



A Validity and Reliability Study of the Motivated Strategies for Learning Questionnaire

Gökçe ERTURAN İLKER^a

Pamukkale University

Yunus ARSLAN^b

Nevşehir Hacı Bektaş Veli University

Giyasettin DEMİRHAN^c

Hacettepe University

Abstract

The aim of this study is to determine the validity and reliability of the Motivated Strategies for Learning Questionnaire (MSLQ) for high school students. In total, 1605 students (829 girls, 776 boys, average age=15.67±1.19) from three different high schools in the central district of Ankara voluntarily participated in the study. The MSLQ was developed for seventh grade students and adapted for Turkish eighth grade students. The MSLQ is a 7-point Likert-type scale and consists of 44 items. Factor analysis was applied to the data to determine whether the questionnaire showed the same structure for high school students. The results showed a good fit between the model composed of first-order latent variables (self-regulation strategies and motivational beliefs) and second-order latent variables (self-regulation, cognitive strategy use, self-efficacy, intrinsic value, test anxiety) as well as observed variables. Cronbach Alpha-scores, which were used to determine the internal consistency of the scale, were between 0.70 and 0.77 and indicated that the Turkish version of the MSLQ was reliable for use with a high school population.

Key Words

High School Students, Motivated Strategies for Learning, Reliability, Validity.

Learning is the product of experiences which causes relatively permanent behavior change (Ertürk, 1998). When one considers that learning is a lifelong activity, helping individuals gain the skill of directing the learning process becomes more of an issue (Haşlamam & Aşkar, 2007). Social Cognitive Theory (Bandura, 1986) introduces the concept of self-regulation, which is important

for both individual and social forms of learning (Zimmerman, 2008). Theory advocates that individuals observe their own behaviors via self-regulation, compare them with their self-oriented standards, and then evaluate and regulate their behaviors by reinforcing or punishing themselves (Senemoğlu, 2005, p. 231). Risemberg and Zimmerman (1992) have defined self-regulation as

- a Gökçe ERTURAN İLKER, Ph.D., is currently an assistant professor of School of Sports Sciences and Technology. Contact: Pamukkale University, School of Sports Sciences and Technology, Denizli, Turkey. Email: gokce.erturan@gmail.com
- b Yunus ARSLAN, Ph.D., is currently an assistant professor of Department of Physical Education and Sports Education. His research interests include measurement and evaluation and sports pedagogy. *Correspondence:* Nevşehir Hacı Bektaş Veli University, Faculty of Education, Department of Physical Education and Sports Education, Nevşehir, Turkey. Email: yarslan@nevsehir.edu.tr
- c Giyasettin DEMİRHAN, Ph.D., is currently a professor of Physical Education and Sports Teaching. Contact: Hacettepe University, Faculty of Sports Sciences, Department of Physical Education and Sports Teaching, Ankara, Turkey. Email: demirhang@gmail.com

setting goals, developing strategies to achieve these goals and controlling the outputs. Zimmerman (1989, p. 4) has described self-regulated learners as those who “actively participate in their own learning meta-cognitively, behaviorally and with motivation.” Self-regulated learning strategies consist of meta-cognitive strategies such as planning, monitoring and changing, focusing, strategies related to persistence and effort on academic tasks, and also cognitive, effective and motivational strategies for understanding, learning and recalling learning materials (Ommundsen, 2006; Pintrich & De Groot, 1990; Zimmerman & Martinez-Pons, 1986).

Different context-specific assessment techniques for self-regulation were developed over the years. Coding systems that are used by teachers in the classroom environment (e.g; Turner, 1995), structured and semi-structured observation forms (e.g.: Zimmerman & Martinez-Pons, 1988) and the diary-method for students to observe their own information processing (Randi & Corno, 1997) are a few of them. “Think-aloud” protocols that require students’ to express their thoughts, feelings and self-regulation skills in the learning environment is another technique (Boekaerts & Corno, 2005).

Likert scale-type assessment tools also have been used extensively to assess self-regulation (Clearly, Callan, & Zimmerman, 2012). The Preschool Self-Regulation Assessment (Smith-Donald, Raver, Hayes, & Richardson, 2007), the Children’s Independent Learning Development Checklist (Whitebread et al., 2009), the Pro-Social Self-Regulation Questionnaire (Ryan & Connell, 1989), and the Learning Self-Regulation Questionnaire (Black & Deci, 2000) are some of them. Scale-type self-regulation assessment tools developed or adapted for the Turkish language are the Student Self-Regulation Scale (Şahhüseyinoğlu & Akkoyunlu, 2010), the Web-Based Education Oriented Self-Regulation Scale (Baş, 2007) and the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich & De Groot, 1990). The Turkish adaptation of the MSLQ was conducted by Büyüköztürk, Akgün, Özkahveci, & Demirel (2004) on university students and also by Üredi (2005) on eighth grade students. The MSLQ Turkish form was used in different studies on eighth grade students (Üredi & Üredi, 2005) and university students (Haşlamam & Aşkar, 2007; Orhan, 2008; Özturan Sağırlı, Çiltaş, Azapağası, & Zehir, 2010). Tanrıseven and Dilmaç (2013) applied the MSLQ Turkish form to high school students but they have

not conducted a reliability and validity study for this age group. From this point of view, the aim of this study is to determine the validity and reliability of the Turkish version of the MSLQ for high school students to understand whether the questionnaire is convenient to use for this age group.

Method

Participants

The participants were volunteers consisting of 1605 (average age= 15.67 ± 1.19) high school students attending three public schools in central Ankara, Turkey. The sample was composed of 829 female and 776 male students. The sample size was adequate in terms of the stipulation that sample size should be 5 or 10 times the number of items in the scale (Büyüköztürk, 2002; Mishel, 1998; Şimşek, 2007).

Data Collection Instrument

The MSLQ was developed by Pintrich and De Groot (1990), by integrating items from various scales assessing student motivation, cognitive strategy use, and meta-cognition (e.g., Eccles, 1983; Harter, 1981; Weinstein, Schulte, & Palmer, 1987). Adaptation to Turkish of the scale, and the reliability and validity study were done by Üredi (2005) on eighth grade students and by Büyüköztürk et al. (2004) on university students. The scale consists of 44 items and the participants rated each item on a 7-point Likert scale, ranging from 1 (*not at all true for me*) to 7 (*very true for me*). It has cognitive strategy uses (13 items) and self-regulation (9 items) sub-scales under the *self-regulation strategies* dimension. Self-efficacy (9 items), intrinsic value (9 items), and test anxiety (4 items) sub-scales fall under the *motivational beliefs* dimension. The mean scores of the sub-scales were assigned interpretations based on the scale points.

Data Collection

The MSLQ was administered to high school students after obtaining permission from the relevant institutions. Before administering the MSLQ, students were encouraged to ask questions if they had difficulty in understanding instructions or items in the questionnaire. They were also informed that their teachers would not have access to their responses. After administering the scale, which was truthfully and completely answered by 1605 students, these scales were applied to the study.

Data Analysis

Confirmatory Factor Analysis (CFA) and Cronbach's alpha techniques were used to analyze the data. CFA is used to test a hypothesized theoretical model including latent variables in the later stages of research. CFA is a method that can be used particularly while finding evidence of validity of a scale that was developed in a culture and then adapted to another culture (Akça & Köse, 2008; Crocker & Algina, 1986; Jöreskog & Sörbom, 1993; Kline, 2005; Kuruüzüm & Çelik, 2005; Tabachnick & Fidell, 2001). For CFA, the indexes used to determine the goodness-of-fit were RMSEA (Root Mean Square Error of Approximation) and SRMR (Standardized Root Mean Square Residual) for which values less than .05 suggest a good fit, and all those indexes for which values greater than .90 indicate a good fit, namely CFI (Comparative Fit Index), GFI (Goodness of Fit Index), AGFI (Adjusted Goodness of Fit Index), NFI (Normed Fit Index). Also χ^2/df (chi square / degrees of freedom) values less than 5 indicate a good fit (Frias & Dixon, 2005; Hu & Bentler, 1999; Marsh & Balla, 1988; Schermelleh-Engel, Moosbrugger, & Müller, 2003; Schumacker & Lomax, 2004; Sümer, 2000).

Results

Validity of the MSLQ

According to CFA results, χ^2/df value was found to be 3.93, the RMSEA was 0.042 and the SRMR was 0.047. These values were less than 0.05 which indicates a good fit. Also the CFI value was found to be 0.95, GFI was 0.90, AGFI was 0.90, and NFI was 0.94. All those values were expected to be higher than 0.90 for a good fit. Factor loadings for the self-regulation latent variable were between 0.53 - 0.74 and the R^2 (R-Squared is a statistical term saying how good one term is at predicting another) values were between 0.29 - 0.58. Factor loadings for the cognitive strategy use latent variable were between 0.51 - 0.74 and the R^2 values were between 0.26 - 0.62. Factor loadings for the self-efficacy latent variable were between 0.58 - 0.71 and the R^2 values were between 0.32 - 0.50. Factor loadings for the intrinsic value latent variable were between 0.49 - 0.78 and the R^2 values were between 0.23-0.52. Factor loadings for the test anxiety latent variable were between 0.54 - 0.81 and the R^2 values were between 0.39-0.54.

Significant correlations were found between self-regulation and motivational beliefs first level latent variables ($r=0.81$), between self-regulation (first

level latent variable) and self-regulation as well as cognitive strategy use second level latent variables ($r=0.78$, $r=0.79$ respectively). Between self-regulation and cognitive strategy use second level latent variables ($r=0.37$), between motivational beliefs (first level latent variable) and self-efficacy, intrinsic value, and test anxiety second level latent variables ($r=0.79$, $r=0.99$ and $r=0.32$ respectively), between self-efficacy and intrinsic value ($r=0.20$), between self-efficacy and test anxiety ($r= 0.25$), and lastly between intrinsic value and test anxiety ($r=0.32$) significant correlations were also found.

Reliability of MSLQ

Cronbach's alpha coefficients are as follows: for the scale, 0.88; for the self-regulation dimension, 0.81, for the motivational beliefs dimension, 0.81; for the self-regulation, cognitive strategy use, self-efficacy, intrinsic value, and test anxiety sub-scales, 0.75, 0.76, 0.75, 0.70 and 0.77 respectively. Reliability coefficients showed that the MSLQ indicates a sufficient level of reliability (Alpar, 2001; Kalaycı, 2006; Tezbaşaran, 1996).

Discussion

The results of the study indicate that the Turkish version of the MSLQ can be used as a valid and reliable instrument (χ^2/df : 3.93; RMSEA: 0.042; SRMR: 0.047; CFI: 0.95; GFI: 0.90; AGFI: 0.90; NFI: 0.94) on high school students. Although the current study and Üredi's (2005) study results both show that the Turkish version of the MSLQ show the same structure with the original MSLQ for secondary and high school students, the Chinese version of the MSLQ was found to be inconsistent with the original structure of the MSLQ (Rao, Moely, & Sachs, 2000). Items within cognitive strategy use and self-regulation scales were gathered under one sub-scale and these two sub-scales have a high correlation ($r = 0.97$).

In this study, due to inaccessibility to 12th grade students, homogeneity in the distribution cannot be reported because high school senior class students were not as consistent as students from other grades in relation to school attendance. Consequently, the data collection process was negatively affected and this study was limited on its ability to generalize the results in relation to high school students.

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