

The Relationship Between the Ways of Coping with Stress Inventory and the General Health Questionnaire-12 Scores Among University Students

Üniversite Öğrencilerinin Genel Sağlık Anketi Skorları ve Stresle Başetme Yöntemleri Arasındaki İlişki

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ABSTRACT Objective: In this study, we aimed to evaluate how university students can cope with stress and their general health questionnaire scores using regression. **Material and Methods:** The survey including socio-demographic characteristics, the ways of coping with stress inventory, and the general health questionnaire was applied to 6386 students who volunteered to participate. All participants were enrolled in university in Eskişehir during the 2004-2005 academic years. **Results:** The mean score of students in the general health survey was 1.93 ± 0.03 (mean \pm standard error of mean). According to the General Health Questionnaire-12 (GHQ-12), 3800 (59.5%) students were healthy, 1282 (20.1%) had probable psychological disorder and 1304 (20.4%) had physiological and psychological disorders. The mean scores of students in the subscales of coping with the stress inventory were 2.07 ± 0.01 for self-confident approach, 1.77 ± 0.01 for optimistic approach, 1.17 ± 0.01 for unconfident self approach, 0.89 ± 0.01 for submissive approach and 1.90 ± 0.01 for social support seeking approach. There was a negative correlation between the GHQ-12 score and self confident approach ($r = -0.28$, $p < 0.001$), optimistic approach ($r = -0.25$, $p < 0.001$) and social support seeking approach ($r = 0.14$, $p < 0.001$). Similarly, there was a considerable positive correlation between submissive approach ($r = 0.17$, $p < 0.001$) and unconfident self approach ($r = 0.39$, $p < 0.001$). **Conclusion:** University students seem to require psychological support and lose their ability to cope with problems effectively when their GHQ-12 scores are higher.

Key Words: Students; stress; physiological; adaptation, psychological

ÖZET Amaç: Bu çalışmada, üniversite öğrencilerinin stresle başa çıkma yolları ve genel sağlık durumlarının incelenmesi amaçlanmıştır. **Gereç ve Yöntemler:** Sosyo-demografik özellikler içeren anket, stresle başa çıkma yolları ölçeği ve genel sağlık anketi (GSA)'ni içeren bu çalışma, katılmayı kabul eden 6386 öğrenciye uygulanmıştır. Bu öğrenciler 2004-2005 öğretim yılında Eskişehir'deki üniversiteye devam eden öğrencilerdir. **Bulgular:** Öğrencilerin GSA genel sağlık puanı ortalamaları 1.93 ± 0.03 (ortalama \pm standart hata) olarak bulunmuştur. GSA puanlarına göre öğrencilerin 3800 (%59.5)'ünün sağlıklı, 1282 (%20.1)'sinin psikiyatrik bir rahatsızlık bulunma olasılığı yüksek ve 1304 (%20.4)'ünün ise psikolojik ve fizyolojik olarak hastalık durumunda olduğu belirlenmiştir. Öğrencilerin stresle başa çıkma alt ölçekleri ve puan ortalamaları. Kendine güvenli yaklaşım 2.07 ± 0.01 , iyimser yaklaşım 1.77 ± 0.01 , kendine güvensiz yaklaşım 1.17 ± 0.01 , boyun eğici yaklaşım 0.89 ± 0.01 ve sosyal destek arama 1.90 ± 0.01 olarak bulunmuştur. Üniversite öğrencilerinin genel sağlık durumları ile kendine güvenli yaklaşım ($r = -0.28$, $p < 0.001$), iyimser yaklaşım ($r = -0.25$, $p < 0.001$) ve sosyal destek arama ($r = -0.14$, $p < 0.001$) arasında negatif yönde, boyun eğici yaklaşım ($r = 0.17$, $p < 0.001$) ve kendine güvensiz yaklaşım ($r = 0.39$, $p < 0.001$) arasında pozitif yönde anlamlı bir ilişki bulunmuştur. **Sonuç:** Üniversite öğrencileri genel sağlık puanı yükseldiğinde psikolojik desteğe ihtiyaç duyarlar ve bu problemlerle başetme yöntemlerini etkili olarak kullanma becerilerini yitirmektedirler.

Anahtar Kelimeler: Öğrenciler; stres; psikolojik; psikolojik uyum

University is an intermediate term in transition from adolescence to adulthood. During this transitional term, the student experiences the tiredness resulting from the physiological change in his/her body, uneasiness and stress resulting from self identification seeking effort.¹ The stressors influencing university students can be taken into consideration in three groups as individual, economical and environmental. The personal and social problems that the students undergo can cause psychological changes in students.²

The high stress level results in psychological and physiological disorders. Furthermore, students who live in lower standards and have problems with coping with stress have psychological, psychosomatic and gastrointestinal problems. Gastrointestinal problems are more frequent among male students than in females.^{1,3,4}

According to studies in our country, losing interest in classes, academic failure, malnutrition, sleeping disorders and depressive emotion impairs the control of internal stress and causes loss of temper and harmony among students. Furthermore, as the students become hopeless, superstitious and fail to seek help, their GHQ-12 scores rise.

Stress depends on the evaluation of human perception and experiences. Increasing or decreasing the stress level is based on the individual's understanding, evaluation of and directing events. Stress is mainly based on the ways that the individual evaluates and solves events.^{5,6}

Lazarus states that the individual has different personal characteristics in a particular threshold characterizing the violence and interaction of the sources of stress. Whether the individual is to react to the stress is determined depending on stress tolerance, inhibition tolerance, ego power and personal sensitivity.⁷

According to Folkman and Lazarus the individual first evaluates the source of stress and then deploys coping strategies.⁸ Lazarus states that coping with stress is a complex process. The changeability of the ways of coping with stress determines the ways of coping with stress. If the changeability of the stressed situation is perceived

then the problem focused on ways of coping with stress is deployed effectively. If the situation is perceived as unchangeable, the emotional based ways of coping with stress are more effective. Thinking positively is related with personality, and the situation itself and is constant. Asking for social help depends on environmental conditions and it is changeable.^{5,9}

The relationship between stress and health was caused by dissatisfaction with job, boredom, anxiety, depression, tiredness, poor self-confidence and self-esteem. Individuals feeling themselves more in the focus have less psycho-physiological strains.^{7,9-11}

When the perceived threat is intensive, the ways of coping with stress may increase the stress level in gaining self-control. The signs of gaining self-control upon threat are increase in self-esteem, believing in sufficiency and autonomy. When there is low or no control, helplessness, anxiety, depression or somatic complaints increase the stress reaction. Inhibition of the control effort results in helplessness, anger, anxiety and motivation decrease.^{5,6,9} The behavior of problem solving has an interceptive influence on life; those individuals performing more effective problem solving behavior experience less depression. Studies show that depression is in interaction with the intensity of the stress.^{6,9}

MATERIAL AND METHODS

Data Collection and Application

All participating students were enrolled in the university. Data were collected by a questionnaire including sociodemographic properties, GHQ-12 and the scale of ways of coping with stress.

Socio-Demographic Properties

Sociodemographic properties were evaluated with eleven questions. They included the year of enrollment in the university, gender, present residence, family type, economical situation, permanent residence, graduated high school, mother's education level, father's education level, reasons for preferring that specific university and ranks of the entered university departments.

General Health Questionnaire-12

The questionnaire includes twelve scale questions studying mental disorders. It was developed by David Goldberg to detect acute psychological disorders in the society. Each item questions the individual's recent symptoms. The choices are "never", "as usual", "more than usual" and "very often". The choices can be coded as 0, 1, 2, 3 or the first two choices can be coded as 0,0, the last two choices can be coded as 1,1. Likert scoring method is used to assign values. Stock and his colleagues reported the reliability of GHQ-12 as 0.74 and the specificity as 0.84.⁴ Four points and above score "high", 2 and 3 score "medium" and lower than 2 score "low". Especially the individuals who score "high" and "medium" levels have probable psychiatric and physiological disorders.¹²

Ways of Coping with Stress Inventory

This inventory, which has a Likert type style and consists of 30 items, was developed by Lazarus and Folkman in 1980. The scale is divided into five subgroups. They are; self-confident approach (SCA), optimistic approach (OA), unconfident self-approach (helpless approach-UCSA), submissive approach (SA) and social support seeking approach (SSSA). The points scored from the subscales are calculated dividing them into the number of items. They are scored as 0 "not suitable at all", 1 "not suitable", 2 "suitable", and 3 "completely suitable", excluding item number 1 and 9.

The SCA, OA and SSSA are evaluated as the effective ways of coping with problems; UCSA and SA are evaluated as ineffective/emotional directed ways of coping with problems.¹³ The validity and the reliability of the scale used in the study was tested by Sahin before.¹⁴

Statistical Analysis

The data were assessed by using SPSS 13.0, t test, one way ANOVA, Tukey HSD Post Hoc test and correlation analysis.

RESULTS

The study involved 6386 students registered in the university in Eskişehir during the 2004-2005 aca-

TABLE 1: GHQ-12 scores of students.

GHQ-12 Scores	n	%
Less than 2 (Low)	3800	59.5
Between 2-3 (Medium)	1282	20.1
Greater than or equal to 4 (High)	1304	20.4
Total	6386	100

demical year. The distribution of the university students according to their GHQ-12 scores is shown in Table 1. According to the scores, 59.5% of the students scored "low", 20.1% scored medium and 20.4% scored high points. The average GHQ-12 score of the students was 1.93 ± 0.03 .

The demographic information of the participants, GHQ-12 scores and their comparisons and Post Hoc tests are given in Table 2. There was a significant difference between the GHQ-12 scores with regard to gender, type of family, graduated high schools, the family's average income, the family's economic situation, current residence and the student's reasons for preferring the department. The difference in points scored for former residence, the parents' educational level and their order of preferences was not significant.

In Table 3, the mean subscale point of students in the coping with stress inventory varies between 0.89 and 2.07.

The intergroup comparison of the mean subscale points are in Table 4. The mean subscale scores of students in the ways of coping with stress inventory were significantly different with regard to gender, class, current residence and the reasons for preferring the department.

The Post Hoc Tests of the intergroup comparison of the mean GHQ-12 scores are in Table 5.

In Table 6, there was a negative correlation between the students' GHQ-12 scores and the self-confident approach ($r = -0.28$, $p < 0.001$). Similarly, a negative correlation was detected between GHQ-12 scores and the optimistic approach ($r = -0.25$, $p < 0.001$). GHQ-12 scores and the social support seeking approach were also negatively correlated ($r = -0.14$, $p < 0.001$). There was a positive correlation

TABLE 2: Comparison of GHQ-12 scores of students.

	$\bar{X} \pm SEM$	Statistics (p)	Post Hoc Tests
Gender			
Female (n= 2900)	2.00 \pm 0.05	t=2.01	
Male (n= 3486)	1.88 \pm 0.04	(0.045)	
Family Type			
(1) Parents and children (n= 5754)	1.91 \pm 0.03	F= 5.15	
(2) Parents, children and grandparent (n= 412)	2.32 \pm 0.12	(0.006)	(1) vs (2) p< 0.01
(3) Widowed, divorced, or separated (n= 200)	1.93 \pm 0.18		
Graduated High School			
(1) High school (n= 2908)	2.02 \pm 0.05	F= 4.20	
(2) Vocational and technical high school (n= 430)	2.05 \pm 0.12	(0.015)	(1) vs (3) p< 0.05
(3) College (n= 2994)	1.84 \pm 0.04		
Family's Average Income (YTL)			
(1) 0-300 (n= 499)	2.15 \pm 0.12		
(2) 301-600 (n= 1729)	1.83 \pm 0.06	F= 2.58	(1) vs (2) p< 0.05
(3) 601-1000 (n= 2186)	1.91 \pm 0.05	(0.036)	
(4) 1001-1500 (n= 1284)	1.98 \pm 0.07		
(5) Above 1501 (n= 568)	2.11 \pm 0.10		
Family's Economic Situation			
(1) Low (n= 735)	2.61 \pm 0.11		
(2) Medium (n= 4091)	1.87 \pm 0.04	F= 21.51	(1) vs (2) p< 0.001
(3) High (n= 1452)	1.76 \pm 0.06	(0.001)	(1) vs (3) p< 0.001
(4) Very High (n= 57)	2.25 \pm 0.44		
Current Residence			
(1) Dormitory (n= 1139)	2.03 \pm 0.08		
(2) Private hostel (n= 469)	1.93 \pm 0.11		(1) vs (5) p< 0.001
(3) Relatives' house (n= 164)	1.77 \pm 0.17	F= 15.76	(4) vs (5) p< 0.001
(4) Rented house (n= 2385)	2.27 \pm 0.06	(0.001)	(4) vs (6) p< 0.01
(5) With parents (n= 1678)	1.58 \pm 0.06		
(6) Others (n= 236)	1.67 \pm 0.13		
Permanent Residence			
Urban (n= 4527)	1.91 \pm 0.04	F= 0.97	
District (n= 1491)	1.98 \pm 0.06	(0.380)	
Rural (n= 343)	2.06 \pm 0.13		
Reason for Preferring the Department			
(1) Willingly (n= 5087)	1.67 \pm 0.03		(1) vs (2) p< 0.001
(2) Family's decision (n= 390)	3.16 \pm 0.17	F= 101.53	(1) vs (3) p< 0.001
(3) Unwillingly (n= 627)	3.04 \pm 0.12	(0.001)	(1) vs (4) p< 0.001
(4) Others (n= 244)	2.61 \pm 0.17		(2) vs (4) p< 0.05
Father's Education Level			
Literate (n= 132)	2.28 \pm 0.24		
Primary school (n= 1465)	2.00 \pm 0.06	F= 2.30	
Junior High school (n= 788)	2.08 \pm 0.09	(0.056)	
High school (n= 1769)	1.84 \pm 0.06		
University (n= 2181)	1.90 \pm 0.05		
Mother's Education Level			
Literate (n= 397)	2.22 \pm 0.13		
Primary school (n= 2513)	1.94 \pm 0.05		
Junior High school (n= 663)	1.95 \pm 0.10	F= 1.90	
High school (n= 1587)	1.91 \pm 0.06	(0.108)	
University (n= 1123)	1.82 \pm 0.07		
Ranks of the Entered University Departments			
1-5 (n= 2702)	1.97 \pm 0.05	F= 1.57	
6-10 (n= 2069)	1.86 \pm 0.05	(0.209)	
11-18 (n= 1494)	2.00 \pm 0.07		

between the GHQ-12 scores and the submissive approach ($r= 0.17$, $p< 0.001$) and between the GHQ-12 scores and the unconfident self-approach ($r= 0.39$, $p< 0.001$).

The subscales of ways of coping with stress inventory developed by Lazarus and Folkman are given in Table 7 according to their means and standard deviations.

TABLE 3: The mean values of ways of coping with stress inventory.

Ways of Coping with Stress Inventory (n= 6386)	$\bar{X} \pm SEM$
Self-confident approach	2.07 ± 0.01
Optimistic approach	1.77 ± 0.01
Unconfident self-approach	1.17 ± 0.01
Submissive approach	0.89 ± 0.01
Social support seeking approach	1.90 ± 0.01

DISCUSSION

In this study, 59.5% of the students were healthy, 20.1% had possible psychiatric disorders and 20.4% had psychological and physiological disorders. Mosfat and his colleagues report that the GHQ-12 scores of the medical students in Canada are lower than the threshold score of disorder.¹⁵

There was a considerable difference between the GHQ-12 scores (2.00 ± 0.05) of female and male students (1.88 ± 0.04). According to the study done

by Hamilton and his colleagues, the average GHQ-12 scores of female students are higher than the scores of male students.¹⁶

The GHQ-12 scores showing the psycho-physiologic situations of the first grade students were significantly higher in comparison to those in senior classes ($p= 0.001$). The fourth graders were at risk of psychiatric disorders. Accordingly, we may suggest that the higher the grade the more stressors there are.

The ways of coping with stress inventory of students were determined as the SCA (2.07 ± 0.01), the OA (1.77 ± 0.01), the UCSA (1.17 ± 0.01), the SA (0.89 ± 0.01) and the SSSA (1.90 ± 0.01).

Excluding the confident self-approach, there was a significant difference between the other ways of coping with stress with regard to the students' gender ($p < 0.001$). Similarly, a significant difference was noted between the mean subscale points of coping with stress in terms of residence and classes ($p < 0.001$).

TABLE 4: Intergroup comparison of the mean GHQ-12 scores.

	Ways of Coping with Stress Inventory ($\bar{X} \pm SEM$)				
	Self-confident approach	Optimistic approach	Unconfident self approach	Submissive approach	Social support seeking approach
Male (n= 3486)	2.07 ± 0.01	1.80 ± 0.01	1.15 ± 0.01	0.92 ± 0.01	1.81 ± 0.01
Female (n= 2900)	2.06 ± 0.01	1.72 ± 0.01	1.18 ± 0.01	0.86 ± 0.01	2.01 ± 0.01
t p	0.53 0.60	5.63 0.001	2.60 0.009	4.30 0.001	14.47 0.001
Class 0 (n= 538)	2.22 ± 0.02	1.86 ± 0.02	1.09 ± 0.02	0.76 ± 0.02	1.95 ± 0.02
Class 1 (n= 1743)	2.16 ± 0.01	1.86 ± 0.01	1.09 ± 0.01	0.82 ± 0.01	2.01 ± 0.01
Class 2 (n= 1264)	2.03 ± 0.02	1.73 ± 0.02	1.21 ± 0.01	0.91 ± 0.01	1.86 ± 0.02
Class 3 (n= 1184)	1.96 ± 0.02	1.69 ± 0.02	1.22 ± 0.02	0.96 ± 0.02	1.85 ± 0.02
Class 4 (n= 1262)	2.03 ± 0.02	1.73 ± 0.02	1.20 ± 0.01	0.94 ± 0.02	1.84 ± 0.02
Class 5 (n= 210)	2.02 ± 0.04	1.70 ± 0.04	1.22 ± 0.04	0.99 ± 0.04	1.81 ± 0.04
Class 6 (n= 166)	1.93 ± 0.06	1.65 ± 0.05	1.16 ± 0.05	0.99 ± 0.04	1.76 ± 0.05
F p	27.45 0.001	16.05 0.001	13.65 0.001	19.77 0.001	20.66 0.001
Dormitory (n= 1139)	2.09 ± 0.02	1.77 ± 0.02	1.20 ± 0.02	0.90 ± 0.02	1.90 ± 0.02
Private hostel (n= 469)	2.02 ± 0.03	1.74 ± 0.03	1.17 ± 0.02	0.89 ± 0.02	1.93 ± 0.03
Relatives' house (n= 164)	2.19 ± 0.05	1.85 ± 0.04	1.15 ± 0.04	0.92 ± 0.04	1.95 ± 0.04
Rented house (n= 2385)	2.02 ± 0.01	1.74 ± 0.01	1.18 ± 0.01	0.93 ± 0.01	1.85 ± 0.01
With parents (n= 1678)	2.09 ± 0.01	1.79 ± 0.02	1.14 ± 0.01	0.86 ± 0.01	1.94 ± 0.01
Others (n= 236)	2.17 ± 0.03	1.80 ± 0.04	1.13 ± 0.03	0.84 ± 0.03	1.96 ± 0.04
F p	7.69 0.001	2.62 0.023	2.32 0.041	4.50 0.001	5.99 0.001
Willingly (n= 5087)	2.10 ± 0.01	1.80 ± 0.01	1.13 ± 0.01	0.87 ± 0.01	1.93 ± 0.01
Family's decision (n= 390)	1.92 ± 0.03	1.65 ± 0.03	1.33 ± 0.03	1.01 ± 0.03	1.78 ± 0.03
Unwillingly (n= 627)	1.91 ± 0.02	1.61 ± 0.02	1.31 ± 0.02	1.02 ± 0.02	1.77 ± 0.02
Others (n= 244)	2.02 ± 0.04	1.63 ± 0.04	1.20 ± 0.03	0.92 ± 0.03	1.82 ± 0.04
F p	32.1 0.001	30.70 0.001	38.04 0.001	23.55 0.001	25.58 0.001

TABLE 5: Post Hoc tests of intergroup comparison of the mean GHQ-12 scores (only significantly different variables).

Ways of Coping with Stress Inventory					
	Self-confident approach	Optimistic approach	Unconfident self approach	Submissive approach	Social support seeking approach
(0) Class 0	(0) vs (2), (3), (4), (5), (6)	(0) vs (2), (3), (4), (5), (6) p< 0.01	(0) vs (2), (3), (4) p< 0.001	(0) vs (2), (3), (4), (5), (6) p< 0.001	(0) vs (3), (4) p< 0.01
(1) Class 1	p< 0.001	(5), (6) p< 0.01			(0) vs (5) p< 0.05
(2) Class 2	(1) vs (2), (3), (4), (5), (6) p< 0.001	(1) vs (2), (3), (4), (5), (6) p< 0.001	(0) vs (5) p< 0.05	(1) vs (2), (3), (4), (5), (6) p< 0.001	(0) vs (5) p< 0.01
(3) Class 3			(1) vs (2), (3), (4) p< 0.001		(1) vs (2),(3), (4),(5),(6) p< 0.001
(4) Class 4	(3) vs (4) p< 0.05				
(5) Class 5			(1) vs (5) p< 0.01		
(6) Class 6					
(1) Dormitory	(1) vs (4) p< 0.05	(4) vs (5) p< 0.05	(1) vs (5) p< 0.05	(4) vs (5) p< 0.001	4) vs (5) p< 0.001
(2) Private hostel	(2) vs (3), (6) p< 0.01				(4) vs (6) p< 0.05
(3) Relatives' house	(3) vs (4) p< 0.01				
(4) Rented house					
(5) With parents					
(6) Others					
(1) Willingly					
(2) Family's decision	(1) vs (2), (3) p< 0.001	(1) vs (2), (3), (4) p< 0.001	(1) vs (2), (3) p< 0.001	(1) vs (2), (3) p< 0.001	(1) vs (2),(3) p< 0.001
(3) Unwillingly	(3) vs (4) p< 0.05	p< 0.001	(2) vs (4) p< 0.05		
(4) Others			(3) vs (4) p< 0.05		(1) vs (4) p< 0.01

There was a negative significant correlation between the students' confident self-approach ($r = -0.27, p < 0.001$), optimistic approach ($r = -0.25, p < 0.001$), social support seeking and GHQ-12 scores. GHQ-12 scores seem to fall as the scores of self-confident approach, optimistic approach and social support seeking approach increase.¹⁷ Self-confident approach, optimistic approach and social support seeking are effective ways of problem solving.¹² In a study by Folkman, the individuals performing effective problem solving behavior experience less depression than those performing ineffective problem solving behavior.^{5,17}

There was a significantly positive correlation between the GHQ-12 scores and the students' UCSA ($r = 0.39, p < 0.001$) and SA ($r = 0.16, p < 0.001$).

GHQ-12 scores tend to rise as the scores of UCSA and SA increase.

The SA and the SA are among the ineffective ways of coping with stress. Thus, it is expected that the UCSA and the SA increase the risk of disorder. The other variables affecting the emergence of psychiatric disorders may lead to this result. Thus,

TABLE 6: Correlations between GHQ-12 scores and the ways of coping with stress inventory.

Ways of Coping with Stress Inventory	GHQ-12 Scores (r, p)
Self-confident approach	$r = -0.28, p < 0.001$
Optimistic approach	$r = -0.25, p < 0.001$
Unconfident self-approach	$r = -0.14, p < 0.001$
Submissive approach	$r = 0.17, p < 0.001$
Social support seeking approach	$r = 0.39, p < 0.001$

TABLE 7: Means and standard deviations of the ways of coping with stress inventory.

Ways of Coping with Stress Inventory	Items	$\bar{X} \pm SEM$
Self-confident approach	8,10,14,16,20,23,26	2.07 ± 0.01
Optimistic approach	2,4,6,12,18	1.77 ± 0.01
Unconfident self-approach	3,7,11,19,22,25,27,28	1.17 ± 0.01
Submissive approach	5,13,15,17,21,24	0.89 ± 0.01
Social support seeking approach	1,9,29,30	1.90 ± 0.01

when the GHQ-12 scores of the students are higher, they need psychological support.

There was no significant correlation between the GHQ-12 scores and the scores of ways of cop-

ing with stress, current residence, family type, economical situation, former residence, graduated high school, and the reasons for preferring the department. As a result, the stress inventory is a reli-

able scale to measure the ways of coping with stress because of the convenience of the coefficient reliability, the characteristics of the factor structure and the various relations of the subscales.

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