Títle

Motivation and Learning Strategies in University Students: adaptation of the Motivated Strategies Learning
Questionnaire to the Portuguese population

Authors

Bill Mckeachie, PhD*, Rita Melo**, MSc, e Rui Mendes***, MSc

Authors' institutions

* University of Michigan, Department of Pshychology

** Technical University of Lisbon, Instituto Superior Técnico, Pedagogical Council, Tutoring Programme

*** Technical University of Lisbon, Instituto Superior Técnico, Studies and Planning Office

Authors' contacts

billmck@umich.edu - +1 763 0218

rita.melo@ist.utl.pt - +351 218 419 813

rui.mendes@ist.utl.pt - +351 218 419 156

Abstract

Promoting academic achievement in university students calls for the use of specific tools for identifying
variables that interfere with students' motivation and learning strategies. In view of this need, the Motivated
Strategies for Learning Questionnaire – MSLQ was adapted to the Portuguese population, by analysing its
acceptability and levels of internal consistency of MSLQ sub-scales. A short version of 28 items was obtained
after validating this tool, which allowed for a more time-cost efficient identification of the dimensions involved
in motivation and learning strategies used by university students.

Keywords

Learning Strategies, Motivation, Academic Achievement, Survey Adaptation, Higher Education.

1. Introduction

The transition from Secondary Education to Higher Education has been a permanent concern of Higher Education Institutions for verifying that students frequently arrive ill-equipped to face University's academic challenges. Particularly in the European context, it has become increasingly difficult to deal with students' academic and social skills deficiencies as a result, in part, of the Bologna Process. This uniformization treat aimed at a higher equivalence and uniformization of the teaching/learning process across EU countries, stressing the importance of university students' autonomy and pro-activity. This new perspective widened the gap between the role students play in secondary education - which was not taken into account by the Bologna Process - and the role they are expected to play in higher education.

In this context, Universities will strongly benefit from offering its students tools that can promote self-regulated learning. Nowadays, people have greater mobility and free access to information in growingly competitive markets. Greater autonomy in the learning process is expected from the individual as a university student and, subsequently, as a professional. Additionally, some University Internet websites illustrate the importance of offering their prospective "consumers" an environment favourable to intellectual stimulus and having a particular concern for motivating and supporting them. Particularly, highly rated Universities show a considerable investment in helping students achieve their academic goals. Thus, the concern for students' motivation and strategies used is important not only for Institutions' attractiveness and the teaching body, but also to the students themselves, who sometimes lack exact knowledge of their characteristics in relation to learning. To this effect, the Instituto Superior Técnico (IST) has made available the necessary resources to enhance students' hard skills and, more recently, their soft skills.

Under the development of soft skills, the IST has created the Tutoring Programme which aims at promoting students' academic integration and personal development through personalised monitoring given by Tutors – Professors of the same Department where students are enrolled in – and through a diversified training opportunity in interpersonal skills (e.g., time management, teamwork, stress management, leadership). In addition, it is also designed to help students develop effective methods to adapt and regulate thinking processes in relation to the immeasurable amount of information available and to increase their motivation for lifelong learning, besides being an old concern at the level of Higher Education (McKeachie, Pintrich and Lin, 1985; Lin, McKeachie and Kim, 2003).

To help achieve these objectives, it has become fundamental to have a tool that allowed for the precise identification of the strategies used by students and those that should be improved.

The Motivated Strategies for Learning Questionnaire - MSLQ has been widely used in this scope (see Harris, Edmundson and Jacobson, 2006 for a meta-analysis of studies that resort to the MSLQ), with the purpose of evaluating the students' perception of their motivation and learning strategies towards a specific course unit. It therefore allows students to increase their self-awareness and to obtain greater perception of their strengths and weaknesses as Higher Education students. The MSLQ also allows teachers to obtain feed-back from students in order to help them take decisions on adjustments deemed necessary to the course unit they teach.

In terms of research, the MSLQ has also made it possible: 1) to study the nature of motivation and the use of learning strategies in different fields; 2) to help refine the theoretical understanding of the motivational constructs, identify how they differ from each other, and pinpoint existing individual differences in self-regulated learning; 3) to evaluate the motivational and cognitive effects of the different aspects of teaching (Duncan and McKeachie, 2005).

In addition to the wide variety of fields of application of the MSLQ, it has been adapted and applied in different countries, such as the USA, Australia, Saudi Arabia, South Korea and Turkey just to mention a few (Büyüköztürk et al., 2004; Sungur and Tekkaya, 2006; Bong and Hocevar, 2002).

This self-assessment survey is based on a theoretical and sociocognitive perspective, which considers students as active agents in processing information (Duncan e McKeachie, 2005). According to this perspective, students' beliefs and cognitions play a fundamental mediation role in the learning process. Likewise, it is assumed that the motivation and the learning strategies are not students' traits. On the contrary, the MSLQ was built on the basis of a theory in which motivation is considered as a dynamic characteristic, which depends on the context and the learning strategies that the student is expected to learn and control. Thus, students' motivation varies according to the different course units and the use of study strategies may also vary according to the nature of the academic tasks.

As stated by McKeachie (1990), there are three assumptions that derive from cognitive psychology and the motivation theory:

- students build knowledge from information they already have, which, in turn, interacts with the students' educational experience;

 - the ability to remember and use what was taught depends on how students' learnt it (e.g. deep vs. superficial processing);

- individuals are beings who are constantly learning and are curious in nature. Nevertheless, intrinsic motivation may diminish due to a feeling of helplessness or despair with regard to their skills as learners.

The perception that students have of their skills is therefore of great importance in what concerns motivation. The model of Dweck and Elliot (1983 cited by McKeachie *et al.*, 1985) shows this inter-relationship. The authors propose a motivation model to achieve success by suggesting that the students have two types of basic conceptions of intelligence and effort: the incremental and entity conceptions. Those who possess the former conception believe that intelligence is an array of skills that may change through effort, whereas those who have an entity conception believe that their skills are more stable and perceive effort as a risk that may reveal a weak skill.

Thus, when students lack a self-efficacy feeling, learning becomes boring and routine. In these cases, students have the tendency to think less of the meaning and purpose of the tasks and to be less motivated to exceed the minimum requirements. When, on the other hand, students start to feel competent to learn (to think of subject matters and the way they relate to other learning and experiences) learning becomes an intrinsic source of satisfaction (McKeachie, 1990).

Likewise, when students are motivated to have goods marks and possess intrinsic motivation (i.e., he/she sees himself/herself as taking part of a task for reasons such as challenge, curiosity and proficiency, that is to say, the task is itself a source of satisfaction), he/she tends to achieve better results than the student who has only extrinsic motivation, i.e., motivation that comes from outside an individual which depends on whether he/she reaches success in a specific task. In the case of a student the motivating factors would be trying to get good marks, being rewarded, performing better than others, obtaining good judgment from third parties and competing with others (Lin, McKeachie, and Kim, 2003).

1.1.   *MSLQ's psychometric properties*

The MSLQ has been widely studied, not only its full version but also some of its scales independently (see Duncan and McKeachie, 2005 for review of the studies conducted between 2000 and 2004; Bong and Hocevar, 2002; Muis et al., 2007).

Comparing MSLQ with other two self-regulated learning tools (the *Learning and Study Strategies Inventory* – LASSI – and the *Meta-Cognitive Awareness Inventory* – MAI), Muis et al. (2007) analysed the influence that the answer format, the situational factors and the methodologies used, such as instructions, have on the construct evaluation. Through confirmatory factor analysis of these three measures, which have been developed to assess self-regulated learning defined as a student's trait, the authors explored the convergent validity (i.e. to what extent there is a pattern of high correlation between the same constructs when assessed by different measures), the discriminatory validity (i.e. to what extent theoretically distinct constructs have a correlation close to zero, regardless of the measures used) and the effect of the methods (co-variance shown when theoretically divergent constructs, measured in a same tool, show a correlation greater than the existing correlation between theoretically convergent constructs, however assessed by different measuring tools). The authors found modest outcomes as regards to convergent validity, which may result from differences that exist in the theories underlying each tool. Such outcomes point out the richness of this field of study and the different aspects that self-regulated learning, as a construct, may have.

1.2. MSLQ Components

MSLQ contains 81 items and is divided into two main parts: motivation and learning strategies, covering a set of 15 sub-scales that can be used jointly or separately according to the research objectives. The MSLQ is an instrument for application in the classroom that takes approximately 15 to 20 minutes to complete (Pintrich *et al*., 1991). Students are evaluated on a 7-point Likert scale, from 1 – 'not at all true of me' to 7- 'very true of me'. The subscale scores derive from the average of its items. Some items are negatively worded. These items scores have to be reversed and converted before calculating the subscales.

There are 15 sub-scales, 6 are motivation scales and 9 are learning strategy scales. Motivation scales total 31 items that assess students' beliefs and objectives for a course unit, the belief on their ability to succeed in it and test anxiety. The learning strategy scales include 31 items on the use that students make of different cognitive and metacognitive strategies and 19 items on resource management. Table 1 contains the scales of each part of the MSLQ and the respective items.

Table 1. Items that compose the 15 MSLQ scales (Duncan and McKeachie, 2005)

Scale	Items that compose the scales
Motivation Scales	
Intrinsic goal-orientation	1, 16, 22, 24
Extinsic goal-orientation	7, 11, 13, 30
Task value	4, 10, 17, 23, 26, 27
Control of learning belief	2, 9, 18, 25
Self-efficacy for Learning and Performance	5, 6, 12, 15, 20, 21, 29, 31
Test Anxiety	3, 8, 14, 19, 28
Learning Strategy Scales	
Training/Repetition	39, 46, 59, 72
Elaboration	53, 62, 64, 67, 69, 81
Organization	32, 42, 49, 63
Critical thinking	38, 47, 51, 66, 71
Metacognitive self-regulation	33r, 36, 41, 44, 54, 55, 56, 57r, 61, 76, 78, 79
Time Management and Study Environment	35, 43, 52r, 65, 70, 73, 77r, 80r
Effort Regulation	37r, 48, 60r, 74
Peer learning	34, 45, 50
Help seeking	40r, 58, 68, 75

Note: r- reverted items

1.3.   Objectives

This study aims at adapting the MSLQ (81 item version) to Portuguese University students to help promoting their academic achievement. We have sought to adapt this questionnaire specifically to courses in which students feel academic difficulties to improve self-awareness of the strategies used in these courses.

2. Methodology

2.1. Procedures

The full version of the MSLQ (81 items) was applied to 197 3rd and 4th year students of different Engineering Courses at IST (Mechanical Engineering, Computer Science and Engineering, Chemical

Engineering and Biological Engineering). Similar to Muis et al. (2007), MSLQ instruction was changed since the sample was obtained from students attending different undergraduate courses. Students could choose a different course to focus on to complete the questionnaire.

Thus, and unlike the original MSLQ, in which students should focus on a specific course (e.g. the course they are currently attending), 3 application groups were set up, according to the initially given instruction: the 'at random course' group where students receive an instruction to focus on any course unit of their choice; the "easy course" group, where students should focus on a course perceived as easily attainable; and the "difficult course" group, where they should focus on a course perceived as difficult to attain.

The MSLQ was translated to Portuguese and, subsequently, retroversed by a certified translator. The final version was independently reviewed and evaluated by three researchers.

The MSLQ was administered in a classroom taking 15 minutes on average. All students in the classroom were invited to voluntarily fill in the survey and informed that it was still at an adaptation phase. Confidentiality of questionnaire results was ensured and participants were informed that results would only be disclosed for their own information - if an e-mail address was provided. In addition, socio-demographic variables were collect as well as students' opinion regarding MSLQ. Students assessed the adequacy of the MSLQ questionnaire through a Likert-type scale from 1 'not adequate' to 5 'adequate' in respect of the following domains: (I) understanding/ clarity, (II) reading, (III) words used; and (IV) number of items.

With regard to adequacy, understanding and analysis procedures of the Portuguese MSLQ items, 3 particular fields were evaluated: acceptability, internal consistency and scale structure. As for acceptability, results were analysed with descriptive analysis in relation to items understanding, clarity, and reading, words used and number of items. The Cronbach's α was then used to evaluate the internal consistency of the scales that compose the MSLQ, while analysing all of the Motivation and Learning Strategy subscales by application groups.

Subsequently, the three groups' Cronbach's α ('difficult course', 'at random course' and 'easy course') were compared with Cronbach's α for the course that was chosen more often (*Materials Resistance* course), and with Cronbach's α obtained by Duncan and McKeachie (2005). The internal consistency of

the two MSLQ parts - Motivation and Learning Strategies - was analysed by application groups in order to explore the behaviours of the data in relation to these two fields in each group.

Lastly, an exploratory data analysis was made to validate the MSLQ adapted to the Portuguese population, eliminating the less important contributors for each scale, through item-scale analysis.

2.1.   Sample

All students who did not provide their student number were excluded from the initial sample. When these participants were included in the sample Cronbach's α values were lower than when they were excluded. As such, these students show a general tendency to be less committed as regards to the answers given, increasing the chance of biased answers. Another exclusion criteria were incomplete questionnaires. After excluding both cases (n=20), the sample totalled 177 students: nearly 27% of the sample answered the survey being instructed to focus on an "at random course unit"; nearly 34% received the instruction of a "more difficult course" (see table 2).

Table 2. Application groups

Group	N (%)	Sex (%)		Average age	Course average*†	% of course concluded*
		M	F			
at random course	47 (26.6)	89.1	10.9	21.46	13.6	75.7
easy course	60 (33.9)	56.7	43.3	21.62	13.0	72.6
difficult course	70 (39.5)	74.3	25.7	22.17	12.9	71.8
Total	177 (100.0)	72.2	27.8	21.79	13.1	73.1

*Note: *) data referring to academic performance in the 06/07 academic year, when the data were collected; †)on a 0 to 20 scale*

3. Results

3.1.   Acceptability

Most questionnaires were complete (92.5%). There was a maximum of 2 omitted answers in each item. As for the understanding of the MSLQ items, and in accordance with a 1 "not adequate" to 5 "adequate" scale, the majority of students awarded a positive value (4 or 5, 43% and 25%, respectively). Similar values were obtained for indicators such as "easy reading" and "word use adequacy". These results indicate that participants understood the questionnaire.

On the contrary, roughly 70% of respondents gave an intermediate or negative value when evaluating the number of items, suggesting the need for a shorter version of the questionnaire.

3.2.   *Internal Consistency*

In most of the scales of motivation and learning strategies we found satisfactory results for internal consistency, although the values of α vary according to the group of application. Nevertheless, in most of them, the Cronbach's α is higher than 0.70 (Table 3),

With regard to motivation, and when comparing the three application groups, the highest coefficients were found in the "difficult course" for *Extrinsic-goal orientation, Task value and Control of learning beliefs* sub-scales*,* showing values higher than those found by McKeachie, Pintrich, and Lin (1985), which proves the robustness of the Portuguese version. In turn, in the "easy course" group, the highest coefficients were found in *Intrinsic-goal orientation, Self-effectiveness for learning and performance* sub-scales*. Finally,* in "random course" group, the highest coefficient value was detected in the *Test anxiety* scale. Overall, the values are close to those of the original study.

Table 3. Alfa coefficients and items that compose the 15 MSLQ sub-scales, by application groups, Duncan and McKeachie sample and Material Resistance Course

Sub-Scales	α Duncan, McKeachie,. (2005)	α Materials Resistance N=33	α Random course N=47	α Easy course N=60	α Difficult course N=70
Motivation Sub-Scales					
Intrinsic goal orientation	.74	.66	.74	.79	.59
Extrinsic goal orientation	.62	.55	.56	.59	.67
Task Value	.90	.91	.93	.90	.94
Control of Learning Beliefs	.68	.85	.76	.60	.83
Self-efficacy for Learning and Performance	.93	.87	.86	.87	.85
Test anxiety	.80	.61	.76	.67	.59
Learning Strategy Sub-Scales					
Rehearsal	.69	.61	.68	.75	.58
Elaboration	.75	.75	.39	.80	.76

Organization	.64	.77	.63	.90	.79
Critical thinking	.80	.80	.80	.84	.81
Metacognitive self-regulation	.79	.83	.72	.89	.80
Time and Study Environment Management	.76	.75	.47	.75	.69
Effort Regulation	.69	,55	,61	,37	,56
Peer Learning	.76	,76	,71	,85	,61
Help seeking	.52	,48	,46	,79	,43

In Learning Strategy sub-scales, the group with the highest coefficients is the "easy course" group in 4 out of 6 scales (*Elaboration, Organization, Meta-cognitive self-regulation and Time and study environment management*). The remaining sub-scales (*Rehearsal, Critical thinking*) obtained the highest α values in the "random course" group. The coefficients are all very similar, except for the *Organization* sub-scale in the "easy course" group, in which the value is substantially higher.

To make comparative analysis richer, a sub-sample was obtained on the basis of the course with the highest weight in the distribution – "Materials Resistance", which accounts for nearly 21% of the overall sample. The coefficients found are substantially higher than those of the original study in two of the sub-scales, *Organization* and *Control of Leaning Beliefs*. The remaining sub-scales have similar or lower α values than those found in the original version.

3.3. *Exploratory Analysis of the Answer Pattern in Motivation and Leaning Strategies*

Regarding the answer pattern and comparing the three groups under analysis, the lowest value of α was found in the "difficult course" group, and the highest in the "random course" group. As far as Learning Strategies are concerned, there are also high values of α, and the "easy course" group is the one with the highest answer pattern.

Thus, similar to what occurs in the Motivation scales, the students of the "difficult course" group generally show a more variable pattern regarding the use of learning strategies than the students of the "easy course" group. Nevertheless, there is a difference in relation to the "random course" group, which presents the lowest answer pattern of the three groups.

The comparison of the global α of Motivation with the global α of Learning strategies, makes it possible to verify that Motivation has a highest answer pattern than the Learning Strategies (α=.912 and α=.875 respectively). These results induced the need for additional tests in order to explore the correlation between the application groups and the domains (Part A – Motivation and part B – Learning Strategies). In fact, this is more significant in the 3 application groups and more intense in the "easy course" group.

Table 4. Spearman Correlation Coefficients between Motivation and Learning Strategies by group of application

Application group	ρ
Random course	,481*
Easy course	,557*
Difficult course	,376*

Note: *p<0,01

3.4. Item Numbers Reduction

With the purpose of confirming the item-scale relationships, a factorial analysis was conducted which gave us a low saturation of the factors in the original scales (with the varimax rotation, the dimensions found did not reproduce the referenced sub-scales). Given this situation, the possibility of deleting the number of items was considered in order to obtain a more consistent questionnaire in respect of the answer pattern (see table 5) and to improve the acceptability of the MLSQ. All scales, showing α values lower than 0,65 were withdrawn from the analysis, except for *Test Anxiety*, in which the sub-scale value was substantially higher after deleting 3 out of the 5 items (almost 0,8).

With regard to Motivation, the *Intrinsic Goal Orientation* sub-scale was deleted. As for the remaining ones, only the highest achievers remained (12 out of the 31 original items).

Table 5. Item-scale analysis of Motivation

Sub-Scales	N	Item Number	Cronbach's Alpha if Item deleted	Cronbach's Alpha	Cronbach's Alpha After Item(s) deleted
Extrinsic Goal Orientation	70	Item 7*	0,508	0,670	0,795
		Item 11*	0,501		
		Item 13	0,620		
		Item 30	0,745		
Task Value	70	Item 4	0,948	0,943	0,883
		Item 10	0,931		
		Item 17*	0,927		
		Item 23*	0,923		
		Item 26	0,929		

Sub-Scales	N	Item Number	Cronbach's Alpha if Item deleted	Cronbach's Alpha	Cronbach's Alpha After Item(s) deleted
		Item 27	0,932		
Control of Learning Behaviour	69	Item 2	0,802		
		Item 9*	0,750		
		Item 18	0,839	0,830	0,898
		Item 25*	0,733		
Self-Efficacy for Learning and Performance	69	Item 5	0,839		
		Item 6*	0,819		
		Item 12	0,844		
		Item 15*	0,818		
		Item 20*	0,819	0,850	0,843
		Item 21	0,856		
		Item 29*	0,823		
		Item 31	0,833		
Test Anxiety	70	Item 3	0,539		
		Item 8	0,643		
		Item 14	0,594	0,591	0,797
		Item 19*	0,411		
		Item 28*	0,439		

Note: * Itens remaining for the MSLQ version adapted to the 4Portuguese population

Similar to what occurred with Motivation, a similar procedure was adopted to the Learning Strategies, where sub-Scales such as *Training, Effort Regulation, Peer Learning and Help Seeking* were deleted. Only the items that contributed the most to each sub-scale remained (16 out of the original 50).

Table 6. Item-scale analysis of Learning Strategies

Sub-Scales	N	Item Number	Cronbach's Alpha if Item Deleted	Cronbach's Alpha	Cronbach's Alpha After Item(s) deleted
Elaboration	69	Item 53*	0,706		
		Item 62*	0,708		
		Item 64*	0,678		
		Item 67	0,741	0,758	0,774
		Item 69*	0,708		
		Item 81	0,782		
Organization	70	Item 32*	0,686		
		Item 42	0,790		
		Item 49	0,775	0,785	0,830
		Item 63*	0,647		
Critical Thinking	69	Item 38*	0,779		
		Item 47*	0,778		
		Item 51*	0,752	0,809	0,786
		Item 66*	0,763		
		Item 71	0,786		
Metacognitive self-regulation[a]	67	Item 33 inv	0,799	0,800	0,672
		Item 36	0,792		
		Item 41*	0,774		
		Item 44	0,777		
		Item 54	0,780		
		Item 55*	0,778		
		Item 56*	0,764		
		Item 57 Inv	0,778		
		Item 61	0,775		
		Item 76	0,808		

Sub-Scales	N	Item Number	Cronbach's Alpha if Item Deleted	Cronbach's Alpha	Cronbach's Alpha After Item(s) deleted
		Item 78	0,796		
		Item 79	0,798		
Study Time and Environment[b]	69	Item 35*	0,638		
		Item 43*	0,588		
		Item 52 Inv*	0,624		
		Item 65	0,636	0,686	0,696
		Item 70	0,664		
		Item 73	0,689		
		Item 77 Inv	0,703		
		Item 80 Inv	0,682		

Note: * Items that remained for the MSLQ version, which was adapted to the Portuguese population.
    a) Given the high number of scale items, the 2 highest achievers were considered for the value of α. Although, the two lowest achievers remained, they contribute to evaluate self-regulation domains that are not contemplated in the remaining items.
    b) Given the almost inexpressive differences between item 35 and 65, primacy was given to the semantically clearest item.

4. Discussion

The Portuguese version of the MSLQ showed high levels of unambiguousness and acceptability. The full version of 81 items was applied according to 3 instructions in order to reach a final instruction, which allowed for a reliable pattern of each sub-scale. After calculating the respective α coefficients, and comparing them with the original study, it was found that both Motivation and Learning Strategies sub-scales are reasonably reliable.

The instruction to be adopted was subject to great reflection, given that it decisively contributed to deepening a subject that has become a priority for Higher Education challenges – the difficulties in academic performance. The option to make use of 3 application groups, in spite of being more risky from the statistical viewpoint, because the answer pattern has a tendency to be *a prior* smaller, was however more challenging due to the possibility of adapting the tool to the field of academic difficulties. Nevertheless, through the coefficients obtained, it was found that the differences between the 3 are not significant. Therefore, the instruction requiring students to select an difficult course unit must be used for two main reasons: the answer pattern is not as variable as it was supposed to be regarding the answers of the 2 other groups and the instruction is, in fact, the one that best fits the needs of intervention in order to increase the levels of academic achievement.

The data showed a correlation between Motivation and Learning Strategies in the three application groups. This correlation had the highest coefficient in the "easy course" group. Thus, the instrument shows good *answerability* and supports the model of Dweck and Elliot (cited by McKeachie et al.,

1985), who purpose the inter-relationship between motivation and the perception of learning strategies used.

In conclusion, the validation of the instrument through the factorial analysis procedure made it possible to establish that not all the items saturated in the original scales. Therefore, together with the general opinion of the respondents regarding instrument understanding and dimension, the option was clearly to reduce the number of items. In addition to allowing the collection of surveys to be less time consuming, this procedure also made it possible to obtain higher α values with the same data and, simultaneously, closer to the original study. To minimize the possibility of error, the option was to delete the scales with α values lower than 0,65, so that the instrument could be made as accurate as possible. By reducing the number of items, it was possible to obtain a final version of 28 items. We plan to validate this new instrument by applying it to a more extended sample than that used in this original adaptation.

References

Bong, M. and Hocevar, D: (2002). Measuring Self-Efficacy: Multitrait-Multimethod Comparison of Scaling Procedures. *Applied Measurement in Education*, 15(2), 143-171.

Büyüköztürk, S., Akgün, Ö., Özkahvecý, Ö., and Demírel, F. (2004). The Validity and Reliability Study of the Turkish Version of the Motivated Strategies for Learning Questionnaire. *Educational Sciences: Theory & Practice*, 4(2) 231-239.

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

Harris, S., Edmundson, L., and Jacobson, R. (2006). Motivational and Learning Strategies of Community College Students. Paper presented at the *MidSouth Educational Research Association Annual Conference*. Birmingham, AL.

Lin, Y., McKeachie, W., and Kim, Y. (2003). College student intrinsic and/or extrinsic motivation and learning. *Learning and Individual Differences*, Vol. 13, 251-258.

McKeachie, W. (1990). Learning, Thinking, and Thorndike. *Educational Psychologist*, 25(2), 127-141.

McKeachie, W. J., Pintrich, P. R., & Lin, Y. G. (1985). Teaching Learning Strategies. *Educational Psychologist*, 20(3), 153-160.

Muis, K., Winne, P., and Jamieson-Noel, D. (2007). Using a multitrait-multimethod analysis to examine conceptual similarities of three self-regulated learning inventories. *British Journal of Educational Psychology*, 77, 177-195.

Pintrich, P., Smith, D., Garcia, T., & McKeachie, W. (1991). *A Manual for the Use of the Motivated Strategies for Learning Questionnaire (MSLQ)*. Ann Arbor: The Regants of the University of Michigan.

Sungur, S. & Tekkaya, C. (2006). Effects of Problem-Based Learning and Traditional Instruction on Self-Regulated Learning. *The Journal of Educational Research*, 99(5), 307-317.