determined, and they should be offered methods or techniques, among which they could choose to meet their needs within the framework of appropriate learning speeds (Senemoğlu, 2012). One of the requirements of the students today is to learn a second or even third language other than their mother tongue. Based on this requirement, researchers have been trying to find new ways of learning so that individuals could learn a foreign language quickly and effectively. In fact, language learning strategies should be used in order to learn a foreign language effectively by using time economically (Akar, 2013).

There are many research topics regarding individual needs and meeting these needs. One of the examples of the present study, which analyzes the relationship between language learning strategies and academic self, was the study by Cesur (2016) that was carried out with 95 high school students. In his study, Cesur found that students used language learning strategies at a medium level. In addition, the analyses made in the study revealed that high school students used mostly metacognitive strategies, and there was a weak relationship between academic self-concept and language learning strategies.

In the literature, there are studies on the relationship of language learning strategies with motivation (Günak, 2010), foreign language anxiety (Açık, 2012), learning styles (Süt, 2013), language learning beliefs (Mutlu, 2018) and academic success (Çakır, 2012; Demirel, 2012; Gözüm, 2018; İpek, 2012; Sütçü, 2014). It is also possible to see the studies examining the relationship between language learning strategies and gender (Liyanage & Barlett, 2011; Naeeini, Maarof & Salehi, 2011; Sung 2011) in the literature. There have also been studies on determining language learning strategies or to what extent they were used (Ada, 2011; Erarslan & Höl, 2014; Khalil, 2005; Griffiths, 2003; Özmen & Gülleroğlu, 2013).

The literature also contains studies examining the relationship between academic self, which is another variable of the study, with certain other variables. It is observed that the studies analyzed the relationship of academic self-concept with touristic experiences (Erdoğan, 2019), academic willingness and cultural capital (Arastamam & Özdemir, 2019), learning needs for mathematics lessons (Baştürk Tekin, 2014), professional preferences of students in science, technology, mathematics and engineering (Uzunoğlu, 2019), and academic success (Çağlar, 2010; Dursun Sürmeli, 2015; Kenç & Oktay, 2002).

In the literature, we see that language learning strategies and the concept of academic self-concept have been the subject of research along with many variables in the learning process, some of which are common. In addition, many studies concluded that the perception of academic self-concept and language learning strategies were both effective on individuals or learning products (Cesur, 2016). The main reason for conducting this study is to find out the degree of relationship between the two variables that are considered to be effective in the development of many characteristics within the learning and teaching process. It is believed that the importance of this study lies in reviewing these two variables together within the teaching and learning process.

It could have significant contributions to the literature by showing the students learning foreign languages in secondary schools that there are different ways of learning specific to the individual, by revealing the relationship between academic self-concept and learning strategies along with their sub-dimensions, by explaining how much these sub-dimensions predict each other, by ensuring that the importance of being aware of their own learning positively or negatively is recognized by the learners, and by enabling students to develop studying methods that are specific to themselves. In addition, it is also believed that the present study could contribute to the researchers, teachers and curriculum development specialists in terms of developing foreign language teaching programs, preparing alternative programs for learners who have difficulties in learning foreign languages, and exemplifying the statistical method of canonical correlation, which is not common in studies on the relationships between various variables.

The purpose of this study was to examine the relationship between language learning strategies and academic self. In order to express the purpose of the study more clearly, "How is the relationship between language learning strategies of secondary school students and their concepts of academic self?" was written as the problem statement.

#### **METHOD**

# **Research Design**

The study was carried out in the survey model. Survey model is generally preferred in non-experimental studies (Christensen, Johnson & Turner, 2012).

## **Study Group**

The study was carried out in the second semester of 2018-2019 academic year due to its physical, administrative and practical convenience. The study was carried out with ninth, tenth and eleventh grade students enrolled in an Anatolian High School in the Çankaya district of Ankara. The students participating in the study were determined on a voluntary basis. The students who participated in the study were given information about the content before the study. Oral permissions were obtained from the students in order to use the data to be obtained from the inventories within the scope of the study.

It was decided that the study should be carried out at the high school level based on the idea that the concept of academic self-concept could be interpreted better for the students at the high school level, and language learning strategies could be more developed at these age levels. The reason why this study was carried out in an Anatolian High School in Ankara was ease of sampling.

There were 671 students in the 9th, 10th and 11th grades of the Anatolian High School where the study was carried out. A total of 550 students were included in the study. Among the students, 28 were excluded from the study due to reasons such as not writing numbers in the inventory or leaving missing items. The number of students included within the scope of the study was 522. In other words, the students, who participated in the study, represented approximately 78% of the 9th, 10th and 11th grade students in the school. The distribution of 522 students participating in the study by grade level and gender is presented in Table 1.

Table 1. Distribution of students in the study group by grade levels

Grade Levels	Female	Male	Total	Total (%)
9th Grade	98	84	182	27.12
10th Grade	96	82	178	26.52
11th grade	84	78	162	24.16
Total	278	244	522	
Total (%)	53.46	46.54	100	78

As displayed in Table 1, the study was participated by 182 students (27.12%) at the 9th grade level, 178 students (26.52%) at the 10th grade level, and 162 students (24.16%) at the 11th grade level. Among the students who participated in the study, 278 (53.46%) were female and 244 (46.54%) were male.

### **Data Collection Tools**

The data of the study were obtained through two data collection tools. One of them was the Personal and Academic Self-Concept Inventory (PASCI) developed by Fleming and Whalen (1984). The original form of the PASCI was applied by taking the opinions of the English teachers at the

school. The other one was the Strategy Inventory of Language Learning (SILL) developed by Oxford (1990). The Turkish version of the Strategy Inventory of Language Learning (Cesur & Fer, 2007) was used.

Personal and Academic Self-Concept Inventory (PASCI) consists of 9 parts in total, which are self-esteem, social acceptance, academic ability, verbal ability, mathematical ability, physical appearance, physical ability, family acceptance and social anxiety. Each section in the inventory explains the opinions of students regarding a different concept of self. Each part of the inventory contains 5 items and the total number of items in the inventory is 45. The inventory is a 7-point Likert-type scale that is scored between practically never/none and very much/very often. The highest score that could be obtained from the inventory is 315, and the lowest score is 45.

In order to determine the reliability of the Personal and Academic Self-Concept Inventory, it was administered to 222 high school students and 338 university students by Fleming and Whalen (1990) with internal consistency and test-retest method. In the study, the correlation of the Strategy Inventory of Language Learning with the RSES (Rosenberg Self Esteem Scale) (Rosenberg, 1965) and the FSB Scale (public and private self-consciousness and social anxiety) that was developed by Fenigstein, Scheier, and Buss (1975) was investigated. Strategy Inventory of Language Learning consists of positive and negative items. A very high correlation was found between the social anxiety in the Personal and Academic Self-Concept Inventory and the social anxiety in FSB (r = -.80, p < .001). The highest correlation between the Strategy Inventory of Language Learning and RSES was found in the self-esteem dimension (r=.74). This result is notable in that both inventories have an important place in the world in terms of self-esteem. When the scales were compared, although no difference was found favoring the male in terms of mathematical ability (p <.001) and physical ability (p < .001), no differences were found in terms of gender in the overall inventory. In addition, it was observed that the data obtained from the measurements revealed a hierarchical structure. Internal consistency coefficient and test-retest measurements showed that the scale had a reliable structure (Cited by Fleming & Whalen, 1990). In this study, Cronbach Alpha reliability coefficient of Academic Self-Concept Inventory was calculated as .93; and for the sub-dimensions, it was .53 for selfesteem..80 for social acceptance..68 for academic ability..65 for verbal ability..86 for mathematical ability, 86 for physical appearance, 65 for physical ability, 74 for family acceptance, and .80 for social anxiety.

Strategy Inventory of Language Learning (SILL) was administered in order to obtain the opinions of the students about learning strategies. The inventory consists of 6 parts, which are memory strategies, cognitive strategies, compensation strategies, metacognitive strategies, affective strategies and social strategies. There are 50 items in the inventory. The inventory is a 5-point Likert-type scale that is scored between never/never applies to me always/always applies to me. The highest score that could be obtained from the inventory is 250 and the lowest score is 50.

In order to determine the content validity of the Strategy Inventory of Language Learning (SILL), two strategists were asked to score the scale according to the learning strategies taxonomy during the period when it was first developed. As a result of the scoring, it was observed that the coherence between the two experts was .99. For the criterion validity, the language performance was taken into account. Criterion validity for this inventory included concurrent and predictive validity for variables. The variables were language performance and learning strategies. Simple and multiple regression analyses were performed on at least one variable for predictive validity as a means of criterion validity. All data were collected at the same time to ensure simultaneous validity. With the help of simultaneous and predictive validity, it was demonstrated that there was a high level of relationship between Strategy Inventory of Language Learning and language performance. This was a strong supporter for the validity of the inventory. Validity of the inventory was calculated based on language performances such the overall language proficiency test of the inventory (Chang, 1991; Green and Oxford, 1992; Park 1994; Phillips, 1990, 1991; Rossi-Le, 1989; Wen and Johnson, 1991) and oral language proficiency test (Chang, 1991). In his study, Takeuchi (1993) found that the

Inventory explained 58% of the Advanced English Language Test using multiple regression analysis. ANOVA and MANOVA were performed for the construct validity of the scale. When two different groups have different scores as a result of the evaluations, this provides an important evidence for the construct validity of the scale. In accordance with this principle, when Watanabe (1990) applied the Strategy Inventory of Language Learning for university and high school students in Japan, he concluded that the strategies in the inventory were used by those with high English language proficiency more frequently than those with low English language proficiency (Cited by Oxford & Burry-Stock, 1995).

The reliability coefficient of the Strategy Inventory of Language Learning was .94 when it was translated into Chinese and applied to 590 students, it was .92 when the Japanese version was applied to 255 Japanese students, it was .93 when it was translated into Korean and applied to 392 Korean students, and it was .91 when it was translated into Spanish and applied to 374 Porto Rican students. Based on these measurements, it was observed that when the scale was translated into another language and applied in that language, its Cronbach Alpha reliability coefficient ranged between .91 and .94 (Oxford & Burry-Stock). In addition, SILL was applied in the USA in English. The students in the study group had mixed native languages. The native languages of the students in this group belonged to different nations such as Arabic, Spanish, British, American and etc. In these applications, Phillips (1991) calculated the reliability coefficient with 141 students as .87; Oxford (1989) calculated it with 159 students as .86; Anderson (1993) calculated it with 95 students as .91; Talbott (1993) calculated it with 31 students as .85. The coefficient of concordance in the studies by Oxford et al. (1993), Anderson (1993) and Talbott (1993) was calculated for 137 students as 88. With the data obtained from these applications, application of SILL in the native language of the study group and in English did not make any difference in terms of the reliability of the inventory (Cited by Oxford and Burry-Stock, 1995).

Strategy Inventory of Language Learning (SILL) was adapted to Turkish by Cesur & Fer (2007). Rather than the total score, the inventory is interpreted by calculating the scores in the six sub-dimensions separately. Hence, each sub-dimension is independent of each other and dimensions are evaluated independently. The reliability coefficient of the six dimensions in the Turkish version of the inventory ranged between .59 and .86. Item correlation of the inventory was found on each item as .92 with positive and significant correlation in all items (p=.01). In addition, the correlation coefficient between the sub-dimensions of the inventory was observed to range between .18 and .63. The test-retest method was used to determine the stability of the inventory; it was found that the stability coefficient in the sub-dimensions ranged between .67 and 82. The mean stability of all sub-dimensions was .76. These data show that the inventory is stable; and therefore, it is reliable. As a result of the factor analysis performed for the validity of the inventory, it was determined that 50 items with an eigenvalue greater than 1 were collected in six dimensions, and they explained 42 percent of the total variance.

### **Data Collection**

Before administering, the purpose in using Personal and Academic Self-Concept Inventory, Strategy Inventory of Language Learning and the data to be obtained from these inventories were explained to the participating students. Based on these explanations, students were informed about the significance of responding to the questions in the inventories sincerely. Both inventories were administered by the teachers and relevant vice principles in the high schools identified for the study in April, May and June 2019.

### **Data Analysis**

In order to analyze the data, dependent and independent variables were determined by using the problem statement of the study. Sub-dimensions of language learning strategies (memory strategies, cognitive strategies, compensation strategies, metacognitive strategies, affective strategies, social strategies) were determined to be dependent variables; sub-dimensions of the academic self-concept (self-esteem, social acceptance, academic ability, verbal ability, mathematical ability, physical appearance, physical ability, acceptance by the family, social anxiety) were determined as independent variables. In the analysis of the data, the independent variable was assigned as the predictor and the dependent variable was assigned as the criterion variable. Canonical correlation analysis was used to investigate the relationship of the independent variable with the dependent and independent variable. The variable set containing two and more variables could be analyzed through canonical correlation. Canonical correlation is a multivariate method that evaluates the relationship between variable sets through linear components (Özdamar, 2004).

Before analyzing the data of the study, the compliance of the data with the assumptions of the canonical correlation analysis technique was checked, and it was decided that the data were appropriate. In studies, the number of observations should be more than 20 times the number of variables (Nakip, 2003). In this study, the number of dependent variables was 6, and the number of independent variables was 9. The number of observations in this study was 522 (In other words, 9+6=15, 15.20=300, 300<522). Outliers should be determined prior to the correlation analysis. Outliers affect analysis negatively. Therefore, outliers should be extracted before analysis (Çankaya, 2005). Based on this information in the literature, before the data of the study were analyzed, outliers and incomplete data of the dependent and independent variable types were removed from the analyses.

### **FINDINGS**

Values related to descriptive statistics of dependent and independent variables are presented in Table 2. It was observed that the highest mean among the values of dependent variables was in cognitive strategies with 44.16. This mean was followed by metacognitive strategies with 28.60, memory strategies with 27, social strategies with 19.50, compensation strategies with 19.21, and affective strategies with 17.35. When the scores of the independent variable were examined, it was found that the highest mean belonged to family acceptance with 25.19. This was followed by verbal ability with 24.39, social acceptance with 24.01, physical ability with 23.71, self-esteem with 23.19, social anxiety with 22.86, physical appearance with 22.16, mathematical ability with 22.06, and academic ability with 22.02. When the skewness values of both types of variable were examined, we could argue that the distribution was skewed to the left; in other words, it was skewed in the negative direction. It could also be argued that the skewness values were not high enough to indicate that deviation from normality was significant; they were rather low.

Table 2. Descriptive statistics on the scores obtained from strategy inventory of language learning and the scores of academic self

Inventories Used in the Study and Their Sub-Dimensions	N	$\overline{\overline{\mathbf{x}}}$	SD	Skewness	Kurtosis
Overall Strategy Inventory of Language Learning	522	155.83	38.90	290	152
Memory Strategies	522	27	7.37	116	220
Cognitive Strategies	522	44.16	11.79	284	180
Compensation Strategies	522	19.21	5.48	341	220
Metacognitive Strategies	522	28.60	8.47	204	377
Affective Strategies	522	17.35	5.81	004	524
Social Strategies	522	19.50	5.75	312	245
Overall Personal and Academic Self-Concept Inventory	522	209.63	41.	.076	190
Self-Esteem	522	23.19	5.41	220	184
Social Acceptance	522	24.01	7.12	209	703
Academic Ability	522	22.02	5.98	093	.112
Verbal Ability	522	24.39	5.68	109	480
Mathematical Ability	522	22.06	7.53	272	631
Physical Appearance	522	22.16	6.06	082	307
Physical Ability	522	23.71	6.54	160	360
Family Acceptance	522	25.19	6.12	376	435
Social Anxiety	522	22.86	7.12	121	645

Since there were variable sets, the relationship between the sub-dimensions of the language learning strategies (dependent variable) and the sub-dimensions of the academic self-concept (independent) was determined by canonical correlation as a multivariable analysis technique. However, the relationship between the dependent and independent variables among themselves and with each other were analyzed in order to determine that there were no multiple connection problems as one of the prerequisites to apply canonical correlation. Looking at Table 3, the highest correlation between the independent variables was found to be in metacognitive strategies with the value of 801; the lowest correlation value between the independent variables was observed to be between social strategies and memory strategies. It is stated that in case the value of this binary correlation between the variables is greater than .80, this indicates the problem of multiple connectivity between independent variables; and there is the problem of multiple connection at a significant level between the independent variables in case it is over .90 (Özdamar, 2004; Tabachnick & Fidell, 2013). When the correlation values between the independent variables in Table 3 were examined, the possibility of multiple connection was accepted to be low since they were below 80; and the analyses were continued. According to Table 3, the highest correlation between the dependent variables was between social anxiety and social acceptance with .682; the lowest correlation value was between physical ability and family acceptance with .299. According to these results, it could be argued that there were no multiple connection problems between dependent variables.

Table 3. Correlations between dependent and independent variables

N=522	Memory Strategies	Cognitive Strategies	Compensation Strategies	Metacognitive Strategies	Affective Strategies	Social Strategies	Self-Esteem	Social Acceptance	Academic Ability	Verbal Ability	Mathematical Ability	Physical Appearance	Physical Ability	Family Acceptance	Social Anxiety
Memory	1	.789	.658	.645	.659	.631	.369	.198	.393	.353	.345	.356	.287	.356	.237
Strategies															
Cognitive Strategies	.789	1	.782	.801	.658	.661	.348	.172	.269	.349	.257	.333	.263	.311	.213
Compensation Strategies	.658	.782	1	.737	.598	.653	.369	.158	.243	.334	.242	.385	.296	.289	.228
Metacognitive Strategies	.645	.801	.737	1	.689	.684	.322	.165	.261	.315	.200	.345	.239	.312	.234
Affective Strategies	.659	.658	.598	.689	1	.692	.364	.186	.352	.332	.280	.407	.283	.294	.284
Social Strategies	.631	.661	.653	.684	.692	1	.379	.191	.344	.402	.292	.360	.273	.332	.278
Self-Esteem	.369	.348	.369	.322	.364	.379	1	.405	.568	.569	.391	.629	.507	.452	.511
Social Acceptance	.198	.172	.158	.165	.186	.191	.405	1	.478	.476	.266	.385	.436	.329	.682
Academic Ability	.393	.269	.243	.261	.352	.344	.568	.478	1	.498	.501	.521	.408	.448	.514
Verbal Ability	.353	.349	.334	.315	.332	.402	.569	.476	.498	1	.305	.468	.436	.467	.527
Mathematical Ability	.345	.257	.242	.200	.280	.292	.391	.266	.501	.305	1	.362	.359	406	.307
Physical Appearance	.356	.333	.385	.345	.407	.360	.629	.385	.521	.468	.362	1	.532	.374	.535
Physical Ability	.287	.263	.296	.239	.283	.273	.507	.436	.408	.436	.359	.532	1	299	.495
Family Acceptance	.356	.311	.289	.312	.294	.332	.452	.329	.448	.467	.406	.374	.299	1	.343
Social Anxiety	.237	.213	.228	.234	.284	.278	.511	.682	.514	.527	.307	.535	.495	.343	1

Note: The italic values in the upper left corner of the table show the correlation of the independent variables among themselves; and, the italic values in the lower right corner indicate the correlation of the dependent variables among themselves.

Table 4 presents the summary of canonical correlation results. Table 4 presents the first canonical correlation coefficient, which is significant for the model and has the highest canonical correlation coefficient, the total variance obtained as a result of data analysis, and total redundancy index (Total Redundancy). Total redundancy index refers to the percentage of the change in the variable set under examination that is explained by other variables in the study (Özdamar, 2004; Tabacknick & Fidell, 2013).

According to Table 4, the percentage of the total variance obtained from the strategy inventory of language learning scores with six variables was 100%. The percentage of the total variance concerning the concept of academic self-concept with nine variables was 76%. In addition, 21.42% of the variance of the language learning strategies variable set was predicted by the canonical variables of the academic self-concept variable set. Of the variance of the academic self-concept variable set, 14.61% was predicted by the canonical variables of the language learning strategies variable set. To summarize the results in Table 4, language learning strategies found in variable set I were predicted more than the academic self-concept in the variable set II.

Table 4. Summarized results of the canonical correlation analysis

		Set I (Language Learning Strategies)		Set II (Academic Self)
Number of Variables		6		9
Obtained Variance		100%		76.08%
Total Redundancy (Total		21.42 (%)		14.61 (%)
Redundancy)				
Variables	1	Memory Strategies $(X_1)$		Self-esteem (Y <sub>1</sub> )
	2	Cognitive Strategies (X <sub>2</sub> )		Social Acceptance (Y <sub>2</sub> )
	3	Compensation Strategies (X <sub>3</sub> )		Academic Ability (Y <sub>3</sub> )
	4	Metacognitive Strategies (X <sub>4</sub> )		Verbal Ability (Y <sub>4</sub> )
	5	Affective Strategies $(X_5)$		Mathematical Ability (Y <sub>5</sub> )
	6	Social Strategies (X <sub>6</sub> )		Physical Appearance (Y <sub>6</sub> )
	7			Physical Ability (Y <sub>7</sub> )
	8			Family Acceptance (Y <sub>8</sub> )
	9			Social Anxiety (Y <sub>9</sub> )
	Canonical R		.55267	• • • •
	Chi-Square		262.55	
	(54)		***	

<sup>\*\*\*</sup>p<.001

Table 5 presents the canonical correlation coefficients, variance explanation rates, chi-square values, Wilks Lambda values and the significance (p) values. According to the data presented in Table 5, 6 different canonical variable coefficients and 6 different canonical correlation coefficients were obtained between variables X and Y as a result of the analyses. Based on the data presented in Table 5, the significance of canonical correlation coefficients was examined using Wilks Lambda and Chi-square results. The analysis concluded that the first two canonical correlation coefficients were statistically more significant compared to  $\alpha = 0.001$  (p<.01), while the other four canonical correlation coefficients were not statistically significant at both (p<.01) and (p<.05) levels.

Table 5. Results of the significance of canonical correlation (Chi-Square-Test)

	Canonical R	Canonical R <sup>2</sup>	Chi-Square	SD	Wilks Lambda Value	р
0	.552670	.305444	262.5524 *	54	.599417	0.000000
1	.265208	. 070335	75.5730 *	40	.863021	0.000579
2	.196945	.038787	38.1594	28	.928314	0.095555
3	.141545	.020035	17.8652	18	.965774	0.965774
4	.117258	.013750	7.4829	10	.985519	0.985519
5	.027228	.000741	0.3805	4	.999259	0.999259

It is important to decide which canonical correlation coefficients are significant practically. For this reason, the chart in Figure 1 was prepared for the values and eigenvalues (squares of canonical correlations) belonging to the canonical pairs. As presented in Figure 1, the eigenvalues of the first canonical pair were quite high. However, it was clearly demonstrated in the chart that the decline after this point was fast. The resulting image and the point, at which the slope starts to disappear gives us information about the number of significant canonical variable pairs (Çankaya, 2005; Nakip 2003; Özdamar, 2004; Tabachnick & Fidell, 2013). When Figure 1 was analyzed in terms of the significance checks for canonical correlation, it could be seen that the value of the first canonical correlation pair gave more significant results than other canonical correlation pairs.

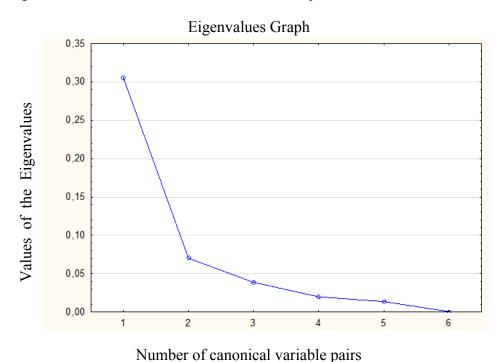


Figure 1. The chart of eigenvalues for canonical variables

The number of variables pairs and canonical correlations that could occur as a result of canonical correlation analysis does not exceed the minimum number of variables in the dependent or independent variable sets (Doğan & Sevindik, 2011). There were 6 independent and 9 dependent variables in the study. In other words, the lowest number of variable sets in the study was 6. Accordingly, 6 canonical variable pairs were obtained in the study. It was believed that the canonical variables of U<sub>1</sub>, U<sub>2</sub>, U<sub>3</sub>, U<sub>4</sub>, U<sub>5</sub> and U<sub>6</sub> were obtained from the independent variable set of memory, cognitive, compensation, metacognitive, affective and social strategies, which constitute the subdimensions of language learning strategies. It was believed that the canonical variables of V<sub>1</sub>, V<sub>2</sub>, V<sub>3</sub>, V<sub>4</sub>, V<sub>5</sub>, V<sub>6</sub> were obtained from the self-esteem, social acceptance, academic ability, verbal ability, mathematical ability, physical appearance, physical ability, family acceptance and social anxiety groups, which were the sub-dimensions of academic self-concept concept that formed the dependent variables set. Interpretations were made based on the canonical variables obtained in the light of this belief. In addition, Table 6 also presents the amounts of variance and inflation coefficients explained by the U and V variables.

According to Table 6, the support of the  $U_1$  linear component to the explained variance was 66% and the inflation coefficient was 0.20. Accordingly, the contribution of the  $U_1$  linear component to the variance was close to the top level. In addition, we could argue that the low inflation coefficient of  $U_1$  could be due to low effect of other (redundant) factors in explaining the relationship between the  $U_1$  canonical variable and the scores concerning the sub-dimensions of language learning strategies.

Moreover, the linear components of  $U_2$ ,  $U_3$ ,  $U_4$ ,  $U_5$  and  $U_6$  had quite low contributions to the variance as well as low levels of relationship according to Table 6. When Table 6 was examined in terms of dependent variable set, the contribution of the  $V_1$  linear component to the total explained variance was 44%, and the inflation coefficient was 0.13. Accordingly, we could argue that the contribution of the  $V_1$  linear component to the variance was at a moderate level. Therefore, the relationship of the linear component of  $V_1$  with the data set belonging to the sub-dimensions of academic self-concept was at the moderate level. We could argue that the low inflation coefficient of  $V_1$  could be due to the low effect of other (redundant) factors in explaining the relationship between the scores concerning the canonical variable of  $V_1$  and the scores obtained in the sub-dimensions of academic self. According to Table 6, the linear components of  $V_2$ ,  $V_3$ ,  $V_4$ ,  $V_5$  and  $V_6$  had quite low contribution to the variance as well as a low level of relationship.

Table 6. The explained variance and inflation coefficients of the academic achievement score variable set

Variables	Explained Variance	Inflation (Redundancy Coefficient)
U1	0.667607	0.203916
U2	0.084925	0.001966
U3	0.050602	0.001963
U4	0.061934	0.001241
U5	0.080099	0.001101
U6	0.054833	0.000041
V1	0.447331	0.136635
V2	0.070310	0.004945
V3	0.060185	0.002334
V4	0.072634	0.001455
V5	0.055701	0.000766
V6	0.054656	0.000041

When the significance results were examined in terms of canonical correlation, two different canonical variable pairs were considered to be statistically significant. Besides this assumption, it was concluded that the first canonical correlation pair had a significant role in explaining the relationship between the sub-dimensions of the first canonical correlation pair in terms of the data, explained variance, eigenvalues and the values concerning the inflation coefficients. Specific variables, which affect the first and second canonical variable pairs and canonical correlations contributing to this result, could be represented by equations. These equations were formed as follows.

U1= 0.494 memory strategies + (-0.173) cognitive strategies + 0.248 compensation strategies + (-0.083) metacognitive strategies + 0.278 affective strategies + 0.375 social strategies

V1 = 0.147 self-esteem + (-0.181) social acceptance + 0.207 academic ability + 0.321 verbal ability + 0.213 mathematical ability + 0.314 physical appearance + 0.089 physical ability + 0.209 family acceptance + (-0.033) social anxiety

U2= 1.259 memory strategies + (-0.431) cognitive strategies + (-1.068) compensation strategies + (-0.043) metacognitive strategies + (-0.190) affirmative strategies + (0.288) social strategies

V2 = (-0.350) self-esteem + 0.061 social acceptance + 1.055 academic ability + (-0.134) verbal ability + 0.247 mathematical ability + (-0.635) physical appearance + (-0.144) physical ability + 0.060 family acceptance + (-0.094) social anxiety

According to the first equation, the most significant contribution to the language learning strategies was made by the memory strategies by 0.494; and the least contribution was made by metacognitive strategies with 0.083. The most significant contribution to academic self-concept

variable was made by verbal ability with 0.321 in the first equation; and the least contribution was made by social anxiety with 0.033.

According to the second equation, the most significant contribution to the language learning strategies was made by the memory strategies by 1.259; and the least contribution was made by metacognitive strategies with 0.043. The most significant contribution to academic self-concept variable was made by academic ability with 1.055; and the least contribution was made by family acceptance with 0.060. It could be stated that the increase in the scores of memory strategies, cognitive strategies, compensation strategies, metacognitive strategies, affective strategies and social strategies in the language learning strategies set led to an increase in the scores of self-esteem, social acceptance, academic ability, verbal ability, mathematical ability, physical appearance, physical ability, family acceptance and social anxiety in the academic self-concept set. Therefore, it could be argued that there was a significant relationship between language learning strategies and academic self.

# DISCUSSION, CONCLUSION AND SUGGESTIONS

In the study, whether the relationship between the variable sets was significant or not, was analyzed by canonical correlation instead of binary correlations. Within this analysis process, while the first type of error in the hypothesis test decreased, it became easier to interpret the effects of variable sets on each other. The canonical correlation analysis performed in the present study concluded that the relationship between the strategies in the sub-dimensions of language learning strategies and the sub-dimensions of the academic self-concept was explained with two canonical variables for 9th, 10th and 11th Grades. Based on this result, it could be argued that the increase in scores obtained from academic self-concept led to an increase in scores obtained from language learning strategies.

Self refers to the beliefs of an individual about his/her emotional, physical, social and spiritual characteristics, desires and achievements (Berk, 1997; Güngörmüş, 1997). In this context, we could argue that the self is related to motivation, anxiety, self-efficacy and beliefs about language learning. The finding that the academic self-concept leads to an increase in the scores related to language learning strategies could be examined in terms of these concepts.

In his study, Günak (2010) found that the relationship between the learning strategies used by individuals and their motivations for learning was significant. In addition, it was concluded that high motivation and use of learning strategies, affected academic success and foreign language learning positively. The literature contains various studies on the fact that high motivation increased the frequency and effective use of language learning strategies for individuals (Mochizuki, 1999; Smemeo & Haslam, 2013). Motivation could be due to the high level of ability to learn languages. This wealth of talent also enables language learning strategies to be used more frequently (Smemeo & Haslam, 2013; Wherton, 2000).

Social Cognitive Theory of Albert Bandura could also be defined as the motivation theory. One of the important concepts in this motivation theory is the perception of self-efficacy (Gözüm, 2018). Bandura (1997) stated that self-efficacy played an important role in the academic development of individuals. From this point of view, we could argue that the perception of academic self-concept and the perception of self-efficacy support each other. In terms of language learning strategies, when the learner undertakes the responsibility of learning process, this indicates the connection of self-efficacy and learning strategies (Gözüm, 2018). In the light of these statements, we could argue that the concept of self-efficacy plays an important role in the interaction of academic self-concept and language learning strategies. In addition, the perception of self-efficacy has an important role in foreign language learning today (Dörnyei, 1994). We could see that in many studies in the literature, which reveal that the relationship between the levels of students in using language learning strategies and their self-efficacy perceptions is positive and significant (Chang & Xu, 2012; Gahungu, 2007; Wong, 2005; Yang & Wang 2015).

Individuals may have different psychological structures within the language learning process. In case the level of anxiety increases in individuals while learning a foreign language, they could perceive their experience as a threat against themselves. The anxiety levels of the language learners increase when they do not feel happy or comfortable during the learning process; in other words, when they encounter various psychological obstacles. This increase is experienced by the individuals in the form of learning disability (Açık, 2012). In the studies carried out in this context in the literature, a negative and significant relationship was found between the language learning strategies of individuals and their anxiety levels regarding foreign languages (Açık, 2012). In other words, as anxiety may be related to academic self, these studies in the literature could be important in terms of revealing the extent of the relationship between academic self-concept and language learning strategies.

The opinions of individuals on learning a foreign language and the general structure or nature of learning a language are defined as beliefs about language learning (Horwitz, 1987). There is a moderate positive relationship between the language learning strategies of individuals and their beliefs about language learning (Azar & Saeidi, 2013; Chang & Shen, 2010; Parviz & Nima, 2013; Zaree-ee & Salami, 2014). This relationship would strengthen the opinion that the belief about language learning that could be related to academic self-concept affects the learning strategies used by individuals in learning a language. In addition, some studies in the literature have revealed that language learning beliefs could explain language learning strategies (Azar & Saeidi, 2013; Zaree-ee, & Salami, 2014).

This study, it was found that academic self-concept affected learning strategies. The literature contains studies with findings that were different from the findings of this study. In their study conducted with 8354 secondary school students, McInerney, Cheng, Mok & Lam (2012) examined the effect of learning strategies and perception of academic self-concept on each other with the structural equation model. As a result of the study, they concluded that the perceptions of students on academic self-concept regarding English and Mathematics courses were affected by the learning strategies of the students (deeply and superficially). The fact that interfering with the learning strategies was easier than interfering with academic self-concept and this intervention could be proven easily could be the reason for this conclusion.

Another finding obtained in the study was that the increase in verbal and academic ability scores in the academic self-concept set led to an increase in the scores of memory strategies among language learning strategies. In other words, the most important predictors in explaining memory strategies were verbal and academic skills.

Memory strategies have two important tasks. One is the storing of information; and the other is the utilization of this stored information. In order to use this strategy while learning a foreign language, individuals should store what they hear and read about the language in their memories (Oxford, 1990). The process of storing, which is performed by reading and hearing could indicate its relationship with memory strategies as a part of verbal ability. This indicator shows that the findings obtained from the study coincide with the literature.

One of the important determinants of verbal ability is learning the vocabulary. Memory strategies are very functional for students to learn the new vocabulary (Baykul, 2010). Schimtt (2000) has implementations such as expressing the synonyms and antonyms, describing the words based on an individual experience and making sentences by combining words, which support verbal ability among memory strategies. The first category of memory strategies is to make mental connections. Mental connections consist of grouping, associating and placing new words in a context (Oxford, 1990). These practices in the literature reveal the possibility that memory strategies could be enriched by using activities regarding verbal ability. We could argue that this possibility supports the finding that the verbal ability predicted memory strategies, which was a result of the study.

The literature contains studies, which found out that memory strategies helped students learn vocabulary permanently (Köksal, 2012) and facilitated their recalling of the vocabulary in the foreign language (Ün, 1984). In the literature, there are also studies showing that memory strategies have an important place in language learning strategies, and that they ranked the first (Baghban, 2012). In addition, while the literature includes studies indicating that students preferred the memory strategies the most while learning a foreign language (Božinović & Sindik, 2011; Khamkhien, 2012), there are also studies demonstrating that memory strategies are not sufficiently used within the learning and teaching processes or that the students use these strategies less frequently than others (Gülsoy, 2011; Ünal, Ayırır & Arıoğul, 2011).

Academic ability refers to all of the skills that are inborn in students or attained afterwards in order to succeed in school (Human Resources Dictionary, 2020). In this sense, we could argue that there is an important relationship between academic ability and academic achievement. Academically successful students have highly advanced memory strategies (O'Malley, Chamot, 1990). Moreover, there are various studies in the literature revealing that memory strategies are effective in increasing academic success (Aydın, 2010; Gür, 2010; Korkmaz & Mahiroğlu 2007). Looking at these results in the literature, we could argue that academic ability is an important predictor in explaining memory strategies.

Another finding of the research was that the metacognitive strategies were weak in explaining language learning strategies. As a reason for this finding of the study, we could state that sufficient importance has not been given to metacognitive strategies in teaching and learning processes of language. The use of metacognitive strategies would decline in case their usage is not internalized by students. This decline could cause the effect of metacognitive strategies to be weak in predicting language learning strategies. From this perspective, the most significant role in the adoption of metacognitive strategies by the students belongs to the teachers. Teachers are important models for students, especially when learning languages. To this end, teachers should provide guidance in making students use and motivating them towards using metacognitive strategies within teaching and learning processes (Harmankaya, 2016).

One reason for the weakness of cognitive strategies in predicting language learning strategies could be the lack of awareness in students about their weaknesses and strengths in learning a language. If students are aware of their potential, they could lead their language learning processes accordingly (Flavell, 1979). In order to create this awareness among students, their executive cognitive strategies could be evaluated. In their study, Veenman, Elshout & Meijer (1997) evaluated the metacognitive strategies and they concluded that it led to improvement in the mental competencies of the students.

Contrary to the finding of the study that metacognitive strategies were weak in predicting language learning strategies, there are many studies in the literature stating that metacognitive strategies were the most frequently used language learning strategy by the students (Alhaisoni, 2012; Balcı & Üğüten, 2017; Cesur, 2016; Erarslan & Höl, 2014; Hamamcı, 2012; Ho & Ng, 2016; Yapıcı & Bada, 2004). The fact that metacognitive strategies enable students to plan their learning processes and enable individuals to perform self-evaluations could be the reason why students prefer this strategy the most while learning a language (Sütçü, 2014). In addition, cognitive strategies allow students to use their previous knowledge while solving new problems they experience (Sütçü, 2014; Cesur, 2016). When students hear a new word, they usually try to associate it with their previous information or an image they have seen before. Or, students at least review what they have learned while repeating topics to learn languages (Cesur, 2016). Planning the process, repeating, and self-evaluating could affect the frequency of using cognitive strategies. Moreover, there are studies in the literature indicating that metacognitive strategies have a positive effect on learning a foreign language (Rasekh & Ranjbary, 2003; Zhussupova & Kazbekova, 2016).

Another of the finding of the study was the weakness of social anxiety and family acceptance dimensions in explaining the perception of academic self. There are studies in the literature examining

the relationship between social anxiety and self-esteem. Self-esteem is about the formation of the concept of self. In this sense, self-esteem could be defined as the attitude developed by individuals towards their own selves (Suner İkiz, 2000). Another dimension of the concept of self is the self-esteem, which refers to the development of a value by the individual about his/her self. Contrary to the finding that social anxiety was weak in predicting the perception of self in this study, there are many studies in the literature revealing that social anxiety is one of the important predictors of self-esteem, self or self-respect (Erözkan, 2011; Deniz, 2018; Sübaşı, 2007; Tagay, Önen, Canpolat, 2018; Zaeema, Nasreen, Riaz, Sarwat, 2013).

Social anxiety disrupts the communication that people have with others and affects their lives negatively. Social anxiety occurs as a result of fear caused by individuals observing, analyzing and evaluating society (Kashdan, 2007). Instead of fear, individuals should first trust in themselves. Having or not having self-confidence increases or decreases the level of social anxiety in individuals. In this sense, self-confidence has an important effect on the perception of self (Farhan & Khan, 2015). In their study, Leary & Kowalski (1995) also revealed that the increase in the self-confidence of an individual caused a decrease in their social anxiety.

The fear of individuals towards being alone could also be an important variable affecting social anxiety and self-esteem. In his study, Sübaşı (2007) found that loneliness was correlated positively with social anxiety and negatively with self-esteem. There are also studies revealing a positive relationship between social anxiety and loneliness (Leary and Kowalski, 1993; Riggio, Throckmorton, DePaulo, 1990). The survival of individuals depends on their communication with others. It can be argued that popular individuals who establish effective communication among their friends and do not get lonely in social terms develop a more positive perception of self when compared to others, who are rejected or neglected by others (Kaya, 2005).

The positive approach of parents within the family environment could affect the perception of self and self-esteem in individuals positively. The way individuals communicate with their parents has an important role in the development of their academic self-concept and self-esteem. We could argue that this importance stems form the communication established by the individuals with their parents (Kenç & Oktay, 2002). Moreover, among the studies in the literature, Maşrabacı (1994) found that the increase in the intensity of the relationship of a child with his/her father would increase the self-esteem; Duru (1995) stated that the individuals, who were exposed to democratic attitudes of their mothers and fathers had high levels of self-esteem; Çevik, Büyükşahin & Atıcı (2009) mentioned that the children of the families, who supported and were positive towards the friendship relations of the individuals, had high levels of self-esteem; and Renklibay (2017) concluded that the accepting attitude of the family increased the level of self-esteem.

The difference of the last two findings of the study from the results of the studies in the literature could be explained through homogeneity and narrowing of the range. In other words, the size of the sampling in the present study, which is greater than the sizes of the samplings in the other studies, and its homogeneity, could have caused the differentiation of the results.

As a result of the study, it was concluded that the scores obtained in certain sub-dimensions of language learning strategies were predicted by the scores obtained in some of the academic self-concept sub-dimensions; however, the effect of the scores concerning some sub-dimensions remained at low levels. It would not be appropriate to generalize this prediction for all language learning strategies since there were two canonical variables found to be significant as a result of the study.

In conclusion, the following suggestions could be made in line with the findings obtained above: It should be ensured that curriculum developers and teachers adopt the idea that they would increase the use of strategy in foreign language learning when they develop academic self-concept in students. In addition, all kinds of practices and understandings that support this idea should be included in the learning and teaching processes. Language learning strategies should be included in

foreign language teaching programs. These strategies should be implemented in classroom processes. Foreign language teachers should be taught language learning strategies through in-service trainings; and they should be aware of the implementation of these strategies in their lessons. This study was carried out in secondary education. A similar study could be conducted longitudinally within different levels of education. Students could be taught about language learning strategies; and the effectiveness of the strategies taught could be tested within an experimental design. In-depth research could be made through qualitative analysis within these studies in the experimental design. The literature could be enriched by employing different variables (academic achievement, self-confidence, anxiety, motivation, etc.) in the research processes to examine the relationship between academic self-concept and language learning strategies.

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