

## School Learning Responsibility Scale's Validity and Reliability Study (For Primary School Students)

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<b>Article history</b>	Learning responsibility is one of the responsibility types which are frequently emphasized particularly in recent years. However, determining to what extent schools and educators are able to make the students acquire learning responsibility is an important problem that should be paid attention. This study was aimed to develop a measurement tool which can be used to determine school learning responsibility levels of primary school students based on their self-perceptions. Study group of this study consisted of a total 579 primary school students. In development process of the scale, firstly, literature review was made and was interviewed with primary school teachers. Within the framework of validity analyses of the scale; (1) Exploratory factor analysis, (2) Confirmatory factor analysis, (3) Item-test correlations, (4) Item discrimination powers were done. The reliability analyses were done as calculated (1) internal consistency (2) determination and (3) unbiasedness coefficients. After exploratory factor analysis; a scale structure consisting of 24 items collected under 2 factors were observed. KMO value of the scale was 0.937; Bartlett's test values were $\chi^2=4638,648$ ; $sd=276$ ; $p<0.001$ . Factor loads of the items were between 0.459 and 0.728. Amount of explained variance was 44.385%. Confirmatory factor analysis indicated that among model fit values $\chi^2/d$ (3.17), RMSEA (0.61), GFI (0.90), AGFI (0.88) showed an acceptable match while S-RMR (0.047), NNFI (0.97) CFI (0.97) and IFI (0.97) showed perfect match. Item-test correlations of the items in the scale were between 0.503 and 0.680; while t-test values related to discrimination powers were between 10.562 and 19.236. Each relationship and difference was significant at $p<0.01$ level. Internal consistency of the scale was Cronbach's alpha 0.920. Unbiasedness coefficients were between Cronbach's alpha 0.862 and 0.921. Coefficient of determination was 0.712 by Pearson's test. It can be stated that School Learning Responsibility Scale (SLRS) is a valid and reliable scale which can be used to determine students' levels of fulfilling learning responsibilities. Findings obtained from SLRS for students' levels of fulfilling their learning responsibilities can be effectively used to determine potential precautions to be taken to make educational process more efficient and to encourage students to be individuals with learning responsibility. On the other hand, we hope that school administrators and teachers make realistic assessments about the cases of academic failure of students.
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## **Introduction**

Learning responsibility is one of the responsibility types which are frequently emphasized particularly in recent years (Barr & Tagg, 1995; Shavelson, 2007; Stockdale & Brockett, 2010; Yıldırım, 2008). Clouder (2009) reported that responsibility can only be acquired through education, and it was educatory at the same time. For Dewey, responsibility is one of the principle components that form character and has the power to shape behaviors (Cited by: Gosselin, 2003). Hughes (2001) pointed out to the importance of students' undertaking learning responsibility by saying: "It seems that responsibility is a key concept in development of life-long learning policies. Encouraging students to take responsibility seems to be the key problem" (p.601).

On the other hand, one of the principle objectives of education is to help the students to make them active learners. This requires the students to have learning responsibility. In other words, it can be stated that learning responsibility forms the basis of learning other responsibilities (Senemoğlu, 2011; Yıldırım, 2009). However, determining to what extent schools and educators are able to make the students acquire learning responsibility is an important problem that should be paid attention.

It can be stated that firstly there are two principle needs to overcome this problem. The first one is to determine characteristics and behaviors that should be observed in individuals who fulfill learning responsibilities. The second need involves valid and reliable measurement tools which can measure whether these characteristics are acquired. The literature contains a large body of research on the first dimension (Yontar&Yurtal, 2009; Yıldırım, 2008; Young, 2005; Töremen, 2011). The behaviors specified by scientists and educators can be listed under two groups, which are learning duties of the student during the course and learning duties of the student outside the course (Yıldırım, 2008; Carnell, 2005; Ellinger, 2004; Davis & Murrell, 1994; Hughes, 2001; Yıldırım, 2009).

As for the second need, a review of the literature found no measurement tool to measure learning responsibility levels of students. As a matter of fact, due to this need, scientists and administrators make a call for developing measurement tools. Shavelson (2007) reported that all official reports discussed whether assessments can be made by directly measuring the learning responsibilities of students. On the other hand, White (1998) reported that traditional measurement and evaluation tools and methods fell behind determining responsibility fulfillment levels of students. According to White, responsibilities of students were only limited to writing or marking what were explained in books on exam paper.

In line with these calls, the present study was carried out to develop a measurement tool which can be used to determine learning responsibility levels of students based on their self-perceptions. We aimed to develop a valid and reliable measurement tool which can be used to determine levels of education institutions to make the students acquire learning responsibilities and learning responsibility levels of students which will lay the basis for making them life-long learners. It was believed that having such a scale will contribute to supply of reliable information on eliminating deficiency and drawbacks in the field and to the development of education programs. On the other hand, it will also contribute to elimination of an important deficiency by responding to abovementioned calls.

## Method

### Sample

*Participants of the scale development group.* Study group of this study consisted of a total 579 students enrolled in 5. and 8. grades of randomly selected 8 primary schools in Kırşehir city center. 5. and 8. grade students were selected since these student can be considered as the products of primary education I. and II. levels. A scale which can be used for the students in both levels was aimed to be developed. Distribution of the students in the study group was summarized in Table 1.

**Table 1:** Distribution of study group according to class level and gender

	Male	Female	Total
5. grade	139	184	303
8. grade	131	145	276
Total	270	309	579

### *Development Process of School Learning Responsibility Scale*

Process steps for the development of “School Learning Responsibility Scale (SLRS)” can be listed as follows:

1. Preparation of item pool: Firstly, literature review was conducted during development process of the scale (Yontar&Yurtal, 2009; Clouder, 2009; Gosselin, 2003; Töremen, 2011; Ellinger, 2004; Shavelson, 2007; Young, 2005; White, 1998; Macready, 2009). In this framework, we tried to make a list of characteristics of in-class and out-class attitudes and behaviors of the students who have and do not have learning responsibility. Secondly, we asked 50 randomly selected teachers in primary education to write criteria which they can use to evaluate their students in terms of having learning responsibility. An item pool consisting of 37 items was prepared to determine students’ levels of fulfilling their learning responsibilities. Five-degree options were listed to determine how often the students showed the indicated behaviors. These options were organized and scored as “(0) Never”, “(1) Rarely”, “(2) Sometimes”, “(3) Often” and “(4) Always”.
2. Analysis/correction of items in the pool: Draft items were analyzed by five experts including two linguistics experts, two educational curriculums and teaching experts and one psychological counseling and guidance expert and 30 students, 15 of who were studying at 5th grade and 15 of who were studying at 8th grade. The items were analyzed in terms of scope, wording, spelling and punctuation. Necessary corrections were made in line with critics and 5 questions were excluded from item pool.
3. Organization of draft scale: Draft scale was organized to have a 32-item structure after the excluded items. The scale was named as “School Learning Responsibility Scale (SLRS)” as it involves learning responsibilities of students.
4. Administration of draft scale to study group: SLRS was administered to the study group during one lesson hour under the supervision of course teachers.
5. Validity analysis of the scale: (1) Exploratory factor analysis, (2) confirmatory factor analysis (3) item-total correlation analysis (4) item discrimination analysis were performed for the validity analysis of SLRS.

Within the scope of factor analysis using SPSS 15.0, KMO and Barlett's test, and Varimax vertical rotation technique were used. Data collected from a different group consisting of a total of 264 people having similar characteristics were transferred to Lisrel 8.80 program and confirmatory factor analysis was made to test factor structure of SLRS. In addition to exploratory and confirmatory factor analyses, item-total correlations were calculated using Pearson's r test and discrimination powers of the items in the scale were calculated using independent sample t-test.  $p < 0.01$  level was considered as sufficient for significance.

6. Reliability analyses of the scale: Internal consistency test, stability test and unbiasedness tests were performed to determine reliability of the scale. Cronbach's alpha reliability coefficient was used to determine internal consistency level. On the other hand, stability level of the scale was calculated by determining the correlation between the results of two applications conducted with five-week interval using Pearson's r test. Unbiased measurement was tested by calculating Cronbach's alpha reliability coefficients for sub-groups based on class level and gender variables of the study group.

## **Findings and Results**

### *Validity of School Learning Responsibility Scale*

Validity is one of the principle properties of measurement tools. Factor analysis, item total correlations and analysis of item discrimination powers are among the tests which are recommended to be used in testing validity qualities of measurement tools (Büyüköztürk, 2008; Balcı, 2009; Eroğlu, 2009; Karagüven, 2009; Tatar, Yıldız, Akpınar&Ergin, 2009). Findings obtained by validity analyses for SLRS are presented below:

Firstly, Kaiser-Meyer-Oklin (KMO) and Bartlett's test analyses were performed to test structural validity of SLRS. It was found that  $KMO = 0,948$ . Bartlett's test value was found to be  $\chi^2 = 6507,984$ ;  $sd = 496$ ;  $p = 0,000$ . The fact that KMO value was above 0,90 was interpreted that data set was perfectly fit for conducting factor analysis. In addition, according to Barlett's test values which is known to be the unit matrix of the correlation it tests, it was understood that zero hypothesis was rejected at 0,05 significance level (Büyüköztürk, 2008; Eroğlu, 2009; Tatar et al., 2009).

*Exploratory factor analysis.* For exploratory factor analysis, firstly principle component analysis was conducted to determine whether the scale was one-dimensional. Principle component analysis is a common technique used as factorization technique (Büyüköztürk, 2008; Balcı, 2009). Varimax vertical rotation technique was applied and factor loads were analyzed to understand whether the scale was separated into unrelated factors.

While evaluating factor analysis results, we paid attention to the following: factor loads of items over 0.30; minimum 0.100 load difference between the loads of items in different factors; minimum 40% explained variance criteria and starting points for horizontal image of vertical falls in scree plot (Büyüköztürk, 2008; Eroğlu, 2009). It was found that the scale can have a two-factor structure.

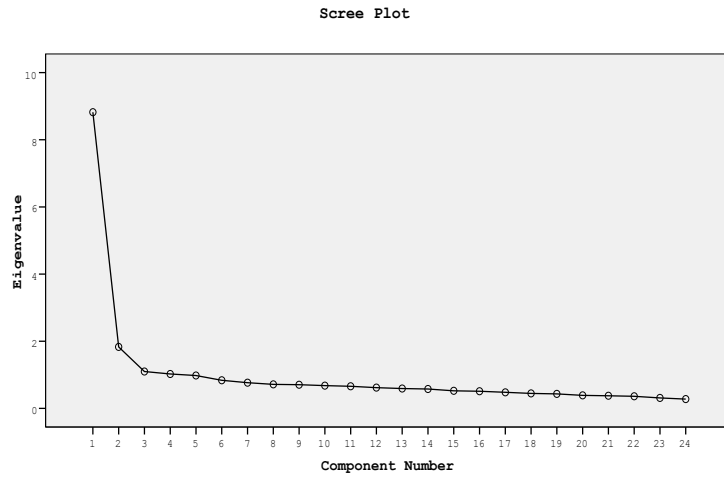
In this framework, Varimax vertical rotation technique was used to determine which factors the items belonged to (Büyüköztürk, 2008; Eroğlu, 2009). Factor weight should be 0.30 and higher in 350 and higher observations to obtain significant factors. On the other hand, 0.45 and higher factors are considered to be quite good (Büyüköztürk, 2008; Eroğlu, 2009). In addition, there should be minimum 0.100 differences between the factor load of an item and load value in another factor (Büyüköztürk, 2008). In this context, a total of 9 items with factor

loads below 0.45 whose loads were similar in different factors were excluded from the scale. Finally we obtained a 2-factor structure consisting of 24 items which explained 44.385% of total variance with a factor load of higher than 0.45. The obtained structure is presented in Table 2.

**Table 2:** Number of factors according to eigenvalue statistics and percentage of explained variance

Components	Eigenvalue	% of Variance	Cumulative %
F1: Learning Responsibility During the Course (LRDC)	5,548	23,117	23,117
F2: Learning Responsibility Outside the Course” (LROC)	5,104	21,268	44,385

Based on the findings presented in Table 2, it was decided that a total of 24 items in the scale were collected under 2 factors and that amount of explained variance was adequate for this factor and items to form a scale structure. This result is indicated in line chart drawn according to eigenvalue (Graph 1).



**Figure 1:** Eigenvalue graph of items (scree plot)

It is observed from Figure 1 that there are fast falls in the first two factors; however this fast fall takes a horizontal course starting from the third factor. This means that the first two factor made significant contributions to explained variance; however the contributions of other factors were similar (Büyüköztürk, 2008; Eroğlu, 2009).

After these analyses, contents of the items collected under factors were analyzed and factors were named. The factors were called as “F1: Learning Responsibility During the Course (LRDC)” and “F2: Learning Responsibility Outside the Course” (LROC)”.

It was found that KMO value of 24-item SLRS within its final version was 0.937; Bartlett’s test values were  $\chi^2=4638.648$ ;  $sd=276$ ;  $p<0.001$ . It was observed that factor values of 24 items in the scale were between 0.459 and 0.728. On the other hand, it was found that items and factors which were included in the scale explained 44.385% of variance.

Distribution of 24 items according to factors, factor loads of items, eigenvalues of factors and amount of explaining variance are presented in Table 3.

**Table 3:**Factor Analysis Results of School Learning Responsibility Scale according to Factors Loads

	Nu.	Items	Factor Loads		
LRDC	1	I ask permission from my teacher to speak and ask questions.	0,702		
	2	I completely note the homework assigned by my teacher	0,696		
	3	I raise my finger to ask for permission to speak	0,672		
	4	I perform the behavior I should do in intragroup sportive activities	0,653		
	5	I immediately write down the wordings that my teacher wants us to note	0,636		
	6	I do my homework on time.	0,620		
	7	I show willingness to participate in group homework	0,588		
	8	I eagerly take part in activities during the course	0,579		
	9	I try to perform the works or movements in physical education, visual arts and music courses as shown by my teacher	0,567		
	10	I carefully listen to what my teacher and friends tell	0,547		
	11	I prepare pencil, book etc and tools before the teacher comes	0,545		
	12	I try to do my homework according to the explanations of my teacher	0,528		
	13	I do not interrupt my teacher or my friends when they speak	0,515		
LROC	14	I note information I find important on my notebook or book with explanations	0,728		
	15	I form schema ad tables to make information more clear while I study	0,719		
	16	I summarize the knowledge I learn	0,694		
	17	I use table, figure and graphs while summarizing	0,680		
	18	I mark the points I find important in a text I read in a book	0,666		
	19	I ask the subjects and words I noted down and I do not know to my teacher	0,619		
	20	I study the subjects and words which I don't know and noted during the course after the lesson	0,599		
	21	I read the subjects which will be taught the next day	0,589		
	22	I follow and read the news and information announced in classroom and school bulletin board	0,561		
	23	I use tools such as dictionary, map, atlas etc while I study at home	0,482		
	24	I use the library and other written sources for research assignments	0,459		
			Eigen value	5,548	5,104
			Variance explained	23,117	21,268

As indicated in Table 3, LRDC factor of LRS contains 13 items and factor loads vary between 0.515 and 0.702. Eigenvalue of this factor is 5.548 and the contribution it makes to general variance is 23.117%. On the other hand, LROC factor contains 11 items. Factor loads of items vary between 0.459 and 0.728. Eigenvalue of the factor is 5.104 and its contribution to general variance is 21.268%.

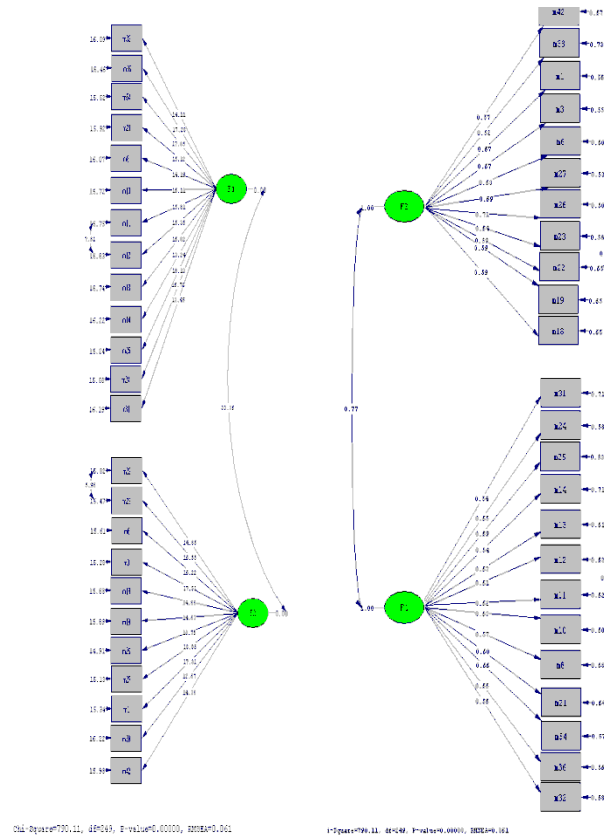
Considering that factor loads of the items were greater than 0.45 and amount of explained total variance was 44.385% it can be interpreted that SLRS consisting of 2 factor and a total of 24 items has structural validity (Büyüköztürk, 2008; Eroğlu, 2009; Karagüven, 2009; Tatar et al., 2009).

**Confirmatory factor analysis.** Confirmatory factor analysis is a structural equality model dealing with implicit variables and observed measurements. It is based on the principle of handling and testing the correlations between observed and non-observed variables (items and factors) as hypothesis. Each implicit variable (factor) is explained with respect to their correlations with observed variables (items) (Yılmaz &Çelik, 2009; Tatar et al., 2009; Raykov&Marcoulides, 2006: 4; Kline, 2005).

Scale form which was obtained with confirmatory factor analysis was administered to new study group consisting of a total of 264 people apart from the study group of the present study. Confirmatory factor analysis was performed on the obtained data. In structural equality model, generally more than one fit value is recommended to be reported (Kline, 2005).

The values observed in the scale model by confirmatory factor analysis were between the intervals of  $\chi^2/d < 3$ ;  $0 < RMSEA < 0.05$ ;  $0 \leq S-RMR \leq 0.05$ ;  $0.97 \leq NNFI \leq 1$ ;  $0.97 \leq CFI \leq 1$ ;  $0.95 \leq GFI \leq 1$ ;  $0.95 \leq AGFI \leq 1$  and  $0.95 \leq IFI \leq 1$ ., which show a perfect fit. The intervals  $\chi^2/d < 5$ ;  $0.06 \leq RMSEA < 0.08$ ;  $0.06 \leq S-RMR \leq 0.08$ ;  $0.90 \leq NNFI \leq 0.96$ ;  $0.90 \leq CFI \leq 0.96$ ;  $0.90 \leq GFI \leq 0.96$ ;  $0.90 \leq AGFI \leq 0.96$  and  $0.90 \leq IFI \leq 0.96$  show that there was an acceptable fit (Kline, 2005; Şimşek, 2007; Tatar et al., 2009).

In addition, correction indices were analyzed during confirmatory factor analysis and it was decided that it would be appropriate to associate error variances of m11 and m12 in the first factor and to associate m22 and m23 items in the second factor. Regarding the values appearing by confirmatory factor analysis, t values diagram (to the right) and standardized analysis diagram (to the left) are presented in Figure 2.



**Figure 2:**Confirmatory factor analysis t values and correlation Coefficients of school learning responsibility scale

As indicated in Figure 2, confirmatory factor analysis was constructed on an equation based on the fact that 2 implicit variables can correctly predict 24 observed variables. 2 implicit variables are the factors F1 (LRDC) and F2 (LROC) which were determined in exploratory factor analysis.

Among model fit criteria for the structure in confirmatory factor analysis it was understood that  $\chi^2/sd$  (3.17), RMSEA (0.61), GFI (0.90), AGFI (0.88) showed an acceptable; S-RMR (0.047), NNFI (0.97) CFI (0.97) and IFI (0.97) values showed a perfect fit (Yılmaz & Çelik, 2009; Kline, 2005; Çokluk, Şekercioğlu & Büyüköztürk, 2010, 271-272; Şimşek, 2007). Based on this finding it can be stated that the fit of scale model structure determined by exploratory factor analysis for SLRS was confirmed by confirmatory factor analysis.

*Item-total correlations.* Another necessary operation to determine validity of measurement scale is the calculation of item-test correlations. Item-test correlation coefficients are used as a criteria showing each item's level of serving to the general aim of the scale (Balcı, 2009; Büyüköztürk, 2008). In this section, correlations between the scores obtained from each item in the factors and the scores obtained from the factors were calculated according to item total correlation and corrected item correlation method and each item's level of serving to the general aim of the scale was tested. Item-factor correlation values and corrected correlation values corrected with Pearson's test for each item are presented in Table 4.

**Table 4:** Item-Factor Scores and Corrected Item-Factor Scores Correlation Analysis

Items Total Correlation				Items Corrected Correlation			
LRDC		LROC		LRDC		LROC	
Item	r	Item	r	Item	r	Item	r
1	0,674	14	0,719	1	0,557	14	0,615
2	0,727	15	0,707	2	0,548	15	0,620
3	0,652	16	0,703	3	0,577	16	0,575
4	0,613	17	0,716	4	0,473	17	0,596
5	0,666	18	0,676	5	0,558	18	0,574
6	0,687	19	0,649	6	0,487	19	0,551
7	0,673	20	0,635	7	0,503	20	0,526
8	0,645	21	0,660	8	0,476	21	0,573
9	0,608	22	0,672	9	0,501	22	0,542
10	0,636	23	0,634	10	0,532	23	0,512
11	0,595	24	0,594	11	0,477	24	0,486
12	0,615			12	0,536		
13	0,583			13	0,489		

N=453; \*=p<0,001

As indicated in Table 4, item test correlation coefficients varied between 0.583 and 0.727 for LRDC factor and between 0.594 and 0.719 for LROC factor. In addition, correlation coefficients of each item and factor in the scale varied between 0.476 and 0.577 for LRDC factor and 0.486 and 0.620 for LROC factor. Each item showed a significant and positive relationship with the general of the factor it belongs to and with item-factor ( $p<0.001$ ). It can be stated that each item significantly contributes to the aim of the factor it belongs to and to the general of the scale.

*Item discrimination.* Presence of the property of discriminating the individuals which have and do not have the measured quality is considered as one of the important proves which is used to determine validity of scale (Büyüköztürk, 2008). For this reason, discrimination powers of 24 items in the scale were calculated. Firstly raw scores obtained from each item were listed from the greater to the smaller. Later, subjects consisting of 156 people constituting lower 27% and upper 27% groups were



determined. Independent groups t-test values were calculated over the total scores of the subjects in the lower and upper group. Findings are presented in Table 5.

**Table 5:** Independent Sampling t-test Analysis Results to Determine Discrimination Powers of the Items in School Learning Responsibility Scale

LRDC		LROC	
Item	t	Item	t
1	10,811*	14	18,044*
2	16,718*	15	17,106*
3	11,860*	16	19,236*
4	10,934*	17	18,304*
5	11,820*	18	16,239*
6	11,284*	19	15,247*
7	13,305*	20	13,303*
8	12,919*	21	18,272*
9	10,562*	22	17,235*
10	13,392*	23	16,646*
11	12,382*	24	13,074*
12	12,592*		
13	13,379*		
General		t <sub>310</sub> : 43,234; p< 0,001	

df: 304-310; \*:p<0,001

It is understood from Table 5 that independent sampling t test values for 24 items in the scale varied between 10.562 and 19.236. For example, t-test value for the general of the scale was determined as 43.234. Each determined difference was at a significant level (p<0.001). It can be stated that both general of the scale and each item of SLRS discriminated the students with high and low learning responsibility.

*Findings on the Reliability of School Learning Reasonability Scale*

Reliability is the most important quality a measurement tool should have. Calculations of internal consistency and coefficients of determination of measurement tools and performance within the framework of reliability analyses are among the most recommended tests (Balcı, 2009; Kayış, 2009). In parallel to this, findings obtained from internal consistency and stability tests conducted on data obtained by SLRS are presented below:

*Internal consistency level.* SLRS consisted of a total of 24 items and 2 factors. Reliability analysis of the scale according to factors and for the general of the scale was determined by Cronbach’s alpha reliability coefficient. The results are presented in Table 6.

**Table 6:** Results of Reliability Analysis for the General and Factors of School Learning Responsibility Scale

Factors	Number of Item	Cronbach Alpha
LRDC	13	0,881
LROC	11	0,876
SLRS	24	0,920

As indicated in Table 6, Cronbach’s alpha coefficient calculated for reliability coefficients was found to as 0.881 for LRDC factor which involved 13 items and as 0.920 for the general of the scale which consisted of 24 items. The fact that Cronbach’s alpha values were between 0.60 and 0.80 suggests that it was very reliable and the fact that it was higher than 0.80 suggests that it has a high level of reliability (Kayış, 2009; Karagüven, 2009). Based on these results it can be stated that SLRS has a high level of reliability both for the general of the scale and for sub-factors.

*Stability level.* Stability level of the scale was determined by test- retest method. As it is known, a reliable measurement tool has to perform stable measurements (Balci, 2009). Final version of the scale consisting of 23 items was administered to 113 students for a second time after five weeks. Correlation between the scores obtained by each of two applications was individually analyzed for each item, factor and for the general of the scale. The findings are presented in Table 7.

**Table 7:** Test-Retest Results of School Learning Responsibility Scale

LRDC		LROC	
Item	r	Item	r
1	0,446*	14	0,775*
2	0,449*	15	0,859*
3	0,536*	16	0,811*
4	0,520*	17	0,822*
5	0,561*	18	0,794*
6	0,664*	19	0,787*
7	0,821*	20	0,757*
8	0,612*	21	0,864*
9	0,684*	22	0,849*
10	0,517*	23	0,744*
11	0,649*	24	0,795*
12	0,676*		
13	0,670*		
LRDC	0,589*	LROC	0,842*
LRS General : $r_{94}$ : 0,712*; $p < 0,001$			

It is understood from Table 7 that correlation coefficients obtained by test-retest method and Pearson's r test varied between 0,446 and 0,864. Coefficients of determination were found as 0,589 for LRDC factor and as 0,845 for LROC factor and as 0,712 for the general of the scale. Each relationship was significant and positive ( $p < 0,001$ ). Based on these values which are determined as coefficients of determination for each item, factor and for the general of the scale, it can be suggested that SLRS can make stabile measurements (Kayış, 2009).

*Unbiasedness level.* Scales which are prepared to be used in education and psychology should make unbiased measurements in sub-groups of the general group they are applied (Özbay&Uyar, 2009; Kan, 2007). The quality of making unbiased measurement of the measurement tool can be determined by the calculation of reliability coefficients of measurements performed on sub-groups such as age, gender, socioeconomic level, and ethnical origin (Özbay&Uyar, 2009). In this framework, LRS's quality of making unbiased measurements and unbiasedness of the measurements independent from the grade level (5. and 8. grade) and gender variables of the students in the study group was determined by calculating Cronbach's alpha reliability coefficients. The findings are presented in Table 8.

**Table 8:** School Learning Responsibility Scale's Level of Making Unbiased Measurements according to Grade Level and Gender

Factors	Class Grade		Gender	
	5. Grade	8. Grade	Female	Male
LRDC	0,862	0,860	0,845	0,895
LROC	0,889	0,835	0,847	0,892
SLRS General	0,921	0,897	0,893	0,933

As indicated in Table 8, Cronbach's alpha reliability coefficients of SLRS's levels of making unbiased measurements independent from grade levels of the study group varied between 0.862 and 0.921. On the other hand, Cronbach's alpha reliability coefficient for the levels of making unbiased measurements independent from gender variables varied between 0.895 and

0.933. The fact that values of Cronbach's alpha coefficients were higher than 0.70 suggest that it is highly reliable (Kayış, 2009). Based on this finding, it can be stated that both factors and general of SLRS could make unbiased measurements in different sub-groups of the study group and therefore it is a reliable scale.

### Conclusions and Recommendations

In this study, we developed a scale to determine students' levels of fulfilling their responsibilities in schools based on their self-perceptions. The results of the study can be listed as follows:

1. The scale is a five-degree Likert type scale consisting of a total of 24 items which can be collected under 2 factors. As it is known, learning requires formation of permanent changes even partially. For this reason, the options “(0) Never”, “(1) Rarely”, “(2) Sometimes”, “(3) Often” and “(4) Always” were provided for the items in the scale to determine learnedness level of the related behavior. Students' levels of fulfilling their learning responsibilities were scored within this framework.

On the other hand, since number of items in two factors of the scale was different, while calculating the scores they will receive, it was thought that it would be appropriate to use arithmetic average values to avoid confusion or to simplify scoring. Accordingly, for the analysis and interpretation of data collected with SLRS, arithmetic intervals of each item and factor should be calculated with the following formula and each interval should be at the interval of 0.80:

$$\text{Range of Mean} = \frac{\text{Number of Interval}}{\text{Number of Option}} = \frac{4}{5} = 0,80$$

In this framework, we can recommend the use the values in Table 9 to interpret arithmetic average intervals for each item and factor; score intervals from the general of the scale and these intervals:

**Table 9:** Score Intervals to be taken from School Learning Responsibility Scale and Arithmetic Average Intervals and Criteria for the Interpretation of these Interval Values

Scale Score Spaces	Mean Spaces	Meaning	Evaluation
0,00 – 19,2	0,00 – 0,80	Never	Very bad
19,3 – 38,4	0,81 – 1,60	Rarely	Bad
38,5 – 57,6	1,61 – 2,40	Sometimes	Middle
57,7 – 76,8	2,41 – 3,20	Often	Good
76,9 – 94,0	3,21 – 4,00	Always	Very good

2. Validity study of the scale was analyzed by calculating (1) exploratory factor analysis, (2) confirmatory factor analysis, (3) item-test correlation and (4) item discrimination powers.

Exploratory factor analysis showed that;

- Factor loads of items were between 0.459 and 0.728 interval,
- Eigen values of factors were 5.548 for LRDC and 5.104 for LROC.
- Amount of explaining variance was 23.117% for LRDC factor; 21.268% for LROC factor and 44.385 for the general of SLRS.

Since item factor load higher than 0.30 (preferably 0.45) and amount of explained variance higher than 40% is adequate (Büyüköztürk, 2008; Eroğlu, 2009; Balcı, 2009; Çokluk,

Şekercioğlu & Büyüköztürk, 2010; Karagüven, 2009) SLRS has structural validity.

On the other hand, confirmatory factor analysis showed that, among model fit values:

- $\chi^2/sd$  ratio was acceptable (3.17);
- RMSEA (0.61), GFI (0.90) and AGFI (0.88) values were acceptable;
- S-RMR (0.047), NNFI (0.97), CFI (0.97) and IFI (0.97) values showed a perfect fit.

These values indicate that scale model structure determined by exploratory factor analysis for LRS was confirmed by confirmatory factor analysis (Yılmaz & Çelik, 2009; Kline, 2005; Çokluk, Şekercioğlu & Büyüköztürk, 2010; Tatar et al., 2009).

On the other hand, analysis of calculated item total correlations and discrimination quality showed that item and factors and general of SLRS had validity (Balcı, 2009; Büyüköztürk, 2008).

**3.** Based on reliability analyses of SLRS the following findings were obtained;

- Cronbach's alpha value as internal consistency coefficients according to factors was found as 0.881 for LRDC factor; 0.876 for LROC factor and 0.920 for the general of the scale.
- Pearson's r value calculated as coefficients of determination were found as 0.589 for LRDC factor; 0.842 for LROC factor and 0.712 for the general of the scale and that each relationship was positive and significant at  $p < 0.01$  level.
- Cronbach's alpha reliability coefficients calculated on sub-groups as unbiasedness coefficients varied between 0.835 and 0.933.

These values indicate that SLRS can make reliable, consistent, stable and objective measurements for the items, factors and the general of the scale (Balcı, 2009; Büyüköztürk, 2008; Karagüven, 2009).

In conclusion, it can be stated that SLRS is a valid and reliable scale which can be used to determine students' levels of fulfilling learning responsibilities. Although the study group consisted of primary education students, SLRS can be recommended to use on secondary education and higher education students. However, in studies for secondary education and higher education students, validity and reliability analyses should be repeated by taking into account the developmental characteristics of the students and differences in their responsibilities.

Findings obtained from SLRS for students' levels of fulfilling their learning responsibilities can be effectively used to determine potential precautions to be taken to make educational process more efficient and to encourage students to be individuals with learning responsibility. When the students undertake the responsibility of their learning in in-class and out-class experiences, significant contributions can be made to the realization of individual development and life-long learning approach. In line with the information obtained by the scale, it is believed that it will allow for the analysis of the causes of academic failure of students and their self-recognition in terms of self-regulation properties. On the other hand, we hope that school administrators and teachers make realistic assessments about the cases of academic failure of students and encourage them to make appropriate measures.

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