Validation of Motivated Strategies for Learning Questionnaire Among High School Students in Afghanistan

Rajib Chakraborty, Maruf Haqyar, and V. K. Chechi

Lovely Professional University

The present study was an attempt to validate the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich & De Groot, 1990) for high school students of Afghanistan, with 81 items in Dari language. From different government and private high schools, 356 students (183 girls and 173 boys) participated in the study. SPSS Amos version 23 was used to confirm the psychometrics, using goodness of fit estimates from the data of 356 students. Out of the 15 subscales of the original MSLQ, six subscales that is Intrinsic Goal Orientation, Extrinsic Goal Orientation, Control of Learning Beliefs, Test anxiety, Effort regulation, and Help seeking got were not retained. Therefore, in the present context nine subscales of the MSLQ were found to be valid and reliable for assessing self-regulated learning strategies and using it on the children for planning educational interventions.

Keywords. Motivated Strategies for Learning Questionnaire, Confirmatory Factor Analysis, high school students

Self-regulated learning strategies involve the students applying their own effective skills, such as self-planning, self-monitoring, self-directing and self-controlling (Zimmerman, 1989), to direct their attempts to acquire knowledge without dependence on others or teachers (Zimmerman, 2002) and enhance academic achievement (Harris et al, 2005). Self-regulated learners evaluate and monitor their educational progression and achievements (deBruin, Thiede, & Camp, 2001). Learners that used self-regulated learning were more responsible, challengeable and become more confident in learning materials of the course and their performance were better (Chang, 2007). Zimmerman and Pons (1988) described self-regulated learning

Rajib Chakraborty, Maruf Haqyar, and V. K. Chechi, School of Education, Lovely Professional University, Phagwara, Punjab, India.

Correspondence concerning this article should be addressed to V. K. Chechi, School of Education, Lovely Professional University, Phagwara, Punjab, India. Email: chechivijay@gmail.com

as actions directed at obtaining facts or ability that includes organization, purpose, goals, and instrumentality self-perceptions with the aid of a learner. They also mentioned that self-regulated learning seeks to provide an explanation for learner differences in motivation and success based on a common set of processes.

Self-regulated learning can assist learners to create better learning behavior and make stronger their study skills (Wolters et al, 2011). The cognitive and metacognitive strategies are often used more by older students and the use of these strategies was directly connected with self-efficacy, goal setting, and the learning material. More importantly, effort regulation strategy from among all the factors effect in study achievement (Radovan, 2010). Therefore, it is important for teachers to be aware and familiar with factors that affect learners' abilities. One of the most widely used instrument to measure this vital construct of learning is the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich & De Groot, 1990) has been extensively used in numerous studies (Dinsmore, Alexander, & Loughlin, 2008; Roth, Ogrin, & Schmitz, 2016; Zimmerman, 2008). It is a self-reporting tool to measure self regulated learning strategies in college students. It contains 81 items which are essentially divided in two sections a motivation section and learning strategies section; while, 50 items for motivational beliefs scales and subscales and 31 items for self-regulated learning strategies that students use. It uses a 7-point Likert scale rating from with no specific labels for the others response strategies. One advantage of this tool is that it's been implemented and demonstrated at different educational levels, both college and non-college (Wolters, 2003).

For example, Purdie, Hattie, and Douglas (1996) reported that the Japanese and Australian students use almost similar learning strategies, however, their perspective differs for learning. Japanese students have broader perspective for learning as a lifelong learning; whereas, Australian students focus learning for school level only. Similarly, Bidjerano (2005) examined gender difference among 198 undergraduate students of university of Northeastern U.S.A concluded that male and female students usage of self-regulated learning strategies is similar for meta-cognition, analytical, and thinking organization, teamwork, time management and effort. In teacher education sector in Australia, the student teachers take seriously to the highly rated courses and the intensity with which they use learning opportunities, their competence in learning strategies, learning orientation, and strategies of self-motivation and resilience are crucial for their high learning outcomes (Keller-Schneider, 2014). Among the English language learners in Malaysian Universities, (Zahidi, 2012),

found that they apply self-regulated learning strategies for completion of their classroom work and to explore personal and contextual factors which act as a facilitators and constraints of the learners' self-regulation. Chang (2007) in web based instruction, concluded that learners are able to set goals, monitor and evaluate their effectiveness to improve their learning motivations into one semester web base course through self-regulated learning strategies. Further, self-regulated learning strategies impact learner's motivation in the web based learning environments. However, Chen (2002) while comparing lectures vs hands on computer lab found that on learning computer concepts peer learning had a negative effects and effort regulation had a positive effects on the achievement of business students in an introduction to information systems course. The finding on effective strategies to learning computer concepts were inconclusive and for further research it is need to examine the appropriateness of MSLQ in assessing self-regulated learning strategies.

From different contexts the use of self learning strategies has been measured by the use of MSLQ developed by Pintrich and De Groot (1990) has been validated in different contexts. The MSLQ tool has been adopted extensively to measure students' motivation and learning strategies in many countries such as Australia (Fuller, 1999), Arabia (Almegta, 1997), Canada (d'Apollonia, Galley, & Simpson, 2001), China (Rao, Moely, & Sachs, 2000), Japan (Yamauchi, Kumagai, & Kawasaki, 1999), Singapore (Chow & Chapman, 2017); Colombia (Ramirez-Echeverry et el., 2016); Iran (Feiz et al., 2013); Pakistan (Nausheen, 2016); Czech Republic (Vaculíková, 2016); Italy (Bonanomi et al., 2018), and Taiwan (Lee, 1997). In addition, the adaptation of foreign origin tools has benefits like saving of cost and time when compared to construction of new tools from scratch (Gjersing, Caplehorn, & Clausen, 2010). Hambleton (2005) expected test adaptations to become a common practice, owing to the exchange of tools from foreign origin, leading to an upsurge in the cross-cultural research.

It has also been implemented and demonstrated at different educational levels, both college and non-college (Wolters, 2003) as well as high school students (Bonanomi et al., 2018; Chow & Chapman, 2017); engineering students (Ramirez-Echeverry et al., 2016); secondary students (Feiz et al., 2013); postgraduate students (Nausheen, 2016); and university students (Vaculíková, 2016). However, Cho and Summers (2012) mentioned that there is a need to establish the validity of MSLQ in different contexts and on diverse populations. This is because studies conducted in recent times have showcased problems associated with the original MSLQ tool's

psychometrics and factor structure (Credéand-Phillips, 2011; Dunn, Lo, Mulvenon, & Sutcliffe, 2012; Hilpert et al., 2013; Muis et al., 2007; Tock & Moxley, 2017). The authors of the tool recognized that the instrument lacked strong psychometrics at the time of its development between the observed data and its corresponding theoretical model (Pintrich, Wolters, & Baxter, 2000) further extended the need to conduct validation studies on more ethnically and racially diverse populations, spread across different age groups and levels of achievement (Pintrich et al., 2000; Wolters & Pintrich, 2005). Additionally, owing to the foreign origin of the tool, the adaptation exercise of it in the context of Afghanistan, calls for fresh validation involving the checking of the factor structure of the tool primarily (Borsa, Damasio, & Bandeira, 2012; Yasir, 2016). The aim of current study was, hence to adapt and validate MSLQ in the context of Afghanistan among high school students by establishing its psychometric properties.

Method

The research design was descriptive in nature as it tried to gather information on the presence of self regulated learning strategies in the high school students of Afghanistan. Descriptive survey design was considered suitable, since the population studied was too large to be observed directly. Survey method was used by the investigators to collect the relevant information using simple random sampling technique. As part of sampling design, the list of secondary schools in the Heart region was prepared, which formed the sampling framework of the study. The final selection of the schools from where the data was to be actually gathered, forming the sample, took place by assigning serial numbers to each of the schools of the sampling frame and by generating random numbers in excel sheets. After securing permission from the Principals of the selected sample schools, the teachers' help was taken to select the students these schools.

Statistical technique of confirmatory factor analysis using SPSS AMOS Ver 23.0 was applied on the gathered data to establish the construct validity of the scale by evaluating the intactness of its factor structure since there is strong underlying theory of measurement of MSLQ (Williams, 1995). Additionally, the factor structure of all the 15 subscales are well established since the validation study of this instrument has been replicated in multiple contexts across the world from 1992 onwards and hence the need to conduct Exploratory Factor Analysis is ruled out. Only the Confirmatory Factor Analysis of all the subscales is conducted using the available data. Commonly reported goodness of fit estimates like Chi-square value at 0.05 (Barett, 2007),

df and *p* values (Kline, 2004; & Hayduk et al., 2007) are included. For small sample size studies, these estimates are sensitive (Anderson & Gerbing, 1984) and hence CMIN/DF with value less than 3.00 (Kline, 2004) is included. RMR and RMSEA estimates are desired to be below 0.08 for a good fit model and the absolute, comparative, and parsimonious estimates like GFI, TLI, CFI are desired to be above 0.90 (Leech et al., 2008). These estimates are expected to reveal the stability of the factor structure of the 15 modular scales considered independently for psychometrics evaluation.

Sample

For the purpose of this study, a total number of 356 high school students (183 girls and 173 boys) from fourteen different government and private high schools of Herat, Afghanistan were considered. The investigator sought permission from the respective principals of the schools. The schools were selected from strata i.e. government and private high schools. The students from all the fourteen schools (6 private and 8 government schools) were apprised of the purpose and selected randomly to give the response on the questionnaire. Clear instructions were given to the students in Dari language. The students took 45 to 50 minutes to complete the tool and return it to the investigator.

Instrument

Motivated Strategies for Learning Questionnaire (MSLQ). MSLQ (Pintrich & De Groot, 1990) is a self reporting tool to measure self regulated learning strategies in college students. It contains 81 items which are essentially divided in two sections a motivation section and learning strategies section. Fifty items for motivational beliefs scales and subscales and 31 items for self-regulated learning strategies that students use. It uses a 7-point Likert scale rating from 1 (*not at all true of me*) to 7 (*very true of me*) with no specific labels for the others response strategies. It has 15 sub scales, which can be used intact or separately in a study depending on its objectives. The original tool in English was presented before experts of *Dari* language who converted the items into their local counterparts. Later, these items in Dari language were shown to English language experts who back translated the items to English for ensuring the essence of the original scale items be preserved as suggested by Green and White (1976).

The details of these scales as mentioned in the original scale by Pintrich et al. (1991) are that the first subscale measures Intrinsic Goal Orientation and comprises of four items that is, 1, 16, 22, and 24. It concerns the degree to which the student perceives oneself to be participating in a task for reasons such as challenge, curiosity, mastery. External Goal Orientation forms the second subscale with four items, which are 7,11,13, and 20, and concerns the degree to which the student perceives herself to be participating in a task for reasons such as grades, rewards, performance, evaluation by others, and competition. The third subscale refers to Students' Perceptions of the Course Material in terms of interest, importance, and utility, measured by using the six items that is, 4, 10, 17, 23, 26, and 27. The four subscale refers to Students' Beliefs that their efforts to learn will result in positive outcomes. It is measured using four items of 2, 9, 18, and 25; while, the fifth subscale of Self Efficacy is a self-appraisal of one's ability to master a task. Self-efficacy includes judgments about one's ability to accomplish a task as well as one's confidence in one's skills to perform that task, measured using eight items of 5,6,12,15,20, 21,29, and 31. The subscale of Test Anxiety has been found to be negatively related to expectancies as well as academic performance, measured using five items of 3, 8, 14, 19 and 28. Basic Rehearsal Strategies involve reciting or naming items from a list to be learned, measured using four items, 39, 46, 59 and 72. Elaboration Strategies help students store information into long-term memory by building internal connections between items to be learned, and measured with the help of six items, 53, 62, 64, 69, and 81.

Organization Strategies help the learner to select appropriate information and also construct connections among the information to be learned, and are measured with the help of four items including 32, 42, 49 and 63. Critical Thinking refers to the degree to which students report applying previous knowledge to new situations in order to solve problems, reach decisions, or make critical evaluations with respect to standards of excellence, measured using the five items, 38, 47, 51, 66 and 71. Meta-cognition refers to the awareness, knowledge, and control of cognition, measured using the twelve items of 33, 36, 41, 44, 54, 55, 56, 57, 61, 76, 78, and 79. Time Management involves scheduling, planning, and managing one's study time. Study Environment Management refers to the setting where the student does her class work, measured using the eight items of 35, 43, 52, 65, 70, 73, 77, and 80. Effort Management is self-management, and reflects a commitment to completing one's study goals, even when there are difficulties or distractions, measured using the four items, 37, 48, 60 and 74. The fourteenth subscale of Peer Learning involving

collaboration with contemporaries is found to be having positive effects on academic achievement, measured using three items, 34, 35 and 50 respectively. The last subscale of Help Seeking mentions that good students know when they do not know something and are able to identify someone to provide them with some assistance, measured with the help of four items, 40, 58, 68 and 75.

Results

For each of the subscale of the MSLQ, separate analysis was conducted and the results are presented in terms of reliability and Goodness of fit indices.

Table 1

Reliability Estimates of Subscales of MSLQ

#	Subscale Title	α	Remark
1.	Intrinsic Goal Orientation	.39	Not acceptable
2.	Extrinsic Goal Orientation	.35	Not acceptable
3.	Task Value	.72	Acceptable
4.	Control Of Learning Beliefs	.33	Not acceptable
5.	Self-Efficacy For Learning and Performance	.78	Acceptable
6.	Test Anxiety	.58	Not acceptable
7.	Rehearsal	.65	Acceptable
8.	Elaboration	.71	Acceptable
9.	Organization	.65	Acceptable
10.	Critical Thinking	.66	Acceptable
11.	Meta-cognitive Self-Regulation	.73	Acceptable
12.	Time and Study Environment	.65	Acceptable
13.	Effort Regulation	.53	Not acceptable
14.	Peer Learning	.64	Acceptable
15.	Help Seeking	.29	Not acceptable

The obtained Cronbach's alpha of different accepted subscales of MSLQ in the present study were found to be in the range of .65 to .78. Kyriazos et al. (2018) and Kline (1999) stated that for psychological constructs, the internal consistency reliability estimate Cronbach alpha can be as low as .60. The obtained value of all the accepted subscales was found to be above the cut-off value of .60. It means that the accepted subscales were found to possess minimum internal consistency reliability.

To further confirm the extracted factor structure and show construct validity, Confirmatory Factor Analysis was conducted for the retained subscales.

Table 2

Factor Loadings for Motivated Strategies for Learning Questionnaire

Items No.	Factor Loadings	Items No.	Factor Loadings
4	.24	45	.55
5	.56	46	.62
6	.59	47	.59
10	.42	50	.70
12	.52	51	.55
15	.51	53	.57
17	.65	54	.46
20	.57	55	.70
21	.49	59	.53
23	.56	62	.51
24	.72	63	.68
26	.75	64	.52
31	.52	65	.47
32	.60	66	.60
34	.57	67	.41
35	.50	69	.63
38	.38	70	.46
39	.49	72	.62
40	.56	73	.47
41	.59	76	.49
42	.74	79	.40
43	.43	81	.44
44	.56		

The factor-loadings of the retained items have magnitude above 0.4, indicating sufficient alliance with the parent factors (see Table 3).

Table 3

Goodness of Fit Measures for MSLQ

Measure	p	CMIN/DF	RMR	RMSEA	GFI	TLI	CFI
Benchmark	>.05	< 3.0	< .08	< .08	> .90	> .90	> .90
Task value	.00	2.72	0.07	0.07	0.98	0.94	0.96
Self-efficacy	.00	2.08	0.09	0.06	0.96	0.97	0.96
Rehearsal	.81	0.21	0.02	0.00	1.00	1.03	1.00
Elaboration	.03	2.16	0.10	0.06	0.99	0.95	0.97
Organization	.10	2.33	0.08	0.06	0.99	0.96	0.99
Critical Thinking	.50	0.87	0.05	0.00	0.99	1.01	1.00
Meta-cognition	.22	1.34	0.06	0.03	0.99	0.99	0.99
T & S Env.	.08	1.98	0.09	0.05	0.91	0.95	0.98
Peer Learning	-	-	0.00	0.35	1.00	-	1.00

Note. T & S Env. = Time and Study Environment.

Results presented in Table 3 shows that the chi-test is desired to be nonsignificant with *p* value greater than .05. This is rarely is the case though; as the CMIN/df value should be ideally less than 3. However, this estimate is highly sensitive to sample size and thus can reveal values above 3 even for well fit model structures. The RMR value and the RMSEA value at less than .05 and .08 are desired. The GFI, TLI value and the CFI value are desired to be above .90, to display evidence of overall goodness of fit.

The exercise of estimating the reliability of the subscales of MSLQ, followed by extraction of the factors and their confirmation revealed that the nine scales of task value, self-efficacy, rehearsal, elaboration, organization, critical thinking, metacognition, time and study environment, and peer learning are worthy retaining of the MSLQ scale in the Afghani context. The retention of these subscales are purely based on the obtained results where most of the estimates of these scales have their estimates above the acceptable and desired benchmarks and reliability.

Discussion

The MSLQ existed in the literature of self regulated learning for close to three decades now. In spite of its poor psychometrics and notorious factor structure, it enjoys the status of being a gold standard in the measurement of strategies students apply to be autonomous in their thoughts, feelings and actions in studies.

Based on the recommendations of Yasir (2016) to validate foreign origin tools when adopted in local context, the present study was conducted to establish the validity of MSLQ questionnaire on the high school students of Afghanistan, by translating the English version of the tool into local Dari language. It is a first of its kind study in the country of Afghanistan. The current study found nine of the scales to be relevant and six of them, namely, help seeking, effort regulation, test anxiety, intrinsic goal orientation, extrinsic orientation and control on learning belief, to be invalid. This finding is consistent with the validation studies of MSLQ conducted in several parts of the world. There is scarcity of literature studies which reported the validation of all the 15 sub scales of the original tool. While six of the retained sub-scales had their goodness of fit indices desirable as per the benchmarks, the sub-scales critical thinking, rehearsal and peer learning displayed unusual TLI and CFI goodness of fit indices. These estimates are acceptable. When TLI and CFI values exceed 1, it can be set to 1.00 (Anderson & Gerbing, 1984). Such results are obtained, when there is room for improvement in the sample size of the study.

The tool is expected to be helpful to the educators in Afghanistan, to conducting profiling of school students based on the presence of self regulated learning strategies in them. Such an exercise can in turn help in the development on subject specific mechanisms of instruction in the classroom among the students. It would consequently lead to promotion of autonomy and a sense of responsibility of learning among the students themselves. These students would in turn become life-long learners and be more confident and less dependent of teachers and faculty for pursuing future studies in their areas of interest in future. The researchers failed to find any quality research work on the specific tool of MSLQ or on the general field of psychometrics in the Afghan context.

Limitations and Suggestions

Present study was limited to certain schools of the Herat city only. Further studies on the same scale can be conducted by including the high school students of the capital region of Kabul and other major cities of this culturally diverse nation. In other words, since Afghanistan consists of several ethnically diverse groups of people, it is important that replication studies with larger sample sizes be conducted on the same scale to further verify the validity of this adopted scale. It is important that stratified random sampling technique be adopted to cover geographically vast regions of the country. Similar studies of validation of this tool in other ethnic languages can be initiated too, along with replication of the study on tertiary level professional and STEM courses students as well.

Implications

According to Sokout (2017), Kankor is a well established entrance test conducted across Afghanistan for high school students to ensure their eligibility to pursue higher education under university system. The outcomes of this test are considered a standard as far as measurement of academic achievement is concerned in Afghanistan. Measurement of the self regulated learning strategies in higher secondary school students and its prediction of their Kankor scores can be beneficial for the officials to take informed decisions regarding the promotion of self regulated learning in this vital population. Research conducted on STEM across the world has shown that higher secondary level is a transition period in the academic life of individuals and presence or absence of self regulated learning in this crucial juncture of life can be decisive in the future advances made in studies and in profession too. Ellis et al. (2016) mentioned that women are 1.5 times more at risk of leaving STEM

related courses across the world. No such estimates in the Afghani context exists reiterating the requirement of the validation and estimation of SRL on a rigorous basis and relating it to STEM research in the country. It is hoped that the introduction of this research and the instrument can initiate budding research on these vital areas of the educational research in Afghanistan.

Conclusion

This research provides teachers with a valid and reliable questionnaire for measuring self regulated learning strategies in school children. The study found that out of the fifteen sub-scales of the original tool, only nine are valid in the context of Afghanistan. The new tool translated and validated in Dari language is a valid and reliable instrument that will assist school teachers to develop intervention programs to promote self regulated learning in the schools of this country.

References

Anderson, J. C., & Gerbing, D. W. (1984). The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis. *Psychometrika, 49*(1), 155-173. doi: 10.1007/BF02294170

Almegta, N. R. (1997). Relationship of self-efficacy, causal attribution, and emotions to female college students' academic self-evaluations. *Dissertation Abstracts International, 58*(01), 78A (UMI).

Barrett, P. (2007). Structural equation modelling: Adjudging model fit. *Personality and Individual Differences, 42*(5), 815-824.

Bidjerano, T. (2005). *Gender differences in self-regulated learning.* Paper presented at the Annual Meeting of the Northeastern Educational Research Association, Kerhonkson, New York, USA.

Bonanomi, A., Olivari, M. G., Mascheroni, E., Gatti, E., & Confalonieri, E. (2018). Using a multidimensional rash analysis to evaluate the psychometric properties of the Motivated Strategies for Learning Questionnaire among high school students. *Testing, Psychometrics, Methodology in Applied Psychology, 25*(1), 83-100.

Borsa, J. C., Damasio, B. F., & Bandeira, D. R. (2012). Cross-cultural adaptation and validation of psychological instruments: Some considerations. *Education, 22*(53), 423-432.

Chang, M. (2007). Applying self-regulated learning strategies in a web-based instruction: An investigation of motivation perception. *Computer Assisted Language Learning, 18*(3), 217-230. doi: 10.1080/095882 20500178939.

Chen, C. C. (2002). Self-regulated learning strategies and achievement in an introduction to information systems course. *Information Technology, Learning, and Performance Journal, 20*(1), 11-23.

Cho, M. H., & Summers, J. (2012). Factor validity of the Motivated Strategies for Learning Questionnaire in asynchronous online learning environments. *Journal of Interactive Learning Research, 23*(1), 5-28.

Chow, C., W., & Chapman, E. (2017). Construct validation of the Motivated Strategies for Learning Questionnaire in a Singapore high school sample. *Journal of Educational and Developmental Psychology, 7*(2), 107-112.

Credé, M., & Phillips, L. A. (2011). A meta-analytic review of the Motivated Strategies for Learning Questionnaire. *Learning and Individual Differences, 21*(4), 337-346. doi:10.1016/j.lindif.2011.03.002

D'Apollonia, S., Galley, D., & Simpson, M. (2001). *Formal reasoning and conceptual development.* Retrieved from http://www.place.dawson college.qc.ca/~sdapoll.

deBruin, A. B., Thiede, K. W., & Camp, G. (2001). Generating keywords improves meta-comprehension and self-regulation in elementary and middle schoolchildren. *Journal of Experimental Child Psychology, 109*(3), 294-310.

Dinsmore, D. L., Alexander, P. A., & Loughlin, S. M. (2008). Focusing the conceptual lens on metacognition, self-regulation, and self-regulated learning. *Educational Psychology Review, 20*(4), 391-409. doi:10.1007/ s10648-008-9083-6.

Dunn, K. E., Lo, W., Mulvenon, S. W., & Sutcliffe, R. (2012). Revisiting the Motivated Strategies for Learning Questionnaire: A theoretical and statistical reevaluation of the metacognitive self-regulation and effort regulation subscales. *Educational and Psychological Measurement, 72*(2), 312-331.

Ellis, J., Fosdick, B. K., & Rasmussen, C. (2016). Women 1.5 times more likely to leave stem pipeline after calculus compared to men: Lack of mathematical confidence a potential culprit. *PLoS One*, *11*(7), 1-14.

Feiz, P., Hooman, H. A., & Kooshki, S. (2013). Assessing the Motivated Strategies for Learning Questionnaire in Iranian students: Construct validity and reliability. *Procedia-Social and Behavioral Sciences, 84,* 1820-1825. doi:10.1016/j.sbspro.2013.07.041

Fuller, R. (1999). *Do university students' conceptions of learning really influence their learning*? Retrieved from http://www.herdsa.org.au/vic/ cornerstones/pdf/fuller.pdf

Gjersing, L, Caplehorn, J. R. M., & Clausen, T. (2010). Cross-cultural adaptation of research instruments: Language, setting, time, and statistical considerations. *BMC Medical Research Methodology, 10*(10), 1130-1135.

Green, R. T., & White, P. D. (1976). Methodological considerations in cross-national consumer research. *Journal of International Business Studies, 7*(2), 81-87.

Hambleton, R. K. (2005). Issues, designs, and technical guidelines for adapting tests. In R. K., Hambleton, P. F., Merenda, C. D. Spielberger, (Eds.), *Multiple languages e-cultures: Adapting educational and psychological tests for cross-cultural assessment*. Hove, USA: Psychology Press.

Harris, K. R., Friedlander, B. D., Saddler, B., Frizzelle, R., & Graham, S. (2005). Self-monitoring of attention versus self-monitoring of academic performance: Effects among students with ADHD in the general education classroom. *Journal of Special Education, 39*(3), 145-156. doi:10.1177/002 24669050390030201

Hayduk, L., Cummings, G., Boadu, K., Pazderka-Robinson, H., & Boulianne, S. (2007). Testing! testing! one, two three : Testing the theory in structural equation models. *Personality and Individual Differences, 42*(2), 841-50.

Hilpert, J. C., Stempien, J., Van Der Hoeven Kraft, K. J., & Husman, J. (2013). Evidence for the latent factor structure of the MSLQ: A new conceptualization of an established questionnaire. *SAGE Open*, *3*(4). doi:10.1177/2158244013510305

Kline, P. (1999). *Handbook of psychological testing*. London: Routledge.

Kline, R. B. (2004). *Principles and practice of structural equation modelling*. New York: The Guilford Press.

Kyriazos, T. A., Stalikas, A., Prassa, K., Galanamis, M., Flora, K., & Chatzili, V. (2018). The Flow Short Scale dimensionality and what MIMIC shows on heterogeneity and invariance. *Psychology, 9,* 1357-1382.

Leach, C. W., van Zomeren, M., Zebel, S., Vliek, M. L. W., Pennekamp, S. F., Doosje, B., Ouwerkerk, J. W., & Spears, R. (2008). Group-level self-definition and self-investment: A hierarchical (multicomponent) model of in-group identification. *Journal of Personality and Social Psychology, 95*(1), 144-165. doi:10.1037/0022-3514.95.1.144

Lee, L. H. (1997). Goal orientation, goal setting, and academic performance in college students: An integrated model of achievement motivation in school settings. *Dissertation Abstracts International, 59*(06), 1905A.

Muis, K. R., Winne, P. H., & 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*(1), 177-195. doi:10.1348/000709905X90876

Nausheen, M. (2016). An adaptation of the Motivated Strategies for Learning Questionnaire for postgraduate students in Pakistan: Results of an Exploratory Factor Analysis. *Bulletin of Education and Research, 38*(1), 1-16.

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. doi.10.1037/0022-0663.82.1.33

Pintrich, P., Smith, D., García, T., & McKeachie, W. (1991). *A manual for the use of the Motivated Strategies for Learning Questionnaire.* Ann Arbor, MI: University of Michigan.

Pintrich, P., Wolters, C., & Baxter, G. (2000). Assessing metacognition and self-regulated learning. In G. Schraw & J. C. Impara (Eds.)., *Issues in the measurement of metacognition.* Lincoln, NE: Buros Institute of Mental Measurements.

Purdie, N., Hattie, J., & Douglas, G. (1996). Student conceptions of learning and their use of self-regulated learning strategies: A cross cultural comparison. *Journal of Educational Psychology, 88*(1)*,* 87-100. doi:10.1037/0022-0663.88.1.87

Ramírez-Echeverry, J., Garcia, A., & Olarte, F. (2016). Adaptation and validation of the Motivated Strategies for Learning Questionnaire in engineering students in Colombia. *International Journal of Engineering Education, 32*(4), 1774-87.

Rao, N., Moely, B., & 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.

Radovan, M. (2010). The influence of self-regulated learning and age on success in studying. *Journal of Contemporary Educational Studies, 61*(5), 102-124.

Roth, A., Ogrin, S., & Schmitz, B. (2016). Assessing self-regulated learning in higher education: A systematic literature review of self-report instruments. *Educational Assessment, Evaluation and Accountability, 28*(3), 225-250. doi:10.1007/s11092-015-9229-2

Keller-Schneider, M. (2014). Self-regulated learning in teacher education: The significance of individual resources and learning behaviour. *Australian Journal of Educational and Developmental Psychology, 14*(1), 144-158.

Sokout, H. (2017). *E-Kankor: Opening new vistas of higher education through an innovative intelligent tutoring system.* Paper presented at Asian Conference on Education and International Development, Kobe, Japan

Tock, J. L. & Moxley, J. H. (2017). A comprehensive reanalysis of the metacognitive self-regulation scale from the MSLQ. *Metacognition and Learning, 12*(1)*,* 79-111. doi:10.1007/s11409-016-9161-y

Vaculíková, J. (2016). The third round of the Czech validation of the Motivated Strategies for Learning Questionnaire. *International Education Studies, 9*(7), 35-46. doi:10.5539/ies.v9n7p35

Williams, L. J. (1995). Covariance structure modeling in organizational research: Problems with the method versus applications of the method. *Journal of Organizational Behavior, 16*(3), 225-233. doi:10.1002/job.40 30160305

Wolters, C. A. (2003). Regulation of motivation: Evaluating an underemphasized aspect of self-regulated learning. *Educational Psychologist, 38*(2)*,* 189-205.

Wolters, C. A., & Pintrich, P. R. (2005). Assessing academic self-regulated learning. In S. A. Karabenick, K. A. Moore, & L. H. Lippman, (Eds.), *What do children need to flourish?* (pp. 251-270). Boston, MA: Springer.

Wolters, C. A., Benzon, M. B., & Arroyo-Giner, C. (2011). Assessing strategies for the self-regulation of motivation. In B. J. Zimmerman & D. H. Schunk (Eds.), *Handbook of self-regulation of learning and performance* (pp. 298-312). London: Taylor & Francis Group.

Yasir, A. S. M. (2016). Cross cultural adaptation and psychometric validation of instruments: Step-wise description. *International Journal of Psychiatry, 1*(1), 1-4.

Yamauchi, J., Kumangai, Y., & Kawasaki, Y. (1999). Perceived control, autonomy and self-regulated learning strategies among Japanese high school learners. *Psychological Reports, 85*(8)*, *779-798.

Zahidi, A. B. M. (2012). *Self-regulation in English language learning: Case studies of six Malaysian undergraduates*, (Unpublished doctoral dissertation), Department of Education, Victoria University of Wellington, United Kingdom.

Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology, 81*(3), 329-339. doi:10.10 37/0022-0663.81.3.329

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice, 41*(2), 64-70.

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal, 45*(1), 166-183. doi:10.3102/0002831207312909

Zimmerman, B., & Martinez-Pons, M. (1988). Construct validation of a strategy model of student self-regulated learning. *Journal of Educational Psychology, 80*(2)*, *284-290.