TURKISH PSYCHOLOGICAL COUNSELING AND GUIDANCE JOURNAL
2023, VOL. 13, NO. 69, 256 - 272.

Official Journal of
Turkish Counseling and
Guidance Association

ISSN: 1302 – 1370, E-ISSN: 2822 – 6569

https://doi.org/10.17066/tpdrd.1245904ao

School Resilience: A Scale Adaptation Study

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ARTICLE HISTORY

Received: 01.02.23
Accepted: 03.06.23

KEYWORDS

Resilience, School Resilience, School Counseling, School Resilience Scale, Psychological Counseling and Guidance

ABSTRACT

This study aimed to adapt the School Resilience Scale (Caleon & King, 2020) to Turkish culture. The participants of this study were high school students. The study consisted of three stages. The first stage regarded the scale translation for linguistic equivalence. In the second stage, the structural validity and reliability of the scale were tested. In the third stage, a test-retest reliability of the scale was performed. Fifty-three students (52.8% girls) participated in the first group, 615 students (52.7% girls) in the second group, and 88 students (67% girls) in the third group. The confirmatory factor analysis (CFA) findings to test construct validity showed that the four-factor structure of the scale had an excellent fit index. Next, a two-level confirmatory factor analysis was conducted, which confirmed the two-level model. The Cronbach's Alpha reliability coefficient for the total scale was .89, while it was between .78 and .84 for the sub-dimensions of the scale. In sum, the findings evidenced that the school resilience scale was a valid and reliable measurement tool that can be used to assess Turkish high school students' school resilience.

Resilience derives from Latin ("re" - back, "salire" - leap/ jump), and the literal meaning is "to jump back" (Hunter & Chandler, 1999). The topic has recently raised significant interest in various areas of study, but it has been studied mainly in psychology (Hosseini et al., 2016). Due to its popularity in recent years, different conceptualizations of resilience, such as coping capacity, thriving in the face of adversity, and stability, have been proposed (e.g., Bryan et al., 2019; Fletcher, 2018; Southwick et al., 2014). Resilience has also been conceptualized as a return to the former or original state after exposure to a stress factor (Fletcher, 2019; Hill et al., 2018; Masten, 2001; Pincus et al., 2018; Vella & Pai, 2019). This conceptualization also coincides with the original Latin meaning "to jump back."

Resilience has generally been conceptualized as a relatively stable personality trait in early research (Block & Block, 1980). The view that mental health is better predicted by various distinguishing factors, which have also been conceived as factors that change over time, has led to the conceptualization of resilience as a complex and dynamic adaptation process within the context of significant adversity. Studies on resilience underline that resilience cannot be conceptualized only at the individual level (Fletcher & Sarkar, 2013). A recent review has shown many definitions of resilience in the literature (Bryan et al., 2019). Most of these definitions indicate

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resisting the adverse effects of stressors, bouncing back from stressors, and growing up in the face of stressors. A recent consensus on the definition emerged, which regarded resilience as maintaining mental health despite exposure to stress (Kalish et al., 2017).

The process of resilience concerns the changing condition of one or more systems when they are exposed to an atypical amount of stress (Ungar, 2021). Resilience (the capacity to recover quickly, flexibility, the power to spring back into shape) is regarded as a personality trait that addresses coping with stressors and overcoming complex life events, and individuals with this personality trait are referred to as resilient (recovering easily, flexible, and improving quickly) (Terzi, 2008).

School Resilience

Ungar and Liebenberg (2013) employed a social-ecological perspective on resilience, decentering attention from individuals and their families. In their view, society and the context were essential for understanding resilience (Ungar & Lerner, 2008). Research on resilience highlighted that increasing resilience against stressors or demands involved the integration of bio-psychological, familial/social, school, and institutional systems (Masten, 2007; Wright et al., 2013).

School environments are fundamentally designed to create "protective factors" that can change and reverse potential risks/adverse outcomes and foster resilience in children. When a school promotes a culture where all students' basic needs for support, respect, and belonging are met, motivation for learning increases, and students feel that they have a place in society. Besides, certain practices that use collaborative approaches, such as designing hands-on learning experiences, cooperative learning, peer helping, peer mentoring, and community service, enable students to foster resilience (Newman & Dantzler, 2015). Finally, schools are considered natural shelters where at-risk students can participate in projects where they identify and solve problems (Henderson, 2013).

The school context has been considered a suitable environment to prevent and reduce risky situations for children and adolescents (Masten et al., 2008). Schools are places where children and adolescents spend most of their time. Thus, they have been regarded as ideal places for conducting studies on resilience (Condly, 2006). Fostering resilience also contributes to academic success, increased school safety, and social and emotional development (Ungar, 2011).

The concept of school resilience might bring to mind the concept of academic resilience. However, school resilience is a different concept from academic resilience. Academic resilience is an individual's tendency to maintain academic success despite risks and unfavorable conditions in life (Colp & Nordstokke, 2014). However, school resilience is an individual's ability to recover and adapt despite school-related risk factors (Caleon & King, 2020). The main difference here is the contextual differences of risk factors and adaptation. Family, school and peer group stand out as the factors that affect adolescents' resilience the most (LaRue & Herrman, 2008). The concept of school resilience aims to determine the impact of these factors on adolescents' resilience levels (Caleon & King, 2020). Adolescents' ability to adapt well to school-related risk factors indicates a high level of school resilience.

The Purpose of the Study

Stress has become an even more decisive factor in daily life following the outbreak of COVID-19 in the world. Resilience has become more relevant due to the losses and traumas people have experienced during the pandemic. Resilience has been considered an essential theme in different disciplines, such as clinical, developmental, sports, social and organizational psychology. Studies on resilience revealed that although the protective and risk factors at school were significant matters of discussion, systemic studies carried out in education and schools were relatively scarce (Ungar, 2021). On the other hand, in Turkish, there is no scale to measure school resilience.

Adolescence is a challenging developmental period in which individuals have significant changes in their psychological and social lives. It is often interpreted as a different risk factor (Cunningham & Swanson, 2010; Schulenberg et al., 2004). With the transition from childhood to adolescence, there is an increase in depression and other mental health disorders (Ghandour et al., 2019). Studies have shown that the COVID-19 pandemic has adverse effects on adolescents susceptible to mental health disorders, adolescent depression, anxiety, and

substance abuse increased significantly, and access to the social support that adolescents require decreased significantly (Gazmararian et al., 2021; Magson et al., 2021). COVID-19-related worries such as pathophobia, online learning difficulties, and social isolation contributed to depression and anxiety for adolescents, as short-term research findings indicated (Magson et al., 2021). While the available data has pointed to alarming issues during the COVID-19 pandemic, studies on the factors influencing adolescents' ability to overcome these challenges are scarce. It has been observed that school resilience is essential since adolescents spend the most time in school. Thus, this study aims to adapt the School Resilience Scale developed in Singapore (Caleon & King, 2020) to Turkish language and culture. There has not yet been a scale in the Turkish literature that precisely measures school resilience. Therefore, adopting this scale to Turkish culture fills this gap in the literature. Adapting the resilience scale can enable measuring school resilience levels independently of individuals' resilience levels, which can provide insights for the school counselors about students' school resilience levels.

School counselors play a critical role in supporting the mental health needs of students. They are involved in providing mental health screenings, short-term mental health counseling, universal prevention programming, and advocacy. School counselors may also serve as liaisons between families, schools, and community agencies while supporting the mental health needs of students (Marraccini et al., 2022). School counselors can address the mental health needs of students by providing direct services and working with school staff and community service providers (Kaffenberger & O'Rorke-Trigiani, 2013). School counselors also play integral and vital roles in counseling students and parents, and in providing consultations to parents and teachers (Nishio et al., 2020). With all these competencies, school counselors can also help to increase the level of school resilience of students. School counselors can determine the school resilience levels of students and provide guidance and psychological counseling services to students who need support. They can also carry out preventive guidance and psychoeducation activities for the risk factors that reduce the level of school resilience throughout the school. In addition, school counselors can also have a say in the work related to other important groups in the school, such as families and teachers. Students with high levels of school resilience are also important for schools. It can be determined which characteristics these students have, and these characteristics can be tried to be brought to other students through various activities. In short, activities can also be carried out within the scope of positive psychology. This study inquires, "What is the psychometric evidence of the validity and reliability of the School Resilience Scale (SRS) adapted to Turkish language and culture?".

Methodology

The Participants of the Study

The study population consists of students studying at high schools in Ankara. A convenience sampling method was employed in selecting the participants. Convenience sampling is selecting a sample based on easy accessibility and availability due to various limitations (Büyüköztürk et al., 2017). Cohen et al. (2007) explain convenience sampling as choosing the nearest individuals to serve as respondents and continuing that process until the required sample size has been obtained and accessible. With this method, data was collected from high school students from various socio-economic levels at all grades in schools. And this dataset covers 17 schools from 6 different school types. Three separate groups participated in the research. In the first study group, 53 students (28 girls (52.8%) and 25 (47.2%) boys) who have had English education and studied in the language program in secondary education were selected for developing the linguistic equivalence of the School Resilience Scale (SRS). The students' ages varied between 15-16 ($\bar{x}$= 15.7, SD= .50). The second group consisted of 615 students (324 girls (52.7%) and 291 boys (47.3%)) whose scores were used to conduct item analysis, confirmatory factor analysis to test construct validity, and criterion-related validity of the scale. The students' ages varied between 14-18 ($\bar{x}$=15.42, SD=1.18). The third group consisted of 88 students (59 girls (67%) and 29 boys (33%)) whose scores were used to examine the test-retest reliability, which assessed the consistency of the scale ($\bar{x}$=16.52, SD=1.31). This group was administered the SRS at a four-week interval. Table 1 presents the demographic information of 615 participants in the second part of the study.

Table 1. Frequency and Percentage Distributions by Demographic Variables

Variables	f	%
Gender		
Female	324	52.7
Male	291	47.3
Age		
14	166	27.0
15	169	27.5
16	184	29.9
17	51	8.3
18	45	7.3
Grade		
9	190	30.9
10	272	44.2
11	110	17.9
12	43	7.0
Total	**615**	**100**

Six hundred fifteen high school students participated in the research. 52.7% of the students were female, and 47.3% were male. The distribution by age was 16 (29.9%), 15 (27.5%), 14 (27.0%), 17 (8.3%), and 18 (7.3%). The distribution by grade was 10 (44.2%), 9 (30.9%), 11 (17.9%), and 12 (7.0%).

The Procedure

The participants were informed about the purpose of the research before the data collection process, and both the participants and their parents provided written consent to declare voluntary participation in the study. The participants were also explained that they could terminate their participation in the study at any time without any responsibility, their personal information would be kept confidential, and the results would only be used for scientific purposes. This study followed the guidelines for adaptation procedures defined by the World Health Organization (WHO) and the International Test Commission (ITC) in the process of adapting SRS (Caleon & King, 2020) to Turkish culture (ITC, 2018; WHO, 2017).

The first stage of the research aimed to test the conceptual and cultural equivalence of the measurement tool. First, the original scale was sent to two experts fluent in both languages. One of the experts was informed about the process and the purpose of the translation, while the other expert was not provided information about the process. Thus, we intended to obtain alternative translations (Coster & Mancini, 2015; Dorer, 2012). After completing both translations, they were checked and merged into a single translation. However, there needed to be a solution to translating a particular word in a way that could represent its cultural equivalence in Turkish. Therefore, the creator of the original scale was contacted to discuss the intended meaning of the word, which was then discussed with the experts who translated the scale. As a result, we agreed, and the first translation was completed. Next, three experts fluent in both languages were contacted via e-mail, and these experts evaluated the conceptual and cultural translation of the scale. The experts were informed about the translation process. A special note about how to translate the word that caused the problem in the first translation was attached for the experts' attention. As a result of the experts' evaluations, the compliance percentage was examined, and the Content Validity Index (CVI) was calculated. For each item, the experts rated the relevance of each item by choosing one of the responses; (1) not relevant, (2) item needs to be revised to be relevant, (3) relevant but needs minor alteration, and (4) very relevant. The experts' responses were interpreted as a good CVI score if each item had a rating of 3 or 4 with 80% and above (Esin, 2014). No item was rated 1 or 2. Hence, the content validity was 100%. After this review, this version of the scale was back-translated. For this procedure, a specialist with a good command of both languages was contacted for the scale to be translated back to its original language. The scale was translated back to its original language. The back-translation delivered a different wording than the original scale. However, we concluded that no meaningful shifts emerged. Besides, a back-translation does not necessarily produce the exact wording as the original text (Beaton et al., 2007). Then, 53 high school students were selected using purposive sampling. Purposive

sampling is a sampling method that allows researchers to include and control specific characteristics (Özen & Gül, 2010). This study employed a purposive sample to ensure participants had a good command of both languages. The original and Turkish scales were administered to 53 high school students fluent in both languages at a 2-week interval, and the scores were examined. To this end, the students were first given the English scale, and the Turkish scale was applied two weeks later. As a result of these applications, the internal consistency coefficient of the scale was examined, and Cronbach's Alpha reliability coefficient was .928.

The second stage aimed to test the construct validity and reliability of the measurement tool. Thus, whether the measurement tool was valid as a model to assess Turkish high school students' resilience was tested, and item-total score correlation, item discrimination, and Cronbach's Alpha reliability coefficients were calculated. In the second stage, the convenience sampling method was used. The data collection took approximately two weeks. The Adolescent Psychological Resilience Scale (APRS) (Bulut et al., 2013), the Depression, Anxiety and Stress Scale-High School Form (DASS-42) (Akkuş Çutuk & Kaya, 2018), and Personal Information Form created by the researchers were used to examine the relationship of the measurement tool with other constructs. In the third stage, a test-retest reliability study of the scale was performed. One hundred five high school students in Ankara were asked to select a nickname to administer the test. The test-retest reliability of the scale was carried out at a 4-week interval. Of the 105 participants who participated in the first stage, 88 completed the scale again.

Data Collection Tools

The School Resilience Scale (SRS). The SRS measures the students' school resilience, which is defined as positive adaptation despite experiences of significant social and school-related stressors that may impact healthy functioning in the school context (Caleon & King, 2020). Two samples were determined to develop the original scale. A total of 1159 8th-grade students (37% girls and 63% boys) in Singapore participated in the first study, and 190 students from the 8th and 9th grades participated in the second study. The scale was applied to 97 students for test-retest reliability. The School Resilience Scale consisted of 16 items with a four-factor structure (family/home, schoolmate, teacher, academic). The SRS was a 7-item Likert scale (1- strongly disagree, 7- strongly agree). The scale explained 55.13% of the variance and was a single-factor scale. The factor loadings ranged from .66 to .83. The Cronbach's alpha of the school resilience scale for internal consistency was between .82 and .86 (N=1599) in the first study and between .79 and .85 (N=190) in the second study. These values evidenced the reliability of the school resilience scale. The findings section presents the results of this scale's adaptation.

Adolescent Psychological Resilience Scale (APRS). Adolescent Psychological Resilience Scale (APRS) was developed by Bulut et al. (2013). During the scale development, 347 high school students participated in the study, including 133 boys (38%) and 214 girls (62%). Exploratory Factor Analysis (EFA) was performed for construct validity, and the scale consisted of 29 items and six factors that explained 57% of the total variance. The scale items had four options, including (1) very suitable for me, (2) suitable for me, (3) not suitable for me, and (4) not suitable for me at all. In the reliability test, Cronbach's Alpha internal consistency coefficient was found to be .87. The alpha values of the sub-dimensions ranged between .61 and .89. Secondly, after one month, the test-retest results showed a correlation coefficient of .87. In another reliability test, 27% of upper-lower group comparisons revealed significant differences in all items. Lastly, item-total correlations in the item analysis ranged from .59 to .81. Based on these findings, APRS was found to be a valid and reliable measurement tool that can be used in the fields of education and psychology. The Cronbach's alpha coefficient in the present study was .89.

Depression, Anxiety, and Stress Scale-High School Form (DASS-42). DASS-42 was developed by Lovibond and Lovibond (1995) to measure the depression, stress, and anxiety levels of individuals. It was later adapted into Turkish by Akkuş Çutuk and Kaya (2018). The scale consisted of 42 items, 14 for each of the three subscales: depression, anxiety, and stress. Each item was rated on a 4-point Likert scale; (0) did not apply to me at all, (1) applied to me a little, (2) applied to me most of the time, and (3) applied to me very much. The scores obtained from the scale ranged between 0 and 42 for each sub-dimension. Depression, anxiety, and stress were categorized on the scale into normal, mild, moderate, severe, and highly severe (Akkuş Çutuk & Kaya, 2018). The Cronbach's alpha coefficient was found in the present study to be .95.

Personal Information Form. The Personal Information Form was created by the researcher to collect information about the participants' gender, age, and grade.

Data Analysis

SPSS 22 and Lisrel 8.80 programs were used for data analysis. The SPSS program was used to compare the frequency and percentage of demographic variables, descriptive statistics, and comparing scores by groups. At the same time, confirmatory factor analysis and structural equation modeling for scale validity and mediation analysis were performed using the Lisrel 8.80 program. Skewness and kurtosis values were examined for the normality of the scale scores, and the distribution was considered normal when the skewness and kurtosis values were within the range of ± 1.50 (Tabachnick & Fidell, 2013). To analyze the extreme values, the z standard values of the sub-dimensions were examined, and no extreme values were found. Pearson correlation was used to analyze the relationship between scale scores. The maximum likelihood estimation method was used since all observed variables in the Structural Equation Model (SEM) analysis were continuous. A two-stage SEM model was used. First, the measurement model was tested based on the latent and observed variables in the model. Then the SEM model was tested following the measurement model and theoretical framework (Şimşek, 2007). For model-data fit, an essential criterion in SEM and confirmatory factor analysis, the frequently used fit indexes in the literature were considered. The acceptable values of model-data fit based on these fit indexes are presented in Table 2.

Table 2. Bibliographies on the Critical Values of Model-Data Fit

Index	Critical Value	Source
x^2/sd	<=3; perfect fit <=5; good fit	(Kline, 2005)
RMSEA; SRMR	<=.05; perfect fit <=.08; good fit <=.10; good fit	(Steiger, 1990; Schumacker& Lomax, 1996 Hu &Bentler, 1999; Anderson &Gerbing, 1984; Cole, 1987)
CFI	>=.95; perfect fit >=.90; good fit	(Schumacker& Lomax, 1996; Fan, Thompson & Wang, 1999)
GFI;	>=.95; perfect fit >=.90; good fit	(Schumacker& Lomax, 1996; Hu &Bentler, 1999)
NFI; IFI	>=.95; perfect fit >=.90; good fit	(Hu &Bentler, 1999; Sümer, 2000)

Findings

This section demonstrates the findings concerning the research questions.

Findings of the First Stage

In the first stage of the study, the original scale of the School Resilience Scale and the Turkish version were administered to 53 high school students fluent in both languages one week apart to test the conceptual and cultural equivalence of the measurement tool, and the relations between the scores of the two scales were examined. The descriptive statistics of the scale scores and the values of Pearson's product-moment correlation coefficients are presented in Table 3.

Table 3. Descriptive Statistics and Correlation Coefficients Regarding the Scale Scores

Factors	$\bar{x}$	Median	Mode	Skew.	Kr.	r
Academic						
English	20.53	22.00	14.00[i]	-.080	-.741	.964*
Turkish	20.11	20.00	23.00	.051	-.438	
Family/Home						
English	11.00	12.00	15.00	-.103	-1.067	.942*
Turkish	11.42	12.00	14.00	-.239	-.799	
Schoolmate						
English	15.79	17.00	18.00	-.262	-1.020	.956*
Turkish	15.74	16.00	17.00	-.081	-.997	
Teacher						
English	15.45	16.00	14.00	-.117	-.938	.958*
Turkish	15.62	16.00	18.00	-.127	-.678	
SRS total						
English	62.77	66.00	28.00[i]	-.130	-1.123	.985*
Turkish	62.89	65.00	73.00	-.023	-.909	

[i]: Smallest value from multiple modes, N:53, *p<.01
Note: $\bar{x}$: Mean, Skew.:Skewness, Kr.:Kurtosis, r:Correlations

As Table 3 shows, Pearson's correlation coefficients between the two measures were .964 ($p < .01$) for the academic factor, .942 ($p < .01$) for the family/home factor, .956 ($p < .01$) for the schoolmate factor, .958 ($p < .01$) for the teacher factor, and .985 ($p < .01$) for the full scale. The Cronbach Alpha reliability test for the internal consistency coefficient of the scale was .940 for the original scale and .928 for the Turkish translation.

Findings of the Second Stage

The second stage aimed to test the construct validity and reliability of the measurement tool. To this end, whether the structure of the measurement tool was valid as a model to use with Turkish high school students was tested, and item-total score correlation and Cronbach's Alpha reliability coefficients were calculated. This study also employed the statistical analyses and methods used in the development stages of the original scale to ensure method equivalence in the adaptation process of the scale. The SRS consisted of 18 items. The original scale had a 4-factor structure. In the original scale, two-level confirmatory and exploratory factor analyses were used for validity analysis. Firstly, the underlying factor structure was identified by exploratory factor analysis, which was then confirmed through confirmatory factor analysis. Since the final scale was adapted in this study, the construct validity was examined by confirmatory factor analysis. The reason for using CFA rather than EFA was that the scale structure was already identified. However, since scale items 2 and 17 were related to items not in their own dimensions and caused an increase in the factor loadings of other factors, they were removed from the scale, and CFA results were reported for a 16-item scale. In the development of the original scale, the identical items were not loaded on the factors sufficiently. However, they were still included in the scale to reduce the positive response clusters (Caleon & King, 2020). Outlier items were analyzed with z standard values for each item. Tabachnick and Fidell (2013) stated that values below and above the z score ± 3.3 should be considered extreme values.

Table 4. t Values for Each Item Based on Confirmatory Factor Analysis

Item	*t*	Item	*t*	Item	*t*
i1	14.86*	i8	19.2*	i13	19.89*
i3	18.84*	i9	18.96*	i14	20.67*
i4	15.03*	i10	21.24*	i15	23.24*
i5	14.51*	i11	24.12*	i16	18.39*
i6	17.55*	i12	16.25*	i18	19.29*
i7	18.76*				

*p<.01

The *t* values of each item in the SRS are shown in Table 4. The *t* values for all items greater than the critical *t* value of ±1.96 at the alpha level of .05 indicate that the factor loading is significant (Çokluk et al., 2010). The findings showed that the *t*-values of each item in the scale were greater than 1.96 and statistically significant.

Figure 1. The Graph of Path Coefficients

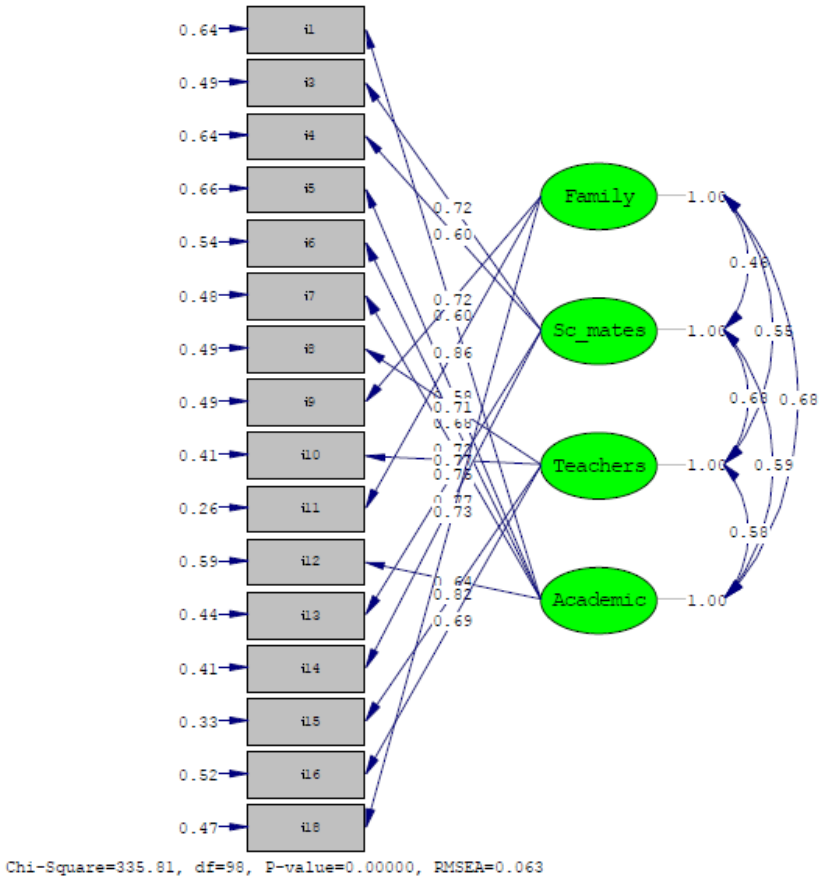

Figure 1 shows the graph of the standard factor loadings for the SRS. Path coefficients for the family/home sub-dimension were 0.72-0.86, 0.60-0.77 for the schoolmate sub-dimension, 0.69-0.82 for the teacher sub-dimension, and .58-0.72. for the academic sub-dimension. The path coefficients were found to be high.

Table 5. Model Fit Index

Index	Perfect Fit	Good Fit	Research Finding	Conclusions
x^2/SD	0-3	3-5	3.43	Good Fit
RMSEA	.00 ≤ RMSEA ≤ .05	.05 ≤ RMSEA ≤ .10	0.063	Good Fit
CFI	.95 ≤ CFI ≤ 1.00	.90 ≤ CFI ≤ .95	0.98	Perfect Fit
GFI	.95 ≤ CFI ≤ 1.00	.90 ≤ CFI ≤ .95	0.94	Good Fit
NFI	.95 ≤ NNFI ≤ 1.00	.90 ≤ NNFI ≤ .95	0.96	Perfect Fit
IFI	.95 ≤ NFI ≤ 1.00	.90 ≤ NFI ≤ .95	0.98	Perfect Fit
SRMR	.00 ≤ SRMR ≤ .05	.05 ≤ SRMR ≤ .08	0.049	Perfect Fit

(Schumacker& Lomax, 1996)

The model-data fit indexes based on the results of confirmatory factor analysis are presented in Table 5. This research considers the most frequently used model-data fit indexes. Chi-square is affected by degrees of freedom, so the ratio of chi-square to the degrees of freedom is recommended for evaluating the model-fit index (Hoe, 2008). Kline (2005) suggested that a chi-square/degrees of freedom ratio of 3 to 5 was a reasonably good indicator of model fit, and a ratio of less than 3 indicated a perfect fit. Hence, the ratio (335.81/98) of

3.43 indicated a good fit. Another important and frequently used fit index, also known as the misfit index, is the Root Mean Square Error of Approximation (RMSEA). An RMSEA of less than 0.08 indicates a good fit, while less than 0.05 means a perfect fit (Schumacker& Lomax, 1996). The RMSEA value was 0.063, which meant a good fit. Other fit indexes included in the study were the Comparative Fit Index (CFI), Normed Fit Index (NFI), Incremental Fit Index (IFI), Goodness of Fit Index (GFI), and Standardized Root Mean Square Residual (SRMR). Based on the results of the confirmatory factor analysis of the SRS adapted with a four-factor structure, the model-data fit was confirmed in consideration of the mentioned fit indexes (RMSEA=.063, CFI=.98, GFI=0.94, NFI=.96, IFI=.98, SRMR= .049).

In the development process of the original scale, the scale items were gathered under a single general concept by conducting a two-level confirmatory factor analysis. In parallel to the original research, this study also used a two-level confirmatory factor analysis, shown in Figure 2.

Figure 2. The Graph of Path Coefficients (Second Level)

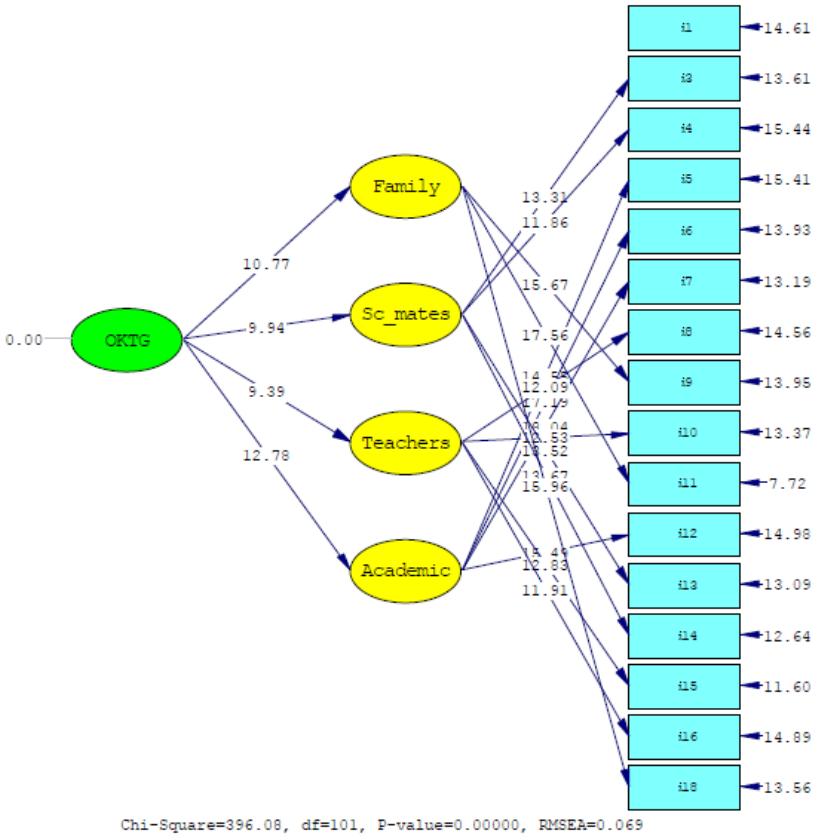

Figure 2 shows the graph of the path coefficients of the second-level factor analysis. All sub-dimensions were gathered under a general scale concept of SRS. The path coefficients were between 0.69-0.82, which indicated statistically significant path coefficients ($p<.05$). According to the model-data fit values for the second-level model, the two-level model with four factors where each factor gathered under a general factor (SRS) was verified. In other words, the model-data fit was satisfactory for this model, which was established as a two-level model, and the construct validity was found sufficient (RMSEA=.069, CFI=.97, GFI=0.92, NFI=.96, IFI=.97, SRMR= .063). The Cronbach's Alpha coefficient calculated for the scale's reliability was .89. The Cronbach's Alpha coefficients of the sub-dimensions were determined as .78 for family/home, .81 for schoolmate, .80 for teacher, and .84 for academic.

One type of validity is convergent validity. Some variables are expected to relate to the variable to be measured. This is called convergent validity (Bademci, 2019). At this stage, Adolescent Psychological Resilience Scale (APRS) (Bulut et al., 2013) was used to test the convergent validity of the scale, and DASS-42 High School Form (Akkuş Çutuk& Kaya, 2018) was used to examine its relations with other constructs. Individuals with a

high level of school resilience were expected to have a high level of resilience and low levels of depression, anxiety, and stress. Research showed a negative relationship between the levels of depression, anxiety, and stress and the level of resilience (Bilge & Bilge, 2020; Eroğlu&Yakşi, 2021; Skrove et al., 2013) as well as a positive relationship between the levels of resilience and school resilience (Caleon & King, 2020).

Table 6. The Correlation Coefficients Between the Scales

Variables	Mean	SD	Skew.	Kr.	1	2	3	4	5
1.School Resilience	81.56	17.19	-.434	-.203	*(.89)*				
2.Adolescent Psychological Resilience	86.49	12.36	-.369	.052	.589*	*(.89)*			
3.DASS-42 (Stress)	30.54	7.71	.225	-.537	-.470*	-.492*	*(.86)*		
4.DASS-42 (Anxiety)	26.97	7.49	.597	-.096	-.511*	-.590*	690*	*(.86)*	
5.DASS-42(Depression)	29.31	8.55	.507	-.115	-.556*	-.657*	.757*	.716*	*(.90)*

N = 615, *p < .01

Note: SD:Standard Deviation, Skew.:Skewness, Kr.:Kurtosis. The values presented in italics in parentheses are Cronbach's Alpha values.

The correlation coefficients in Table 6 showed a positive and moderate relationship between school resilience and adolescent psychological resilience ($_r$615=.589, p<.01), while school resilience and stress ($_r$615=-.470, p<.01), anxiety ($_r$615=-.511, p<.01) and depression ($_r$615=-.556, p<.01) were negatively and moderately correlated. Table 7 presents the *t*-test results for the independent samples conducted to examine the differences between the responses of the lower - upper 27% groups, which were identified based on the total scale scores.

Table 7. t-Test Scores of the Lower-Upper Group Means for Scale Items

Item No	Group	N	x̄	SD	*t*	p
Item-1	Lower Group	166	2.82	1.60	-14,317	<.001
	Upper Group	166	5.39	1.67		
Item-2	Lower Group	166	3.02	1.54	-17,272	<.001
	Upper Group	166	5.70	1.27		
Item-3	Lower Group	166	3.05	1.42	-15,616	<.001
	Upper Group	166	5.45	1.38		
Item-4	Lower Group	166	4.37	2.11	-11,880	<.001
	Upper Group	166	6.54	1.05		
Item-5	Lower Group	166	3.20	1.59	-14,955	<.001
	Upper Group	166	5.69	1.45		
Item-6	Lower Group	166	2.79	1.44	-18,629	<.001
	Upper Group	166	5.67	1.38		
Item-7	Lower Group	166	3.12	1.68	-18,383	<.001
	Upper Group	166	6.11	1.25		
Item-8	Lower Group	166	2.90	1.59	-18,257	<.001
	Upper Group	166	5.93	1.43		
Item-9	Lower Group	166	2.92	1.66	-21,415	<.001
	Upper Group	166	6.23	1.10		
Item-10	Lower Group	166	2.54	1.40	-21,530	<.001
	Upper Group	166	5.90	1.45		
Item-11	Lower Group	166	2.99	1.64	-20,137	<.001
	Upper Group	166	6.18	1.22		
Item-12	Lower Group	166	3.52	1.68	-17,959	<.001
	Upper Group	166	6.18	0.90		
Item-13	Lower Group	166	3.18	1.63	-18,738	<.001
	Upper Group	166	6.12	1.20		
Item-14	Lower Group	166	2.98	1.60	-24,130	<.001
	Upper Group	166	6.47	0.96		
Item-15	Lower Group	166	3.43	1.72	-16,528	<.001
	Upper Group	166	6.18	1.28		
Item-16	Lower Group	166	2.93	1.56	-15,069	<.001
	Upper Group	166	5.60	1.67		

N = 615, *p < .01

Note: x̄: Mean, SD:Standard Deviation, *t*: t Value, p: Significance

The values in Table 7 showed a significant difference between the item scores of the lower and upper 27% groups (p<.001). In conclusion, the scale items had sufficient item discrimination.

Findings of the Third Stage

In the third stage, the test-retest reliability of the scale was examined. Test-retest reliability assesses a measurement's consistency or stability over time (Erkuş, 2005). To administer the test, 105 high school students in Ankara were asked to select a nickname. The test-retest reliability of the scale was carried out at a 4-week interval. Of the 105 participants who participated in the first stage, 88 completed the scale again. The Pearson product-moment correlation coefficient was examined to test the consistency between the scores of the students from both applications. The results showed a high, significant positive correlation between the two applications of the SRS ($r88$=.948, p<.01). Hence, the scale was found to have high consistency.

The Turkish version of the SRS is a 7-point Likert-type scale that ranges from (1) "I Strongly Disagree" to (7) "I Strongly Agree." There were no reverse items in the scale. SRS had four sub-dimensions. These were family/home, schoolmate, teacher, and academic dimensions. The total score of the scale can also be used. In short, the scale also measured school resilience as a single dimension. High scores obtained from the scale indicated a high level of school resilience. The SRS proved to be a practical self-report scale that was easy to evaluate. In short, SRS proved to be a valid and reliable scale suitable for Turkish culture and can measure high school students' school resilience levels.

Discussions

This study aims to examine the psychometric properties of the School Resilience Scale developed by Caleon and King (2020) on high school students in Turkey and present it to the national literature. The scales (Alonso-Tapia et al., 2013; Martin & Marsh, 2006) that measure the level of school resilience have some limitations. The scope of these scales was narrow, and they focused only on academic resilience. Therefore, a scale was developed that incorporated all school components and included the stress factors in schools, thus explaining and evaluating the concept of school resilience more accurately (Caleon & King, 2020). A number of tests were conducted to determine whether the scale in question is adapted to the Turkish language and culture. During the linguistic adaptation process of the scale, meticulous efforts were made to minimize the effect of cultural differences. During the translation of the scale into Turkish, it was difficult to find the Turkish equivalent of the word "schoolwork" in the original scale. In this process, the authors of the original article were contacted and asked what the word meant. Then, Turkish language experts determined the Turkish equivalent of the word. The linguistic validity of the adapted scale is high. The two applications of the scale at a one-week interval to determine the linguistic equivalence of the translation revealed a high level of correlation, which can be regarded as an indication of equivalency between the original scale and the Turkish version. For model fit, χ^2/SD values between 3 and 5 were considered a good fit, RMSEA value between .05 and .10 was a good fit, SRMR value of .05 and below indicated a perfect fit, NFI, CFI, and IFI values that were .95 and over meant perfect fit, and a GFI value of .90 and above pointed to a good fit (Hoe, 2008; Kline, 2005; Schumacker & Lomax, 1996; Tabachnick & Fidell, 2013). The model fit findings of the study are similar to the findings of the original scale. In the development process of the original scale, the scale items were gathered under a general concept by conducting a two-level confirmatory factor analysis (Caleon & King, 2020). In parallel to the original research, the present study also performed a two-level confirmatory factor analysis. All sub-dimensions of the scale were put together for the general concept of school resilience. This data is important data for the term school resilience. Because with this test, it can be said that while the academic dimension, family, schoolmate and teacher dimensions, which are the sub-dimensions of the concept of school resilience, can individually reduce the level of school resilience, the system formed by these four sub-dimensions also affects the level of school resilience. The path coefficients were between 0.69 and 0.82, which indicated statistically significant results (p<.05). According to the model-data fit values for the second-level model, the two-level model with four factors where each factor gathered under a general factor (SRS) was confirmed. An item's lowest factor loading value can be .30 or .40, as determined in the literature (Şencan, 2005). Moreover, a high correlation between the full scale and its factors suggests a high level of internal consistency. Cronbach's Alpha reliability coefficients also indicated that the scale had a high level of reliability. Kline (2005) indicated that the Cronbach alpha reliability coefficient should be at least .70 in order to state that

the scale provides reliable measurement. In line with this information, it is seen that the Cronbach alpha reliability coefficient of the scale is sufficient. Given the test-retest reliability results, the scale also showed the test-retest consistency. When the item discriminations were examined, all items on the scale showed distinctive features to assess school resilience.

Both the original scale development and the current research used resilience as a variable to evaluate convergent validity. Resilience is a general name given to the ability of individuals to recover from the stressors they have been exposed to. School resilience, on the other hand, shows the level of resilience specific to a contextually specific area (Caleon & King, 2020). The scale used in this study is called Adolescent Psychological Resilience Scale (APRS) (Bulut et al., 2013). Both the original and this study found positive and moderately significant correlations between resilience and school resilience scores. Besides, the original scale used the concept of depressive symptoms, while this study used the Depression, Anxiety, and Stress Scale-High School Form (DASS-42) (Akkuş Çutuk & Kaya, 2018). A moderately significant negative correlation was found between these variables and school resilience in the original scale and this study. There was a statistically significant positive correlation between resilience and school resilience scores (Caleon & King, 2020). The research findings were found to be consistent with the findings of the original study. Considering all these data, it is thought that sufficient evidence has been obtained for the validity and reliability of the scale.

It was determined that the findings were consistent with the literature. Looking at the literature, significant positive relationships were determined between school resilience and resilience and negative relationships with depressive symptoms (Caleon & King, 2020). Moreover, studies in the relevant literature reported a significant negative correlation between resilience and depression (Bilge & Bilge, 2020; Eroğlu & Yakşi, 2021), anxiety (Skrove et al., 2013), and stress (Bilge & Bilge, 2020). Students with high levels of school resilience have a high ability to adapt despite the stressors they are exposed to. In addition, students with high school resilience levels are likely to have low levels of depression, anxiety, and stress.

Since schools are the places where children and adolescents spend most of their time, they have been considered ideal places for resilience studies (Condly, 2006). However, studies (Donaldson et al., 2000; Williamson et al., 2003) have shown that the most common sources of stress for adolescents are related to academic and social areas. In parallel to this, family, school, and peer groups stand out when looking at the factors affecting resilience in adolescents (LaRue & Herrman, 2008). Schools encompass two of these three important factors. Risk factors at school affect students' resilience (Caleon & King, 2020). The four sub-dimensions of school resilience are family, friends, teachers, and academic factor. School resilience is an important concept for adolescents to adapt positively despite the risk factors at school. Another importance of this concept is that it allows interventions at school to have a more specific and clear focus. The level of school resilience can increase with the removal of risk factors at school and interventions related to protective factors. According to the systemic perspective, an increase in students' resilience levels can also be observed with these specific interventions (Ungar, 2021). In short, it may be important to know the school resilience level of adolescents. Teachers, especially school counselors, can identify students' school resilience levels and conduct individual and group activities that can increase these levels.

This research has some limitations. The participants were selected using convenience sampling, which is a limitation regarding the generalizability of the findings. Conducting future studies with participants selected from different regions may provide stronger support for the validity and reliability of the measurement tool. Moreover, since the participants of this study consisted only of high school students, these results cannot be generalized to other age groups. The validity and reliability tests need to be repeated for this scale to be used in different age groups. Finally, since the data of this study were collected through a self-report method, the generalizability of the findings is limited.

Suggestions for Future Studies

Based on the results of this study, some suggestions can be made to researchers. This scale only includes high school students. School resilience is important at all levels of schools. Therefore, a measurement tool that can

measure the level of school resilience in primary, secondary, and universities can be developed or validity and reliability studies of this scale can be conducted in various age groups.

Especially for adolescents, stress factors at school are considered important (LaRue & Herrman, 2008). Therefore, the school resilience levels of students can be determined first and the factors that reduce school resilience can be identified. According to the factors that reduce the level of school resilience, family, teacher, and peer group training can be organized. In addition, both individual and group studies can be organized in areas such as bullying prevention, assertiveness, and emotion regulation skills to cope with risk factors.

If risk factors that reduce students' school resilience and dominate the school in general are identified, preventive group guidance, psychoeducation programs, group and individual psychological counseling, and consultancy activities for teachers and parents can be carried out to eliminate the effects of these factors. The characteristics of students with high school resilience can be identified by correlational and predictive analyses and psychoeducation programs can be created in schools within the scope of positive psychology based on these characteristics. After the life events that have affected a large part of the society in recent years, such as epidemics and earthquakes, school resilience levels of students can be determined and studies can be conducted on the effects of these events on students and thus the protective role of schools can be rebuilt.

Conclusions

This study aimed to adapt the School Resilience Scale (Caleon & King, 2020) to Turkish culture. The confirmatory factor analysis assessing the construct validity showed that the four-factor structure of the scale (family/home, schoolmate, teacher, and academic) indicated a good fit. According to the results of the two-level confirmatory factor analysis, all sub-dimensions of the scale were gathered under school resilience. The school resilience scale was examined in terms of convergent validity, internal consistency reliability, item discrimination, and test-retest reliability. In conclusion, the findings of this study demonstrated that the school resilience scale was a valid and reliable measurement tool to assess the school resilience levels of Turkish high school students.

Author Note: This article is a part of the doctoral dissertation written by Ali ÇETİNKAYA and supervised by Özlem HASKAN AVCI in Hacettepe University Institute of Educational Sciences, Department of Guidance and Psychological Counseling.

Acknowledgment: Ali Çetinkaya received the TUBITAK 2211-A National Graduate Scholarship during his doctoral education with application number 1649B031805383. We would also like to acknowledge Haydar Karaman for his help in the data analysis of this study.

Author Contributions: First and second author: Study design. First author: Data collection, Data analysis, and reporting. First and second author: Writing the manuscript. All the authors contributed to the analysis and revisions of the manuscript, and all the authors read and approved the final version.

Funding Disclosure: Ali Çetinkaya received the TUBITAK 2211-A National Graduate Scholarship during his doctoral education with application number 1649B031805383. Apart from this, no other financial support was received.

Conflicts of Interest: The authors declare that they have no conflicts of interests.

Data Availability: Data not available due to privacy/ethical restrictions.

Ethical Disclosure: This study was conducted with permission from Hacettepe University Ethics Boards and Commissions (No: 00002140021, Date:12.04.2022). The present study was carried out based on the 1964 Declaration of Helsinki.

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Appendix

Turkish Form of the School Resilience Scale (SRS)

1: Kesinlikle Katılmıyorum
7: Kesinlikle Katılıyorum

1	Okulda aksilikler yaşadıktan sonra (örneğin; düşük notlar, derslerle ilgili olumsuz geri bildirimler) kendimi hızla toparlayabilirim.	1	2	3	4	5	6	7
5	Derslerle ilişkili sorunlarla baş etmede iyiyimdir.	1	2	3	4	5	6	7
9	Öğretmenlerle yaşadığım sorunlar cesaretimi kolayca kırmaz.	1	2	3	4	5	6	7
12	Okul arkadaşlarımla olan anlaşmazlıkları etkili bir şekilde yönetebilirim.	1	2	3	4	5	6	7
16	Evdeki sorunların okuldaki performansımı etkilemesine izin vermem.	1	2	3	4	5	6	7