

VALIDITY AND RELIABILITY OF THE ACADEMIC RESILIENCE SCALE IN TURKISH HIGH SCHOOL

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The present study aims to determine the validity and reliability of the academic resilience scale in Turkish high school. The participances of the study includes 378 high school students in total (192 female and 186 male). A set of analyses were conducted in order to determine the validity and reliability of the study. Firstly, both exploratory and confirmatory factor analysis was performed in order to determine the factor structure of the scale. The compliance criteria of the scale regarding both exploratory and confirmatory factor analysis reached an adequate level. The Turkish version of the scale was found to have one-dimension. The convergent and discriminant validity of the academic resilience scale were determined. Internal consistency of the scale was measured and total item correlation and test re-test analyses were performed. Consequently, the validity and reliability of the scale reached to an adequate level. The scale was found to be suitable for determining the academic resilience levels of the high school adolescent.

Keywords: Academic resilience, high school, adolescent, validity, reliability.

Adolescence is one of the periods during which individuals experience developmental difficulty at most. Adolescents are to meet many problems. The adolescents whose level of resilience is high might realize the risks in an environment. Psychologically resilient people are able to continue healthy development and focus on their strengths rather than deficiencies, even if the environment is full of risks (Kimberly and Rouse, 2001). Resilience affects both general adaptation and academic and emotional life of adolescents. One of the most important difficulties that adolescents have to deal with is academic difficulties. According to another definition, resilience is the process of successful adaptation to difficult or threatening situations (Howard and

Johnson, 2000). Moreover, these children are independent, insightful, humorous, creative have special knowledge and are able to form good relationships (Henderson and Milstein 2003). As a result of protective factors, psychologically resilient people are less affected by negative events. Resilient people confront and attempt to overcome problems by producing effective and successful solutions rather than running away from them (Martin 2002). Sometimes, students encounter some difficulties while trying to achieve academic success.

Students not only need to have potential and energy to be successful but also they need to have the necessary qualifications in order to be able to effectively deal with the stress, study pressure and acade-

mic problems they encounter at school (Martin, 2002). Academic resilient is defined as the ability to be persistence, positive and adaptive (Perrone, Sedlacek and Alexander, 2001). Academic resilience, on the other hand, the attitude of not giving up in challenging situations because of the belief that effort and challenge lead to success more than ability (Dweck, 1999). According to another definition, academic resilience is the ability to effectively deal with many risks in academic fields (Kennedy and Bennett, 2006).

Academically resilient students needs to have a good deal of self-regulation to maintain a positive attitude, especially during frustrating with a academic problems (McTigue Washburn and Liew, 2009). While academic resilience is positively related to liking school, participating in courses, self-efficacy, mastery orientation, the valuing of school, planning, study management, and persistence; it is negatively related to the variables such as self-handicapping, anxiety, uncertain control and failure avoidance (Martin and Marsh, 2006).

Moreover, academically resilient students were recorded to do more homework, study harder, be less likely to skip class (Finn and Rock, 1997) and have higher educational demands (Cappella and Weinstein, 2001) than their academically non-resilient peers. In addition, the former are also good at coping with the risks they are exposed to. For instance, in a study by Perez Espinoza, Ramos, Coronado and Cortes, (2009), academically resilient students were found to have higher academic achievement than those in a higher risk

group. Academically resilient students set future-oriented goals. They believe that they already have the environmental support required for achievement of these goals (Kimberly and Rouse, 2001). Moreover, academically resilient students have highly-developed social skills, focus on self-control (Cappella and Weinstein, 2001; Kimberly and Rouse, 2001) and have high global self-esteem (Martin and Marsh, 2006; Dumont and Provost, 1999).

Family background is one of the most important elements of academic resilience. Students who receive a high level of social support from their families have high academic resilience (Benard, 1991; Bogenschneider, 1996; Richman, Rosenfeld and Bowen, 1998). Academic resilience, accompanied by many positive factors, is expected to positively integrate with high academic achievement. In practice, many studies in the literature have shown that academically resilient adolescents are academically successful (Benard, 1991; Bogenschneider, 1996; Richman, Rosenfeld, and Bowen, 1998). In other words, individuals with high academic resilience try to fulfill their duties in a better way than those with low academic resilience.

Purpose of the Current Study

Academic resilience is considered to be a preventive factor for many problems encountered in an academic process. Studies on academic resilience are required in order to prevent academic problems. Measurement tools which measure academic resilience are required for such studies to be carried out. There is no scale for the direct measurement of academic resilience

in Turkey. Therefore, it is aimed to ensure that the academic resilience scale developed by Martin and Marsh (2006) is used in Turkish. The Academic Resilience Scale, developed by Martin and Marsh (2006), is based on the positive capacity of students to effectively cope with stress, pressure and difficulties they encounter in academic situations (I believe that I can successfully cope with the pressure I am exposed to during school tasks). This scale includes a hypothetical framework based on the model offered by Martin (2002). This model was developed with contributions from many motivational theories such as the theory of needs, self-value motivation theory, self-sufficiency theory, expectancy-value theory, control theory, attribution theory and motivational orientation theory. This scale was chosen to measure academic resilience due to its easy-to-apply structure, which includes a low number of items. In addition, the scale has been shown to be sufficiently valid and reliable. To this end, the validity and reliability of the academic resilience scale is going to be tested for high school students in the present study.

Method

Participants

The respondents of the present study consist of 378 high school students in total (192 female and 186 male). Participants are composed of 9th (31.2%), 10th (24.1%), 11th (23.0%), 12th (21.7%) class students. The age of participant students varies between 14 to 20 (mean = 15.97). 6.1% of mothers are illiterate, 54.5% pri-

mary education, 14.3% secondary education, 16.9% high school, 1.3% college and 6.1% university graduates. 1.1% of fathers are illiterate, 41.0% primary education, 18.3% secondary education, 19.3% high school, 4.5% college and 14.9% are university graduates.

Measures

Demographic Variables Form

The demographic information of participants were used a form to age, sex, class, grade point average of the previous year (GPA), mother-father education.

Academic Resilience Scale (ARS)

The Academic Resilience Scale developed by Martin and Marsh (2006) was assessed through six items. The measurement is a scale which requires scoring in the form of the 7 point Likert Scale ranging from "not true of me at all" to "extremely true of me". Academic resilience (e.g., "I think I'm good at dealing with schoolwork pressures") refers to students' ability to effectively deal with setback, challenge, adversity, and pressure in the academic setting. The original scale were found to be acceptable fit values for the confirmative factor analysis (CFI=.97, NNFI=.97). The reliability of the scale, Cronbach Alpha coefficient was calculated as 0.89. In addition, the total item correlation of the scale ranges between 0.59 and 0.78.

The Rosenberg Self-Esteem Scale (RSE)

RSE is developed by Rosenberg (1979) a 10-item instrument that assesses global

self-esteem. Participants indicate their responses by using a four-point Likert scale that ranges from 1 (strongly disagree) to 4 (strongly agree). The scale scores for the RSE can range from 10 to 40 with higher scores indicating higher levels of self-esteem. The reliability and validity of the instrument for Turkish student has been established by Cuhadaroglu (1986). The correlation between the scale and psychiatric interview results was found .71 for validity of the RSES-Turkish version. The test-retest reliability was reported as .75. Examples of items include: "On the whole, I am satisfied with myself."; "I feel that I'm a person of worth, at least on an equal plane with others". In the present study, the RSES Turkish version cronbach alpha coefficient was $\alpha = .73$.

Motivated Strategies for Learning Questionnaire (MSLQ)

MSLQ (Motivated Strategies for Learning Questionnaire) developed by Pintrich, Smith, Garcia, & McKeachie (1993). Two essential sections of the MSLQ are the motivation and the learning strategies sections. The motivation section has 6 factors and the learning strategies section has 9 factors. The 81 items of the MSLQ-TR are scored on a 7 point Likert scale, from 1 (not at all true of me) to 7 (very true of me). In this study, internal goal orientational and test anxiety subscales was used. Cronbach's alpha reliability coefficient for internal goal orientational subscales has been found as .80, and .74 for test anxiety (Garcia and Pintrich, 1996). The motivation and learning strategies scale adapted into Turkish by Karadeniz, Büyüköztürk,

Akgün, Çakmak and Demirel (2008) for the teenagers between ages 12-18. MSLQ was used CFA in order to test the factor structure that shows the Motivation Subscale (MS) of MSLQ-TR over the data gathered from 12 -18-age students. As a result of the analysis were obtained CFA results $\chi^2=871.00$, $p=.000$, SRMR=0.068, GFI=0.92, AGFI=0.90, RMSEA=0.055, CFI=0.86. This values show that the tested model is coherent at a satisfactory level. In the present study, cronbach alpha coefficient was intrinsic motivation scale for .81 and .86 for test anxiety.

The Multidimensional Scale of Perceived Social Support (MSPSS)

The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) is a 12-item scale, rated on a 7-point Likert scale, ranging from (1) very strongly disagree to (7) very strongly agree. It measures social support from three sources: family, friends, and a special person, measured on three subscales: FA (family), FR (friends), and SO (significant other), each with four items. in this study was used only family subscale. In a later study, Canty-Mitchell and Zimet (2000) reported the Cronbach's alpha reliability coefficient as .93 for the subscales of Family. The reliability and validity of the instrument for Turkish student has been established by Eker, Arkar and Yaldız (2001). The test-retes reliability for family subscales was computed as .84. In the current study, cronbach alpha coefficient for the family social support was computed as .87.

Presedures

At first, was permission Dr. Martin the developers of the scale. Later, scale have been translated from English to Turkish by the researchers carrying out the research and the academicians who know English and Turkish well. Participants have been selected from 3 high schools with different socio economic levels (Hasan Tekin Ada High school, Anafartalar High school and Cumhuriyet high school). In selecting procedure classes of question team, the classes of volunteer teachers have been preferred. Students have been informed about research objective and participation of volunteers has been ensured. Approximate completion time was 25 minutes. The research analyses were conducted with SPSS 14.0 and LISREL 8.71. package programs.

Results

Factor Structure

Exploratory Factor Analysis.

Gorsuch (1997)'s suggestions, normal distribution of data and applicability of correlation matrix between items into fac-

tor analysis have been tested via Kaiser-Meyer-Olkin (KMO) and Barlett tests. In the analyses conducted on obtained data the value of Kaiser-Meyer Olkin has been recorded as .89. Likewise it has been detected that the result of the same items and Bartlett's Test are meaningful [$\chi^2 = 931.131$ df = 15, $p < .001$]. KMO values equal and above .60 are deemed sufficient (Tabachnick and Fidell, 2001). In order to detect construct validity of scale, factor analysis has been conducted. In factor analysis procedure varimax axle rotation technique has been employed. At the end of this analysis one factor having eigenvalue have been obtained as variance 60.05. The items of this structure are above .70 (see Table 1). The higher factor load the better it is considered to be the exploratory capacity of these items. On a general aspect factor load equaling and above .30 is an acceptable measurement (Worthington and Whittaker, 2006).

Table 1
Item Statistics for Academic Resilience Scale

Items	M	SD	Corrected Item-Total Correlation	a if item deleted	EFA Loading
M1	5.78(4.39)	1.70(1.40)	.70(.59)	.84(.89)	.80
M2	5.70(4.46)	1.80(1.69)	.64(.67)	.85(.88)	.76
M3	5.63(4.94)	1.77(1.29)	.73(.65)	.83(.88)	.83
M4	5.41(4.59)	1.80(1.36)	.70(.77)	.83(.86)	.81
M5	5.30(4.58)	2.01(1.45)	.62(.78)	.85(.85)	.74
M6	5.26(4.76)	1.82(1.38)	.58(.77)	.86(.86)	.70

Note: The numbers in parentheses are belong to the original scale.

Table 2
CFA Congeneric Loading for the Academic Resilience Scale

Items	CFA Congeneric Loading
1. I believe I'm mentally tough when it comes to exams	.84 (.62)
2. I don't let study stress get on top of me	.78(.72)
3. I'm good at bouncing back from a poor mark in my schoolwork	.92(.71)
4. I think I'm good at dealing with schoolwork Pressures	.86(.81)
5. I don't let a bad mark affect my confidence	.79(.86)
6. I'm good at dealing with setbacks at school (e.g., bad mark, negative feedback on my work)	.76(.84)

Note: The numbers in parentheses are belong to the original scale.

Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) LISREL 8.71 package program has been used (Jöreskog & Sörbom, 2004). In order to determined the confirmation of one-factor model obtained via CFA and EFA, ARS scores have been worked upon a covariance matrix. In literature, a number of fit statistics are employed to determine the sufficiency of a model. In relevant literature the most widely applied fit values to test the compatibility of the tested model with analyzed data are chi square and degrees of freedom (X^2/df), Comparative Fit Index (CFI), goodness-of fit index (GFI), Standardized Root Mean Square Residual (SRMR) and Root Mean Square Error of Approximation (RMSEA) (Kelloway 1998), the non-normed fit index (NNFI; Gerbing and Anderson 1993). RMSEA and SRMR fit indexes are deemed as the indicator of an acceptable compatibility for a model with 0.06 or lower value. If the value of SRMR and RMSEA equals or lower than 0.05 it is accepted to be a sign of a good compatibility. CFI, GFI, NNFI fit indexes for 0.90 is acceptable and

0.95 and higher values are deemed to be a good fit index (Hu and Bentler, 1999).

To examine the adequacy of the component structure from study, confirmatory factor analyses were conducted. In the end, as a result of the CFA applied with values $X^2 = (9, N = 378) 41.17, P < .001, RMSEA = 0.081, SRMR = .049, CFI = .95, GFI = .96, AGFI = .92$ and $NNFI = .91$. The modification indexes produced by Lisrel indicated only three modifications for the model. An examination of the possible explanations for the modifications revealed that the error covariance between item 1 ("I believe I'm mentally tough when it comes to exams") and 2 (I don't let study stress get on top of me) was the result of the specific wording of these items. Adding the covariance between item 1 and 6 improved the fit of the model: $X^2 = 21.80, df = 8, X^2/df = 1.62, GFI = .98, AGFI = .95, SRMR = .036, RMSEA = .068, CFI = .98$ and $NNFI = .96$. The chi-square difference test indicated that this modification significantly improved the fit of the model, $DX^2(1) = 19.37, p < .001$.

Table 3
Correlations of Academic Resilience items with all variables Used in the Study

	Total	Items						Cronbach's α
		M1	M2	M3	M4	M5	M6	
Intrinsic Motivation	.50**	.51	.51**	.50**	.51**	.51**	.50**	.81
Test Anxiety	-.26**	-.19**	-.07	-.09*	-.12*	-.35**	-.23**	.86
Family SS	.71**	.59**	.48**	.62**	.60**	.57**	.58**	.87
Self-Esteem	.20**	.19**	.16**	.22**	.18**	.14**	.06	.73
GPA	.13*	.13*	.11*	.15**	.09	.13*	.06	
Gender	-.05	-.02**	-.04	.00	.11*	.04	-.06	

*.05 ** .001

Convergent and Discriminant Validity

A statistically significant relationship was found among the intrinsic motivation ($r = .48$, $p < .001$), test anxiety ($r = -.26$, $p < .01$), family social support ($r = .72$, $p < .01$) and self-esteem ($r = .20$, $p < .01$) of the academic resilience scale in terms of convergent and discriminant validity. The academic resilience scale scores were positively correlated with GAP of students ($r = .24$, $p < .001$). However, the scale items were correlated significantly with each of the measurement (Excluding 1 items and motivation, test anxiety and items 2). But, the academic resilience scale were no correlated with gender of students.

Internal Consistency

Descriptive statistics of the academic resilience scale items are indicated in Table 1. The results of item total score correlation was ranged from .58 to .73. Cronbach's alpha coefficient employed to detect internal consistency of the scale's total and subscales has been calculated as .86 for scale. If each scale item is deleted, the alpha values to be obtained between .83 and .86.

The Test Retest reliability

The participants of study are composed of 85 in high school. The correlations between data obtained from academic resilience scale repeated three weeks later are .82.

Discussion

The present study aim to determine the reliability and validity level of the Academic Resilience Scale for Turkish high school students. The Academic Resilience Scale developed by Martin and Marsh (2006) was assessed through six items.

The results of the factorial validity studies indicated that the scale consisted of the one factors with acceptable reliability estimates. In terms of reliability, the ARS was found to have high internal consistency, and the item-total correlations were quite adequate. The exploratory factor analysis and a confirmatory factor analysis (CFA) were performed in order to determine the internal reliability of the scale. The factor analysis have been quite high variance of one factor scale. The CFA compliance values reached the level of perfection. Cronbach Alpha values and test re-test

results. The above mentioned measurements were performed to determine the reliability level of the scale. The convergent and discriminant validity of the academic resilience scale were determined. The related convergent validity was determined by family social support. Academic resilience were corellated positive high level relationships with family social support. According to this result, the family social support increase the academic resilience (Bogenschneider, 1996; Richman, Rosenfeld and Bowen, 1998; Catterall, 1998). However, academic resilience was a statistically significant positive relationship with self esteem. In other words, academic resilience of individual with high self-esteem is high (Dumont and Provost, 1999). Moreover, academic resilience was found a statistically significant positive relationship among the intrinsic motivation. In fact, the intrinsic motivation of individuals with academic resilience is expected to be high. The previous studies also present findings supporting this result (Martin, and Marsh, 2006). In addition to the academic resilience were positively correlated with GAP of high students. There are some studies supporting this expected result (Gonzalez and Padilla, 1997; Catterall, 1998; Richman, Rosenfeld, and Bowen, 1998).

The related discriminant validity was determined by test anxiety. Academic resilience were found negative relationships with test anxiety. In the literature, this finding is supported by the findings of other studie (Martin and Marsh, 2006). For the reliability of the scale, of the total item correlations, and test-retest reliability

scores were obtained from a high level in terms of results. In addition, the Cronbach alpha reliability coefficient was also very high level. All these results show that the six item academic resilience scale can be used for the high school students in Turkey validity and reliability.

This study has some limitations. The most important limitation of the present research was that the respondents were only from Denizli central high schools. To make a generalization about the results of this study, the research needs to be repeated at different high school and central. A second limitation was the reliance on self-report measures to evaluate academic resilience.

Despite these limitations, a valid and reliable scale -which aims to measure the academic resilience of Turkish high school students has been introduced within the Turkish education and psychology literature. Therefore, it will be possible to conduct a literature review of the academic resilience of high school students. In addition, advisors can provide students with academic support after measuring their academic resilience.

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