

Available online at www.sciencedirect.com**SciVerse ScienceDirect**

Procedia - Social and Behavioral Sciences 46 (2012) 5875 – 5882

Procedia
Social and Behavioral Sciences

WCES 2012

Investigation of correlation between demographic features of university students and psychological symptoms with non linear canonical correlation analyze

Tugba Seda Colak ^{a*}, Betul Dusunceli ^b^a*Sakarya University, Education Faculty, Sakarya 54300, Turkey*^b*Sakarya University, Education Faculty, Sakarya 54300, Turkey*

Abstract

The main purpose of the study is to investigate the correlation between demographic features of education faculty students and psychological symptoms. The study was carried out with 638 female, 530 male, totally 1168 students who were the students of Sakarya University Education Faculty in 2010-2011 academic year. Nonlinear canonical analyze have been used to analyze the data.

Findings of the research are:

- 1- There is a significant correlation between demographic features of students and anxiety disorders.
- 2- Demographic features of students are a factor for mood disorders.
- 3- Demographic features of students are a factor for paranoid ideation in psychotic symptoms

© 2012 Published by Elsevier Ltd. Selection and/or peer review under responsibility of Prof. Dr. Hüseyin Uzunboylu

Open access under [CC BY-NC-ND license](http://creativecommons.org/licenses/by-nc-nd/4.0/).

Keywords: Demographic features, Psychological symptoms, Canonical Correlation

1. Introduction

Studies on mental health set forth that mental health differs according to different demographic features. When age which is one of demographical features is examined; age differences were apparent on responses to two of the psychological symptoms; students who were aged 25 years and over had lower levels of both generalized anger and depression than did the younger students (Rosenthal & Schreiner, 2000). Gender is another important factor affecting the mental health. In a sample of university undergraduates masculinity predicted lower depression but higher antisocial and substance use problems, whereas femininity predicted lower antisocial and substance use problems (Lengua & Stormshak, 2000).

Results indicated that lessening occupational stress and strengthening social support and rational coping could decrease depressive symptoms among Chinese female nurses (Wu, Ge, Sun, Wang & Wang, 2011). Results showed that 38.6 percent of secondary teachers in Hong Kong had experienced strong maladaptive stress due to vocational

* Corresponding Author name. Tel.: +90-544-839-0335

E-mail address: tcolak@sakarya.edu.tr

strain but coping resource was limited with most deficits on rational and cognitive coping (Leung, Wah Mak, Yu Chui, Chiang & Lee, 2009).

Psychological symptoms help us to understand what kind of process the mental health of the individual undergoes. For instance predictors of post-traumatic stress disorder symptoms included paranoia, depression and psychosis (Silverman et al. 1999). Borderline and schizotypal patients perceived themselves as more interpersonally vulnerable and more aggressive, and perceived others as more hostile at all three points in time (Karterud, 1995).

In 1977, Derogatis et al. developed SCL-90-R symptom checklist which is an assessment instrument used by the researchers in determining the psychological symptoms. The results of the study on the validity of SCL-90-R are interpreted in a way that this test can generally measure psychopathology, however the subscales cannot distinguish between the different psychiatric symptom groups, but a structure validity which can show "psychiatric symptomatic situation" as a whole is found (Dağ, 2000). Subscales of SCL-90-R include the following psychological symptoms:

Somatization: Mental distress in people's world is expressed through bodily distress (Seligman & Rosenhan, 1997). Somatization is defined as the 'conversion' of psychological pressure and overwhelming emotions into more acceptable physical symptoms (Gupta, 2006). The patient's need to somatize can be rechanneled into a discussion of psychological issues with a balanced somatopsychological orientation (Carlton, 2001).

Obsessive Compulsive: An obsession is a recurring thought or image that seems irrational and beyond control. A compulsion is a seemingly irresistible urge to engage in an act, often repeatedly, such as lengthy, elaborate washing after using the bathroom (Rathus, 1984).

Interpersonal Sensitivity: Interpersonal sensitivity was associated more with high expressivity on behalf of the sender than with the perceiver's perceptivity (Snodgrass, Hecht & Ploutz-Snyder, 1998).

Depression: In the normal individual, a state of depondency characterized by feelings of inadequacy, lowered activity, and pessimism about the future (Chaplin, 1985).

Anxiety: Anxiety seems to be a response to a vague, distant, or even unrecognized danger. It is a physiological, behavioral, and psychological reaction all at once (Bourne, 2011).

Hostility: The hostility of individuals toward other persons has most frequently been said to be a function of the frustration brought about by these persons (Pepitone, 2006).

Phobic Anxiety: Phobic anxiety, in which anxiety is displaced, bound to an external object and avoided. In phobic anxiety a pseudo object or situation becomes, as in superstition, the focus of anxiety (Morgan, 2003). Panic and phobic anxiety are influenced by genetic factors (Swoller & Tsuang, 1998).

Paranoid Ideation: Paranoid Ideation is characterized by persecutory thoughts and feelings that are not subject to modification by logic or experience (Orient, N.D.). Paranoid thinking is positively related to loneliness and negatively related to social support (Riggio & Kwong, 2009).

Psychoticism: Psychoticism is associated with the tendency to be impulsive, cold, not empathic, unconcerned about the rights and welfare of others, and antisocial. Individuals low in psychoticism are described as warm, sensitive, and concerned about others (Carducci, 2009).

The aim of this study is to present the relation between the demographic features and psychological symptoms. Another aim of the study is to determine which variable of the demographic features increases the risk of emerging which psychological symptom. Today, psychological help is given for three aims. First aim is healing, second one is preventing and third one is enrichment. The studies carried out with healing purpose are criticized in terms of economy, time and functionality. In this context, psychological help process gains more importance for taking necessary measures until the mental health of the individual is ruined (prevention) and for enriching their lives (enrichment). The results of this process are important since it will contribute to the studies for preventing the mental health of the individuals and for enriching their lives.

2. Method

In this study, a research model which is based on the relation between demographic features (gender, department, grade level, education type, accommodation type, socio-economic level, academic success level, department preference level, number of siblings, birth order and settlement unit) and psychological symptoms (somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism) was developed.

Since the relations between two groups will be examined, one group is selected as dependent and other group is selected as explanatory variable group. The effects of the variables in the explanatory variable group on the variables in the dependent variable group are revealed with Canonical Correlation Analysis. Therefore, Canonical Correlation Analysis is a technique which is preferred in these types of data and which is commonly used.

Canonical Correlation Analysis examines the correlation between linear combinations of variables belonging to a set and linear combinations of variables belonging to the other set. To this end, variables couple constituted by the linear combinations of the variables with the highest correlation is determined. Then, the couple constituted by the linear combinations of the variables with the highest correlation which is not related with this couple is determined and included in the analysis. The couples comprising the linear combinations of all variables are called canonical variables and the correlation between them is called canonical correlations. Canonical Correlations explains how much dependency is there between the variables of two sets. The most important aim of the technique is to move from a set of variables which are more dimensional and which are related with each other to a set constituted by less dimensional canonical variables.

2.1. Hypothesis of the research

H1: Demographical features of the individuals are factors for the psychological symptoms.

2.2. Universe and sample of the research

The universe of the research is constituted by the students studying in Sakarya University in 2011-2012 term. The sample of the research consists 1168 university students 54,6% of which are female and 45,4% of which are male. The departments of the students constituting the sample study are as follows: 3,7% study in classroom teaching, 17,2% in social sciences, 6,9% in science teaching, 4,8% in math teaching, 9,1% in preschool teaching, 23,8% in psychological counseling and guidance department, 16,9% in computer and instructional technologies teaching department, 10,9% in Turkish teaching 6,8% in special education department. Grade level information of the students is as follows: 32,2% in 1st grade, 18,2% in 2nd grade, 37,5% in 3rd grade and 12,1% in 4th grade. 57,2% of the students study in regular education and 42,8% of the students study in evening education. Accommodation information of the students is as follows: 29,7% in state dormitory, 27,0% in private dormitory, 35,5% them in a student house and 7,8% them in their own house. 9,5% of the students stated their socio-economic level as low, 84,8% of them as medium and 5,7% of them as high. The academic success levels of the students are as follows: 2,7% low academic success, 75,3% medium academic success and 22,1% high academic success. The students stated their department preference orders as follows: 35,6% 1st-3rd preference, 19,5% 4th-6th preference, 15,1% 7th-9th preference, 11,0% 10th-12th preference and 18,8% 13th and more. 72,9% of the students have 1-3 siblings, 19,6% of them have 4-6 siblings and 7,4% have 7 and more siblings. 41,7% of the students were born as the first child, 31,1% as the middle child and 27,2% as the last child. 23,9% of the students come from villages-towns, 47,5% from province-city and 28,6% from metropolitan cities.

2.3. Collection of Data

In the collection of research data, Personal Information form and "SCL-90-R" were used in order to record the demographic features of the students and to determine the psychological symptom levels of the students, respectively.

2.3.1. Personal Information Form

To determine the demographic features of the university students included in the research sample, this form includes questions regarding gender, department of study, grade level, education type, accommodation type, socio-economic level, academic success level, department preference order, number of siblings, birth order and settlement unit.

2.3.2. SCL-90-R

Developed by Deragotis et al. in 1977, SCL-90-R is a psychological symptom scanning tool with self evaluation. The validity-reliability studies of the scale, which was developed to measure the psychological and physical symptoms, the level of compulsion experienced by the individual or the negative stress reaction lived, were carried out by Dağ (1991). The test which consists 90 items is based on five-point Likert type evaluation, namely never (0), little (1), medium level (2), quite much (3), high level (4). The test has 10 subscales in total: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism. Turkish translation of the scale was used on samples in some researches in Turkey and it was observed that it distinguishes used and examined groups in a significant level. Reliability study of the scale was carried out by Dağ in 1989 and its Cronbach alpha value was found ".97". A correlation between .10 - .77 was found between general symptom average and MMPI (Bozkurt, 1996).

3. Analysis of the data and findings

Eigen values and canonical correlations regarding the canonical correlation analysis in which psychological symptoms are dependent and demographical values are independent variables are shown in Table 1.

Table 1: Eigenvalues and canonical correlations

Function	Eigenvalue	Explained Variance	Explained Variance with Total	Canonical correlation	Wilks L.	p
1	0,083	40,076	40,076	0,276	0,818	0,000*
2	0,042	20,173	60,250	0,200	0,885	0,001*
3	0,028	13,476	73,726	0,164	0,922	0,044*
4	0,020	9,632	83,357	0,139	0,948	0,269
5	0,017	8,369	91,726	0,130	0,966	0,587
6	0,009	4,547	96,273	0,096	0,983	0,926
7	0,004	2,164	98,437	0,067	0,992	0,985
8	0,002	1,114	99,551	0,048	0,997	0,988
9	0,001	0,343	99,894	0,027	0,999	0,983
10	0,000	0,106	100,000	0,015	1,000	0,882

According to Table 1, the eigenvalue calculated regarding the canonical correlation couple is an indicator of the total variability. As the eigenvalues increases, canonical correlation coefficients also increase. It was observed that the biggest eigenvalue in the canonical correlation couples which were calculated as ten is in the 1st function (0,083). In other canonical correlation couples, the eigenvalues gradually decrease.

When the significances of the canonical correlations which are among the obtained canonical variable couples are tested with Wilks Landa statistics, first two canonical correlation coefficients and third canonical correlation coefficients were found significant in the 0.01 error level and in the 0,05 error level respectively. Since three correlation coefficients were found significant, the examination of first three canonical variable couples will be enough. Raw canonical coefficients and standardized canonical coefficients according to the first three canonical variable couple were shown in Table 2 for set 1.

Table 2: Raw and standardized canonical coefficients for Table 1

Set 1 variables	Raw Canonical Correlation Coefficients			Standardized Canonical Correlation Coefficients		
	1	2	3	1	2	3
p1	-0,870	0,945	0,181	-0,655	0,711	0,136
p2	-0,281	-0,316	-0,282	-0,227	-0,255	-0,228
p3	-0,607	0,39	0,076	-0,515	0,331	0,065

p4	-0,106	-0,602	-0,604	-0,092	-0,521	-0,523
p5	0,954	-0,158	-0,149	0,828	-0,137	-0,129
p6	-0,004	0,858	0,432	-0,003	0,707	0,356
p7	0,629	-0,064	0,819	0,498	-0,051	0,649
p8	0,094	-0,146	0,362	0,082	-0,128	0,316
p9	0,579	0,345	-0,315	0,485	0,289	-0,264
p10	-0,169	-0,129	-1,015	-0,139	-0,107	-0,837

Standardized coefficients are the coefficients showing the change amount occurring in terms of standard deviation in the canonic variable in return for the increase of 1 standard deviation occurring in the original variable. Accordingly, the equation of the U1 canonical variable (psychological symptoms) will be as follows.

$$U1 = -0,655*p1 - 0,227*p2 - 0,515*p3 - 0,092*p4 + 0,828*p5 - 0,003*p6 + 0,498*p7 + 0,082*p8 + 0,485*p9 - 0,139*p10$$

The amount of contribution belonging to p5 variable in forming the U1 canonical variable is the highest with a value of 0,828. In the second rank, p1 variable is observed with a negative contribution. It is seen that the variable with the least contribution to U1 variable is p6. The variable with the most effect in U2 canonical variable is p1, it is p10 in U3 canonical variable.

Raw canonical coefficients and standardized canonical coefficients according to the first three canonical variable couple were shown in Table 3 for set 2.

Table 3: Raw and standardized canonical coefficients for Table 2

Set 2 variables	Raw Canonical Correlation Coefficients			Standardized Canonical Correlation Coefficients		
	1	2	3	1	2	3
y1	1,545	0,394	-0,036	0,769	0,196	-0,018
y2	0,092	-0,221	0,093	0,214	-0,51	0,216
y3	-0,241	-0,153	0,159	-0,253	-0,160	0,167
y4	-0,116	0,066	0,242	-0,058	0,032	0,12
y5	-0,159	0,253	0,545	-0,152	0,243	0,522
y6	-0,021	-0,523	-0,373	-0,008	-0,204	-0,145
y7	-0,14	-0,113	1,555	-0,064	-0,052	0,713
y8	0,226	-0,32	0,074	0,343	-0,487	0,112
y9	-0,454	0,241	-0,579	-0,278	0,148	-0,355
y10	-0,111	-0,334	0,081	-0,090	-0,273	0,066
y11	-0,209	-0,694	-0,467	-0,151	-0,502	-0,337

According to Table 3, the equation of the V1 canonical variable will be as follows.

$$V1 = 0,769*y1 + 0,214*y2 - 0,253*y3 - 0,058*y4 - 0,152*y5 - 0,008*y6 - 0,064*y7 + 0,343*y8 - 0,278*y9 - 0,090*y10 - 0,151*y11$$

While the variable with the most contribution to the formation of V1 canonical variable is y1 (0,769), y8 (0,343) variable is observed in the second rank. It is seen that the variable with the least effect on V1 variable is y6. The variable with the most effect on V2 canonical variable is y11, on the other hand, it is y5 variable in V3 canonical variable.

Since it will be more proper to use the correlations between the canonical variable and original variables in that set, these correlation coefficients are called as correlation loadings or weights. The canonical loadings of the first three canonical variable couples are shown in Table 4.

Table 4. Canonical Variable and Canonical Loadings

Set 1	Canonical Loadings			Set 2	Canonical Loadings		
	1	2	3		1	2	3
p1	-0,124	0,720	-0,355	y1	0,758	0,298	0,018

p2	-0,047	0,185	-0,596	y2	0,228	-0,473	0,264
p3	-0,015	0,437	-0,465	y3	-0,427	0,003	0,131
p4	0,169	0,179	-0,727	y4	-0,054	-0,045	0,169
p5	0,506	0,444	-0,553	y5	-0,097	0,238	0,483
p6	0,257	0,717	-0,233	y6	-0,110	-0,343	-0,007
p7	0,533	0,387	-0,081	y7	-0,124	-0,148	0,681
p8	0,270	0,274	-0,277	y8	0,410	-0,411	-0,006
p9	0,511	0,496	-0,516	y9	-0,196	0,239	-0,23
p10	0,272	0,472	-0,692	y10	-0,133	-0,192	0,072
				y11	-0,174	-0,556	-0,227

According to the table, canonical variable of the data set variables of psychological symptoms and canonical loadings are analyzed, it is seen that the biggest loading value (0,533) belongs to p7 variable and it is followed by p9 variable with 0,511 value. The loading value belonging to p5 variable with the highest contribution is in the third rank according to the standardized coefficients. The biggest factor loadings value (0,758) in the V1 canonical variable of demographical features is y1 and this y1 variable has the biggest effect in terms of standardized coefficient. Explained variance and lump coefficients of canonical correlation couples are shown in Table 5.

Table 5: Explained Variance and Lump Coefficients

	Explained Variance	Lump
U1	0,106	0,008
U2	0,218	0,009
U3	0,241	0,007
V1	0,100	0,008
V2	0,098	0,004
V3	0,084	0,002

When Table 5 is analyzed, the contribution of U1 linear component to the explained variance is 11%. Lump coefficient of U1 linear component is found as 0,008. The low lump coefficient of the U1 linear component shows that there is a high relationship in a low level between U1 canonical variable (demographic features) and psychological symptoms data set. It is seen that the contribution of U2, U3, U4 and U5 to variance and their relation levels are quite low. The contribution of V1 linear component to the total explained variance is 10% for other psychological symptoms variable set. Lump coefficient of V1 linear component is found as 0,008. The contribution of V1 linear component to the variance is in the low levels and its relation with demographic properties data set is also low. The contribution of V2, V3, V4 and V5 components to the variance and their relation levels are also quite high.

According to canonical correlation significance results, four different canonical variable couples were statistically significant. However, according to the results of explained variance and lump coefficients, it was found that first canonical correlation couple (u1 and v1) is appropriate in explaining the relation.

4. Conclusion and discussion

Research findings which model the effect of demographical features on psychological symptoms support the research hypothesis which sets forth the relation between demographical features and psychological symptoms. Integrally, psychological symptoms set is considered as dependent variable and demographical features are considered as independent variable in the canonical correlation analysis in which the relation between two variable sets is modeled.

According to canonical correlation significance results, three different canonical variable couples were statistically significant. According to the results of variance and lump coefficients, it was concluded that first canonical correlation couple was significant in explaining the relation. It shows that there is a low level high relation between U1 canonical variable (demographic features) and psychological symptoms data set.

According to this result, original variables which contribute to the first canonical variable couple and canonical correlation can be explained with the following equations.

$$U1 = -0,655 \text{ somatization} + -0,227 \text{ obsessive compulsive dis.} - 0,515 \text{ interpersonal sensitivity} + -0,092 \text{ depression} + 0,828 \text{ Anxiety} + -0,003 \text{ hostility} + 0,498 \text{ phobic anxiety} + 0,082 \text{ paranoid ideation} + 0,485 \text{ psychoticism} + -0,139 \text{ general mental health}$$

$$V1 = 0,769 \text{ gender} + 0,214 \text{ department} + -0,253 \text{ grade level} + -0,058 \text{ education type} + -0,152 \text{ accommodation type} + -0,008 \text{ socio-economical level} + -0,064 \text{ academic success} + 0,343 \text{ preference order} + -0,278 \text{ number of siblings} + -0,090 \text{ settlement unit} + -0,151 \text{ birth order}$$

According to this equation, the most important psychological symptoms which contribute to the emerging of psychological symptoms (u1) or which affect the deterioration of general mental health are respectively as follows: anxiety (0, 828), Somatization (0, 655) and interpersonal sensitivity (0, 515). The psychological symptoms which have the least effects on deterioration of general mental health or on emerging of mental symptoms are as follows: Hostility (0, 003), Paranoid ideation (0, 082) and depression (0, 090). This can be described as follows: While anxiety, somatization and interpersonal sensitivity are experienced as factors which cause the deterioration of mental health; hostility, paranoid ideation and depression are experienced as a result of the deterioration of mental health. This finding is supported by Koç& Polat (2006) and Koç, İskender, Çolak& Bayraktar (2008).

The most important contribution to demographic features variable (v1) is made by gender (0,769), preference order of Professional education program (0,343) number of siblings (0,278) and grade level (0,227). The least contribution to this variable set is made by socio-economic level (0,008), settlement unit (0,090) and academic success level (0,064). In many researches, it is found as a basic determinant of the change on the gender dependent variable. The finding that “The women reported higher levels of manifesting psychological symptoms (anger, anxiety, depression)” of Rosenthal& Schreiner supports the present research. Among Asian, Black/African American, Latino/Hispanic, white and other ethnic minority students, women’s levels of symptoms were higher than men’s (Rosenthal& Schreiner, 2000).

When the related literature is examined, researches on the problems experienced by the individuals in their professional lives are seen. However, researches on the profiles of mental health of future profession members are quite limited. The foundations of the psychological problems experienced by the individuals during their professional lives are laid in their professional lives. This study detects the psychological symptoms shown by the individuals before their professional lives and helps to find an early intervention. Thereby, it is seen that it is possible to have useful individuals both for the society and for themselves as a healthy profession member. Studies showed that the individuals have similar symptoms before and after entering a profession. The study of Kovess-Masfety, Rios-Seidel& Sevilla-Dedieu (2007) confirms that teachers’ mental health depends on sociodemographic factors such as gender, age and family status. Another research concluded that midlife psychological functioning was predicted by having discussed plans for the future with parents and teachers (Seltzer et. al. 2009). In the light of this, it is displayed that it is important to detect and intervene in the psychological symptoms of candidates of teaching profession in the early stages.

Childhood and early adulthood psychological distress predict work characteristics in mid-adulthood. Work stressors are an important source of preventable psychiatric diagnoses in midlife. Psychological distress may influence selection into less advantaged occupations with poorer working conditions that may increase the risk of future depressive and anxiety disorders (Stansfeld, Clark, Caldwell, Rodgers& Power, 2008).

There is an important relation between demographic features and psychological symptoms. Gender, professional education program, choices (professional choices), number of siblings, grade level and birth order of the individual were found as an important factor in emerging of the psychological symptoms. The gender of the individual was found to be an important predictor in emerging the psychological symptoms such as anxiety, somatization and interpersonal sensitivity. The researches on the teachers showed that these psychological problems continue in the professional life. Jin, Yeung, Tang& Low (2008) showed that each stress source of teachers was positively related to teachers' psychosomatic symptoms. The results are consistent with a priori predictions that stress sources directly related to the nature of the teaching profession would be strongly associated with teachers' physical and mental health.

As a result of this research, it was concluded that some of the demographical features explain the psychological symptoms and some of them do not. Knowing demographical features of the individuals creates awareness about the psychological symptoms they have experienced or the potential to experience the same. However, since only

some canonical variables were found important, it can be said that this forecast is not relevant for all demographic features, therefore for general mental health. That's why, it is important to determine the factors affecting the general mental health. The contribution of this study may be limited in terms of determining which of the demographic features predict, interpret and understand the mental symptoms and taking the necessary measures. In this context, the studies which may eliminate this limit can be concentrated on. The reason why gender variable has the most effect which explains the change in psychological symptoms can be researched in cultural dimension and intercultural dimension. The fact that department preference order is found as a factor which cause the psychological symptoms to emerge brings out the importance of professional orientation. It is necessary to carry out the necessary studies in order to use this finding in professional guidance and professional counseling efficiently.

References

- Bourne, E. J. (2011). *The anxiety & phobia workbook*. Oakland: Raincoast Books.
- Bozkurt, A. (1996). *Psychopathology in male sexual dysfunctions*, Dissertation, Gülhane Military Medical Academy, Ankara.
- Carducci, B. J. (2009). *The psychology of personality*. (2nd ed). West Sussex: Wiley- Blackwell.
- Carlton, B. S. (2001). One Patient, Three Therapists. In Tseng, W.S.& Streltzer, J. (Eds.). *Culture and Psychotherapy: A Guide to Clinical Practice*. Washington DC: American Psychiatric Press.
- Chaplin, J.P. (1985). *Dictionary of psychology*. New York: Dell Publishing.
- Dağ, İ. (1991). Belirti tarama listesi (SCL-90-R)'nin üniversite öğrencileri için güvenilirliği ve geçerliliği. *Türk Psikiyatri Dergisi*, 2, 5-12.
- Dağ, İ. (2000). *Belirti tarama listesi, psikiyatride kullanılan ölçekler*. Ankara: Physicians Broadcasting Union.
- Gupta, M.A. (2006). Somatization disorders in dermatology. *International review of Psychiatry*, 18 (1), 41-47.
- Jin, P., Yeung, A.S., Tang, T. & Low, R. (2008). Identifying teachers at risk in Hong Kong: Psychosomatic symptoms and sources of stress. *Journal of Psychosomatic Research*, 65, 357-362.
- Karterud, S., Friis, S., Irion, T., Mehlum, L., Vaglum, P., & Vaglum, S. (1995). A SCL-90-R derived index of the severity of personality disorders. *Journal of Personality Disorders*, 9 (2), 112-123.
- Koç, M.& Polat, Ü. (2006). The mental health of university students. *International Journal of Human Sciences*, 3(2), 1-22.
- Koç, M., İskender, M., Çolak, T.S.& Bayraktar, B. (2008). Üniversite öğrencilerinin duygusal dışa vurum düzeyleri ve psikopatolojileri. *17th National Educational Sciences Congress*, Sakarya University, Sakarya.
- Kovess-Masfety, V., Rios-Seidel, C. Sevilla-Dedieu, C. (2007). Teachers' mental health and teaching levels. *Teaching and Teacher Education*, 23, 1177-1192.
- Lengua, L.J. & Stormshak, E.A. (2000). Gender, gender roles and personality: Gender differences in the prediction of coping and psychological symptoms. *Sex Roles*, 43 (11/12), 787- 820.
- Leung S.S.K., Wah Mak Y., Yu Chui Y., Chiang V.C.L. & Lee A.C.K. (2009). Occupational stress, mental health status and stress management behaviors among secondary school teachers in Hong Kong. *Health Education Journal*, 68 (4), 328-343.
- Morgan, S. (Eds), (2003). *Encyclopaedia of Psychoanalysis: Phobia a reassessment*. London: H. Karnac Books Ltd.
- Orient, J. M. (N.D.). *Sapira's art and science of bedside diagnosis*. Retrieved April 29, 2011, from http://books.google.com/books?id=5RX1SyN7znoC&pg=PA606&dq=paranoid+ideation&hl=tr&ei=j_qRTef_Jcnusgbb8ZzQBg&sa=X&oi=book_result&ct=result&resnum=1&ved=0CC0Q6AEwAA#v=onepage&q=paranoid%20ideation&f=false
- Pepitone, A. (2006). *Attraction & Hostility*. New York: Atherton Press.
- Rathus, S. A. (1984). *Psychology* (2nd ed.). Canada: CBS College Publishing.
- Riggio, H.R. & Kwong, W.Y. (2009). Social skills, paranoid thinking, and social outcomes among young adults. *Personality and Individual Differences*, 47, 492-497.
- Rosenthal, B.S. & Schreiner, A.C. (2000). Prevalence of psychological symptoms among undergraduate students in an ethnically diverse urban public college. *Journal of American College Health*, 49 (1), 12-18.
- Seligman, M. E. P., Rosenhan, D. (1997). *Abnormality* (1st ed.). New York: Norton Company.
- Seltzer, M.M., Floyd, F.J., Greenberg, J.S., Hong, J., Taylor, J.L.& Doescher, H. (2009). Factors predictive of midlife occupational attainment and psychological functioning in adults with mild intellectual deficits. *American Journal on Intellectual and Developmental Disabilities*, 114 (2), 128-143.
- Silverman, J.J., Singh, N.N., Carmanico, S.J., Lindstorm, K.A., Best, A.M.& Clearfield, S. (1999). Psychological distress and symptoms of posttraumatic stress disorder in Jewish adolescents following a brief exposure to concentration camps. *Journal of Child and Family Studies*, 8 (1), 71-89.
- Snodgrass, S.E., Hecht, M.A. & Ploutz-Snyder, R. (1998). Interpersonal sensitivity: Expressivity or perceptivity? *Journal of Personality and Social Psychology*, 74(1), 238-249.
- Stansfeld, S.A., Clark, C., Caldwell, T., Rodgers, B. & Power, C. (2008). Psychological work characteristics and anxiety and depressive disorders in midlife: The effects of prior psychological distress. *Occupational Environment Medicine*, 65, 634-642. doi:10.1136/oem.2007.036640
- Swoller, J.W. & Tsuang, M.T. (1998). Panic and phobic anxiety: Defining phenotypes for genetic studies. *The American Journal of Psychiatry*, 155 (9), 1152-1162.
- Wu, H., Ge, C. X., Sun, W., Wang, J. N. & Wang, L. (2011). Depressive symptoms and occupational stress among Chinese female nurses: The mediating effects of social support and rational coping. *Research in Nursing & Health*, 34, 401-407. doi: 10.1002/nur.20449