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Mediating Role of Internal Factors in Predicting Academic Resilience

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ABSTRACT

The aim of this study was to examine the effects of external and internal factors on academic resilience. This study is more apt to examine the critical role of internal protective factors in students' academic resilience. Child rearing attitudes or parenting style and ecological education value perception were included as external factors and academic self-efficacy and academic motivation as internal factors. Within the scope of this purpose, the Academic Resilience Scale (ARS) was adapted to Turkish, and the Ecological Education Value Perception Scale (EEVPS) was developed. The model testing with structural equation modeling indicated that internal factors play a mediating role between external factors and academic resilience. Internal protective factors of academic motivation and academic self-efficacy were found to mediate between external factors of parenting style and ecological education value and academic resilience. It was concluded that even having external protective factors for resilience, we still need internal protective factors to become academically more resilient. The current study's results showed that the existence of intrinsic motivation and protective features can be considered a prerequisite for academic resilience. The results are discussed in light of previous studies and within the limitations of this study.

KEYWORDS

Academic resilience;
academic motivation;
academic self-efficacy;
ecological education value;
parenting style

Despite the difficulties encountered in life, individuals who continue their academic life successfully are an example of resilient persons. The concept of resilience was derived from a Latin word *resiliens* and means the flexibility of matter and capability of returning to its original form easily (Greene, 2002). Masten et al. (1990) defined resilience as the process of capacity for or outcomes of successful adaptation despite challenging or threatening circumstances.

Ecological perspective is one of the most comprehensive approaches when evaluating resilience (Stokols et al., 2013; Ungar, 2011, 2018). An ecological approach proposes a more social-phenomenological framework for explaining human behavior. Moreover, it underlines that behaviors should be handled with a concept that is more complicated and realized within the phenomenon of a sociocultural environment rather than a simple cause and effect relation (Ungar, 2004, 2008). According to this perspective, human behavior is an outcome of complex and numerous individual-environment interactions (Gunderson, 2000; Ungar, 2005). The evaluation of resilience from an ecological perspective is based on the ecological system theory of Bronfenbrenner (1994). The ecological perspective examines the correlation between the developing individual and context and the surrounding environment in which the individual is actively involved (Bronfenbrenner, 1979). Ungar (2008), who

adopted this approach, defined resilience as knowing required psychological, social, cultural, and physical resources that sustain the well-being of an individual and negotiating the use of these personal and cultural resources in favor of being more resilient.

Resilience is considered to be knowing the required psychological, social, cultural, and physical resources that sustain the well-being of an individual and negotiating the use of these personal and cultural resources in his/her favor (Ungar, 2005). Academic resilience was stated to be an important dimension of resilience (Cappella & Rhona, 2001; Finn & Rock, 1997) and defined as academic success and high-level performance showed by individuals in spite of stressful life events and living conditions that can lead the individuals to fail and end up as school dropouts (Alva, 1991; Borman & Overman, 2004; Erberber et al., 2015; Martin & Marsh, 2006; Sandoval-Hernández & Białowolski, 2016; Sandoval-Hernandez & Cortes, 2012). According to Wang et al. (1994), academic resilience is probable academic achievement obtained despite negative experiences, poor environmental conditions, and the lack of initial personality traits. Academic achievement was also concluded to be the most important factor that determines academic efficacy and resilience in school-age children (Masten, 1994; Masten & Coatsworth, 1998).

As it is understood from the previous studies, resilience is considered the capacity of an individual that allows to use the experienced behaviors and previously existing skills prior to stressful events encountered (Garmezy, 1993); academic resilience can be defined as showing academic achievement and high-level performances in spite of the stressful conditions caused by risk-involved educational situations (Alva, 1991; Benard, 2004; Ungar et al., 2007).

There are high risk factors and positive achievement outcomes in academic resilience. The risks faced by the students' academic life generally are academic pressure, stress, academic difficulties, physical and verbal harassment, bullying, parental separation, poverty, learning disabilities, lack of quality education in school, widespread hopelessness in the community, living in a rural area, and having economic disadvantages (Martin & Marsh, 2006; Morales & Trotman, 2011; Winfield, 1994). In addition, there are protective factors contributing to coping with risky situations and reducing these issues as well (Martin, 2002). These protective factors were generally classified as internal and external factors, which are perceived support of family and friends, a strong internal locus of control, high academic confidence, academic achievement, sense of responsibility, academic self-concept, motivation, commitment and connection to friends and school, self-regulatory behaviors, and culture (Alva, 1991; Benard, 2004; Feinstein et al., 2009; Gonzalez & Padilla, 1997; Morales & Trotman, 2011; Padrón et al., 1999; Richard, 2012; Ungar et al., 2007). Martin and Marsh (2006) referred to five personal factors in academic achievement as the 5-C model: confidence (self-efficacy), commitment (persistence), coordination (planning), control (how hard work and effective strategies affect achievement), and composure (low anxiety). Similar studies in the literature support the effects of these personal attitudes and psychological features on academic resilience (Borman & Overman, 2004; Henderson & Milstein, 1996).

Extensive research has been conducted to identify risk and protective factors associated with resilience in schools. The literature indicates that protective factors consist of parental background, personality traits, school experiences, and peer groups (Toland & Carrigan, 2011). Coleman (2014) stated that there are five fundamental protective factors that strengthen resilience: (a) supportive and encouraging relationships, especially with the school staff and other adults; (b) student characteristics such as self-respect, motivation, and acceptance; (c) parental factors such as parental support and school development; (d) communal factors such as youth programs; and (e) factors such as academic achievement and prosocial competence. Moreover, Borman and

Overman (2004) expressed that the most important protective factors (personality traits) related to academic resilience are self-efficacy, self-respect, student participation, and attitudes toward school. How well students adapt to the educational environment depends on the interactions of protective and risk factors that students have. Those benefiting from strong protective factors tend to be more resilient, experience fewer compliance problems, and can cope with difficulties better (Kwek et al., 2013).

Academic resilience has been treated as a factor that enhances school success as well as academic skills and school experience. In other words, resilient students deliver higher performance and motivation in relation to achievement without losing their positive feelings about learning and school in spite of a stressful school environment, including some risk factors, such as failure and school dropout (Cassidy, 2015; De Baca, 2014). Additionally, researchers (McMillan & Reed, 1994; Wagnild, 2009; Waxman et al., 2003) suggested that academic resilience can be encouraged rather than anchored by altering or focusing on several factors, such as social competence, problem-solving skills, self-determination, sense of having an objective, motivation and target orientation, time, family life, and positive use of learning environment.

Achievement is one of the most important factors and a critical term in educational and academic life. Achievement is defined as reaching a determined goal and obtaining the preferred results (Wolman, 1973). In other words, individuals ensure self-motivation by convincing themselves they can accomplish whatever task they have and achieving the aim with planned and committed study (Başar, 2001). In education, achievement is a set of behaviors consistent with program targets (Demirtaş & Güneş, 2002). Kağıtçıbaşı (2013) defined achievement as a phenomenon that belongs to the individual and involves the age-group level of the individual and the whole ecology of the environment in which the individual lives. Assessing academic achievement is crucial because it shapes students' future in addition to enabling them to prepare for a well-supported personal, occupational, and communal life.

Academic achievement correlates with cognitive factors, such as learning rate and intelligence; affective factors, such as self-respect, personality type, self-efficacy, motivation, and study habits; and environmental factors, such as parental attitude, socioeconomic conditions of the family, and school principals and teachers' competence and attitude (Howie & Pietersen, 2001; Wang, 2004). Research carried out in Turkey shows that academic achievement is influenced by several factors such as student, school, and family-based variables

(Arıcı, 2007; Dağdelen, 2013; Karaman et al., 2020; Özer & Anıl, 2011; Polat, 2009; Şevik, 2014). The student-based factors influencing academic achievement were found to be self-respect, self-efficacy, motivation, and study habits (Dadlı, 2015; Klomegah, 2007; Özer & Anıl, 2011; Şevik, 2014).

Academic resilience of students having risks depends on the protective factors that they have at hand for their academic achievement. These are (a) caring and supportive adult relationships, (b) opportunities for meaningful school and community participation, and (c) high parental and teacher expectations for student performance and success (Benard, 1995, 1997; Wang et al., 1997, 1998). In spite of the risk factors encountered in school life, the answer to the question of why some students are better than others in terms of academic achievement has been the main subject of academic resilience research. Individuals with a high level of academic resilience feel themselves to be strong in exam periods, can manage their own anxiety more effectively, overcome school tasks efficaciously, and stimulate achievement resources effectively (Williams et al., 2015).

In previous studies, it was also observed that internal factors, such as academic motivation, academic self-efficacy, and external factors, such as child raising attitudes and perceived social support, are discussed together with academic resilience (Acedevó, 2009; Acedevó & Esquivel, 2008; Alva, 1991; Benard, 2004; Cutler, 2006; Er, 2009; Gizir, 2004; Hamill, 2003; Jowkar et al., 2014; Lee, 2009; Maghadam, 2006; Masten et al., 2012; Roberts, 2007; Terzi, 2008; Yavuz & Kutlu, 2016; Wasonga, 2002; Weaver, 2009). However, there is a lack of studies conducted on variables within the scope of Bronfenbrenner's (1994) ecological model; therefore, it was assumed that this study would contribute to the related literature.

It is apparent in resilience studies that the examination of individual protective (internal) and environmental (external) features is of great importance in explaining why some individuals at risk have healthier and more successful adaptation than others (Masten, 2001). Therefore, the main aim of this study was to focus on the effects of internal and external factors on academic resilience. Within the frame of this main purpose, the Academic Resilience Scale (ARS) developed by Cassidy (2016) was adapted into Turkish, and a new scale called the Ecological Education Value Perception Scale (EEVPS) was developed as well.

Method

The current study was carried out in three stages and with different study groups. In the first stage, the Turkish

validation of the ARS; in the second stage, the development of the EEVPS; and in the third stage, relations between academic resilience and external and internal factors were examined. All the data related to this study were collected during the spring term of the 2016/2017 academic year.

Participants

Different study groups took part in each stage of the research. In the first stage of the validation of the ARS, data on the linguistic equivalence of the Turkish and English forms were obtained from 56 English Language Teaching (ELT) students (50 females, six males). Construct validity, internal consistency, and item discrimination indices were investigated with 359 students (305 females, 54 males) studying in the counseling and guidance, elementary education, and early childhood education departments. Criterion validity on the data obtained from 208 students (172 females, 36 males) studying in the counseling and guidance and elementary education departments was investigated using the Academic Self-Efficacy Scale (ASES). A total of 136 students (101 females, 35 males) studying in the counseling and guidance department took part in test-retest reliability. A total of 759 students participated in this stage of the study.

In the second stage, the six-item EEVPS was developed; principal component analysis (PCA) was performed on data obtained from 60 students (32 females, 28 males) studying in the counseling and guidance department. The suggested relative and absolute values for the sample size vary from study to study to analyze PCA effectively. For instance, to obtain good results from PCA, P. Kline (1994) suggested that the sample size should be at least twice the number of items; Nunnally (1978) suggested it to be 10 times, and Arrindell and Van der Ende (1985) suggested it be 20 times bigger. Where there is not a single definite and generally accepted criterion for the sample size, the KMO value, determinant, factor loadings, the extracted variance ratio, and communality values should be taken into consideration in the decision-making process for PCA. The test-retest reliability of the study consisted of 79 students (58 females, 21 males).

A structural equation model, in which the mediation of internal variables is examined, was performed on the data gathered from 541 students studying in the counseling and guidance, elementary education, and early childhood education departments (411 female, 130 male; 199 were freshmen, 121 were sophomores, 99 were juniors, and 121 were seniors). Currently being university students and volunteering to participate were the inclusion criteria of this study.

Measures

Five different assessment instruments were used in this research: the Academic Resilience Scale (ARS), Ecological Education Value Perception Scale (EEVPS), Parenting Styles Questionnaire (PSQ), Academic Motivation Scale (AMS), and Academic Self-Efficacy Scale (ASES).

Academic resilience scale

The ARS developed by Cassidy (2016) includes a special vignette; it can determine academic resilience depending on the responses given to the situation mentioned in this vignette. A 5-point Likert scale from 1 (*likely*) to 5 (*unlikely*) is used to determine the responses. The psychometric properties of the ARS are briefly mentioned in the Table 1.

The total explained variance of the ARS (consisting of three factors) was 42.40% with a satisfactory internal consistency. It was found out that there were positive and moderate correlations in relation to the concurrent validity with the General Academic Self-Efficacy Scale; no significant correlation related to age variables ($r = .20$, $p > .05$). On the other hand, when the study by Cassidy (2016) is examined, it is seen that several issues come into question, such as items with low factor loading ($\lambda_9 = .29$; $\lambda_{15} = .26$; $\lambda_1 = .15$) or cross-loading items ($\lambda_{18} = .32$ and $.32$ under different factors).

Ecologic Education Value Perception Scale

The EEVPS measures the level of social support perceived by an individual about his/her academic/educational development. It consists of six items that can be measured with a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The development process and psychometric properties of the EEVPS are explained in detail in the following sections.

Parental style questionnaire

This instrument was developed by Sümer and Güngör (1999) and measures the attitudes of parents about child rearing based on acceptance/involvement and strict control factors. The scale consists of 22 items (Sümer, 2000). The items with odd numbers are evaluated within the scope of the acceptance/involvement factor; the even-numbered items are evaluated within the scope of the

strict control-supervision factor. A 5-point Likert scale from 1 (*very untrue of me*) to 5 (*very true of me*) was used separately for parents to determine responses; three items (i11, i13, i21) were reverse-coded. The explained total variance was 47.79%–32.04% for the strict control factor and 15.77% for the acceptance/involvement factor. Since some of the items included in the questionnaire for fathers were determined to be insignificant even though the modification suggestions had been applied according to the outcome of confirmatory factor analysis, this part of the questionnaire was excluded. So this can be regarded as a limitation of the study.

Academic Motivation Scale

The Academic Motivation Scale (AMS) was developed by Vallerand et al. (1989) and adapted to Turkish by Karagüven (2012), Karataş and Erden (2012), and G. Can (2015) through their independent studies. In this study, G. Can's (2015) adaptation was used. The AMS consists of 28 items, including four items for each factor. The factors are motivation, external regulation, internal regulation, identified regulation, intrinsic motivation to stimulation, intrinsic motivation to accomplish, and intrinsic motivation to know. G. Can (2015) compared the alternative models and determined that the best fitting model is the seven-factor model after excluding item 1. Fit indices for the seven-factor model were obtained by confirmatory factor analysis (CFA) are as follows: $\chi^2/sd = 3.38$, RMSEA = .07, NNFI = .96, CFI = .97, GFI = .98, and SRMR = .06. The internal consistency coefficients of the factors ranged from .69 to .89, and the test-retest reliability, determined by a one-month interval, ranged from .74 to .86. In addition, it was determined that a special correlation pattern (simplex pattern), which was expected to appear among the seven factors in the original form of the AMS, was found to be partially supported, and there were high correlations between some consecutive factors.

Academic Self-Efficacy Scale

The Academic Self-Efficacy Scale (ASES) was developed by Jerusalem and Schwarzer (1981) and translated into and validated in Turkish by Yılmaz et al. (2007). The factor loadings included in the ASES, which explain 45.31% of the total variance and consists of a single factor,

Table 1. The psychometric properties of the ARS.

Factor	Number of items	Explained variance	Factor loadings	Cronbach α	Item discrimination	r^\ddagger
Perseverance	14	27.86%	.15–.78	.83	.14–.59	.48**
Reflecting and adaptive help seeking	9	9.05%	.32–.82	.78	.03–.64	.35**
Negative affect and emotional response	7	5.48%	.39–.73	.80	.12–.54	.31**
Total	30	42.40%	.15–.82	.90	.03–.64	.49**

** $p < .01$; \ddagger Correlations with General Academic Self-Efficacy Scale.

ranged from .50 to .83; the item discrimination values ranged from .36 to .71. The correlation between the ASES and Self-Esteem Scale (SRS) was examined within the context of concurrent validity, and a positive and moderate level of correlation was determined ($r = .44, p < .01$). The Cronbach α coefficient was found to be .79. The seventh item of the scale was reverse-coded.

Procedure

In the adaptation process of the ARS, permission for adapting the original scale was requested. Following permission, an expert group consisting of researchers from the fields of counseling and guidance, English language teaching, and assessment and evaluation, who studied resilience, academic resilience, and scale development and adaptation, translated the ARS into Turkish. Counseling and guidance experts along with the measurement and evaluation experts, who were not a part of the previous translation group, checked the translated scale. In line with the feedback suggested by these experts, necessary changes were made. This form was then translated back into English and presented to the two faculty members working in the department of English Language Teaching. After comparing the two forms, the faculty members stated that no significant difference was detected. Based on the feedback, studies were conducted to determine the linguistic equivalence and psychometric properties of the ARS.

In stage 2, the literature was reviewed for the EEVPS (Cutler, 2006; Klasen et al., 2010; Masten et al., 2012; Ungar & Liebenberg, 2013) to determine the conceptual framework. The ecological education value perception is defined as the value attached to an individual's academic/educational development by family members, friends, and socially significant others. In this context, an item pool aimed at measuring the EEVPS was created, and expert opinions from the fields of counseling and guidance and assessment and evaluation were obtained. The recommendations of the experts on whether some items should be excluded from the scale or could have been expressed in a different way were discussed. Suggested changes and corrections were then made, and the seven-item form of the EEVPS was finalized for use. A prepilot study of the EEVPS was implemented with a group that included seven students. In the prepilot scheme, students were asked to read the items and indicate what they understood orally. By doing this, whether the expressions were understood correctly and in the same way by the students was determined. The prepilot implementation showed that the scale was clear for the students.

Data analysis

In the first and second stages of the study, linguistic equivalence, criterion validity, and test-retest reliability were investigated by simple correlations. Confirmatory factor analysis was used in the validation process of the ARS, and PCA was used in the development process of the EEVPS. Internal consistency was checked by Cronbach's alpha, and item discriminations were investigated by item-factor/total score correlations. In the third stage, structural equation modeling was used for examining the relations between the ARS, AMS, ASES, EEVPS, and PSQ.

Prior to the analysis mentioned here, initial checks related to the missing data, outliers, normality, and multicollinearity were done. The data obtained at different stages of the study showed that there were missing values ranging from .01% to .21%. The missing data were examined with Little's MCAR test in terms of distribution on individuals and variables, coexistence conditions, and frequency. As a result of this test, it was indicated that they exhibit an MCAR pattern. Based on the suggestions of Akbaş and Tavşancıl (2015), the missing values were imputed using an expectation-maximization (EM) algorithm.

The outliers in the data sets were examined through standard scores and Mahalanobis distances. Skewness/kurtosis coefficients and normality tests were used to examine the normality. In case of nonnormal distribution, the parameter estimations were carried out by means of an asymptotic covariance matrix.

Results

The findings of the study were presented in three stages.

First stage: Adaptation of ARS into Turkish culture

In this section, the findings related to the linguistic equivalence, construct validity, reliability, and criterion validity of the ARS were presented respectively. The correlation coefficients between the items included in the Turkish and English versions of the ARS forms that were obtained from 56 students studying at Gaziantep University, Department of English Language and Teaching, varied between .44 and .92. Büyüköztürk (2016) stated that correlation coefficients that are in the .30–.70 range correlate with the moderate level; correlation coefficients above .70 are high. According to this, it seems that there are both moderate and high-level correlations between Turkish and English expressions of the items. It was determined that the correlation coefficients between the total scores (the one

tested by confirmatory factor analysis was taken into consideration) and factors obtained through Turkish and English versions of the ARS forms were calculated as follows: .72 for factor of “perseverance,” .77 for factor of “reflecting and adaptive help-seeking,” .83 for the factor of “negative affect and emotional response,” and .88 for the total scores ($p < .01$). Since the correlation coefficients calculated for interitems are either moderate or high and those calculated for the factors and total scores are high level, it can be said that the linguistic equivalence of the ARS was approved.

The original form of the ARS has a three-factor model including “perseverance,” “reflecting and adaptive help-seeking,” and “negative affect and emotional response.” Çokluk et al. (2014) stated that CFA is an analysis in which a previously defined and restricted construct is tested to hold a view about whether the construct can be deemed as a model or not. Therefore, the construct validity of the ARS was examined using CFA.

As a result of the analysis carried out, it was found that there were several insignificant items ($t < 1.96$), and some of the goodness of fit indices were far beyond the acceptable limits in the three-factor model developed by Cassidy (2016). This could be related to the psychometric problems of the original form, as previously mentioned in Table 1, and the proposed modification suggestions were examined. It was seen that, if an item (Item 23: *I would try not to panic*) under the factor of “negative affect and emotional response” is relocated under the factor of “reflecting and adaptive help-seeking,” a significant improvement in model fit takes place. Two experts in the field of psychological counseling and guidance also approved the modification. When the model was tested after this relocation, acceptable values were obtained. After considering the indices and modification suggestions, however, a significant contribution to the model—data compliance—can be obtained by correlating the error variances of the two items under the title of “negative affect and emotional response” (Item 12: *I would probably be sad*, Item 14: *I would be disappointed*). This model was tested again after making this modification.

It was determined that t values of all items were higher than 1.96, according to the CFA carried out after making the aforementioned changes, and all standardized coefficients were in the range of .18 and .73. The goodness of fit indices were as follows: $\chi^2/df = 3.10$; RMSEA = .08; GFI = .84; CFI = .94; NFI = .91; NNFI = .93; SRMR = .08. The suggested GFI index is slightly below the good fit criterion; however, χ^2/df , RMSEA, CFI, NFI, NNFI, and SRMR indices indicate good fit (Browne & Cudeck, 1993; Hu & Bentler, 1999;

R. B. Kline, 2005). When these values are evaluated as a whole, the model fit is achieved.

Corrected item-factor correlations for the factor of “perseverance” varied between .20 and .64; the factor of “reflecting and adaptive help-seeking” varied between .20 and .62, and the factor of “negative affect and emotional response” varied between .33 and .49. Cronbach’s α coefficients calculated for the factors were .83, .79, and .68 respectively. Items with .30 or higher item factor correlation discriminate the individuals very well; the items with an item factor correlation between .20 and .30 may be used if they are essential, or they should be revised (Büyüköztürk, 2016). Two items (Items 1 and 15) under the factor of “perseverance” in addition to one item (Item 29) under the factor of “reflecting and adaptive help-seeking” have item discrimination values that are lower than .30. Excluding these items did not lead a significant change on reliability. Although they had low discrimination, these items were not excluded for not constraining the content.

The correlation coefficients calculated through the data obtained by applying the ARS to the same student group with a 10-day interval was .86 ($p < .01$) for the “persistence” factor, .84 ($p < .01$) for the “reflecting and adaptive help-seeking” factor, and .79 ($p < .01$) for the “negative affect and emotional response” factor.

The ASES was used for criterion validity of the ARS. Correlations between ASES total scores and perseverance factor, reflecting and adaptive help-seeking, and negative affect and emotional response were calculated as .35 ($p < .01$), .43 ($p < .01$), $-.19$ ($p < .01$) respectively. Correlations obtained at the third stage are also very close to these values. According to these findings, there is a positive and moderate level of correlation between the total scores of ARS and ASES in terms of the “perseverance” and “reflecting and adaptive help-seeking” factors; the correlation was determined to be negative and low in terms of the “negative affect and emotional response” factor.

Second stage: Development of EEVPS

The initial form of the EEVPS consisting of seven items was applied to a group of 60 students. As a result of the principal component analysis carried out on the data obtained from this implementation, it was determined that the KMO value (Kaiser Meyer Olkin) was .65 and Bartlett’s test results for sphericity are significant ($\chi^2 = 90.03$, $p < .01$). It is already known that having a KMO value above .70 means suitability for conducting factor analysis; it is deemed as sufficient when the value is between .50 and .70 (A. Can, 2018). As a result of the analysis, it was determined that there were three factors

whose eigenvalues were greater than 1 (they were 2.51, 1.47, and 1.04 respectively). These values were compared with the results of the parallel analysis (Watkins, 2000), and it was found that the maximum number of factors that could be excluded was two. As a result of PCA, the axes of two factors were rotated by different methods; it was seen that the second factor included two items, and the analysis was repeated by reducing the number of factors to one. It is recommended that the factor loading of each item on a scale should be at least .32 (Tabachnick & Fidell, 2001). One factor solution showed that the factor load of an item was .24; therefore, this item was excluded from the scale. It was observed that the KMO value was .68 and the Bartlett's test for sphericity was significant for the last case in which six items were under the title of one factor ($\chi^2 = 73.27, p < .01$). These six items included in the EEVPS explain 41.42% of total variance. The factor loadings, item total correlations, and Cronbach α coefficient for the EEVPS can be seen in Table 2.

Table 2 indicates that the factor loadings of EEVPS items varied between .42 and .78; corrected item factor correlations varied between .24 and .59, and Cronbach's α coefficient was calculated as .71. Considering the values included in Table 2, it was seen that the item discrimination value of an item, which was *My family doesn't evade any sacrifice for my education*, was calculated below .30, although the factor loadings were above .32. As well as holding high factor loadings, since no significant increase was observed in terms of Cronbach's α coefficient ($\alpha = .72$) when this item was excluded, it was considered appropriate to keep the item in the scale. Baykul (2000) stated that the reliability of the measurement tools used in education and psychology should be at least .70. In addition, it is known that the Cronbach's α coefficient, which provides information on the internal consistency of the measuring instrument, tends to increase with the number of items. Therefore, it can be

Table 2. The factor loadings, item factor correlations, and Cronbach α coefficient for the EEVPS.

Items ^p	Factor loading	Corrected item factor correlation	Cronbach α
Everyone encourages me for my education.	.78	.59	.71
Most of my friends struggle for getting a good education.	.75	.60	
Everyone around me struggles for getting a good education.	.70	.47	
There are many educated people (well-educated) around me.	.62	.41	
My friends care about my education.	.52	.34	
My family doesn't evade any sacrifice for my education.	.42	.24	

^pUnvalidated English translation of items in the EEVPS.

said that the reliability value ($\alpha = .71$) obtained for six items is sufficient. The correlation coefficient was calculated as .80 ($p < .01$) by applying the EEVPS to a group of 79 students with a 14-day interval.

Correlations between the scores obtained from the EEVPS and PSQ original form were examined through the data obtained from the study group in the third stage (Table 3). As a result of this examination, it was determined that there was a positive and moderate level of correlation ($r = .36, p < .01$) between EEVPS total scores and acceptance/involvement factor scores of PSQ; the correlations were calculated as negative and low ($r = -.12, p < .01$) between the EEVPS total scores and the control factor scores. Hence, it was seen that the EEVPS has psychometric properties suitable to use in the studies conducted in the field of education and psychology.

Third stage: Testing hypothesized model

In the third stage of the study, the correlations between the data obtained from the ARS, EEVPS, PSQ, AMS, and ASES were analyzed by structural equation modeling. At the stage of testing the validity of the proposed model, the perception of ecological education value and the mother's parenting style were external; academic motivation and academic self-efficacy were regarded as internal latent variables, and their levels of predicting academic resilience were examined. The validity of the measurement model, in which factor total scores were considered as the observed variable, was tested with CFA before the mentioned structural model. The mean and standard deviation values of the variables included in the model and their correlation coefficients are shown in Table 3.

The correlation coefficients of the variables included in the study ranged between $-.41$ and $.75$. According to the results of the measurement model, the standard coefficients of the model that were obtained after making suggested modifications are shown in Figure 1.

In Figure 1 "acceptance" and "strict control" represent the factors of the original form of the PSQ; "adaptive help seeking" and "negative affect" represent the factors of the ARS. Other related error variances belong to the AMS, and as was mentioned before, AMS factors display a special pattern (simplex pattern) and show high correlations among themselves. Based on these considerations, six error variances were correlated according to the modification suggestions.

The fit values obtained for the measurement model ($\chi^2/df = 4.30$, RMSEA = .08, NNFI = .94, CFI = .96, GFI = .92, SRMR = .06) showed that a good model fit was achieved. After the validation of the measurement

Table 3. Mean, standard deviation, and correlations of the variables included in the model.

Scale/Subscale	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Acceptance	43.47	7.87	1												
2. Strict control	31.00	8.00	-.35**	1											
3. Ecological education value perception	23.64	4.28	.36**	-.12**	1										
4. External regulation	17.14	3.43	.16**	-.03	.36**	1									
5. Introjected regulation	19.01	5.39	.09*	.06	.25**	.45**	1								
6. Identified regulation	22.69	4.24	.26**	-.06	.45**	.60**	.50**	1							
7. Intrinsic motivation to stimulation	18.65	5.03	.10*	.08	.24**	.16**	.49**	.45**	1						
8. Intrinsic motivation to accomplish	19.65	5.33	.20**	-.01	.29**	.38**	.61**	.59**	.68**	1.00					
9. Intrinsic motivation to know	22.01	4.78	.21**	-.02	.38**	.46**	.54**	.75**	.62**	.73**	1.00				
10. Amotivation	20.72	5.10	-.23**	.21**	-.22**	-.27**	-.03	-.36**	-.06	-.22**	-.37**	1.00			
11. Self-efficacy	25.07	4.48	.16**	-.08	.34**	.28**	.30**	.40**	.29**	.39**	.40**	-.24**	1.00		
12. Perseverance	51.23	7.18	.14**	-.01	.22**	.26**	.23**	.44**	.26**	.36**	.44**	-.41**	.38**	1.00	
13. Reflecting and adaptive help seeking	36.54	5.76	.08	.05	.24**	.27**	.30**	.41**	.29**	.36**	.42**	-.24**	.35**	.66**	1.00
14. Negative affect and emotional response	18.61	4.36	-.14**	.17**	-.10*	-.02	-.02	-.11*	-.11**	-.14**	-.18**	.39**	-.21**	-.26**	-.09*

* $p < .05$; ** $p < .01$.

model, the mediation model in which the “external” latent variable predicted the “internal” and “academic resilience” latent variables and the “internal” latent variable predicted the “academic resilience” latent variable were tested. Although the model fit values given in Figure 1 were the same as those obtained for the measurement model, it was observed that the path between the “external” latent variable and “academic resilience” latent variable was not significant ($p > .05$). The standard coefficients obtained by removing the path between “external” and “academic resilience” latent variables are given in Figure 2.

In Figure 2, it is seen that the removal of the path from the model reduced the χ^2/df ratio to 4.25. No difference was observed in the other fit indexes. According to the tested model, it was determined that external factors predicted internal factors ($\gamma = .57$, $p < .01$), and internal factors predicted academic resilience ($\beta = .62$, $p < .01$) significantly. The direct effect of external factors on academic resilience was not significant ($\gamma = .00$, $p > .05$). This finding indicated that the internal factors totally mediate the relation between external factors and academic resilience.

Discussion

The main aim of this study was to find out the effects of external and internal factors on academic resilience. Parenting styles and ecological education value perception were considered to be external factors, and academic self-efficacy and academic motivation were considered to be internal factors. Within the scope of this aim, the Academic Resilience Scale (ARS) developed by Cassidy (2016) was adapted to Turkish, and the

Ecological Education Value Perception Scale (EEVPS) was developed.

Adaptation of Academic Resilience Scale

The results showed that the three-factor structure of the ARS was encountered in Turkish culture, but the model fit was provided if an item in the original form in the “negative affect and emotional response” factor was included in a “reflecting and adaptive help-seeking” factor. Obtaining the correlations has been assumed to be evidence of construct validity ($r = .35$, $p < .01$) for the perseverance factor between the ARS and ASES, as was expected, for the “reflecting and adaptive help-seeking” factor ($r = .43$, $p < .01$), and for the “negative affect and emotional response” factor ($r = -.19$, $p < .01$). If it is considered that Cronbach’s α coefficient varies between .68 and .83, and test-retest reliabilities vary between .79 and .86, it can be said that the ARS is a reliable assessment instrument that can be used for measuring academic resilience levels of university students by “perseverance,” “reflecting and adaptive help-seeking,” and “negative affect and emotional response” factors.

Development of the Ecological Education Value Perception Scale

In this study, the EEVPS was developed based on the ecological model that Bronfenbrenner (1994) stated. The EEVPS, consisting of six items categorized under a single factor, explains 41.42% of the total variance. Considering the fact that single-factor scales are expected to explain at least 30% of the total variance (Büyükoztürk, 2016), it can be stated that this ratio can

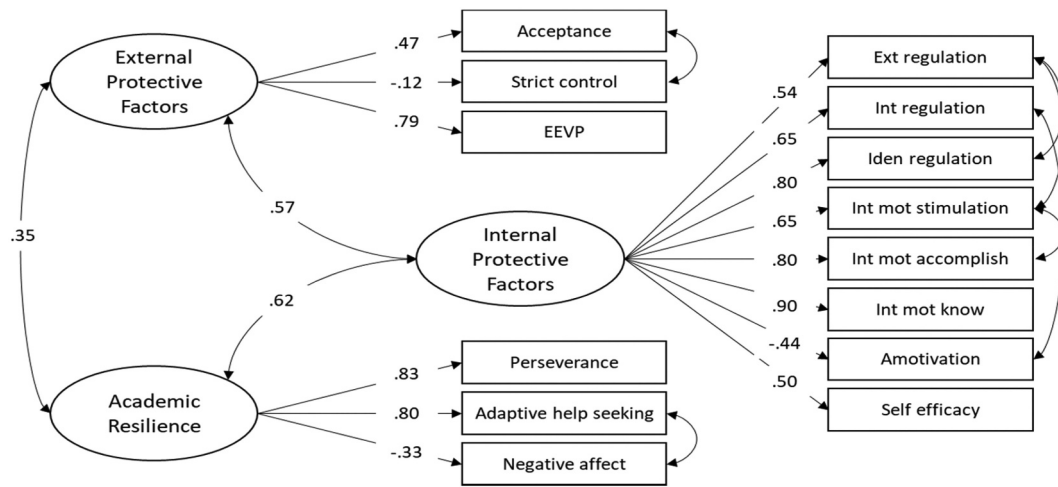


Figure 1. Diagram of measurement model (standard coefficients).

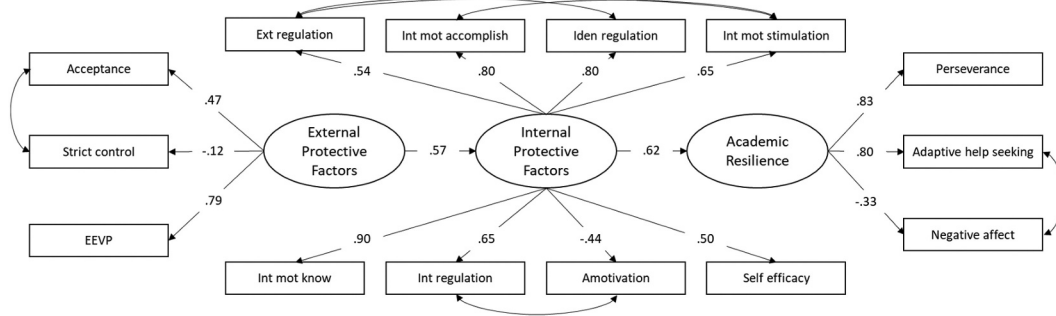


Figure 2. Diagram obtained by removing the path between external and academic resilience variables (standard coefficient).

be considered as high. The fact that the Cronbach's α coefficient was .70 and test-retest reliability was .80 showed that the reliability of the EEVPS was high. When the ecological model was considered, the positive correlation ($r = .36, p < .01$) between the EEVPS scores and PSQ acceptance/involvement factor and negative correlation ($r = -.12, p < .01$) between the EEVPS and strict control-supervision factor were assumed to be proof of concurrent validity.

Internal protective factors and academic resilience

The ecological model discusses external factors as the determinants of internal factors (Ungar, 2018). From this point of view, a conceptual model was tested in which academic resilience, parenting styles of the family, and ecological education value perception were considered to be external factors, and academic motivation and academic self-efficacy were considered to be internal factors. The model showed that external factors predicted internal factors; similarly, internal factors predicted academic resilience, but the direct effect of external factors

on academic resilience was not significant. As a result, a mediation model was applied in which a high level of goodness of fit indices was obtained.

In Krovetz's (1999) resilience theory, protective factors were discussed as factors that constitute a source of self-recovery in the face of important and negative life events that take place in and around the individual. In this respect, academic resilience is not limited to the individual's own characteristics; it is also shaped by the interaction between the individual's social and physical environment and personal (internal) factors (Johnson, 2008; Masten, 2001; Toland & Carrigan, 2011; Wasonga, 2002). Here, academic resilience was evaluated as a structure that emerges from the interaction between the external and internal resources of the individual, and the relationship between academic resilience and these resources was tried to be determined.

The relationship between internal and external factors and academic resilience was investigated in many previous studies. As internal factors, self-efficacy (Benard, 2004; Cutler, 2006; Hamill, 2003; Maghadam, 2006; Roberts, 2007; Terzi, 2008; Weaver, 2009), positive

opinions of the individual about his/her academic qualification, having empathic understanding, internal control and positive future expectations, interest in relationships and emotional bonds (Arnold, 2003; Gizir, 2004), perceived psychological autonomy, educational expectations, cooperation and communication (Er, 2009), positive attitudes toward school (Maddox & Prinz, 2003; Malindi & MacHenjedze, 2012; Organization for Economic Co-operation and Development [OECD], 2003; Ungar & Liebenberg, 2013), goals and expectations toward life and the future (Dass-Brailsford, 2005; Krovetz, 1999; Wasonga et al., 2003), self-efficacy (Fallon, 2010; Krovetz, 1999), a high positive self-concept (Arnold, 2003), high motivation and entrepreneurship (Dass-Brailsford, 2005), cognitive flexibility, planning skills and cognitive executive functions (Acedevo, 2009; Acedevo & Esquivel, 2008; Masten et al., 2012; Yavuz & Kutlu, 2016), emotional regulation, personal sensitivity, optimism (Weaver, 2009), self-confidence, motivation, goal-setting ability, and stress management (OECD, 2011) were found to be related to academic resilience. According to the findings of the aforementioned studies and this study, it might be said that academic self-efficacy and motivation are the main determinants of academic resilience.

In general, the history of psychology and its findings have focused on the hypothesis that the major drive leading individuals to any behavior is intrinsic motivation. The importance of internal determination as an initiating or driving force and the importance of supportive, enhancing external resources and motivation were revealed. It can be concluded from the findings that extrinsic motivation and external positive assets that are necessary for academic resilience depend on intrinsic motivation and/or the use of resources or processing through them. In other words, the existence of intrinsic motivation and protective features can be considered a prerequisite for academic resilience. According to Woodworth (1918), an activity can be initiated with extrinsic motivation, but if a person is internally willing, he will continue the action freely and effectively. In addition, Allport (1937) stated that extrinsic motivation is the initiator of any action, and intrinsic motivation is the thing that determines the continuity of the movement; this is called functional autonomy (as cited in Deci & Ryan, 1985). Apart from these, there are other studies that examine the importance of intrinsic motivation compared to extrinsic motivation in education (Berlyne, 1966; Hunt, 1965; Jordan, 1952; Vogel et al., 1959). Deci (1971) found in his research that external motivation increases or decreases intrinsic motivation by type. According to Newstrom and Davis (2002), the difference between internal and external motivation is

similar to the difference between the content of the work and the context of the work. Intrinsic motivators are internal rewards that a person feels while doing his/her job. A person in this condition is self-motivated, meaning that the person is motivating himself or herself. Extrinsic motivators are external rewards that take place outside the nature of the work. They are not the factors that directly work when performing a specific task. According to Deci and Ryan (1980, 1985), intrinsic motivation can be defined as the person doing something internally because s/he is interested; external motivation is defined as doing something for the result.

Internal motivation is very important in terms of education and learning behavior as it is highly related to advanced learning and creativity. In the literature, extrinsic motivation is considered to be an insufficient form of motivation in contrast to intrinsic motivation (Fischer et al., 2019).

When academic resilience is evaluated with an ecological/holistic point of view, the explanation of resilience or academic resilience with only internal resources remains very limited. In this respect, it is possible to mention the direct or indirect effects of internal and external resources in the emergence of resilience. In this context, it was found that external factors, such as the high positive expectations of family, school, and friends (Foster, 2013; Gizir, 2004); high academic expectations; social support perception; family expectations and values regarding education (Arnold, 2003; Benard, 2004; Er, 2009; Foster, 2013; Gonzalez & Padilla, 1997; Wu et al., 2012); communication within the family (Jowkar et al., 2011); high expectations in environmental relations; in-school activity opportunities and socialization (Arastaman, 2011; Arastaman & Balci, 2013; Er, 2009; Foster, 2013; Gizir, 2004; Hernandez & Cortes, 2011; Perez et al., 2009; Williams, 2011); perception of school support; free school atmosphere and attachment to school (Gonzalez & Padilla, 1997; Malindi & MacHenjedze, 2012); supportive communication between teachers and students; the value given to school and courses (Alva, 1991; Dass-Brailsford, 2005; Dinçer & Oral, 2013; Foster, 2013; Perez et al., 2009; Wasonga, 2002); role models in the environment and supportive social institutions (Dass-Brailsford, 2005); cultural identity; grade point average (Weaver, 2009); growing up with parents (Perez et al., 2009); academic optimism in schools (Fallon, 2010); qualified school and education services; and time spent at school (Benard, 2004; Foster, 2013; OECD, 2011) were all related to academic resilience.

In general, it is apparent that the protective factors contributing to academic resilience are the high expectations of the family and their attitudes toward education,

communication skills of the individual with the people around them, supportive in-school and out-of-school activities, and the support received from teachers. On the other hand, it was determined that students with high self-efficacy and self-esteem, with positive thoughts toward school, who are hopeful about the future, goal oriented, and who have both an internal and external focus of control are more academically resilient than others.

Self-efficacy is defined as the belief in the capacity of the individual to organize and successfully perform the activity that is necessary to show a certain performance (Bandura, 1997). Self-efficacy affects people's way of thinking and emotional reactions. Individuals with a high level of self-efficacy are able to cope with obstacles more quickly and to maintain their commitment to their goals. It is also stated that high self-efficacy allows people to choose challenging environments, explore their environment, or create new environments (Bandura, 1997; Scholz et al., 2002). Within the framework of all of this, it can be assumed that academic self-efficacy is meaningful in explaining academic resilience as an internal resource. Therefore, self-efficacy beliefs allow people to recover, get stronger, and maintain their current development in the face of adversities and problems (Pajares, 2002).

The results of this study show that the direct effects of external resources (parenting styles, ecological education value) on academic resilience can be ignored, but it should also be kept in mind that they may have indirect effects on internal resources. The external resources discussed here are not limited to family or parents.

Within the context of the social-ecological approach, it is important for individuals to use other resources within the community in the face of challenging or difficult situations (Ungar, 2005). In the ecological approach, it was stated that the support received from family, friends, and the community is an important resource in terms of resilience.

In this research, individuals stated that they received support from their families, friends, schools, teachers, social institutions, etc., when they encountered a problem. Therefore, it can be said that individuals benefit from the resources that are provided to them by their exosystem, mesosystem, and macrosystem on the basis of an ecological context in the face of challenges or difficulties, and these protective resources contribute to their academic resilience when they use their internal resources.

As a result, the effects of protective factors on the development of children are much higher than the risk factors. Three main protective factors that protect children and support their development are supportive external systems, such as "the characteristics of the individual" (social competence, problem-solving skills, independence,

having an aim, etc.), "family" (especially in infancy and early childhood), and "school" (Kurtoğlu & Doğan, 2016). The healthy development of the child and living a successful life are possible with the interaction of these three protective factors. As Bronfenbrenner (1994) stated in the Ecological System Theory, social structures such as family, community, school, and class are important factors that affect the development of children and youngsters positively and protect them from risks. It can be asserted that children with these protective factors can cope with difficulties more effectively (Betancourt & Khan, 2008; Cefai, 2008; Klasen et al., 2010).

Implication of the findings

Considering the results of this study, it can be suggested that college counseling and school counseling services should give priority to studies on the factors directly affecting learning outcomes of students, such as academic resilience, school attendance, increasing learning motivation, and developing positive school attitudes. Moreover, the studies that increase students' intrinsic motivations and strengthen their internal resources should be prioritized before activating all social ecological factors (e.g., family participation).

Limitations of the study

Within the scope of the research, a limited number of internal and external resources were discussed, which can be considered a limitation of the research. In addition, discussing the ecological education value and socialization processes in a broader context can be important for achieving results that are more valid in terms of academic resilience. Another limitation of the study could be parenting style measures, in which only the maternal style was included in this study. These limitations should be considered when interpreting all the results and conclusions of the study.

Disclosure statement

No potential conflict of interest was reported by the authors.

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References

- Acedevo, M. (2009). *Cognitive flexibility and planning skills as predictors of social academic resilience in Hispanic-American elementary school children* [Unpublished doctoral dissertation]. Fordham University.
- Acedevo, M., & Esquivel, G. E. (2008). *Neuro psychological factors of high resiliency and low resiliency English language learners*. 20th Annual Conventions of the Association for Psychological Science. Chicago: ABD.
- Akbaş, U., & Tavşancıl, E. (2015). Investigation of psychometric properties of scales with missing data techniques for different sample sizes and missing data patterns. *Journal of Measurement and Evaluation in Education and Psychology*, 6(1), 38–57. <http://dx.doi.org/10.21031/epod.26476>
- Allport, G. W. (1937). *Personality: a psychological interpretation*. New York: Holt.
- Alva, S. A. (1991). Academic invulnerability among Mexican-American students: The importance of protective resources and appraisals. *Hispanic Journal of Behavioral Sciences*, 13(1), 18–34. <https://doi.org/10.1177/07399863910131002>
- Arastaman, G. (2011). *The opinions of general and Anatolian high school administrators, teachers and students in Ankara province in relation to factors affecting student resiliency* [Unpublished doctoral dissertation]. University of Ankara.
- Arastaman, G., & Balcı, A. (2013). Investigation of high school students' resiliency perception in terms of some variables. *Educational Sciences: Theory & Practice*, 13(2), 922–928. <https://files.eric.ed.gov/fulltext/EJ1017335.pdf>
- Arcı, I. (2007). *The effective factors on the students in the religious culture and ethics course (Ankara example)* [Unpublished doctoral dissertation]. University of Ankara.
- Arnold, P. F. (2003). *Characteristics of families and schools that foster academic resilience: Insights gained from the national education longitudinal study 1988-1994* [Unpublished doctoral dissertation]. Florida State University.
- Arrindell, W. A., & Van der Ende, J. (1985). An empirical test of the utility of the observations-to-variables ratio in factor and components analysis. *Applied Psychological Measurement*, 9(2), 165–178. <https://doi.org/10.1177/014662168500900205>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W.H. Freeman and Company.
- Başar, M. (2001). The effects of perception of false success in families on students. *Afyon Kocatepe University Journal of Social Sciences*, 2(2), 115–124.
- Baykul, Y. (2000). *Assessment in education and psychology: Classical test theory and practice*. OSYM Publishing.
- Benard, B. (1995). *Fostering resilience in children*. ERIC Clearinghouse on Elementary and Early Childhood Education. (ERIC Document Reproduction Service No. ED386327).
- Benard, B. (1997). *Turning it around for all youth: From risk to resilience* (ERIC/CUE Digest, No. 1 26). ERIC Clearinghouse on Urban Education. (ERIC Document Reproduction Service No. ED412309).
- Benard, B. (2004). *Resiliency: What we have learned*. West Education Publishers.
- Berlyne, D. E. (1966). Curiosity and exploration. *Science (New York, N.Y.)*, 153(3731), 25–33. <https://doi.org/10.1126/science.153.3731.25>
- Betancourt, T. S., & Khan, K. T. (2008). The mental health of children affected by armed conflict: Protective processes and pathways to resilience. *International Review of Psychiatry (Abingdon, England)*, 20(3), 317–328. <https://doi.org/10.1080/09540260802090363>
- Borman, G. D., & Overman, L. T. (2004). Academic resilience in mathematics among poor and minority students. *The Elementary School Journal*, 104(3), 177–195. <https://doi.org/10.1086/499748>
- Bronfenbrenner, U. (1979). *Ecology of human development*. Harvard University Press.
- Bronfenbrenner, U. (1994). Ecological models of human development. In *International encyclopedia of education* (Vol. 3, 2nd, ed., pp. 3–44). Elsevier
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Sage.
- Büyükoztürk, Ş. (2016). *Data analysis for social science handbook* (23th ed.). PegemA Publishing.
- Can, A. (2018). *Quantitative data analysis in scientific research process with SPSS*. PegemA Publishing.
- Can, G. (2015). Turkish version of the academic motivation scale. *Psychological Reports*, 116(2), 388–408. <https://doi.org/10.2466/14.08.PR0.116k24w5>
- Cappella, E., & Rhona, W. (2001). Turning around reading achievement predictors of high school student's academic resilience. *Journal of Educational Psychology*, 93(4), 758–771. <https://doi.org/10.1037/0022-0663.93.4.758>
- Cassidy, S. (2015). Resilience building in students: The role of academic self-efficacy. *Frontiers in Psychology*, 6, 1781. <https://doi.org/10.3389/fpsyg.2015.01781>
- Cassidy, S. (2016). The academic resilience scale (ARS-30): A new multidimensional construct measure. *Frontiers in Psychology*, 7, 1787. <https://doi.org/10.3389/fpsyg.2016.01787>
- Cefai, C. (2008). *Promoting resilience in the classroom: A guide to developing pupil's emotional and cognitive skills*. Jessica Kingsley.
- Çokluk, Ö., Şekercioğlu, G., & Büyükoztürk, Ş. (2014). *Multivariate statistics for the social sciences: SPSS and LISREL applications*. Pegem Publishing.
- Coleman, N. (2014). Promoting resilience through adversity: Increasing positive outcomes for expelled students. *Educational Studies*, 41(1–2), 171–187. <https://doi.org/10.1080/03055698.2014.955741>

- Cutler, M. M. (2006). *Self-efficacy and resilience among American Indian adult: A study of successful American Indian adult survivors of life stress/trauma* [Unpublished doctoral dissertation]. University of South Dakota.
- Dadlı, G. (2015). *The researching the relation between the 8th grade secondary school students' self-regulation skills and self-efficiency in science - technology course and their academic success* [Unpublished Master Thesis]. University of Kahramanmaraş Sütçü İmam.
- Dağdelen, S. (2013). *Association between biology teacher's interpersonal behavior, classroom learning environment and student's achievement* [Unpublished master thesis]. University of Marmara.
- Dass-Brailsford, P. (2005). Exploring resiliency: Academic achievement among disadvantaged black youth in South Africa. *South African Journal of Psychology*, 35(3), 574–591. <https://doi.org/10.1177/008124630503500311>
- De Baca, C. (2014). *A review of literature; Resiliency and academic performance*. ScholarCentric: Success Highways Resiliency Solution. http://www.scholarcentric.com/wpcontent/uploads/2014/03/SC_Resiliency_Academic_Performance_WP.pdf
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18(1), 105–115. <http://dx.doi.org/10.1037/h0030644>
- Deci, E. L., & Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 13, pp. 39–80). Academic.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum Press.
- Demirtaş, H., & Güneş, H. (2002). *Glossary of educational management and supervision*. Anı Publishing.
- Dinçer, M. A., & Oral, I. (2013). *Academic resilience profile in public high schools in Turkey*. ERG Publishing.
- Er, G. (2009). *Predicting the academic resilience levels of 2nd level primary educations students who have broken family according to some variables* [Unpublished master thesis]. University of Ege.
- Erberber, E., Stephens, M., Mamedova, S., Ferguson, S., & Kroeger, T. (2015). *Socioeconomically disadvantaged students who are academically successful: Examining academic resilience cross-nationally* (IEA's Policy Brief Series, No. 5). IEA. http://www.iea.nl/policy_briefs.html
- Fallon, M. C. (2010). *School factors that promote academic resilience in urban Latino high school students* [Unpublished doctoral dissertation]. Loyola University.
- Feinstein, S., Driving-Hawk, C., & Bartman, J. (2009). Resiliency and native American teenagers. *Reclaiming Children and Youth*, 18(2), 12–17. <https://eric.ed.gov/?id=EJ867921>
- Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. *Journal of Applied Psychology*, 82(2), 221–234. <https://doi.org/10.1037/0021-9010.82.2.221>
- Fischer, C., Malycha, C. P., & Schafmann, E. (2019). The influence of intrinsic motivation and synergistic extrinsic motivators on creativity and innovation. *Frontiers in Psychology*, 10, 137. <https://doi.org/10.3389/fpsyg.2019.00137>
- Foster, T. A. (2013). *An exploration of academic resilience among rural students living in poverty* [Unpublished doctoral dissertation]. Piedmont College.
- Garmez, N. (1993). Children in poverty: Resilience despite risk. *Psychiatry*, 56(1), 127–136. <https://doi.org/10.1080/00332747.1993.11024627>
- Gizir, C. A. (2004). *Academic resilience: An investigation of protective factors contributing to the academic achievement of eighth grade students in poverty* [Unpublished doctoral dissertation]. University of METU.
- Gonzalez, R., & Padilla, A. M. (1997). The academic resilience of Mexican American high school students. *Hispanic Journal of Behavioral Sciences*, 19(3), 301–317. <https://doi.org/10.1177/07399863970193004>
- Greene, R. (2002). Human behavior theory: A resilience orientation. In R. Greene (Ed.), *Resiliency: An integrated approach to practice, policy and research* (pp. 1–28). NASW Press.
- Gunderson, L. H. (2000). Ecological resilience: In theory and application. *Annual Review of Ecology and Systematics*, 31(1), 425–439. <https://doi.org/10.1146/annurev.ecolsys.31.1.425>
- Hamill, S. K. (2003). Resilience and self-efficacy: The importance of efficacy beliefs and coping mechanisms in resilient adolescents. *Colgate University Journal of the Sciences*, 35, 115–146. http://groups.colgate.edu/cjs/student_papers/2003/Hamill.pdf
- Henderson, N., & Milstein, M. M. (1996). *Resiliency in schools: Making it happen for students and educators*. Corwin Press.
- Hernandez, A. S., & Cortes, D. (2011). *Factors and conditions that promote academic resilience: A cross-country perspective*. 56th Annual Conference of the Comparative And International Education Society, San Juan, Puerto Rico.
- Howie, S. J., & Pietersen, J. J. (2001). Mathematics literacy of final year students: South African realities. *Studies in Educational Evaluation*, 27(1), 7–25. [https://doi.org/10.1016/S0191-491X\(01\)00011-6](https://doi.org/10.1016/S0191-491X(01)00011-6)
- Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Hunt, J. M. (1965). Intrinsic motivation and its role in psychological development. In: D. Levine, (Ed.), *Nebraska Symposium On Motivation* (pp. 189–282). Vol. 13. University of Nebraska Press, Lincoln.
- Jerusalem, M., & Schwarzer, R. (1981). Fragebogen zur erfassung von selbstwirksamkeit. In R. Schwarzer (Ed.), *Skalen zur Befindlichkeit und Persönlichkeit* (Forschungsbericht No. 5). Freie Universitaet, Institut fuer Psychologie.
- Johnson, B. (2008). Teacher-student relationships which promote resilience at school: A micro-level analysis of students' views. *British Journal of Guidance & Counselling*, 36(4), 385–398. <https://doi.org/10.1080/03069880802364528>
- Jordan, A. M. (1952). Intrinsic versus extrinsic motivation in learning. *The High School Journal*, 36(3), 76–83. <http://www.jstor.org/stable/40363054>
- Jowkar, B., Kohoulat, N., & Zakeri, H. (2011). Family communication patterns and academic resilience. *Procedia Social and Behavioral Sciences*, 29, 87–90. <https://doi.org/10.1016/j.sbspro.2011.11.210>
- Jowkar, B., Kojuri, J., Kohoulat, N., & Hayat, A. A. (2014). Academic resilience in education: The role of achievement goal orientations. *Journal of Advances in Medical Education & Professionalism*, 2(1), 33–38. <https://pubmed.ncbi.nlm.nih.gov/25512916/>

- Kağıtçıbaşı, Ç. (2013). Autonomous-related self. In C. Kağıtçıbaşı (Ed.), *Family, self, and human development across cultures: Theory and applications* (pp. 165–207). Routledge (Lawrence Erlbaum Associates).
- Karagüven, M. H. (2012). The adaptation of academic motivation scale to Turkish. *Educational Sciences: Theory & Practice*, 12(4), 2611–2618. <https://files.eric.ed.gov/fulltext/EJ1002866.pdf>
- Karaman, M. A., Vela, J. C., & Eşici, H. (2020). Middle school students' academic motivation in Turkey: Levels of perfectionism and self-efficacy. *Middle School Journal*, 51(5), 35–45. <https://doi.org/10.1080/00940771.2020.1814624>
- Karataş, H., & Erden, M. (2012). Bilingual equivalence, validity and reliability of academic motivation scale. *Education Sciences*, 7 (4), 983–1003. <http://dergipark.org.tr/nwsaedu/issue/19814/211923>
- Klasen, F., Daniels, J., Oettingen, G., Post, M., Hoyer, C., & Adam, H. (2010). Posttraumatic resilience in former Ugandan child soldiers. *Child Development*, 81(4), 1096–1113. <https://doi.org/10.1111/j.1467-8624.2010.01456.x>
- Kline, P. (1994). *An easy guide to factor analysis*. Routledge.
- Kline, R. B. (2005). *Methodology in the social sciences. Principles and practice of structural equation modeling* (2nd ed.). Guilford Press.
- Klomegah, R. Y. (2007). Predictors of academic performance of university students: An application of the goal efficacy model. *College Student Journal*, 41(2), 407–415. <https://eric.ed.gov/?id=EJ777950>
- Krovetz, M. (1999). Fostering resiliency. *Thrust for Educational Leadership*, 28(5), 28–31. https://books.google.com.tr/books?redir_esc=y&hl=tr&id=rGVLAAAYAAJ&focus=searchwithinvolume&q=Fostering+resiliency
- Kurtoğlu, G., & Doğan, S. (2016). Adaptation of emotional resilience scale to Turkish: Reliability and validity study. *FSM Scholarly Studies Journal of Humanities and Social Sciences*, 8, 223–239. <https://doi.org/10.16947/fsmia.281701>
- Kwek, A., Bui, T., Rynne, J., & So, K. (2013). The impacts of self-esteem and resilience on academic performance: An investigation of domestic and international hospitality and tourism undergraduate students. *Journal of Hospitality & Tourism Education*, 25(3), 110–122. <https://doi.org/10.1080/10963758.2013.826946>
- Lee, D. D. (2009). *The impact of resilience on the academic achievement of at-risk students in The Upward Bound Program in Georgia* [Unpublished doctoral dissertation]. Georgia Southern University.
- Maddox, S. J., & Prinz, R. J. (2003). School bonding in children and adolescents: Conceptualization, assessment, and associated variables. *Clinical Child and Family Psychology Review*, 6(1), 31–49. <https://doi.org/10.1023/A:1022214022478>
- Maghadam, M. A. (2006). *Predictors of resilient successful life outcomes in persons with disabilities: Toward a model of personal resilience* [Unpublished doctoral dissertation]. The George Washington University.
- Malindi, M. J., & MacHenjedze, N. (2012). The role of school engagement in strengthening resilience among male street children. *South African Journal of Psychology*, 42(1), 71–81. <https://doi.org/10.1177/008124631204200108>
- Martin, A. (2002). Motivation and academic resilience: Developing a model for student enhancement. *Australian Journal of Education*, 46(1), 34–49. <https://doi.org/10.1177/000494410204600104>
- Martin, A. J., & Marsh, H. W. (2006). Academic resilience and its psychological and educational correlates: A construct validity approach. *Psychology in the Schools*, 43(3), 267–281. <http://dx.doi.org/10.1002/pits.20149>
- Masten, A. S. (1994). Resilience in individual development: Successful adaptation despite risk and adversity. In M. C. Wang & E. W. Gordon (Eds.), *Educational resilience, in inner-city America: Challenges and prospects* (pp. 3–25). Lawrence Erlbaum.
- Masten, A. S. (2001). Ordinary magic. Resilience processes in development. *The American Psychologist*, 56(3), 227–238. <https://doi.org/10.1037//0003-066x.56.3.227>
- Masten, A. S., Best, K. M., & Garmezy, N. (1990). Resilience and development: Contributions from the study of children who overcome adversity. *Development and Psychopathology*, 2(4), 425–444. <https://doi.org/10.1017/S0954579400005812>
- Masten, A. S., & Coatsworth, J. D. (1998). The development of competence in favorable and unfavorable environments. Lessons from research on successful children. *The American Psychologist*, 53(2), 205–220. <https://doi.org/10.1037//0003-066x.53.2.205>
- Masten, A. S., Herbers, J. E., Desjardins, C. D., Cutuli, J. J., McCormick, C. M., Sapienza, J. K., Long, J. D., & Zelazo, P. D. (2012). Executive function skills and school success in young children experiencing homelessness. *Educational Researcher*, 41(9), 375–384. <https://doi.org/10.3102/0013189X12459883>
- McMillan, J. H., & Reed, D. F. (1994). At risk students and resiliency: Factor contributing to academic success. *The Clearing House*, 67(3), 137–140. <https://doi.org/10.1080/00098655.1994.9956043>
- Morales, E. E., & Trotman, F. K. (2011). *A focus on hope: 50 resilient students speak*. Rowman-Littlefield/University Press of America Press.
- Newstrom, J. W., & Davis, K. (2002). *Organizational behavior (human behavior at work)* (11th ed.). Mc-Graw-Hill.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). McGraw-Hill.
- Organization for Economic Co-operation and Development [OECD]. (2003). *OECD science, technology and industry scoreboard*. OECD Publishing. http://dx.doi.org/10.1787/sti_scoreboard-2003-en
- Organization for Economic Co-operation and Development [OECD]. (2011). *Against the odds: Disadvantaged students who succeed in school*. OECD Publishing. <https://doi.org/10.1787/9789264090873-en>
- Özer, Y., & Anıl, D. (2011). Examining the factors affecting students' science and mathematics achievement with structural equation modeling. *Hacettepe University Journal of Education*, 41, 313–324. <http://www.efdergi.hacettepe.edu.tr/yonetim/icerik/makaleler/702-published.pdf>
- Padrón, Y. N., Waxman, H. C., & Huang, S. Y. L. (1999). Classroom behavior and learning environment differences between resilient and non-resilient elementary school students. *Journal of Education for Students Placed at Risk*, 4(1), 63–81. https://doi.org/10.1207/s15327671espr0401_5
- Pajares, F. (2002). *Overview of social cognitive theory and of self-efficacy*. <http://www.emory.edu/EDUCATION/mfp/eff.html>

- Perez, W., Espinoza, R., Ramos, K., Coronado, H. M., & Cortes, R. (2009). Academic resilience among undocumented latino students. *Hispanic Journal of Behavioral Sciences*, 31(2), 149–181. <https://doi.org/10.1177/0739986309333020>
- Polat, S. (2009). Analysis of academic failure on the basis of social inequality. *Journal of Education Science Society*, 7(25), 46–61.
- Richard, A. L. (2012). *Setting good footprints: Reconstructing holistic success of indigenous students in higher education* [Unpublished master thesis]. University of Manitoba. <http://mspace.lib.umanitoba.ca/handle/1993/5033>
- Roberts, K. A. (2007). *Self efficacy, self concept and social competence as resources supporting resilience and psychological well being in young adults reared within the military community* [Unpublished doctoral dissertation]. Fielding Graduate University.
- Sandoval-Hernández, A., & Białowolski, P. (2016). Factors and conditions promoting academic resilience: A TIMSS-based analysis of five Asian education systems. *Asia Pacific Education Review*, 17(3), 511–520. <https://doi.org/10.1007/s12564-016-9447-4>
- Sandoval-Hernandez, A., & Cortes, D. (2012). *Factors and conditions that promote academic resilience: A cross-country perspective* [Presentation]. 25th International Congress for School Effectiveness Improvement (ICSEI), Malmo, Sweden. http://iea.academia.edu/AndresSandovalHernandez/Talks/65278/Factors_and_conditions_that_promote_academic_resilience_A_cross-country_perspectiveSOU
- Scholz, U., Doña, B. G., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *European Journal of Psychological Assessment*, 18(3), 242–251. <https://doi.org/10.1027/1015-5759.18.3.242>
- Şevik, Y. (2014). *The views of primary school principals and vice principals about the factors that affect students' academic success and their contribution to academic success* [Unpublished master thesis]. University of Mehmet Akif.
- Stokols, D., Lejano, R. P., & Hipp, J. (2013). Enhancing the resilience of human–environment systems: A social–ecological perspective. *Ecology and Society*, 18(1), 7. <http://dx.doi.org/10.5751/ES-05301-180107>
- Sümer, N. (2000). Structural equation modeling: Basic concepts and applications. *Turkish Journal of Psychology*, 3(6), 49–74.
- Sümer, N., & Güngör, D. (1999). Psychometric evaluation of adult attachment measures on Turkish samples and a cross-cultural comparison. *Turkish Journal of Psychology*, 14(43), 71–109. <https://psycnet.apa.org/record/1999-01914-005>
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Allyn & Bacon.
- Terzi, Ş. (2008). The relationships between resilience and internal protective factors in university students. *Hacettepe University Journal of Education*, 35, 297–306. <http://www.efdergi.hacettepe.edu.tr/yonetim/icerik/makaleler/562-published.pdf>
- Toland, J., & Carrigan, D. (2011). Educational psychology and resilience: New concept, new opportunities. *School Psychology International*, 32(1), 95–106. <https://doi.org/10.1177/0143034310397284>
- Ungar, M. (2004). The importance of parents and other caregivers to the resilience of high-risk adolescents. *Family Process*, 43(1), 23–41. <https://doi.org/10.1111/j.1545-5300.2004.04301004.x>
- Ungar, M. (2005). Introduction: Resilience across cultures and contexts. In M. Ungar (Ed.), *A handbook for working with children and youth: Pathways to resilience across cultures and contexts* (pp. xv–xxxix). Thousand Oaks, CA: Sage Publications.
- Ungar, M. (2008). Resilience across cultures. *British Journal of Social Work*, 38(2), 218–235. <https://doi.org/10.1093/bjsw/bcl343>
- Ungar, M. (2011). The social ecology of resilience: Addressing contextual and cultural ambiguity of a nascent construct. *American Journal of Orthopsychiatry*, 81(1), 1–17. <https://doi.org/10.1111/j.1939-0025.2010.01067.x>
- Ungar, M. (2018). Systemic resilience: Principles and processes for a science of change in contexts of adversity. *Ecology and Society*, 23(4), 34. <https://doi.org/10.5751/ES-10385-230434>
- Ungar, M., Brown, M., Liebenberg, L., Othman, R., Kwong, W. M., Armstrong, M., & Gilgun, J. (2007). Unique pathways to resilience across cultures. *Adolescence*, 42(166), 287–310.
- Ungar, M., & Liebenberg, L. (2013). Ethnocultural factors, resilience, and school engagement. *School Psychology International*, 34(5), 514–526. <https://doi.org/10.1177/0143034312472761>
- Vallerand, R. J., Blais, M. R., Brière, N. M., & Pelletier, L. G. (1989). Construction et validation de l'échelle de motivation en éducation (EME) [Construction and validation of the motivation toward education scale]. *Canadian Journal of Behavioural Science/Revue Canadienne Des Sciences Du Comportement*, 21(3), 323–349. <https://doi.org/10.1037/h0079855>
- Vogel, W., Raymond, S., & Lazarus, R. S. (1959). Intrinsic motivation and psychological stress. *The Journal of Abnormal and Social Psychology*, 58(2), 225–233. <https://doi.org/10.1037/h0043112>
- Wagnild, G. M. (2009). *The resilience scale user's guide for the US English version of the resilience scale and the 14-item resilience scale (RS-14)*. The Resilience Centre.
- Wang, D. B. (2004). Family background factors and mathematics success: A comparison of Chinese and US students. *International Journal of Educational Research*, 41(1), 40–54. <https://doi.org/10.1016/j.ijer.2005.04.013>
- Wang, M. C., Haertel, G. D., & Walberg, H. J. (1994). Educational resilience in inner cities. In M. C. Wang & E. W. Gordon (Eds.), *Educational resilience in inner-city America: Challenges and prospects* (pp. 45–72). Erlbaum.
- Wang, M. C., Haertel, G. D., & Walberg, H. J. (1997). Fostering educational resilience in inner-city schools. In H. J. Walberg, O. Reyes, & R. P. Weissberg (Eds.), *Issues in children's and families' lives, Vol. 7. Children and youth: Interdisciplinary perspectives* (pp. 119–140). Sage Publications, Inc.
- Wang, M. C., Haertel, G. D., & Walberg, H. J. (1998). *Educational resilience* (Laboratory for Student Success Publication Series No. 11). Temple University Center for Research in Human Development and Education.
- Wasonga, T. (2002). Gender effects on perceptions of external assets, development of resilience and academic achievement: Perpetuation theory approach. *Gender Issues*, 20(4), 43–54. <https://doi.org/10.1007/s12147-002-0022-4>

- Wasonga, T., Christman, D. E., & Kilmer, L. (2003). Ethnicity, gender and age: Predicting resilience and academic achievement among urban high school students. *American Secondary Education*, 32(1), 62–74. <http://www.jstor.org/stable/41064505>
- Watkins, M. W. (2000). *Monte carlo PCA for parallel analysis [computer software]*. State College, PA: Ed & Psych Associates.
- Waxman, H. C., Gray, J. P., & Padron, Y. N. (2003). *Review of research on educational resilience*. Center for Research on Education, Diversity & Excellence. University of California.
- Weaver, D. E. (2009). *The relationship between cultural/ethnic identity and individual protective factors of academic resilience* [Unpublished doctoral thesis]. The College of William and Mary.
- Williams, J., Steen, S., Albert, T., Dely, B., Jacobs, B., Nagel, C., & Irick, A. (2015). Academically resilient, low-income students' perspectives of how school counselors can meet their academic needs. *Professional School Counseling*, 19(1), 155–165. <https://doi.org/10.5330/1096-2409-19.1.155>
- Williams, J. M. (2011). *Home, school, and community factors that contribute to the educational resilience of urban, African American high school graduates from low-income, single-parent families* [Unpublished doctoral dissertation]. University of Iowa.
- Winfield, L. F. (1994). *Developing resilience in urban youth. Urban monograph series*. North Central Regional Educational Laboratory.
- Wolman, B. (1973). *Dictionary of behavioral science*. Van Nostrand Company.
- Woodworth, R. S. (1918). *Dynamic psychology*. Columbia University Press.
- Wu, Q., Tsang, B., & Ming, H. (2012). Social capital, family support, resilience and educational outcomes of Chinese migrant children. *British Journal of Social Work*, 44, 636–656. <https://www.jstor.org/stable/43687662>
- Yavuz, H. C., & Kutlu, Ö. (2016). Investigation of the factors affecting the academic resilience of economically disadvantaged high school students. *Education and Science*, 41(186), 1–19. <https://doi.org/10.15390/EB.2016.5497>
- Yılmaz, M., Gürçay, D., & Ekici, G. (2007). Adaptation of the academic self-efficacy scale to Turkish. *Hacettepe University Journal of Education*, 33, 253–259. http://www.efdergi.hacettepe.edu.tr/shw_artcl-1047.html