International Journal of Assessment Tools in Education
2018, Vol. 5, No. 2, 235–247

DOI: 10.21449/ijate.401069

Published at http://www.ijate.net http://dergipark.gov.tr/ijate Research Article

# Reliability, Validity and Turkish Adaptation of Self-Directed Learning Scale (SDLS)

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**Abstract:** Self-Directed Learning Scale (SDLS) developed by Lounsbury, Levy, Park, Gibson, and Smith (2009) was used for determining individuals' self-directed learning. The purpose of this study was to translate the SDLS into Turkish and to investigate its reliability and validity with a sample of 272 university students. The SDLS, the Modified Schutte Emotional Intelligence Scale (MSEIS), Self-Directed Learning Inventory (SDLI), and the Causal Uncertainty Scale (CUS) for determining convergent validity was applied to the participants. Factor analyses results verified the uni-dimensionality of the scale. The test–retest correlation of SDLS was 0.82, whereas Cronbach alpha coefficient of the scale was founded as 0.85 in the reliability analyses. Correlation coefficients representing for convergent validities varied from -0.30 to 0.72 ($p < .01$) and criterion validity of the scale was determined as 0.236 when cumulative GPA was used as criterion in the assessment of concurrent validity. The findings suggest that the Turkish adaptation of SDLS is a valid and reliable tool to measure self-directed learning in Turkish samples.

**ARTICLE HISTORY**

*Received: 29 October 2017*
*Revised: 10 February 2018*
*Accepted: 15 February 2018*

**KEYWORDS**

self-directed learning,
validity,
reliability,
scale

## 1. INTRODUCTION

With the advance of technology, it is now easier to access information but difficult to decide on which ones are relevant. Moreover, there is even no obligation to learn this information at schools. Therefore, rather than old-fashioned learning styles, new learning styles are needed. As a result, the concept of self-directed learning gains more importance in this new era. Considering these needs, schools are gradually changing their classical teaching methods and creating more learner-centered environments. Being a self-directed learner is a requirement for all individuals in this information society (Garrison, 1997).

Self-directed learners are "individuals who take primarily initiative action in describing what to learn, why to learn, identifying a personal and material resource for learning; choosing,

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ISSN-e: 2148-7456 /© IJATE 2018

practicing and evaluating the learning outcomes" (Knowles, 1975, p.18). Self-directed learning (SDL) encourages people not only to stay in an observer position but also to have an active role in learning. In SDL, individuals have the control of managing of their own learning. Learners are independent in determining and deciding their own learning goals (Morrow,1993). Self-directed learners act as autonomously and take responsibility for planning, initiating, and evaluating their own learning efforts (Wilcox, 1996). As a result, SDL develops field-specific knowledge as well as the ability to transfer conceptual knowledge to new situations. Individuals can fill the gap between school knowledge and real-world problems more easily (Temple & Rodero, 1995).

According to Kreber (1998), SDL is not only related with a goal, but also with all learning activities to reach this goal. Independent learning is a similar concept as SDL, but it has some differences, as well. Basically, independent learning occurs only if it is based on experimentation and exploration. For instance, Thomas Edison's discovery of the ampoule can be accepted as an example of *independent learning*. However, self-directed learning includes taking responsibility of deciding about what, when and how to learn.

Past research suggests that self-directed learning is affected not only by individual factors but also by environmental factors (Song & Hill, 2007). According to Brockett and Hiemstra (1991), the tendency to be self-directed is higher for women and bachelors than for men and marrieds. Roberson and Merriam suggest that life changes in late ages are directly related to the process of self-directed learning (2005). It was observed that the students who determined their performance standards were more successful than those who did not self-determine their standards (Brownell, Colletti, Ersner-Hershfield, Hershfield, & Wilson, 1977). From this perspective, evolvement of the learner's SDL ability is closely related to the environment and the teacher. For instance, during experiment, teachers bring some tools to the classroom to work on real-life problems. If the duties are meaningful, students will come up with an entertaining approach to tasks, that is to say, students will voluntarily work on them. Thus, students should also be allowed to cooperate with the teacher in determining the deadlines and other arrangements (Temple & Rodero, 1995). On the other hand, if the instructor changes the decision-maker position with learner, SDL can be enhanced. Learners can understand their own needs more deeply and choose more appropriate learning activities (Taylor, 1995). Another example of the effects of environment on SDL is experiment which is demonstrated by Agran and Wehmeyer (2000). They observed that when a lecturer teaches students to set goals, take actions for these goals and revise goals according to the observed improvements, the level of mental retardation of children increased significantly.

There were lots of studies which stressed the positive effects of features of SDL in the literature. For instance, considering that self-evaluation and self-judgment are SDL's characteristics, Schunk (1981) found that the mathematical achievements of students, who evaluated their cognitive strategies verbally and in writing, were increased. With the contribution of proper planning and implementation, leadership patterns of learners evolve through to SDL (Morrow, 1993). It has been found that students become more effective learners and social beings with the help of SDL. They pointed out that self-directed learners have the ability to search for multiple texts, use different strategies to reach the targets, and present their ideas in different forms such as drawing and writing (Guthrie et. al., 1996).

In the literature there is one scale about self-directed learning, namely Self-Directed Learning Readiness Scale (SDLRS) which was developed by Guglielmino (1978). The scale is used to measure attitudes, skills and characteristics that compromise individuals' current level of readiness to manage their learning. In addition, another frequently used scale is Self-Directed Learning Inventory (SDLI) developed by Suh, Wang, and Arterberry (2015). This scale has the goal to measure self-directed learnings in collective cultures in which environmental factors

are different from individualistic cultures. According to Suh and colleagues (2015), self-directed learning in Korean culture is different from self-directed learning in other individual cultures. SDLI has 8 subscales which are learning needs, utilizing skills, enduring challenges, self-efficacy in learning, planning skills, completing tasks, evaluation skills, and internal attributions. This scale was translated into Turkish by Çelik and Arslan (2016). Another scale measuring self-directed learning was developed by Lounsbury, Levy, Park, Gibson, and Smith (2009) including 10 items based on a personality approach. This scale's major advantage is its briefness (Lounsbury, et al., 2009).

Noticeably, SDLS's psychometric properties including confirmatory factor analysis, internal consistency and construct validity, was reported by Lounsbury and colleagues (2009). Primarily, internal consistency indicated by correlation coefficient varied from 0.84 to 0.87 in a study with on college students. Moreover, the one-factor structure of the scale was verified by an applied confirmatory factor analysis. To determine convergent validity of SDLS, SDLRS was used and the correlation was found as .82. In addition, a significant relationship between SDLS and a number of personality traits was found. Specifically, the results suggested that although SDLS was positively associated with emotional stability and optimism, it was negatively associated with neuroticism and tension (Lounsbury et al., 2009).

Another important concept in regard with self-directed learning is the average of cumulative grade (GPA) used as an academic performance indicator in education. It is assumed that self-directed capabilities of students have a significant impact on their GPA scores. However, few research studies have examined the relationship between SDL and cumulative GPA. For instance, Hsu and Shiue (2005) found that self-directed learning was related to performance of distance learning. Moreover, Okabayashi and Torrance (1984) found that gifted students had higher self-directed learning. However, none of these studies investigates the relationship between GPA and SDL. To address this need, the present research aims to examine the relationship between self-directed learning and cumulative GPA for university students.

Although a reliability and validity of the SDLS was conducted by Lounsbury and colleagues (2009), there has been no cross-cultural validation of this scale. Thus, the major aim of this study was to examine the psychometric properties of the SDLS in Turkish context with a sample of university students in Turkey. The psychometric examination includes (i) test-retest reliability, (ii) internal consistency, (iii) convergent validity, (iv) factor analyses, (v) and criterion validity of the scale. With respect to criterion validity, this study examined the correlation between cumulative GPA and SDL, unlike previous studies. Moreover, the current study also investigated the relationship between emotional intelligence and self-directed learning to provide the convergent validity of the scale. Emotional intelligence has three subscales including being aware of the own and others' feelings and emotions, noticing different emotions, and using this knowledge to direct thinking and action (Schutte et al., 1998). This research has a potential to reveal the relationship between self-directed learning and emotional intelligence with its subscales. Besides, since the SDLI was administered in a collectivist culture like Korea, the current study can verify the applicability of SDLS in a collectivist culture like Turkey.

To sum up, it is expected that the current research can provide important evidences for reliability and validity of SDLS in a Turkish sample. Moreover, this study may help us to understand the effectiveness of learning processes in educational settings. Also, the results of this study may give more information about self-directed learning of Turkish university students. Lastly, the study may explain differences between individualistic and collectivistic culture's perception of self-directed learning.

## 2. METHOD

### 2.1. Participants

Totally, 272 undergraduate students [97 males (35.7%), 175 females (64.3%)] from various universities including Çankaya University, Başkent University, Middle East Technical University, Gazi University, Hacettepe University, Ankara University, Yıldırım Beyazıt University and Karabük University recruited in the study by convenience sampling method. Their ages ranged from 18 to 35, with a mean age of 21.45 (*SD* = 1.99). All participants were Turkish students. The grades and universities of students were shown in Table 1. Of these participants, 166 [ 53 males (31.9 %), 113 females (68.1%)] of them received the SDLS twice for examining retest reliability. Their ages ranged from 18 to 30 with a mean age of 21.25 (*SD* = 2.35).

**Table 1.** Descriptive Statistics of participants in this study.

| | Frequency | Percentage | Mean±Standard Deviation |
|---|---|---|---|
| **Gender** | | | |
| Female | 175 | 64.3 | |
| Male | 97 | 35.7 | |
| **Grade** | | | |
| 1st grade | 15 | 5.5 | |
| 2nd grade | 114 | 41.9 | |
| 3rd grade | 62 | 22.8 | |
| 4th grade | 78 | 28.7 | |
| Unstated | 3 | 1.1 | |
| **University** | | | |
| Çankaya University | 111 | 40.8 | |
| Başkent University | 103 | 37.9 | |
| Middle East Technical University | 14 | 5.1 | |
| Gazi University | 12 | 4.4 | |
| Hacettepe University | 13 | 4.8 | |
| Ankara University | 7 | 2.6 | |
| Yıldırım Beyazıt University | 5 | 1.8 | |
| Karabük University | 7 | 2.6 | |
| **Department** | | | |
| Psychology | 85 | 31.1 | |
| Banking and Finance | 37 | 13.6 | |
| Management Information Systems | 28 | 10.3 | |
| Accounting and Financial Management | 25 | 9.2 | |
| Education | 17 | 6.2 | |
| Political Science and International Relation | 13 | 4.8 | |
| International Trade | 10 | 3.7 | |
| Economics | 10 | 3.7 | |
| Engineering | 8 | 2.9 | |
| Management | 6 | 2.2 | |
| English Language and Literature | 5 | 1.8 | |
| Insurance and Risk Management | 5 | 1.8 | |
| Chemistry | 5 | 1.8 | |
| Others | 19 | 6.8 | |
| **Age** | | | 21.45±1.98 |

## 2.2. Measures

Self-Directed Learning Scale (SDLS). The original Self-Directed Learning Scale was created by Lounsbury et. al. (2009) as a self-report scale. It measures to what extent individuals learn in an autonomous manner through a unidimensional structure. It consists of 10 items rated on a five-point Likert Scale from 1 (strongly disagree) to 5 (strongly agree). Individuals who get higher scores are associated with stronger self-directed learning. Lounsbury at al. (2009) obtained Cronbach alpha of .87 when their sample included middle and high school students. The Cronbach alpha was .84 when the sample included college students. In another study, Zhoc and Chen (2016) applied SDLS in Chinese university students. They obtained internal consistency reliability coefficient of 0.79.

Modified Schutte Emotional Intelligence Scale (MSEIS). The Modified Schutte Emotional Intelligence Scale was developed by Schutte and colleagues (1998) to measure dimensions of emotional intelligence (e.g., optimism/mood regulation, utilization of emotions and appraisal of emotions). It has 41 items and 21 of them are reverse-scored. Its responses are rated between 1 (totally disagree) and 5 (totally agree). Higher scores indicate higher emotional intelligence. Its internal reliability was 0.87. It was translated into Turkish by Tatar, Tok and Saltukoğlu (2011). The Cronbach alpha for the Turkish version of the scale was found as 0.82.

Self-Directed Learning Inventory (SDLI). The Self-Directed Learning Inventory was developed by Suh, Wang, and Arterberry (2015) to measure for elementary to middle school students' self-directness in collectivist cultures. This scale has 8 subscales which are learning needs, utilizing skills, enduring challenges, self-efficacy in learning, planning the process, evaluating the process, completing tasks, and internal attribution. Its internal reliability was 0.82. The Turkish adaptation and validation of the scale was established by Çelik and Arslan (2016). Internal consistency of this inventory was found 0.93. It consists of 28 items and responses are rated between 1 (totally disagree) and 5 (totally agree).

Causal Uncertainty Scale (CUS). The Causal Uncertainty Scale was developed by Weary and Edwards (1994) to measure uncertainty about understanding the cause and effect relationship in social world. The internal consistency of the scale was founded as 0.83 (Weary & Edwards, 1994). It consists of 14 items and responses are rated between 1 (totally disagree) and 5 (totally agree). Higher scores indicate higher uncertainty. This scale was adapted into Turkish by Uz (2015). The Turkish version of the scale's internal consistency was found as 0.82.

## 2.3. Procedure

First of all, ethical approval was obtained from Çankaya University Ethics Committee. SDLS was translated to Turkish by three expert psychologists. In addition, back-translations were separately done by a psychologist with a specialist degree in i) cognitive psychology, ii) social psychology and by a iii) professional translator. The final version of the translation was approved again by the same three psychologists.

All subjects voluntarily participated in the current study. Before attending, information about the study was explained and informed consent was obtained from all participants. A demographic information form was administered to measure variables including gender, age, university, department, grade, and cumulative GPA. MSEIS, SDLI, and CUS were also applied to all participants in order to examine convergent validity of SDLS. To measure test-retest reliability, SDLS was re-administered after two to four weeks after the first application of the scale.

## 3. RESULTS

### 3.1. Reliability Analyses

The test–retest correlation of SDLS was $r = 0.820$, $p < .01$. Guttman Split-Half Coefficient was computed for determining internal consistency (split-half correlation). Guttman Split-Half Coefficient of SDLD was found as 0.816. Item total correlations and Cronbach's alpha values (if an individual item deleted) were calculated to assess internal consistency. The Cronbach alpha coefficient of SDLS was found to be 0.853. Item-total item correlations were between 0.43 and 0.63. If item deleted Cronbach's α values were calculated for each item and it was found that α values varied from 0.823 to 0.841 (see Table 2).

**Table 2.** Mean, standard deviation, item-total correlations, and alpha values of items

| Items | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| Item1 | 34.25 | 29.49 | ,478 | ,837 |
| Item2 | 34.69 | 27.60 | ,582 | ,828 |
| Item3 | 34.35 | 28.47 | ,582 | ,828 |
| Item4 | 34.41 | 28.77 | ,515 | ,834 |
| Item5 | 33.91 | 30.98 | ,428 | ,841 |
| Item6 | 34.01 | 29.83 | ,528 | ,833 |
| Item7 | 34.08 | 30.00 | ,442 | ,840 |
| Item8 | 34.08 | 28.93 | ,632 | ,824 |
| Item9 | 34.44 | 28.05 | ,629 | ,823 |
| Item10 | 34.25 | 27.50 | ,623 | ,823 |

$N = 272$, $\alpha = 0.85$

### 3.2. Validity Analyses

Convergent validity. There was a strong significant positive correlation between participants' SDLS and SDLI scores ($r = 0.73$, $p < .01$). The correlation between SDLS and the MSEIS was also significant ($r = 0.38$, $p < .01$). There was a significant negative moderate correlation between SDLS and the CUS ($r = -0.30$, $p < .01$) (Table 3). The correlations between SDLS and subscales of SDLI varied between 0.33 and 0.60 ($p < .05$). As seen in Table 4, the correlations between SDLS and subscales of MSEIS varied between 0.082 and 0.402 ($p < .05$).

**Table 3.** Descriptive Statistics, alpha coefficients, and correlations of the scales

| Scale | Mean | S.D. | SDLS | MSEIS | CUS | SDLI |
|---|---|---|---|---|---|---|
| SDLS | 38.01 | 5.92 | (0.853) | | | |
| MSEIS | 156.53 | 15.09 | 0.376** | (0.837) | | |
| CUS | 31.05 | 9.25 | -0.304** | -0.473** | (0.879) | |
| SDLI | 105.57 | 14.03 | 0.728** | 0.459** | -0.338** | (0.905) |

$N = 272$

Alpha coefficients are on the diagonal, in parentheses.

** $p < .01$.

**Table 4.** *Correlations between SDLS Scores and (i)MSEIS Scores, (ii) SDLI Scores, (iii) Cum GPA*

| Scales | Mean±SD | r |
|---|---|---|
| **Modified Schutte Emotional Intelligence Scale (MSEIS)** | | |
| Optimism/Mood Regulation | 47.03±5.39 | 0.402** |
| Utilization of Emotions | 22.06±3.24 | 0.082 |
| Appraisal of Emotions | 38.62±5.58 | 0.266** |
| **Self-directed Learning Inventory (SDLI)** | | |
| Learning Needs | 20.46±3.54 | 0.503** |
| Utilizing Skills | 14.50±2.60 | 0.604** |
| Enduring Challenges | 14.31±2.98 | 0.596** |
| Self-Efficacy in Learning | 11.29±2.34 | 0.584** |
| Planning the Process | 10.39±2.84 | 0.371** |
| Evaluating the Process; | 11.06±2.80 | 0.325** |
| Completing Tasks; | 11.18±2.34 | 0.408** |
| Internal Attribution | 12.37±1.94 | 0.411** |
| **Cumulative GPA Scores** | 2.69±0.58 | 0.236** |

** $p < .01$.

Factor analyses. The one-factor structure of the scale, which was formed by Lounsbury and Gibson (2006), was tested with a confirmatory factor analyses by LISREL 9.2. For one-factor structure, Goodness of Fit Index was found as 0.97, Comparative Fit Index was found as 0.99, Root Mean Square Error of Approximation was found as 0.04, and other scores can be seen in Table 5. The path diagram of the one factor model of the SDLS can be seen in Figure 1.

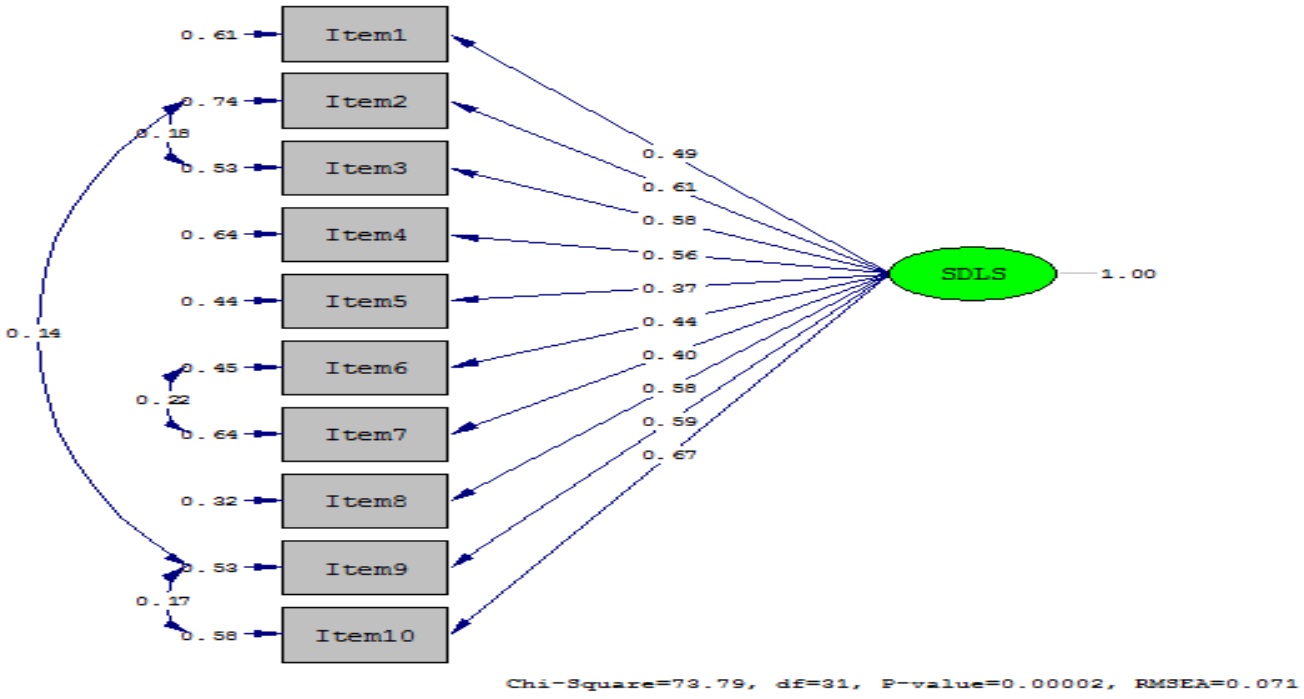


**Figure 1.** The one-factor Structure of SDLS

**Table 5.** CFA results for the one-factor model

| Fit Indices | Fit Range | Research Model Uni-dimensional Model |
|---|---|---|
| Total Fit Index | | |
| $\chi^2/df$ | $0 \leq \chi^2/df \leq 3$ | 73.79/31= 2.38 |
| Comparative Fit Index | | |
| NNFI | .90 ≤ - ≤ .94 | .96 |
| CFI | ≥ .95 | .97 |
| RMSEA | 0.05 ≤ - ≤ 0.08 | 0.07 |
| Absolute Fit Index | | |
| GFI | ≥ .90 | .95 |
| AGFI | ≥ .85 | .91 |
| Residual Based Indexes of Compliance | | |
| SRMR | .06 ≤ - ≤ .08 | .05 |
| RMR | | .04 |

Criterion validity. Cumulative GPA scores were used to determine concurrent validity. There existed a positive significant correlation between individuals' SDLS scores and Cumulative GPA scores ($r = 0.236$, $p < .01$).

## 4. DISCUSSION

The purpose of this study was to translate the SDLS into Turkish and to investigate the psychometric properties of the Turkish adaptation of the SDLS. The majority of the sample was composed of university students from Ankara. The psychometric evaluation of the Turkish version of SDLS included examining (i) test-retest reliability, (ii) internal consistency, (iii) convergent validity, (iv) factor analyses, (v) and criterion validity of the scale.

To test-retest reliability, the correlation coefficient was found as 0.82. This result suggests that SDLS was consistent over time, meaning that student who got high self- directed learning scores tend to have high scores in the same scale after some time. Past research studies did not determine test-retest reliability of this scale. For this reason, this study provides information about the reliability of SDLS. Moreover, internal consistency was examined, and the Cronbach's alpha coefficient was found as fairly high, demonstrating that the one-factor structure was internally consistent. This score is similar to the one obtained in Zhoc and Chen's (2015) study, as well as Lounbury and Gibson's (2009) research. Besides, Guttman Split-Half Coefficient was greater than 0.8, indicating that SDLS was reliable.

Additional three scales were used in this study for determining convergent validity of the scale as a part of construct validity examination. Firstly, a significant strong positive correlation was found between SDLS and SDLI. This result indicates not only the convergent validity of SDLS but also applicability of SDLS in collectivist cultures like Turkey. SDLS was used to examine self-directed learning in individualistic cultures. On the other hand, Suh, Wang, and Arterberry (2015) developed SDLI to determine people's self-directed learning in collectivistic cultures. In fact, culture is one of the determinant of measuring self-directed learning (Mok, Leung, & Shan, 2005). According to Brockett (1983), self-directed learners are willing to learn new concepts and they like to learn information independently. On the other hand, independence-interdependence dimension is the most important determinant when distinguishing between individualistic and collectivistic cultures (Triandis, 2001). Considering all these information, the 'self-directed learning' concept can vary according to individualistic or collectivistic cultures. High correlation between SDLS and SDLI demonstrates that SDLS measures self-directed learning not only for individualistic cultures, but also for collectivistic cultures.

In addition, the current study revealed the relations of self-directed learning and emotional intelligence. As founded, the significant positive correlation between SDLS and the MSEIS indicates that students who learn more self-directed tend to be more emotionally intelligent or vice versa. The observed correlation coefficient is lower than previous studies. There can be two reasons for this result. First of all, number of males and females were not balanced in the current study. MSEIS scores of males were significantly lower than MSEIS scores of females. On the other hand, there was no significant difference between SDLS scores of men and of females. Thus, gender can be a confounding variable for determining correlation between SDLS and MSEIS for this study. Second reason may be the small sample size employed in the current work.

There is a significant negative moderate correlation between SDLS and the CUS, indicating that students who are more self-directed tend to be less causal uncertain. According to Markant, Settles, and Gureckis (2016), people generally start learning with a little piece of information. For this reason, self-directed learning people should have little causal uncertainty not only for determining correct sources but also for finding proper methods for themselves. The negative correlation between SDLS and CUS supports this expectation.

In the original study, Lounsbury and Gibson (2006) found a uni-dimentional factor structure of the scale. Supporting past findings, confirmatory factor analysis (CFA) results shows that the SDLS is uni-dimensional. As Browne and Cudeck (1993) suggested, Root Mean Square Error of Approximation (RMSEA) score obtained in our study was lower than 0.08, conforming adequate fit model. Similarly, Goodness of Fit Index (GFI) score of the present study reached the suggested cut off score of 0.95 (Munro, 2005). Adjusted Goodness of Fit Index (AGFI) should be higher than 0.95, but allowance value was suggested to be 0.90 (Munro, 2005). AGFI score in this study was within this range. In addition, Bentler (1990) suggested 0.90 as an allowance score of Comparative Fit Index (CFI). CFI score of the current work was quite higher than this value. Furthermore, Root Mean Square Residual (RMR) and Standardized Root Mean Square Residual (SRMR) should be lower than 0.05 (Hu & Bentler, 1999). In this study, RMR and SRMR scores were found as lower than this threshold. All these results demonstrate that the Turkish version of SDLS fit the one-factor model.

The correlation between SDLS and cumulative GPA of participants was examined for determining the criterion validity of the scale. A significant positive correlation between SDLS scores and cumulative GPA of participants was observed. These results support those of Lounsbury et al. (2009) who found a positive correlation between self-directed learning and academic achievements. All these findings suggest that self-directed learners who are motivated and open to new experiences tend to have higher academic achievement. However, there existed some missing values for cumulative GPA in the data. These missing values might decrease the magnitude of the relationship between SDLS scores and cumulative GPA.

In sum, the results of the current study show that SDLS was a reliable and valid tool to measure self-directed learning for university students in Turkey. SDLS is uni-dimensional and can measure self-directed learning in different cultures. The scale's factor structure was internally consistent. The scale also showed test-retest reliability. Criterion validity of the scale was provided by its correlation with university achievement (i.e., Cumulative GPA). Moreover, the study has broadened the nomothetic span of self-directed learning by relating to emotional intelligence and causal uncertainty.

Although this study will contribute the area of education with clarifying the learning orientation of individuals, the current study has the following limitations. Firstly, the majority of the participants were from one city, Ankara. Secondly, sample size was small. Additionally, the number of students was not equally distributed across universities and gender. Future studies are suggested to select participants from different cities in different cultures to enhance

the generalizability of the findings and applicability of SDLS in collectivistic cultures. Additionally, future studies are recommended to collect data from larger samples to strengthen the external validity of the scale. Moreover, future research studies should balance the male and female ratio to minimize a possible confounding effect of gender.

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## 5. REFERENCES

Agran, M., Blanchard, C., & Wehmeyer, M. L. (2000). Promoting transition goals and self-determination through student self-directed learning: The self-determined learning model of instruction. *Education and Training in Mental Retardation and Developmental Disabilities*, 351–364.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*(2), 238.

Brockett, R. (1983). Self-directed learning and the hard-to-reach adult. *Lifelong Learning: The Adult Years*, *6*(8), 16–18.

Brockett, R. G. & Hiemstra, R. (1991*) Self-direction in adult learning: perspectives on theory, research, and practice.* London: Routledge

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. *Sage Focus Editions*, *154*, 136.

Brownell, K. D., Colletti, G., Ersner-Hershfield, R., Hershfield, S. M., & Wilson, G. T. (1977). Self-control in school children: Stringency and leniency in self-determined and externally imposed performance standards. *Behavior Therapy*, *8*(3), 442–455.

Corno, L. (1992). Encouraging students to take responsibility for learning and performance. *The Elementary School Journal*, 93(1), 69-83.

Çelik, K., & Arslan, S. (2016). Turkish adaptation and validation of Self-Directed Learning Inventory. *International Journal of New Trends in Arts, Sports & Science Education (IJTASE)*, 5(1), 19-25.

Garrison, D. R. (1997). Self-directed learning: Toward a comprehensive model. *Adult Education Quarterly*, *48*(1), 18 –33.

Guglielmino, L. M. (1978). *Development of the self-directed learning readiness scale* (Doctoral dissertation, ProQuest Information & Learning).

Guthrie, J. T., Meter, P., McCann, A. D., Wigfield, A., Bennett, L., Poundstone, C. C., & Mitchell, A. M. (1996). Growth of literacy engagement: Changes in motivations and strategies during concept-oriented reading instruction. *Reading Research Quarterly*, *31*(3), 306–332.

Hodgkinson, G. P., Langan-Fox, J., & Sadler-Smith, E. (2008). Intuition: A fundamental bridging construct in the behavioural sciences. *British Journal of Psychology*, *99*(1), 1-27.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55.

Hsu, Y. C., & Shiue, Y. M. (2005). The effect of self-directed learning readiness on achievement comparing face-to-face and two-way distance learning instruction. *International Journal of Instructional Media*, *32*(2), 143.

Knowles, M. S. (1975) *Self Directed Learning: A Guide for Learners and Teachers*. Chicago: Association Press.

Kilmann, R. H., & Thomas, K. W. (1975). Interpersonal conflict-handling behavior as reflections of Jungian personality dimensions. *Psychological Reports*, *37*(3), 971–980.

Kreber, C. (1998). The relationships between self-directed learning, critical thinking, and psychological type, and some implications for teaching in higher education. *Studies in Higher Education*, *23*(1), 71-86.

Lounsbury, J. W., & Gibson, L. W. (2006). Personal Style Inventory: A personality measurement system for work and school settings. *Knoxville, TN: Resource Associates Inc*.

Lounsbury, J. W., Levy, J. J., Park, S. H., Gibson, L. W., & Smith, R. (2009). An investigation of the construct validity of the personality trait of self-directed learning. *Learning and Individual Differences*, *19*(4), 411-418.

Markant, D. B., Settles, B., & Gureckis, T. M. (2016). Self-Directed Learning favors local, rather than global, uncertainty. *Cognitive Science*, *40*(1), 100–120.

McCombs, B. L., & Whisler, J. S. (1989). The role of affective variables in autonomous learning. *Educational Psychologist*, *24*(3), 277–306.

Mok, M. C.M., Leung, S. O., & Shan, W. J. P. (2005). A comparative study on the self-directed learning of primary students in Hong Kong and Macau. *International Journal of Self-directed Learning*, *2*(2), 39–54.

Morrow, L. M. (1993). Promoting Independent Reading and Writing through Self-Directed Literacy Activities in a Collaborative Setting. Reading Research Report No. 2.

Munro B.H. (2005) *Statistical Methods for Health Care Research*, 5th edn. Lippincott Williams and Wilkins, Philadelphia, PA.

Okabayashi, H., & Torrance, E. P. (1984). Role of style of learning and thinking and self directed learning readiness in the achievement of gifted students. *Journal of Learning Disabilities*, *17*(2), 104-106.

Roberson Jr, D. N., & Merriam, S. B. (2005). The self-directed learning process of older, rural adults. *Adult Education Quarterly*, *55*(4), 269–287.

Schunk, D. H. (1981). Modeling and attributional effects on children's achievement: A self-efficacy analysis. *Journal of Educational Psychology*, *73*(1), 93.

Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., & Dornheim, L. (1998). Development and validation of a measure of emotional intelligence. *Personality and Individual Differences*, *25*(2), 167–177.

Song, L., & Hill, J. R. (2007). A conceptual model for understanding self-directed learning in online environments. *Journal of Interactive Online Learning*, *6*(1), 27–42.

Suh, H. N., Wang, K. T., & Arterberry, B. J. (2015). Development and Initial Validation of the Self-Directed Learning Inventory with Korean College Students. *Journal of Psychoeducational Assessment*, *33*(7), 687–697.

Tatar, A., Tok, S., & Saltukoğlu, G. (2011). Gözden geçirilmiş Schutte Duygusal Zekâ Ölçeği'nin Türkçe'ye uyarlanması ve psikometrik özelliklerinin incelenmesi. *Klinik Psikofarmakoloji Bülteni*, *21*(4), 325–338.

Taylor, B. (1995). Self-Directed Learning: Revisiting an Idea Most Appropriate for Middle School Students. Paper presented at *the Combined Meeting of the Great Lakes and Southeast International Reading Association*, Nashville, TN, Nov 11-15. [ED395287]

Temple, C., & Rodero, M. L. (1995). Reading around the World: Active Learning in a Democratic Classroom: The" Pedagogical Invariants" of Célestin Freinet. *The Reading Teacher*, *49*(2), 164–167.

Triandis, H. C. (2001). Individualism, collectivism and personality. *Journal of Personality*, *69*(6), 907–924.

Uz, İ. (2015). Nedensel Belirsizlik Ölçeğinin Türkçeye uyarlanması. *Anatolian Journal of Psychiatry/Anadolu Psikiyatri Dergisi*, *16*.

Weary, G., & Edwards, J. A. (1994). Individual differences in causal uncertainty. *Journal of Personality and Social Psychology*, *67*(2), 308.

Wilcox, S. (1996). Fostering self-directed learning in the university setting. *Studies in Higher Education*, *21*(2), 165–176.

Zhoc, K. C., & Chen, G. (2016). Reliability and validity evidence for the Self-Directed Learning Scale (SDLS). *Learning and Individual Differences*, *49*, 245–250.

## Appendix A

**Tablo A.** Öz Yönetimli Öğrenme Ölçeği (Turkish Version)

| **Öz Yönetimli Öğrenme Ölçeği** | | | | | | |
|---|---|---|---|---|---|---|
| Aşağıda çeşitli durumlara ilişkin ifadeler bulunmaktadır. Lütfen ifadeyi okuduktan sonra size uyma derecesini sağ taraftaki kutucuklardan birini işaretleyerek belirtiniz. | | Kesinlikle Katılmıyorum | Katılmıyorum | Fikrim Yok | Katılıyorum | Kesinlikle Katılıyorum |
| 1. | Sınıf dışında, düzenli olarak kendi kendime bir şeyler öğrenirim. | | | | | |
| 2. | Öğretmenin sınıfta açıklamadığı şeylerin cevabını kendi kendime bulmak konusunda oldukça iyiyimdir. | | | | | |
| 3. | Sınıfta anlamadığım bir şey olursa, onu kendi kendime öğrenmenin her zaman bir yolunu bulurum. | | | | | |
| 4. | Okulda başarılı olmamda yardımcı olacak doğru kaynakları bulmada iyiyimdir. | | | | | |
| 5. | Kendi insiyatifim temelinde, öz yönetimli öğrenmeyi (belirlediğim amaca yönelik, kendi öğrenme yöntemimle öğrenmeyi) okulda ve gelecekteki kariyerimde başarı için çok önemli buluyorum. | | | | | |
| 6. | Öğreneceğim şeyler için hedeflerimi kendim koyarım. | | | | | |
| 7. | Neyi ne zaman öğreneceğimden kendim sorumlu olmak isterim. | | | | | |
| 8. | Eğer öğrenmem gereken bir şey varsa, onu öğrenmenin bir yolunu hemen bulurum. | | | | | |
| 9. | Çoğu öğrenciye kıyasla, kendi kendine öğrenme konusunda çok daha iyiyimdir. | | | | | |
| 10. | Diğer insanlara bel bağlamadan kendi kendime öğrenme konusunda oldukça motiveyimdir. | | | | | |