THE TURKISH ADAPTATION STUDY OF MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE (MSLQ) FOR 12–18 YEAR OLD CHILDREN: RESULTS OF CONFIRMATORY FACTOR ANALYSIS [1]

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ABSTRACT
This study gives results of the first phase of the 12-18 year old Turkish students' norm study of The Motivated Strategies for Learning Questionnaire (MSLQ), which deveoped by Pintrich, Smith, Garcia & McKeachie (1993). The scale was administrated to 1114 students from 3 primary schools and 3 high schools in Ankara in Turkish language, science, mathematics and social science courses. After eliminating the questionnaires which have missing and extreme values, the analyses were done on 762 valid questionnaires for motivation subscale and 1100 valid questionnaires for learning strategies subscale. Results of the confirmatory factor analyses show that the first subscale, Motivation, has six factors, and the second subscale, Learning Strategies, has nine factors according to original scale's factor structures. Depending on the results of the confirmatory factor analysis; 6 items from motivation subscale and 5 items from learning strategies subscale were removed due to their low factor loadings. The corrected item total correlations ranged 0.58 to 0.15 for motivation subscale, and 0.68 to 0.19 for learning strategies subscale.

Keywords : MSLQ, motivation, learning strategies, confirmatory factor analysis, adaptation of MSLQ

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INTRODUCTION

There is a considerable number of studies on the factors that affecting students' success and majority of them focus on students' motivation and use of learning strategies (Pintrich, Smith, Garcia & McKeachie, 1991, 1993; Garcia & Pintrich, 1996; Pintrich & De Groot, 1990; Zimmerman & Martinez-Pans, 1990). According to these studies, students who have high motivation and exploit learning strategies are more likely to perform better and be more successful. Also these students would develop lifelong learning skills more efficiently.

When students organize and manage their learning goals efficiently, they use cognitive and metacognitive strategies frequently (Eccles, 1983; Pintrich, 1988; Pintrich, 1988). They also manage more efficiently their learning effort when learning. Additionally, higher level motivated students' uses of cognitive and metacognitive strategies are higher and they completed their learning tasks better (Pintrich & De Groot, 1990).

In order to find the factors that affect the academic achievement of the university students and to increase the academic achievement of the university students by controlling these variables, a model and MSLQ were developed carried on during 10 years (Pintrich et al., 1993). Motivation in this model is gathered under the components of value, expectation and affective; and also learning strategies are gathered under the cognitive-metacognitive strategies and resource management strategies. The structured handled within the context of this model introduces in which level the students can success "learning the learning", and exposes the subjects in which they are successful and they need any support.

Whole of the MSLQ or its subscales is/are widely used in different student groups, in different fields in many countries. MSLQ has been widely used in the motivation and the determination of learning strategies of secondary school, high school and university students or adult learner in various companies. The scale is also used in different fields such as motivation and performance, learning strategies and success, self-efficacy, self-organization, web and internet based learning and distance learning. At the same time the scale has been used in several disciplines such as education psychology, social sciences, accounting, nutrition and teacher training (Chen, 2002; Duncan & McKeachie, 2005).

Also used in the primary and secondary school level in the world and in order to determine the factors that affect the academic achievement of students, it's seen that the preparation of a suitable form of a means like MSLQ for the primary school second section and the secondary schools students in Turkey population and after, by fixing the state, the evaluation of the results are up-to-date and important. It's seen that, except English, MSLQ or JHS MSLQ (Junior High School MSLQ) is also used in Greek (Andreo & Metallidou, 2004) for the 4. and 6. grade students, Hebrew (Eshel & Kohavi, 2003) for the 6. grade students, the Korean language (Bong, 2001) and the Norwegian language (Ommundsen, 2003) for the secondary school students, German (Neber & Heler, 2002) for high school students, Chinese (Rao & Sachs, 1999, Rao, Moely & Sachs, 2000; Sachs, Law, Chan & Rao, 2001; Sachs, Law & Chan, 2002) and the Korean language (Bong & Hocevar, 2002). Similarly, it's thought that to determine the factors that affect the academic achievement of students at the primary and secondary education level, and that's why; to adapt a suitable form of MSLQ, which is found acceptance in the world, in conformity with this level's students are up-to-date, necessary and also an important subject.

In the PISA (Programme for International Student Assessment) examination that was applied to children at the age of 15 in 26 countries in 2000, MSLQ was used for measuring the learning control in the research that was carried out by Artelt (2005) to determine the effects of cultural similarities and differences of countries on reading performance, strategies of motivation and learning. At the end of the research, it was found out that the students who motivate theirselves by the material they read were the ones who frequently use the control strategies in the learning process and that there were similarities and differences between countries in the use of these strategies.

Presently, in order to determine the motivation levels and the usage level of learning strategies of the primary education second section and secondary education students who continue their education, the Motivated Strategies for Learning Questionnaire (MSLQ)'s norm study for 12-18 ages is conducted within a project. This project, called SOBAG (Social Sciences and Humanities Research Group) 104KD97, is supported by TUBITAK (The Scientific and Technological Research Council of Turkey) and Ministry of National Education EARGED (Educational Research and Development Department). The first phase of this project that takes the specified norm study in hand is to realize the adaptation study of MSLQ for 12-18 age students in Turkey. In this research, it's emphasized the first phase results of this norm study and the results in the adaptation study of MSLQ to the Turkish Culture.

METHOD

This is a scale adaptation study. Within the context of the study, first of all, the preliminary application of the scale that has been tested its Turkish equivalence by experts, afterwards validity and a reliability analysis has been applied to the gained data. The information concerning this process is presented in the relevant subtitles.

Sample

The subjects of the research consist of 1114 students from 3 primary schools and 3 high schools in Ankara. The scale forms were applied in Turkish education, science, mathematics and social studies courses. After eliminating the questionnaires which have missing and extreme values, the analyses were done on 762 valid questionnaires for motivation subscale and 1100 valid questionnaires for learning strategies subscale.

For the motivation subscale; 47.2% of the students were female and 52.8% of the students were male. 21.2% of the students attend to 6th grade, 17.2% attend to 7th grade, 23% attend to 8th grade, 17.8% attend to 9th grade, 9.8% attend to 10th grade and 11% attend to 11th grade. 52.7% of the students responded to the motivation subscale for science and mathematics courses, %26.8 for social courses and 20.6% for Turkish language courses. 3.7% of the students did not answer the question about their continuing education programme. 61.5% of the students go to primary school and 38.5% go to high school. For the learning strategies subscale; 46% of the students were female and 54% of the students were male. 7 students did not answer the question about gender. 17% of the students attend to 6th grade, 16.7% attend to 7th grade, 20.6% attend to 8th grade, 19.7% attend to 9th grade, 10.8% attend to 10th grade and 15.2% attend to 11th grade. 4 students did not answer the question about grade. 52.19% of the students responded to the learning strategies subscale for science and mathematics courses, 25.92% for social courses and 21.9% for Turkish language courses. 54.32% of the students go to primary school and 35.68% go to high school.

Measurement Instrument

The Motivated Strategies for Learning Questionnaire (MSLQ) was developed to assess university students' motivational orientations and their use of different learning strategies (Pintrich et al., 1991). Two essential sections of the scale are the motivation and the learning strategies sections. The Motivation section has 6 factors and the learning strategies section has 9 factors, which subscales are modular and can be used single or together depending on the researchers' purpose.

The motivational scales are based on general social-cognitive model of motivation. The structure of these scales consists of expectancy, value and affect. Expectancy components refer to students' beliefs that they can accomplish a task. Two subscales of these components are students' perceptions of self efficacy and control beliefs for learning. Value components focus on the reasons why students engage in an academic task. Three subscales measuring the value beliefs are intrinsic goal orientation, extrinsic goal orientation and task value. The third motivational construct is affect and measured by scale of test anxiety, which taps into students' worries and concern over taking exams.

The learning strategies section of the instrument is based on a general cognitive model of learning and information processing. Three types of scales included in this section are cognitive, metacognitive and resource management. Cognitive strategies include students' use of basic and complex strategies for the processing of information from texts and lectures. The scales measuring use of cognitive strategies are rehearsal, elaboration, organization and critical thinking. The second general category is metacognitive control strategies which is measured by one subscale concerning the use of strategies that help students control and regulate their own cognition. The third general strategy category is resource management. These strategies include managing study environment and time as well as students' regulation of their own effort. Finally the remaining two subscales are peer learning and help seeking.

The 81 items of the MSLQ-TR are scored on a 7 point Likert scale, from 1 (not at all true of me) to 7 (very true of me). The motivation section consists of 31 items and the learning strategy section includes 50 questions. Administering the instrument takes approximately 20-30 minutes.

Tranlation and Turkish-English Equivalency of The Scale

MSLQ was translated into Turkish by the authors with the supervision of two experts in English language. After that, items of the scales were examined by a Turkish language expert related to Turkish language and two assessment and evaluation experts related to design (introduction information, instructions of the scale, format, order of the items, etc.), construction of the scale and rating points. Needed corrections were made according to these views.

To verify Turkish content approval of the scale an expert review form (ERF) was developed and used by the researchers. ERF intended to measure appropriatenes of the scale factor construction there fore face validity by the means of meanings, conceptializations , experiences and used terminology related to items and the factors of the scale. According to views and suggestions of the nine experts, a preliminary form of the scale was prepared. After that, items of the Turkish form of the scale were translated to English by two bilinguals to compare Turkish-English eguivalency of the scale by item by item back translation. According to item by item comparing results it can be said that two forms are identical in items' meaning. These results confirm that Turkish and English versions of the scales might be regarded equivalent

Statistical Analysis
Before the analyses of the gathered data, the forms which were filled incomplete or wrong, or which has extreme values have been removed from the data set. In the determination of extreme values, the scale scores have been transformed to z-standard scores and in the right and left of the mean, the scores that were outside of the 3.00 standard deviation have been accepted as the extreme values.

The confirmatory factor analysis was used in order to test the scale's factor structure (construct validity). For performing confirmatory factor analysis (CFA), Lisrel 8.30 was used. Corrected item-total correlation was calculated in order to examine the item validity.

RESULTS
Because MSLQ-TR is a scale where two different scales (Motivation Subscale and Learning Strategy Subscale) are used together, the findings are given as separate subheadings for these two scales.

MSLQ-TR Motivation Subscale (MS)
Factorial Structure of MSLQ-TR Motivation Subscale. It was used CFA in order to test the factor structure that shows the Motivation Subscale (MS) of MSLQ-TR over the data gathered from 12 -18-age students. Firstly, for a model with 6 factors set in the original scale, goodness of fit (GOF) statistics were figured out. As a result of the analysis, χ^2 (df=419, p=.000)=1712.77, χ^2/df =4.09, RMR (Root Mean-Square Residual)=0.18, SRMR (Standardized Root Mean-Square Residual)=0.07, GFI (Goodness-of-Fit Index)=0.88, AGFI (Adjusted Goodness-of-Fit Index)=0.85, RMSEA (Root Mean Square Error of Approximation)=0.06, CFI (Comparative Fit Index)=0.82, NNFI (Non-Normed Fit Index)=0.80 pointed out that the model were not fit with the expected level. Concerning these results, when modification index values reduced, it was stated precisely that there was a notable relation, especially, between the error covariances of item 6 with item 15, item 9 with item 25 and item 17 with item 26. When these item couples were analyzed, it was realized that they existed under the same potential variable in the original scale and also they were close to each other with respect to meaning.

When considering that they measured the same feature, by taking expert's opinion it was decided that one each item would be removed from the said item couples. In the removal processing, among the item couples, the items which measured the same feature and whose item-factor correlation was lower were removed from the model after consulting to the expert's opinion. In order to test the new model, again CFA was used. According to the results of second analyses, χ^2 =1174.55, p=.000, df=335, χ^2/df =3.51 and their GOF indexes RMR=0.15, SRMR=0.07, GFI=0.90, AGFI=0.88, RMSEA=0.06, CFI=0.85, NNFI=0.83 values pointed out that the model fit in a satisfactory level. But, when the modification index values were considered, since the item 13 which was expected to exist in the extrinsic goal orientation factor had a high correlation with the intrinsic goal orientation, control belief, self-efficacy perception and task value factors, and also since the factor loading was low (0.19) in its own factor, this item was taken out of the model and analyzed again.

The third CFA results were as χ^2 =1058.87, p=.000, df=309, χ^2/df =3.21 and GOF indexes RMR=0.15, SRMR=0.07, GFI=0.91, AGFI=0.89, RMSEA=0.06, CFI=0.86, NNFI=0.84. When these values were handled together, this showed that the model would be fit again in a satisfactory level. However, when its modification index was analyzed, there was a notable relation between the error covariances of the items 12 with 15 and items 5 with 21 that existed under the same factor in this model. By taking expert's opinion, considering the the factor loadings, and also the items 12 with 21 have been removed from the model and the analysis have been made again.

The values rated according the fourth CFA results, χ^2 =871.00, p=.000, df=260, χ^2/df =3.20 and GOF indexes are as RMR=0.16, SRMR=0.068, GFI=0.92, AGFI=0.90, RMSEA=0.055, CFI=0.86 NNFI=0.84. These values show that the tested model is coherent at a satisfactory level.

Analysis results of the fourth CFA point out that the model is coherent. The diagram regarding these results is given in the Figure 1. As it's seen in the figure, the factor loadings of the items change between 0.23 (item 9) and 0.70 (item 7) and all the loadings are statistically significant ($p<.05$). On the other hand, in the Table 1, the mean and standard deviation values of the factors of MS, and also the interfactors and factor-total points correlations are given.

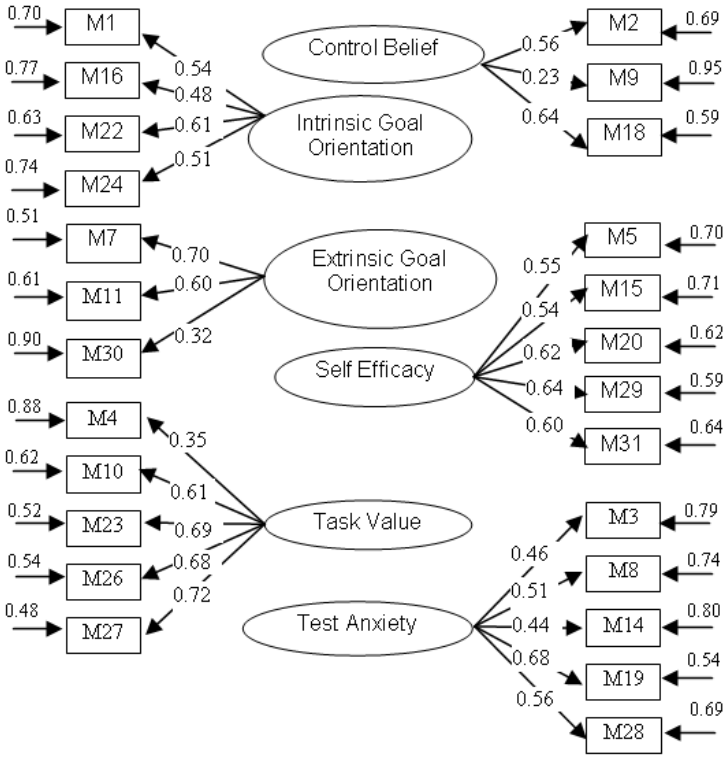

Figure 1. CFA Results of Motivation Subscale

As seen in Table 1, the correlations between the total scores and the factors scores of the scale are between 0.74 and 0.10; and the significant correlations among the factor points change between 0.10 and 0.58. The mean points taken from the scale is 133.38 (S=12.75) for total, 22.75 (S=3.85) for Intrinsic Goal Orientation factor, 15.31 (S=4.10) for Extrinsic Goal Orientation factor, 29.58 (S=4.25) for Task Value factor, 29.13 (S=4.02) for Self-efficacy factor concerning learning and performance, and 17.98 for the Control Belief factor. It's 18.63 (S=6.36) for Test Anxiety factor. The positive motivational factors; Intrinsic goal orientation, task value, self efficacy and control beliefs for learning are all positively correlated with one another with ranging from 0.27 to 0.58. This correlations show that students scores gathered from this subscales positively change together. For instance if one of the students score of intrinsic goal orientation is high, task value, self efficacy and control believes scores of the same student are most probably high too. There is also significant correlation between extrinsic goal orientation and test anxiety (r=0.35).

Table 1: ***Pearson Correlation Coefficients between Motivation Subscales' Points and Their Descriptive Statistics***

Factors	$\overline{X}$	S	Pearson Coefficients					
			1	2	3	4	5	6
1.Intrinsic Goal Orientation	22.75	3.85	-	-0.06	0.58*	0.47*	-0.05	0.33*
2.Extrinsic Goal Orientation	15.31	4.10		-	-0.02	0.10*	0.35*	0.04

3.Task Value Beliefs	29.58	4.25			-	0.47*	0.04	0.27*
4.Students' Perceptions of Self Efficacy	29.13	4.02				-	0.21*	0.29*
5. Test Anxiety	18.63	6.36					-	0.10*
6. Control Beliefs for Learning	17.98	2.36						-
Total	133.38	12.75	0.66*	0.10*	0.72*	0.74*	0.43*	0.43*

* p<.01

MSLQ-TR Learning Strategy Subscale (LSS)

Factorial structure of MSLQ-TR Learning Strategy Subscale. How much MSLQ-TR Learning Strategy Subscale (LSS) data supports the structure supported by expert opinion was analyzed by CFA. First of all, the goodness fit statistics have been calculated for the model with 9 potential variables (factors) set in the original scale.

As a result of the analysis, as being the first; Chi-Square (χ^2=5617.81, p=.000, df=1139, χ^2/df=4.93) value and GOF indexes (RMR=0.24, SRMR=0.06, GFI=0.83, AGFI=0.81, RMSEA=0.06, CFI=0.83, NNFI=0.81) pointed out that the model were not cohere with the expected level. But, when analyzed its modification indexes, it was determined that there was a notable relation between the error covariances of item 32 with item 63, item 37 with item 60 and item 77 with item 80 which existed in the same latent variable. When analyzed these item couples, it has been seen that they were close as expression, but even if they were small, there were differences with respect to the meaning. That's why; again it was made CFA by being added to the model in order to make the error covariances free of these item couples.

According the second analysis results; Chi-Square χ^2=4948.60, p=.000, df=1136, χ^2/df=4.35 and their GOF indexes RMR=0.23, SRMR=0.06, GFI=0.85, AGFI=0.83, RMSEA=0.06, CFI=0.84, NNFI=0.83 values pointed out that the model were cohere better. When analyzed the modification index values, it has been seen that there was a very high relation between the error covariances of the items 38 and 47 that exist in the critical thinking, 59 and 72 that take place in the rehearsal strategy factor and 68 and 75 that existing the help seeking factor. When these items were analyzed upon the expert opinion, because it was considered that they measured different features, in order to make the error covariance free between these two items, a model has been revised. Furthermore, CFA has been made by deciding the removal of item 57, because the items 33 and 57 which their error covariances were high according to the modification indexes were close to each other with respect to the expression and the meaning and its factor loading was low, and because the item was also bad according to the expert's opinions.

According to the results of the third CFA, Chi-Square is χ^2=4020.36, p=.000, df=1085, χ^2/df=3.71 and their GOF indexes were RMR=0.20, SRMR=0.05, GFI=0.87, AGFI=0.85, RMSEA=0.05, CFI=0.87, NNFI=0.86. These values were more coherent according to the previous model. When considered the factor loadings, the values of the item 40 (r=0.9) in the help seeking factor, items 77 (r=.16) and 80 (r=.17) in the time-work environment factor were too low. When analyzed these items, taking into consideration that there were items, which measured the same feature, they have been removed. This model was also tested with CFA.

The results achieved at the end of the fourth CFA, Chi-Square is χ^2=3288.17, p=.000, df=948, χ^2/df=3.47 and the GOF indexes were RMR=0.18, SRMR=0.045, GFI=0.89, AGFI=0.87, RMSEA=0.05, CFI=0.89, NNFI=0.88. The fact that the analysis gave better results according to the previous analysis could be interpreted as a better model was formed. When analyzed Chi-Square and the GOF index values prior to the reliability analysis, it could be said that learning strategies scales have an acceptable validity level.

As a result of the analyses that were realized for the reliability of the dimensions in the model which was formed, when Cronbach alpha coefficients and corrected item-total correlations were analyzed, it was obviously seen that the item 52, which takes place in the time and work environment, had a negative correlation at the medium level (0.29) with the factor and if this item was removed, the reliability coefficient will increase from 0.51 to 0.74. That's why; after the removal of the item 52, it has been made again a CFA.

The results achieved at the end of the fifth CFA, Chi-Square is χ^2=3094.61, p=.000, df=904, χ^2/df =3.42 and the GOF indexes are RMR=0.17, SRMR=0.044, GFI=0.89, AGFI=0.87, RMSEA=0.047, CFI=0.89, NNFI=0.88. The results show that this model has a relatively better accordance. The factor loadings of the scale change between 0.24 and 0.79. According to this result, it can be said that the scale has a valid structure (Figure 2).

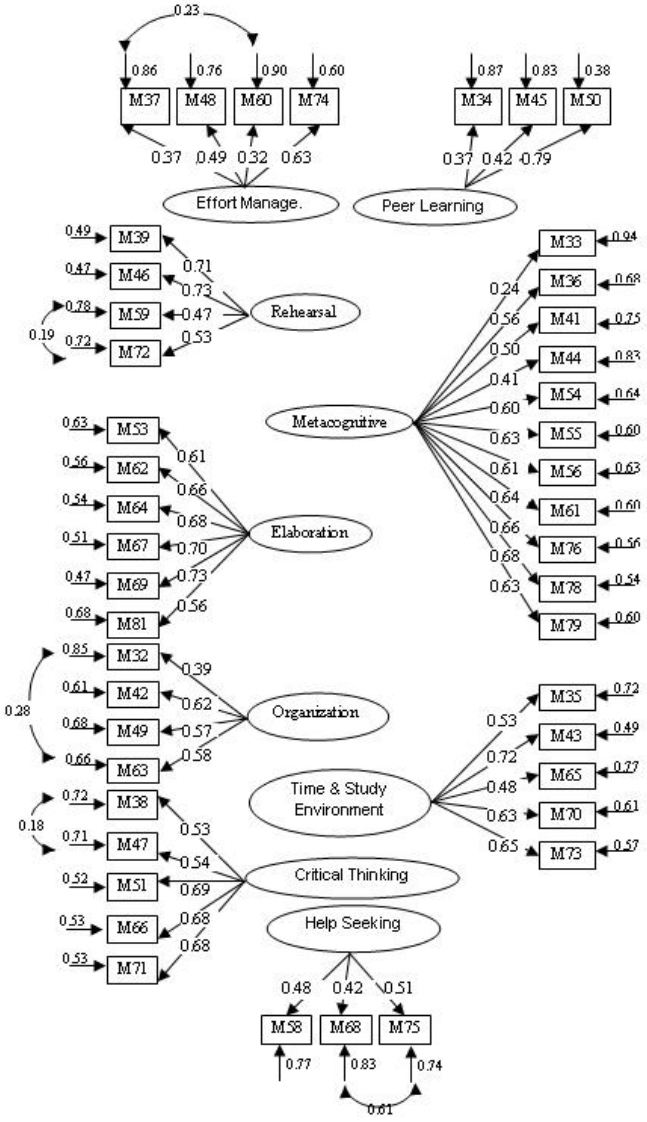

Figure 2. **CFA Results of Learning Strategy Scale**

Because the original scale and Cronbach alpha value of the effort management factor were low, the sixth CFA has been made in order to analyze the accordance of the strategy scale with the respect of the structure validity. According to the sixth CFA results, it can be reached to the values Chi-Square χ^2=2464.84, p=.000, df=747, χ^2/df =3.30 and the accordance indexes RMR=0.15, SRMR=0.042, GFI=0.90, AGFI=0.89, RMSEA=0.046, CFI=0.91, NNFI=0.90.

The factor loadings of the scale change between 0.24 to 0.79. These results can be commented as the model that is in the case of the removal of the effort management factor from the scale is acceptable and also more coherent according to the previous. But, in order to give the final decision, because of the fact that the results in Turkey samplings are wanted, the results related to the effort management factor are given in this report and also if it isn't reached to the reliable results in an acceptable level, the removal of this factor will be evaluated.

The correlations and descriptive statistics regarding MSLQ-TR factors and factor points are given in Table 2. According to this, the correlations between the factor points of MSLQ-TR change 0.16 to 0.77; the correlations between the factors and the total scores change 0.59 to 0.93. The mean points taken from the scale is 4.78 (S=1.02) for total, 4.69 (S=1.45) for the Rehearsal factor, 4.56 (S=1.42) for the Organization factor, 4.88 (S=1.33) for the Elaboration factor, 4.83 (S=1.33) for Critical Thinking factor, 4.64 (S=1.48) for ,Help Seeking factor, 3.81 (S=1.47) for Peer Learning factor, 4.95 (S=1.11) for Metacognitive Strategies factor, 4.65 (S=1.33) for Effort management factor and 5.26 (S=1.28) for Time and Study Environment factor.

As seen in Table 2 except for the relatively lower correlations for effort management, all cognitive strategies, metacognitive strategy and resource management subscales' scores were positively related to one another with Pearson correlation coefficients ranging from 0.16 (0.23 for second lowest) to 0.77. Additionally, these coefficients were relatively higher for rehearsal, elaboration, critical thinking and metacognitive self regulation strategies. Considering these results, it can be said that students who use any of these strategies, use other strategies similarly.

Table 2: *Pearson Correlation Coefficients between MSLQ-TR Learning Strategy Subscales' Points and Their Descriptive Statistics*

Factors	$\bar{X}$	S	Pearson Coefficients*								
			1	2	3	4	5	6	7	8	9
1 Rehearsal	4.69	1.45	-	.617	.565	.493	.398	.391	.708	.156	.593
2 Organization	4.56	1.42		-	.584	.521	.326	.393	.660	.403	.538
3 Elaboration	4.88	1.33			-	.765	.480	.443	.743	.463	.602
4 Critical Thinking	4.83	1.33				-	.411	.424	.688	.420	.539
5 Help Seeking	4.64	1.48					-	.435	.487	.282	.406
6 Peer Learning	3.81	1.47						-	.433	.233	.330
7 Metacognitive Self Regulation	4.95	1.11							-	.572	.725
8 Effort Management	4.65	1.33								-	.574
9 Time and Study Environment Management	5.26	1.28									-
Toplam	4.78	1.02	.771	.747	.855	.794	.613	.593	.925	.645	.797

* p<.01.

There are relatively strong correlations between; critical thinking – elaboration (r=0.77), metacognitive – elaboration (r=0.74), rehearsal – organization (r=0.617), rehearsal – metacognitive (r=0.70), organization – metacognitive (r=0.66), critical thinking – metacognitive (r=0.68) and metacognitive-time and study environment management (r=0.73). These correlations show that students' scores gathered from these subscales change positively together, for instance, if one of the students' score of elaboration is high, critical thinking scores of the same student are most probably high too.

DISCUSSION

In this study, it's examined the confirmatory factor analysis results of the data gained from Ankara sampling which is the first phase of the Turkey adaptation study of MSLQ for 12-18 age. The application has been realized on totally 1114 students, in 3 primary schools and 3 high schools, in different courses. The analyses have been realized through 762 data set for the motivation scale, 1100 for learning strategies scale.

When tested with CFA, the models relevant to the motivation scale (MS), the calculation with analysis is χ^2/df =3.20. Being smaller than 5 of this rate shows that the model is acceptable (Marsh & Hocevar, 1988). Of the GOF indexes, they are RMSEA=0.055 and RMR=0.16. Being close to 0 of these values and even the values which are equal to or smaller than 0.05 show a very good fit. Taking into account the complexity of the model, the values under 0.10 are also accepted (Anderson & Gerbing, 1984; Cole, 1987; March, Balla & McDonald, 1988). The fact that the model tested here is formed a very complex structure and because RMSE and SRMR (0.068) are between 0.05 and 0.08, it can be said that it isn't very good but there is a fit at an acceptable level. In the model, it is GFI=0.92 and AGFI=0.90.The cases that GFI value is over 0.85 and AGFI value is over 0.80 are acceptable levels for the fit (Anderson & Gerbing, 1984; Cole, 1987; March, Balla & McDonald, 1988). With regard to GFI and AGFI values, there is an acceptable accordance. CFI=0.86 NNFI=0.84 which are the increasing GOF indexes are like this. Because of being close to 0.90 of CFI and NNFI, when taking into account the complexity of the model it can be said that there is an acceptable fit.

It's seen that 6 items have got out in the study of adaptation of the motivation scale to Turkish Culture for 12-18 ages. Three of them have got out from self-efficacy factor, the others have got out from extrinsic goal orientation, task value and control belief factors. It's seen that the items which take place in the self-efficacy factor and also have a notable among the error covariances are close to eachothers with respect to the meaning for Turkish students. From this aspect, 17. ('I am very interested in the content area of this course') and 26. (I like the subject matter of this course items can be given as examples. Even if, when they are translated into Turkish, it's found two different meanings that are the equivalences of the words "interest" and "like", these two items consequently give very similar meanings with respect to Turkish language. Because, according to Turkish Culture structure when they are interested in the subjects of the course, students like the subjects of that course, but when they aren't interested, they don't like.

When the models relevant to LSS are tested with CFA, the calculation with the analysis is χ^2/df =3.42. Being lower than this rate shows that the model is acceptable (Marsh & Hocevar, 1988). From the GOF indexes, they are RMSEA=0.047, SRMR=0.044 and RMR=0.17. As RMSEA and SRMR values are lower than 0.05, it can be said that there is a good fit. In the model, being GFI=0.89 and AGFI=0.87 shows that there is an acceptable fit. Because of being close to 0.90 of CFI=0.89 and NNFI=0.88 values, when taking into account the complexity of the model it can be said that there is an acceptable accordance.

It's seen that 5 items (40, 52, 57, 77, 80) have got out in the study of adaptation of the motivation scale to Turkish Culture for 12-18 age. Three of them have got out from time and work environment factor, the others have got out from help seeking and metacognitive factors. They are removed from the scale because these items' factor loadings are too low, there are other items that are also close to these items with respect to the meaning and when they are removed, the GOF indexes become better with the original model.

In contrast to the evaluation that MSLQ-TR's CFA results which are realized in Ankara sampling for 12-18 age students are coherent with the real data, it can be said that it's necessary to be improved in the adaptation processing. That's why; the researchers continue the studies of MSLQ-TR application and the realization of its analysis on 24.000 students in order to develop the model and determine the norms of the scale in Turkish culture regarding in Turkey population.

REFERENCES

Anderson, J.C., & Gerbing, D.. (1984). The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis. *Psychometrika, 49*, 155-173.

Andreou, E., & Metallidou, P. (2004). The relationship of academic and social cognition to behaviour in bullying situations among Greek primary school children. *Educational Psychology, 24*(1), 27–41

Artelt, C. (2005). Cross-Cultural Approaches to Measuring Motivation. *Educational Assessment, 10*(3), 231–255

Bong, M. (2001). Between- and within-domain relations of academic motivation among middle and high school students: Self-efficacy, task-value and achievement goals. *Journal of Educational Psychology, 93*(1), 23–34.

Bong, M., & Hocevar, D. (2002). Measuring self-efficacy: Multitrait–multimethod comparison of scaling procedures. *Applied Measurement in Education, 15*(2), 143–172.

Chen, C. S. (2002) Self-regulated learning strategies and achievement in an introduction to information systems course. *Information Technology, Learning and Performance Journal, 20*(1), 11-25

Cole, D.A. (1987); Utility of confirmatory factor analysis in test validation research. *Journal of Consulting and Clinical Psychology, 55,* 1019-1031.

Duncan, T. G. & McKeachie, W. J. (2005). The Making of the Motivated Strategies for Learning Questionnaire, *Educational Psychologist, 40*(2), 117–128

Eccles, J. (1983). Expectancies, values and academic behaviors. In J.T. Spence (Ed.), *Achievement and achievement motives* (pp. 75-146). San Francisco: Freeman.

Eshel, Y. & Kohavi, R. (2003). Perceived classroom control, self-regulated learning strategies, and academic achievement. *Educational Psychology, 23*(3), 249–260.

Garcia, T. & Pintrich, P.R (1996). Assessing Students' Motivation and Learning Strategies in the Classroom Context: the Motivated Strategies for Learning Questionnaire. *Alternatives in assessment of achievements, learning processes and prior knowledge.* Edited by Menucha Brenbaum, Filip JRC Dochy. Kluwer Academic Publishers. Boston/Dordrecht/London.

Marsh, H.W. & Hocevar, D. (1988). A new more powerful approach to multitrait-multimethod analysis: application of second-order confirmatory analysis. *Journal of Applied Psychology 73*, 107-117.

Marsh, H.W., Balla, JR. & McDonald, R.P., (1988), Goodness-of-fit indexes in confirmatory factory analysis: the effects of sample size, *Psychological Bulletin, 103*(3), 391-410.

Neber, H., & Heller, K. A. (2002). Evaluation of a summer-school program for highly gifted secondary-school students: The German Pupils Academy. *European Journal of Psychological Assessment, 18*(3), 214–228.

Ommundsen, Y. (2003). Implicit theories of ability and self-regulation strategies in physical education classes. *Educational Psychology, 23*(2), 141–157.

Pintrich, P. R. (1988). A process-oriented view of student motivation and cognition. In J. S. Stark & L. Mets (Eds.), Improving teaching and learning through research. *New directions for institutional research, 57* (pp. 55-70). San Francisco: Jossey-Bass.

Pintrich, P. R. (1989). The dynamic interplay of student motivation and cognition in the college classroom. In C. Ames & M. Maehr(Eds.), Advances in motivation and achievement: Vol. 6. *Motivation enhancing environments* (pp. 117-160). Greenwich, CT: JAI Press.

Pintrich, P.R. & De Groot, E.V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*(1) 33-40.

Pintrich, P.R., Smith, D.A.F., Garcia, T. & McKeachie, W.J. (1991). *A Manual for the use of the motivated strategies for learning.* Michigan: School of Education Building, The University of Michigan. ERIC database number: ED338122.

Pintrich, P.R., Smith, D.A.F., Garcia, T. & McKeachie, W.J. (1993). Reliability and predictive validity of the motivated strategies for learning questionnaire (MSLQ). *Educational and Psychological Measurement, 53* (3), 801-814.

Rao, N. & Sachs, J. (1999). Confirmatory Factor Analysis of The Chinese Version Of The Motivated Strategies For Learning Questionnaire. *Educational and Psychological Measurement, 59* (6), 1016–1029.

Rao, N.,Moely, B. E., & Sachs, J. (2000). Motivational beliefs, study strategies, and mathematics attainment in high- and low-achieving Chinese secondary school students. *Contemporary Educational Psychology, 25*(3), 287–316.

Sachs, J., Law, Y. K., & Chan, C. K. K. (2002). An analysis of the relationship between the Motivated Strategies for Learning Questionnaire and the Learning Process Questionnaire. *Psychologia: An International Journal of Psychology in the Orient, 45*(3), 193–203.

Sachs, J., Law, Y. K., Chan, C. K. K., & Rao, N. (2001). A nonparametric item analysis of the Motivated Strategies for Learning Questionnaire–Chinese version. *Psychologia, 44*, 197–208.

Zimmerman, B.J. & Martinez-Pons, M. (1990). Student differences in self-regulated learning: relating grade, sex and giftedness to self-efficacy and strategy-use. *Journal of Educational Psychology, 82*(1) 51-59.

