ZUNG DEPRESYON ÖLÇEĞİNİN LİSE VE ÜNİVERSİTE ÖĞRENCİLERİ İÇİN GEÇERLİK VE GÜVENİRLİĞİ

(FACTOR ANALYSIS WITH VALIDITY AND RELIABILITY AND FOR HIGHSCHOOL AND UNIVERSITY STUDENTS OF ZUNG DEPRESSION)

Başaran GENÇDOĞAN

Nihal ÖREN

Asst. Prof. Dr. Basaran Gencdogan, Ataturk University, Faculty of Education, Department of Counseling & Guidance
E-mail: basaran@atauni.edu.tr

Correspondence to: Prof. Dr. Nihal Oren, Akdeniz University, Faculty of Education, Department of Counseling & Guidance
E-mail: noren@gmail.com . Gsm: 05333501406

ABSTRACT

Depression, is an important psychologic disorder. So, it is of importance early diagnose (Oskay,1997). Various depression scales are used the measurement of depression. Although Zung Depression Scale, which is one of these, is used in researches especially psychiatry branch, validity and reliability studies were done only by Ceyhun and Akça in psychiatric patients. There is a need for valid and reliable tools to determine degree of depression in the young. So, validity and reliability studies are needed so that It could be used Zung Depression Scale in adolescents. This research covers a total of 1221 students, 767 "normal" university students and 212 patient university students and 242 highschool students.

"Structure and alike scale" validity methods and "depression" sub-scale of SCL-90R scale with Beck Depression Inventory were used. In determining of the reliability of scale two half validity-Cronbach Alfa Coefficient and Gutman Split-half and Spearman Brown were used. Besides, Kaiser-Meyer-Olkin Sampling Adequecy and Berlett's Test of Sphericity analysises were administered to determine factor structure of scale then the factor analysises were done separately for highschool, university patient student groups.

In terms of depression points averages of highschool and university students, as there was no significant difference in the alpha level of p<0.05 in terms of Zung Depression Scale points between high students and university normal students group, there was a significant difference on behalf of the high students. There was significant difference on behalf of the normal students in terms of depression point averages.

Consequently, it is said that Zung Depression Scale is applicable in respect of validity and reliable for depression levels of normal and patient students in highschool and university students. In this context, it could be suggested that the scale be used as a validity and reliability means in the measurement of depression levels of normal and patient students and researches.

Key words: Depression, validity, reliability

ÖZET

Depresyon önemli bir psikolojik bozukluktur. Bu nedenle erken teşhis önem taşımaktadır (Oskay,1997; Köroğlu,2004). Depresyonun ölçülmesinde değişik depresyon ölçekleri kullanılmaktadır. Zung Depresyon Ölçeği, birçok araştırmada kullanılmasına karşın Ceyhun ve Akça, (1996)'nın psikiyatrik hastalarla yaptığı çalışma dışında

geçerlik ve güvenirlik çalışmasına rastlanmamıştır. Depresyonu belirlemede geçerli ve güvenilir araçlara gereksinim vardır. Bu nedenle "Zung Depresyon Ölçeği"nin geçerlik ve güvenirlik çalışmasına gerek duyulmuştur.

Araştırma, 242 lise öğrencisi ile 767 "normal" ve 212 "hasta" üniversite öğrencisinden oluşan 1221 kişi üzerinde gerçekleştirilmiştir. Ölçeğin, "yapı" ve "benzer ölçek" geçerliği için Beck Depresyon Envanteri ile SCL–90 R ölçeğinin "Depresyon" alt ölçeğinden yararlanılmıştır. Güvenirliğinin saptanmasında, Cronbach Alfa Katsayısı, Gutman Split-half ve Spearman Brown iki yarı güvenirliği hesaplanmıştır. Ayrıca ölçeğin faktör yapısını belirlemek için önce örneklem yeterliği ve uygunluğu Kaiser-Meyer-Olkin Sampling Adequecy ve Berlett's Test of Sphericity analizleri yapılmıştır.

Lise ve üniversite öğrencileri depresyon puan ortalamaları açısından, lise öğrencileri ile üniversite normal öğrenci grubu arasında Zung Depresyon Ölçeği puanları açısından p>0.05 önem düzeyinde anlamlı bir fark çıkmazken, lise ve üniversite hasta öğrenci grubu arasında p<0.05 önem düzeyinde lise öğrencileri lehine anlamlı bir fark bulunmuştur. Normal ve hasta üniversite öğrencileri arasında normallerin lehine fark bulunmuştur.

Sonuç olarak, Zung Depresyon Ölçeğinin lise ve üniversite öğrencilerinde, normal ve hasta öğrencilerin depresyon düzeylerinin ölçülmesinde geçerli ve güvenilir olduğu yani psikometrik özellikler yönünden uygun olduğu söylenebilir. Bu bağlamda, ölçeğin araştırmalarda normal ve hasta öğrencilerin depresyon düzeylerinin ölçülmesinde geçerli ve güvenilir bir araç olarak kullanılabileceği önerilebilir.

Anahtar Kelimeler: Depresyon, geçerlik, güvenirlik

INTRODUCTION

High school students are in the development stage where adolescence age began new or it had gone on (in certain way) for a long time. When the age and developmental criteria are taken into account, college students exhibit the characteristics of adolescence and young adulthood periods (Turkum, 1996). Effects which puberty constitutes and development tasks needing to be overcome in both high school students and university students, family and social environment have a hitch due to negative economic conditions. Especially problems relating to emotional area make the problems inevitable. It is reported that the most common pathology during this period is depression. Albayrak, 1998; Kaplan & Sadock 1998; Gokçakan & Gokçakan, 1998; Sener, 1994; Breton, 1996; Aydemir, 1999.

All the symptoms seen in adults concerning depression are seen in adolescents with depression too. It is any longer understood that depression also occur with similar symptoms in adults (Oskay, 1997). If depression in adolescents isn't treat, it is a psychological disorder to cause to results to endanger the life in severe cases and to continue for months or even years (Oskay, 1997). The social cost of depression is very well known and clearly identified as life-saving treatment of depression.

In more serious cases of depression, adolescent trend to self-harm behaviors by getting into despair and suicide idea (Duran, 2002). Therefore, it is of great importance to be able to diagnose adolescents with depression before occuring a more serious psychological illness (Oskay, 1997). Is important to assess the severity of depression. Hospitalization and drug therapy in very severe depression may be considered. Being evaluated of violence is also important to do the treatment plan therefore, techniques to use and symptoms to

step can be determined (Savasır et al., 1997; Hell, 1998).

Different depression scales are used to measure depression. Although Zung Depression Scale one of them is used especially in researches in the psychiatry field, it wasn't found any validity and reliability study except study which Ceyhun and Akca (1996) made with psychiatric patients. Despite this it is seen that the scale is used widely in our country (Aydin 1989; Terakye and Algıer, 1992; Turkcan et al., 1992; Lostar et al., 1989; Elbi et al., 1989; Saydam et al., 1989, Isik et al., 1989; Emik et al., 1989; Kocabas and Celebi, 1997; Ozkan et al., 1987; Sualp, 1994; Ozturkoglu et al, 1994).

In this context, reliable instruments are needed in diagnose depression and in determining the degree of depression in young people. The purpose of this study is that it was needed to reliability and validity study so that Zung Depression Scale developed by Zung can be used for his purpose in adolescents.

Problem

In this research, the factor structure with reliability and validity of Zung Depression Scale for the high school and college students were examined. The "normal" student concept mentioned in the study is defined as student who didn't resort to health center with any a psychological complaint and "the patient" student concept is defined as student who resorted to health center with any a psychological complaint and is treated.

METHOD

Participants

In this study, They were studied in two different universe as high school and college students. The universe of high school consisted of a total of 5747 students studying in eight different high schools in the province of Erzurum, a total of eight different high schools consisted of 5747 high school students. The universe of üniversity consisted of graduate students studying in different faculties of Ataturk University as a group of students "the normal and the patient".

Data on patient sample were collected in Health Center of same university. High school and university "normal" student sample group was randomly selected. Students were reached in any lesson. University "sick" student sample group was selected from students who resorted to the Health, Culture and Sports Department of Health Center of same university with different psychological complaints. The sample of the study consists of 242 high school first, second and third grade students and a total of 1221 university students, 767 normal, 212 patient.

Instruments

In this study, Zung Self-Rating Depression Scale developed by Zung (1965) and done the validity and reliability study (English Version) was used in testing the linguistic validity of Turkish translation done by Baltas (1991) of Zung Depression Scale. For similar scale validity, "Beck Depression Inventory" done the validity and reliability study by Hisli (1998) and "Depression Sub-Scale" of "Symptom Check List" (SCL–90-R, Symptom Check List) done the validity and reliability study by Kılıc (1987) were used.

Zung Self-Rating Depression Scale (Zung Depresyon Ölçeği)

Zung Self-Rating Depression Scale developed by Zung in 1965 is self-assessment scale of depression being an emotional disorder (Zung, 1974). The scale is composed of a total of 20 items with 10 straight and 10 reverse grade. Each item is assessed according to no time the four-grade or rarely, sometimes, often, often or always a Likert-type scale. These 20 items are handled with together and the recognition of depression is provided.

In the scale, according to marking, it is given 2, 3 or 4 points by starting from 1 to each of straight items but according to marking, it is given 3, 2 or 1 point by starting from 4 to reverse items. Then, all items are summed and original score taken from the scale is converted to a value of 100. the lowest original score taken from the scale is 20. SDS (depression score) according to system of 100 is 25 and the highest original score is 80. SDS according to system of 100 is 100 (Zung, 1965).

According to the results obtained from many research, interpretation of the SDS scale was given in Table 1.

Tablo 1. Interpretation of SDS Scale

SDS Table	Equivalent Clinical Global Impression
Down 50	Within Normal Limits
50–59	Depression in Most Mild Level
60–69	Depression in Medium- Distinctive Levels
70 and above	Depression in Severe-the Most Advanced Level

Beck Depression Inventory

The scale which was developed by Beck (1961) and translated to Turkish by Hisli (1988, 1989) and done the validity and reliability study of depression is paper and pencil test which can be applied to adults and consisting of 21 items and measuring signs emerging in the cognitive, affective, and motivational field that measures (Oner, 1997).

Psychological Symptom Check List (SCL–90-R) Depression Sub-Scale

The scale which was developed by Derogatis (1997) and consiting of 90 items and 10 sub-tests was translated to Turkish by Gökler (1978). The reliability and validity study by Kılıc (1987) was done. 13-item Depression (D) sub-scale of this scale was used in the study for similar scale validity. Derogatis and his colleagues found as 0.90, test-retest reliability for depression D subscale and as 0.41, criterion dependent validity.

It was found 0.78, test-retest reliability for depression subscale and between 0.40 and 0.59, criterion dependent validity by Oner (1997), Kılıc (1987)

Data Analysis

10 different statistical procedure were applied in the interpretation of the data obtained in the study. 1. % Values, 2. Pearson moment multiplication correlation coefficient analysis, 3 Cronbach's Alpha Coefficient analysis, 4. Gutmann Split-half (two half) correlation analysis, 5. Spearman Brown split half correlation analysis, 6. KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequecy) analysis, 7. Bartlett's Test of

Sphericity analysis, 8. Factor Analysis (Principal Component), 9.Varimax Conversion and 10. t-Test.

This analysis was done with SPSS for Windows Release 10.0.1 version of package statistical program prepared for social sciences, in computer.

FINDINGS AND DISCUSSION

Findings Related to Demographic Characteristics of the Sampling

The findings concerning the demographic characteristics of high school and university students taken place in sample are given in Table 2.

Tablo 2. Results Related with Demographic Characteristics High School and University Students getting to Sampling

School Echelon			GENDER				TOTAL	
			FEMALE		MALE			
		1.degree	25	33.33	N	%	N	%
High school	Degree	2.degree	30	50.85	50			
		3.degree	30	27.78	29			
	Total		85	35.12	78			
University	State	Normal	302	39.37	15			
		Patient	109	51.42				
	Total		411	41.98				
	TOTAL		496	40.62				

According to table 2, group of high school students consist of a total of 242 (19.82%) individuals, 85 (35.12%) female and 157 (64.88%) males. University students consist of a total of 979 (80.18%), 767 (62.82%), "normal" and 212 (17.36%) patient. 441 of students (41.98%) female and 568 of students (58.02%) are male. The sample is consisted of total of 1221 students.

Findings related with Linguistic Equivalence Validity of the Zung Depression Scale

Zung Depression Scale was translated to Turkish by Baltas (1991) and this translation has been used very widely in both psychiatric and psychological researches because it was published and distributed as the booklet by the pharmaceutical company Ciba-Geigy. Therefore, a different translation of the scale has not been done. Linguistic validity of the scale surrounded by Baltas were investigated. A group of 30 people who know very well English and Turkish were given before English then Turkish forms. Pearson moment multiplication coefficient and correlation value of scores between these forms with the calculated value, then whether there is difference statistically between means of scores taken from both of forms statistically or not was analyzed with t-test. Pearson moment multiplication correlation coefficient calculated between Turkish and English forms of Zung Depression Scale is 0.95 and it was found significantly in the $p < 0.001$ importance level.

This finding showed that there is a significant relationship in terms of linguistic equality between English and Turkish translation forms of Zung Depression Scale.

Whether there is difference between means of scores taken from both English and Turkish forms of the

same group or not was analyzed with t-test. The findings in Table 3 are given in.

Tablo 3. Mean, Standard Deviation and t-Test concerning scores obtained from English and Turkish Forms of Zung Depression Scale

	N	X	S.S.	Calculated t	Table t	Significance Level
Turkish Form	30	39.067	10.336	2.003	2.048	P>0.05
English Form	30	40.003	10.298			Insignificant

SD:28

When table 3 was examined, "t" value found relating to the difference between means of scores taken from both English and Turkish forms of the same group is 2.003. "t" value calculated is smaller than table "t" 2.048. and it was seen not to be significant in the p>0.05 significance level of the result.

This finding shows that there is no significant difference between the scores taken from English and Turkish translation forms of Zung Depression Scale.

Findings Related with Validity, reliability and Factor Structure Concerning High School and University Students of the Zung Depression Scale

Validity of the Zung Depression Scale were examined with methods of the "structure" (construct validity), and "similar scale" (concurrent validity) validity. The difference between means of scores taken from Zung Depression Scale of the student groups "normal" and "patient for the construct validity were compared with t-test. Zung Depression Scale, Beck Depression Inventory and SCL–90-R Depression Sub-Scale scores and correlation values of high school and college students for the similar validity were calculated.

Bartlett's Test of Sphericity values for 'sample size' were calculated and factor structure was examined. Cronbach's alpha reliability coefficient, Gutmann Split-Half Two-Part Reliability and Item-Total Score Correlations of high school, college normal and patient student groups, for reliability of this test were calculated. Correlation values between scores obtained from Zung Depression Scale, Beck Depression Inventory and the Symptom Check List (SCL–90-R) Depression sub-scale were calculated with Pearson Moment multiplication and the findings were given in table 4.

Table 4. Zung Depression Scale, Beck Depression Inventory and the Symptom Check List (SCL–90-R), Correlation Values Between Scores Obtained from Depression Sub-Scale

	Zung Depression Scale	
	High school	Üniversity
Beck Depresyon Inventory[1]	0.71[*]	0.892[*]
SCL–90-R D Sub Scale[2]	0.78[*]	0.816[*]

(1) N=242   (2) N=85   (*) p<0,05

When table 4 was examined, Beck Depression Inventory and the Symptom Check List (SCL–90-R) of Zung Depression Scale, Depression sub-scale and Pearson moment multiplication correlation values are significant in $p < 0.05$ significance level for both high school and college students. This finding shows that similar scale validity of Zung Depression Scale is high for high school students.

The difference between means of SDS scores obtained from Zung Depression Scale of the student groups "normal" and "patient for the construct validity of Zung Depression Scale were compared with t-test and the findings were given in table 5.

Table 5. Mean, Standard Deviation and t-Test Related to SDS Scores which Normal and patient University Students obtained from Zung Depression Scale

	N	X	S.S.	Calculated t	Table t	Significance Level
Normal	767	49.9322	10.4543	13.903	3.291	P<0.001
Patient	212	61.6745	12.2912			Significant

S.D:977

When table 5 is examined, While score mean which normal students obtained from Zung Depression Scale is 49.9322, score mean of the patient students are 61.6745, and t" value found relating to the difference between means is13.903. The table "t" is greater than 3.291 and it is seen that it is significant in the $p < 0.001$ importance level.

This finding shows that Zung Depression Scale distinguishes the normal and the patient group significantly. It can be said that construct validity of the scale is high for college students.

Findings Related to Reliability of the Zung Depression Scale

Cronbach's alpha coefficient, Gutmann Split-half and Spearman Brown two semi-correlation values (material release) item-total correlation coefficients were calculated and the findings were given in table 6.

Table 6. Cronbach Alpha Coefficient, Gutmann Split-half and Spearman Brown and item-total score correlation coefficients of Zung Depression Scale

	High school	University Normal	Patient
Cronbach Alfa	0.7002	0.7989	0.8368
Gutmann Split-half correlation	0.6223	0.6855	0.7511
Spearman Brown correlation	0.6363	0.7018	0.7597
Item-Total Score correlation Item Number			
1	.457*	.604*	.636*
2	.324*	.382*	.555*
3	.432*	.484*	.482*
4	.471*	.379*	.317*
5	.345*	.473*	.540*
6	.164**	.142**	.322*
7	.328*	.309*	.339*
8	.205*	.305*	.190**

9	.340*	.401*	.381*
10	.428*	.537*	.589*
11	.467*	.573*	.589*
12	.458*	.365*	.472*
13	.590*	.613*	.667*
14	.477*	.586*	.570*
15	.436*	.592*	.631*
16	.388*	.533*	.523*
17	.456*	.514*	.549*
18	.318*	.495*	.412*
19	.437*	.525*	.597*
20	.305*	.368*	.499*

Significant in (*) p<0.01 level   Significant in (**) p<0.05 level

When table 6 is examined, Cronbach's alpha reliability coefficients which is an internal consistency and homogeneity indicator of Zung Depression Scale items were found over 0.70. and In the literature, It can be stated that When the reliability is 0.70–0.80, it is sufficient to be using of measuring scale in studies. (Özgüven, 1994). In this context, according to the Cronbach's alpha reliability coefficients obtained, It can be said that an internal consistency and homogeneity of Zung Depression Scale items are adequate.

Gutmann Split-half two semi reliability values and Spearman-Brown two semi correlation values which were done as a result of dividing into two halves as odd and double items for internal consistency reliability coefficient of Zung Depression Scale items were found high too. These findings shows that two semi reliability values which were obtained related to internal consistency of Zung Depression Scale items are high and significant.

"Discernment power analysis" of items for internal consistency of Zung Depression Scale items was done. For this, item-total score (item drop) correlations and correlation values with each other of all the substances were calculated by the Pearson Moment multiplication analysis. Item-total correlation values of all items except 6. and 8. items for the sample of high school, 6. item for university normal students and 8. item for the sample of patient student are on the lower limit of 0.30 and is significant at the level of importance p <0.01.

Findings Related with Factor Structure of Zung Depression Scale

"Kaiser-Meyer-Olkin Measure of Sampling Adequecy (sampling adequacy)" with the aim to assess whether the sample is adequate for factor analysis before examining of factor structure of Zung Depression Scale and "Bartlett's Test of Sphericity Analysis"(sample test size) to assess whether the sample is appropriate for factor analysis was done. The findings were given in table 7.

Table 7. Kaiser-Meyer-Olkin Measure of Sampling Adequecy (KMO) ve Bertlett's Test of Sphericity Test Results

TESTS	High School	University	
		Normal	Patient
Kaiser-Meyer-Olkin Measure of Sampling Adequecy	0.742*	0.873*	0.847*

Bartlett's Test of Sphericity	662.418*	2795.818*	1030.854*
Significant in (*) 0.01 level			

As seen in the table 7, Kaiser-Meyer-Olkin Measure of Sampling Adequecy (sample adequacy) test and Bartlett's Test of Sphericity Analysis (sample test size) test results was found significant in level of significance p <0.01 for high school and university samples. This finding shows that variables are not related to each other for high school and college samples, and that variations in matrix is random, and that the data show normal distribution, and that the measurement results were not affected from the sample size. In other words, it is understood that samples are sufficient and appropriate for factor analysis.

The principal components (principal component) method for determining the factor structure of Zung Depression Scale was used and it was done analysis according to "varimax" conversion. Although there are multiple factor analysis and conversion method, it has been reported with studies that it was not reached a conclusion among them regarding factor loads of these and factor structures. (Fırat, 1995; Gumuş ve Gomleksiz, 1999; User, 1995). Other factor analysis methods were used in the study too, and ultimately, "principal component" method and "Varimax" transformation method was preferred because there is not very significant variations in factor loadings, and also with the aim to examine that the variance to be announced will be equal to 1, that is to say, whether variables gather together.

Initially, "the factors loadings related to each other of factors" matrix as a result of "varimax" transformation implementation to factors resulting was given in table 8 for the sample of high school; it was given in table 9 for college normal sample and it was given in table 10 for university patient sample.

Table 8. Factor Structure for High School Sampling of Zung Depression Scale

Zung Depression Scale Items	Factors					
	1	2	3	4	5	6
I feel offended, dismal and sad	.620					
I am having crying bouts or I feel as if I will cry	.615					
I am having difficulty in sleeping through the night	.500					
I am having constipation	.431					
My heart beats faster than usual	.577					
I am getting tired without case	.436					
I am uneasy, I can not be able to fidget	.681					
I am more troubled than as usual	.578					
It would be better for everyone if I had died	.469					
My mind is as open as usual		.766				
I can be able to do easily things which Im accustomed		.572				
I can be able to decide easily		.599				
I feel that Im very useful and that It is needed to me		.633				
My Appetite is as per usual			.700			
I realise I have been losing weight			.767			
I am looking to the future with hope				.296		
My life is pretty full				.792		
I feel myself the best in the morning					.589	
I am still enjoying doing things I am accustomed					.721	
I like looking at attractive women / men, I enjoy talking and being with them						.760
Variance explained %	14.38	10.20	7.003	6.627	6.213	6.210

Total variance explained %	50.639

When the table 8 is analyzed, it is seen that 1. factor explains 14.38% of the total variance; 10.20% as 2. factor; % 7.003 as 3. factor; % 6.627 as 4. factor % as 5. factor, and 6.210% as 6. factor and that all of these factors explain 50.639% of total variance. The following names were suggested to factors by examining the components making up the 6-factor structure found in relation to high school students:

1. Factor: "Affect and somatic changes" could be called to this factor consisting of items with 1, 3, 4, 8, 9, 10, 13, 15 and 19 number.

2. Factor: "Cognitive changes" could be called to this factor consisting of items with 11, 12, 16 and 17 number.

3. Factor: "Changes in appetite and weight" can be said to this factor consisting of items with 5 and 7 number.

4. Factor: "Expectations of life" could be called to this factor consisting of items with 14 and 18 number.

5. Factor: "Loss of enjoyment and interest" could be called to this factor consiting Of 2 and 20 numbered items.

6. Factor: 6 "Change in sexual interest" could be called to this factor consiting of 6 numbered item.

Tablo 9. Factor Structure of Zung Depression Scale for the University Normal Student Group

Zung Depression Scale Items	Factors			
	1	2	3	4
I feel offended, dismal and sad	.666			
I am having crying bouts or I feel as if I will cry	.686			
I am having constipation	.539			
My heart beats faster than usual	.500			
I am getting tired without case	.471			
I am uneasy, I can not be able to fidget	.591			
I am more troubled than as usual	.589			
It would be better for everyone if I had died	.484			
I am looking to the future with hope		.644		
My life is pretty full		.701		
I feel myself the best in the morning		.464		
My mind is as open as usual		.357		
I can be able to decide easily		.519		
I feel that Im very useful and that It is needed to me		.630		
I am still enjoying doing things I am accustomed			.550	
I can be able to do easily things which Im accustomed			.571	
I like looking at attractive women / men, I enjoy talking and being with them			.627	
I am having difficulty in sleeping through the night				.481
My Appetite is as per usual				.555
I realise I have been losing weight				.745
Variance explained %	**15.200**	**13.302**	**7.750**	**7.743**
Total variance explained %				**43.994**

When the table 9 is analyzed, it is seen that 1. factor explains 15.200 % of the total variance; 13.302 % as 2. factor; 7.750 % as 3. factor; 7.743 % as 4. factor and that all of these factors explain 43.994 % of total variance. The following names were suggested to factors by examining the components making up the 4-factor

structure found in relation to normal student group of Zung Depression Scale:

1. Factor: "Affect and somatic changes" could be called to this factor consisting of items with 1, 3, 8, 9, 10, 13, 15 and 19 number.

2. Factor: "Cognitive and Expectations of life changes" could be called to this factor consisting of items with 2, 11, 14, 16, 17 and 18 number.

3. Factor: " Loss of libido and interest " can be said to this factor consisting of items with 6, 12 and 20 number.

4. Factor: " Sleep, appetite and weight changes" could be called to this factor consisting of items with 4, 5 and 7 number.

Table 10. Factor Structure for University Patient Student Group of Zung Depression Scale

Zung Depression Scale Items	Factors		
	1	2	3
I feel offended, dismal and sad	.753		
I am having crying bouts or I feel as if I will cry	.510		
I am having constipation	.149		
I am getting tired without case	.464		
I am uneasy, I can not be able to fidget	.708		
I am more troubled than as usual	.713		
It would be better for everyone if I had died	.611		
I am looking to the future with hope		.547	
My life is pretty full		.535	
I feel myself the best in the morning		.493	
My mind is as open as usual		.604	
I can be able to decide easily		.575	
I feel that Im very useful and that It is needed to me		.592	
I am still enjoying doing things I am accustomed		.594	
I can be able to do easily things which Im accustomed		.583	
I like looking at attractive women / men, I enjoy talking and being with them		.347	
I am having difficulty in sleeping through the night			.617
My Appetite is as per usual			.535
My heart beats faster than usual			.464
I realise I have been losing weight			.559
Variance explained %	**16.111**	**15.353**	**9.748**
Total variance explained %			**41.211**

When the table 10 is analyzed, it is seen that 1. factor explains 16.111 % of the total variance; 15.353 % as 2. factor; 9.748 % as 3. factor, and that all of these factors explain 41.211 % of total variance. The following names were suggested to factors by examining the components making up the 3-factor structure found in relation to normal student group of Zung Depression Scale:

1. Factor: "Affect and somatic changes" could be called to this factor consisting of items with 1, 3, 8, 9, 10, 13, 15 and 19 number.

2. Factor: "Cognitive changes" could be called to this factor consisting of items with 2, 6, 11, 12, 14, 16, 17, 18 and 20 number.

3. Factor: "Somatic changes" can be said to this factor consisting of items with 4, 5, 7 and 9 number.

Similar factor structure was found in factor analysis which Sakamato and colleagues (1998) did in Japanese university students too. Sakamato et al. found a 3-factor structure by leaving out of the study item with 8 number determining the constipation which is an gastrointestinal complaint and item with 2 number which shows daily fluctuations. 1. factor consist of 1, 3, 10, 13 and 15 numbered items, 2. factor consist of 11, 12, 14, 16, 17, 18 and 20 numbered items, 3. factor consist of 4, 5, 7 and 9 numbered items. These findings are very similar to the factor structure in the above for "patient" sample.

Findings Related with Scores of the Zung Depression Scale in terms of High School and University Normal ve Patient Student Groups

Information about mean, standard deviation, standard error of the mean, variance, of SDS scores, range and the maximum values which were found as a result of turning total original scores obtained from Zung Depression Scale into SDS index score for high school and university normal and patient student groups are given in table 11.

Table 11. Statistical Data concerning Original and SDS Scores of High school and university Normal and Patient Students

	High school	University Normal	Patient
N	242	767	212
Mean	49.0579	49.9322	61,6745
Standard deviation	8.9844	10,4643	12,2912
Variance	80.7186	109,5019	151,0737
Range	50.00	68,00	58,00
Minimum	28.00	26,00	31,00
Maximum	78.00	94,00	89,00

Whether there is difference between scores which high school students and university "normal" and "patient" students obtained from Zung Depression Scale or not was examined with t-test and the findings are given in table 12 and table 13.

Table 12. Findings related with mean, standard deviation and t-test

concerning High School Students and University Normal

Student Groups

		N	X	S.S.	Calculated t	Table t	Significant Level
University	Normal	767	49.9322	10.4643	1.171	1.645	P>0.05
Highschool		242	49.0579	8.9844			Insignificant

S.D.:1007

When table 12 is examined, "t" value found in result of t-test done relating to the difference the between Zung Depression Scale, SDS score means which was applied to high school students and college normal students is 1.171. Caculated "t" is smaller than table "t" 1. 645. This finding show that there is not any

significant difference in $p > 0.05$ significance level between high school students and college normal students in terms of Zung Depression Scale, SDS scores.

Table 13. Findings Related with mean, standard deviation and t-test

concerning High School Students and University Normal

Student Groups

		N	X	S.S.	Calculated t	Table t	Significance Level
University	Patient	212	61.6745	12.2912	12.586	1.645	P<0.05
High school		242	49.0579	8.9844			Significant
S.D: 452							

When table 13 is examined, "t" value found in result of t-test done relating to the difference the between Zung Depression Scale, SDS score means which was applied to high school students and college patient students is 12.586. Caculated "t" is greater than table "t" 1. 645. This finding show that there is a significant difference in $p < 0.05$ significance level between high school students and college patient students in terms of Zung Depression Scale, SDS scores.

CONCLUSIONS AND SUGGESTIONS

The conclusion and suggestions reached as based on the findings in this research in which validity, reliability and factor structure of Zung Depression Scale was examined for high school and university students are given in following.

Linguistic validity of the scale was found significant in $p < 0.01$ level of significance as a result of analysis done for linguistic validity of the scale. In scale, it occured that two items (items 6 and 8) rather than translation are insufficient to measure depression or they are not very closely related with depressive symptoms. Similar scale validity was found significant in $p < 0.05$ significance level in terms of high school students. Cronbach's a, Split-half and Spearman Brown split half reliability was found significant in the $p < 0.05$ significance level. Item-total score correlations were found significant in < 0.01 level of significance except 6. item ($p < 0.05$). A five-factor structure that describes 50.369% of total variance for the sample of high school. Similar scale validity was found significant both normal and patient student in $p < 0.05$ significance level in terms of both normal and patient student in terrms of university students. Cronbach's a, Split-half and Spearman Brown split half reliability was found significant in $p < 0.05$ significance level in terms of "normal" and "patient" students. Item-total score correlations of other all items except 6 and 8. items in "normal" and "patient" students were found significant in $p < 0.01$ level of significance in terms of item-total score correlations. 4-factor structure that describes 43.994 % of total variance for university "normal" students was found. 3-factor structure that describes 41.211 % of total variance for university "patient" students was found. There is not any significant difference in $p > 0.05$ the level of importance in terms of Zung Depression Scale scores between high school and college normal students in terms of high school and university students depression score means, but it was found a significant difference in favor of high school students, in $p < 0.05$ significance level between high school and college patient students. A difference in favor of normals was found between normal and the patient college students in terms of Depression Scale scores.

It can be said that Zung Depression Scale is valid and reliable in measurement depression levels of normal and the patient students in high school and college students, that is to say, it is suitable in terms of psychometric properties. In this context, It can be offered that the scale can be used as a valid and reliable instruments in measurement of depression levels of normal and patient students in studies.

It was seen as a result of analysis done that 6. item, "I like talking and being together with them, and looking at attractive women / men" in high school sampling and in 6. and 8. items, "I suffer from constipation" in university sampling are not successful exactly in measurement the depression. This finding has emerged in studies abroad. Therefore, there is a utility in being done a new work about determining the validity and reliability by being written different items relating to dimensions which these items measured. Because the scale is practical and short, it can be used as a battery with other measuring instruments in varied studies. Studies on the qualifications such as Age, educational status, educational status of parents, place of residence, number of siblings can give more detailed information relating to scale in more different samplings.

REFERENCES

Albayrak, Kaymak, D., (1998) *Guidance and Psychological Counselling Needs of Boğaziçi Students.* Yöret Mail, Istanbul, pp: 12.

Aydemir, O., (1999) *Psychiatry Consultation Manual.* Matsan Press, Istanbul, p.147.

Aydın, B., (1989) *Investigation of Depression Levels and Study Habits and Attitudes in Some of University Students.* Marmara University Faculty of Education, Educational Sciences Journal, 1, 8–15.

Batlaş, A., (1991) *Measuring Depression..* Ciba-Geigy Pharmaceutical and Chemical Industry Publication, Istanbul.

Beck, A. T.,(1961) *An Inventory for Measuring Depression.* Archives of General Psychology, 4.

Breton, Sue.,(1996) *Depression, Your Question Answered.* Element Books Limited, p. 71.

Ceyhun, B, Akça, F., (1996) *A Study on Reliability and Validity of Zung Depression Scale.* VIII. Scientific Studies in the National Congress of Psychology, Turkish Psychological Association Publication, Ankara, p. 20–26.

Derogatis, L. R.,(1997) SCL-90, *Administration, Scoring and Procedures.* Manuel-I. USA: John Hopkins University, School of Medicine.

Duran, A., (2002) *Psychiatric Symptoms: Surgery Psychiatry* (Ilkay, Ertaç; Editor) I. Ü. Publication number: 4326. p. 100. Istanbul.

Elbi, M. Mete,L., Nifirne, Z., Sorias, S. ve Saygılı, R., (1989) *SCID Reliability Studies.* XXV. National Psychiatry and Neurological Sciences Congress (Science Studies), Turkey Mental Health and Treatment Foundation Publications: I, Saypa Edition, Ankara, p. 540–542.

Emik, Caner and Kayaalp, M. Levent and Eker, Engin., (1989) *Depression-Anxiety Findings in Medical Specialty Students and relationships with their marriages.* XXV. National Psychiatry and Neurological Sciences Congress (Science Studies), Turkey Mental Health and Treatment Foundation Publications: I, Saypa Edition, Ankara, p. 629–631.

Gokcakan, Z. & Gokcakan, N., (1998) *Depression in Teacher Candidates*, VII. National Educational Sciences Congress, Volume 1, p. 271, Konya.

Gökler, B. (1978) *Evaluation in terms of Psychological Symptoms of Children in Primary School Age of*

Neurotic Female patients. (Unpublished master's Thesis), Hacettepe University, Capa Medical Faculty, Department of Psychiatry, Ankara.

Gumuş, A. ve Gomleksiz, M.,(1999) *Religion, Nationalism and Authoritarianism*, Education-sen Publications, Research Series: 3, Ankara, September, p. 98.

Hell, D., (1998) *Treatment of Patients with Depression.* Documenta Ciba-Geigy An International Forum for The Doctor, p.4.

Hisli N., (1988) *Validity and Reliability of the Beck Depression Inventory for university students.* Journal of Psychology, 6 (22).

Hisli N., (1989) *Reliability and Validity of the Beck Depression Inventory for university students.* Journal of Psychology, 7 (23), 3–13.

Isık, E, Gurer, M.A, Aydogan, A. Cosar, B., (1989) *Level of Depression in a group of Behcet Patient, Anxiety Levels and Comparative Investigation of MMPI Profiles.* XXV. National Psychiatry and Neurological Sciences Congress (Science Studies) Turkey Mental Health and Treatment Foundation Publications: 1, Saypa Edition, Ankara. p. 540–542.

Kaplan, Harold., I. and Sadock, Benjamin J., (1998) *Primary Step Psychiatry Handbook.* (Translation:Banu Büyükkale), Turgut Publishing & Trading Co., Ltd., Golden Print, Istanbul, p. 55.

Kilic, M., (1987) *Problems of students having and non-having to Different Psychological Symptoms* (Unpublished PhD Thesis), Hacettepe University, Faculty of Education, Department of Educational Sciences, Ankara, Turkey.

Kirkpinar, Rel. (1983) *A study on Depression and other Adolescence Problems in High School Students in the city center of Erzurum* (Unpublished PhD Thesis) University. Faculty of Medicine, Erzurum.

Kocabas, Z. and Celebi, A., (1997). *Anxiety in Migraine and Tension Headache, Depression and Neurotic Education Levels.* Thinking Man, Journal of Psychiatry and Neurological Sciences,Istanbul, 10, 3, p.17–20.

Köroğlu, E.,(2004) Psychonorology: Descriptive Clinical Psychiatry. S. 253–283. *American Psychiatric Association.* Ankara, Turkey.

Lostar, Sadiye, Yurtseven, Hilal, Aykut, Levent, Şen, Bahar and et al., (1989) *Zung Index in a Group of Students in Medicine and Biology, XXV Detection of Depressive Items. XXV.* National Psychiatry and Neurological Sciences Congress (Science Studies) Turkey Mental Health and Treatment Foundation Publications: 1, Saypa Edition, Ankara, p.135–144.

Oskay, G., (1997) *Turkey Adaptation of the Reynolds Adolescent Depression Scale, Validity and Reliability Study*, PDR Journal, Volume II, Issue 8, Ankara, p. 17–26.

Oner, N., (1997) *Psychological tests used in Turkey*, a *Reference resource*, (3rd Edition), Bogazici University Publication No: 584, Bogazici University Press, İstanbul, p.298,301 - 302, 463.

Ozbay, H. and Ozturk, E., (1994) *Youth,* Communication Publications, Sefik Press, İstanbul, 1992, p. 12–13.

Özgüven, İ. Ethem. *Psychological Tests.* New Dogus Press, Ankara, 1994, p.95.

Ozkan, A., Cengiz, K., (1987) Arik, A.C. *Effect of ranitidine to depression in Patients with Peptic Ulcers.* XXIII. National Psychiatry and Neurological Sciences Congress, AKM, Istanbul,p.204–206.

Ozturkoğlu, M., Evlice, E.Y., Ozpoyraz, N., Unal, M. and Fettahlıoğlu, M., (1994) *Antidepressant Efficacy and Side Effects of Electroconvulsive Therapy,* Turkish Journal of Psychiatry, 5: (2).

Saydam, M. and et al., (1989) *Evaluation in terms of Psychiatric and Psychosomatic of Mourning Process.* XXV. National Psychiatry and Neurological Sciences Congress Scientific Studies. Turkey Mental Health and Treatment Foundation Publications: 1, Saypa Edition, Ankara,p.508–511.

Savasır, I., and Sahin, Hisli, N., (1997) *Assessment in Cognitive-Behavioral Therapy: Scales Used Frequently.* Turkish Psychological Association Publications No. 9, Ozyurt printing, Ankara, Turkey. p.25.

Sualp, A., (1994) *Diuretics, Calcium Channel Blockers, ACE inhibitors and Comparison with the Zung Depression Scale of patients with hypertension regulated with diet* (Medical Specialty Unpublished Thesis), Ministry of Health, the Pediatric Hospital, Istanbul.

Sener, S.., (1994) *Depression in Children and Adolescents*, Depression Monographs Series-7, Doctors' Publishing Association, Medikomat Printing Publishing Industry. ve Tic. Ltd.. LTD. Ankara, p.322.

Terakke,G ve Algıer, I., (1992) *Depression in adolescents Hospitalized and with Chronic Illness.* I. Psychosomatic Symposium Scientific Publishing, Antalya, p. 200–213.

Turkcan, S. et al., (1992) *Personal and Familial Expectations Affecting Psychiatric symptomatology in High School Senior Class Students in OSS Pre-and Post-Term.* Child and Adolescent Psychiatry Days Congress Book. Kusadasi, p.149–163.

Turkum, S., (1996) *Effect of psychological counseling with group based on Cognitive-behavioralApproach on Cognitive Distortion Communication Skills*, (Unpublished PhD Thesis), Ankara University, Social Sciences institute, Ankara.

Ugurel, Semin, R., (1980) Psychology of Youth. Istanbul University Faculty of Literature Publication No. 267, Faculty Press, Istanbul.

User, N., (1995*) Analysis of Factors Affecting Academic Positions of students in the navigation school with Multivariate Statistical Techniquess*, Marmara University, Institute of Science, Istanbul, p. 41.

Zung, W.W.K., (1965) *A Self-Rating Depression Scale*. Archive of General Psychiatry. 12, p. 63–70.

Zung,W.W.K.,(1974) *Measurement of Affects: Depression and Anxiety.* In Pierre Pichot (Ed.) Psychological measurement in Psychopharmacology: Modern Problems in Pharmaco-Psychiatry (Vol.7) Based, Switzerland: Kargerspp, s.170–180.