Personality and Coping among Turkish College Students: A Canonical Correlation Analysis

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Abstract

The discussion about whether coping strategies are determined by stable characteristics of the individual, such as personality or they are determined by situation-specific variables, such as cognitive appraisals regarding stressful situation is still in agenda. Thus, the relationship between coping and personality traits was examined with 237 students (53.2 % male; mean age = 22.22 years old) who were enrolled in classes at Marmara University in Istanbul, Turkey. The participants responded to the Ways of Coping with Stress Scale (WCSS) and the NEO Five Factor Inventory (NEO-FFI). The canonical correlation analysis showed that those who were high in conscientiousness tend to use more self-confident, optimistic, and turning to religion coping strategies whereas those who were high in extraversion were more likely to use self-confident and seeking of social support strategies in stressful situations.

Key Words

Personality, Coping, NEO Five Factor Inventory, Canonical Correlation Analysis.

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Coping is a complex process described in various ways such as a situational or trait-like response; a response to stress or a response to change (Beutler & Moos, 2003a). Lazarus and Folkman (1984) claim that coping is a situation-specific construct, which is different from human adaptation. On the other hand, Costa, Somerfield and McCrae (1996) maintain that coping and adaptation form a continuum closely related to structural aspects such as personality dispositions. In other words, coping reflects the dynamic transaction between the individual and stressful situation. The transactional theory considers that situation appraisals are the key determinants of coping efforts (Folkman & Lazarus, 1985). The other model asserts that personality dispositions are also important determinants of coping because they may predispose people to use certain coping strategies (e.g. Suls, David, & Harvey, 1996). The transaction model, instead of examining coping as a trait-like construct that is consistently engaged across situations, suggests a pattern of viewing coping as a dynamic process that is modified according to the situation and the appraisal made by the individual (Bishop et al., 2001).

A number of studies have found that the transactional theory is limited and personality factors might play an important role during the coping process (Carver, Scheier, & Weintraub, 1989; Costa & McCrae, 1992; Endler & Parker, 1990; Suls et al., 1996; Watson & Hubbard, 1996). Suls et. al (1996) identified and explained that a new (i.e. third) generation of coping theory and research have emerged because of several factors: The availability of more reliable models and broad dimensional measures of personality (the Big Five) and the empirical fact situations do not account for all, or necessarily even most, of the variation in coping behavior. In the same way, Carver and Scheier (1994) claim that the transactional model is related to the concept of situational coping, which focuses on the issue of what the person did (or is doing currently) in a specific coping episode or during a specific period of time. The second way of modeling coping strategies, which refers to dispositional coping (or trait coping), assumes that people develop habitual ways of dealing with stress and that these habits or coping styles can influence their responses in new situations.

Watson and Hubbard (1996) identified three distinct approaches to the study of personality and coping. First, coping behavior itself may be viewed as a trait. Second, the associations between personality variables and process measures of coping may be assessed. Third, coping behavior

may be understood with reference to the major taxonomic frameworks of personality.

Costa et al. (1996) have argued that coping behavior and personality should be seen as part of an adaptation continuum. This is not to say that personality and coping behaviors are measuring essentially the same thing, but rather that there are structural and conceptual links between the two (see Figure 1 for how personality relates with coping).

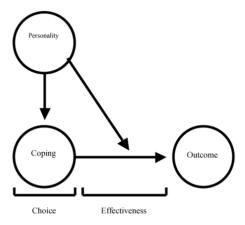


Figure 1: A general Framework Linking Personality and Coping (adapted from Bolger & Zuckerman, 1995, p. 891)

Coping have been examined in relation to personality variables such as hardiness (Kobosa, 1982), self-efficacy (Schwarzer, Böhmer, Luszczynska, Mohamed & Knoll, 2005), and self-esteem (Guinn & Vincent, 2002). As a pioneering study, Carver et al. (1989) found that active coping and planning were positively associated with optimism, self-esteem, hardiness, and Type A and negatively correlated with trait anxiety. In contrast, denial and behavioral disengagement were found to be positively associated with trait anxiety, but negatively related to optimism, self-esteem, and hardiness.

Kato and Pedersen (2005) concluded that individuals coping strategies to some extent reflect their personality, in part due to the influences of the common genetic factors among middle-aged and older adult twins. In multivariate analyses, they found that the patterns of covariation between personality and coping scales were considerably different in

men and women. At least for women, coping and personality are distinct constructs but show systematic associations. Bouchard et al. (2004) found personality shares as much variance with situational as with dispositional coping among university students. More, situational coping is also related to trait coping, which confirms that individuals do not approach each coping context anew, but rather bring to bear a preferred set of coping strategies that remains relatively stable across time and situations.

At the same time, some consensus has been reached supporting the use of the five-factor model as a framework for research on the relationship between personality and coping (e.g., Ekşi, 2004; McWilliams, Cox & Enns, 2003; O'Brien & DeLongis, 1996). In fact, the five-factor model of personality provides a useful context for assessing differences in coping strategy usage. The advantage of using the five-factor model is that it is a comprehensive model of personality and, as such, is an efficient means of assessing and describing personality and of identifying broad source traits that in turn give rise to more-specific individual differences such as coping strategies (McCrae & John, 1992).

There is now a large and growing literature on the association between big five personality traits and coping strategies. In a mostly cited research, McCrae and Costa (1986) found that Neuroticism was associated with increased use of hostile reaction, escapist fantasy, self-blame, withdrawal, wishful thinking, passivity, and indecisiveness, whereas Extraversion is correlated with the use of rational action, positive thinking, and restraint in an older sample. Individuals opened to new experiences are more likely to use humor in dealing with stress, while individuals not opened to new experiences are more likely to use faith.

McWilliams et al. (2003) found that less-adaptive coping strategies (i.e., Emotion-oriented coping) were associated with less-adaptive personality traits (i.e., Neuroticism) and with psychological distress (i.e., Depression), whereas the reverse was found regarding adaptive coping strategies (i.e., Task-orientated coping) among a depressed sample.

Knoll, Rieckmann, and Schwarzer (2005) concluded that Neuroticism was positively associated with situation-specific evasive coping among a group of cataract surgery patients. A positive relation with situation-specific support coping was also found on a bivariate level. As for dispositional coping, which was assessed six weeks post-surgery, a similar

picture emerged. Neuroticism was positively related to both situation-specific and dispositional evasive and support coping. Extraversion was only related to focus on positive coping in its situation specific version; no association with support coping was found. On a bivariate level, Openness to Experience went along with higher situation-specific and dispositional Active Coping. However, with dispositional coping, associations with affect were mainly spurious and decreased when a higher-order personality trait was included in the equations.

Bishop et al. (2001) found that Problem-solving was positively associated with Conscientiousness among male police officer from the Singapore Police Force. Avoidance coping was positively related to Neuroticism but negatively related to Conscientiousness. Positive Reappraisal was positively associated with Extraversion, Agreeableness, and Openness. Wishful thinking and self-blame appear to be particularly characteristic of people high in Neuroticism (McCrae & Costa, 1986).

Quirk and McCormick (1998) cluster analyzed the NEO-FFI in a sample of 3,256 male substance abusing veterans and related these subtypes to symptom correlates, substance of choice, and coping strategies. Individuals with the highest level of Neuroticism and lowest levels of Agreeableness and Conscientiousness (most likely personality disordered) exhibited the highest level of escape-avoidance coping and the lowest level of planful problem solving or positive reappraisal.

Ratsep et al. (2000) tried to explore personality traits as predictors of coping with disease-related distress in patients with multiple sclerosis (MS). While Neuroticism correlated significantly with emotion-focused in both MS-patients and control group, Extraversion and Openness to Experience were linked to task-oriented coping strategies in normal controls but not in the MS-group. Agreeableness was associated with avoidance-oriented coping strategies only in the MS-group.

Among big five, Neuroticism has been studied most extensively and is consistently associated with passive and ineffective coping mechanisms (e.g. Bolger & Zuckerman, 1995). Neuroticism is defined as a predisposition to experience negative affect and therefore those who are high in Neuroticism experience more anxiety, depression, hostility, and self-consciousness (McCrae & Costa, 1986).

Gunthert et al. (1999) concluded that compared with low- Neurotic individuals, high- Neurotic individuals used less-adaptive coping strate-

gies (e.g., hostile reaction) and reacted with more distress in response to some types of coping strategies. O'Brien and DeLongis (1996) found that across a variety of stressful situations those higher on Neuroticism showed a greater dependence upon escape-avoidance coping and a lower inclination to employ planful problem solving than those lower on. Collectively, the results of this study regarding problem-, emotion-, and relationship-focused modes of coping indicate that personality, the stressful situation, and Person x Situation interactions were all significant predictors of coping responses. Callahan (2000) portrays temporomandibular patients as less psychologically hardy (committed), less optimistic, higher in neuroticism, and more prone to rely on non-adaptive coping strategies (escape-avoidance).

Fifty pre-medical students reported their coping efforts at 35 days before, 10 days before, and 17 days after the examination. They provided daily reports of anxiety for 35 days surrounding the examination. Neuroticism influenced coping efforts and increased in daily anxiety under stress. Two types of coping, wishful thinking and self-blame, explained over half of the relationship between neuroticism and increased in pre-examination anxiety. Under stress, some people become distressed or perform poorly, whereas others remain resilient (Bolger, 1990).

High- and low-neurotic participants differed both in their choice of coping efforts and the effectiveness of those efforts (Bolger & Zuckerman, 1995). David and Suls (1999) found that high- neurotic participants, compared with low- neurotic participants, used more catharsis, self blame, wishful thinking, and hostile reaction to cope with daily stressors.

In multivariate analyses, after considering confounding factors, Neuroticism was positively and Extraversion was negatively related to avoidance coping and Neuroticism was negatively associated with counting one's blessings as a coping strategy. Personality was not related to either problem-solving or seeking social support coping strategies for individuals experiencing a cardiac catheterization (Bosworth, Feaganes, Vitaliano, Mark & Siegler, 2001).

There is also some evidence that Openness to Experience is related to specific coping strategies (Costa et al., 1996). People with high Openness to Experience rethink the problem and seek for new information.

It is reasonable to speculate that individual differences in coping strategies reflect individuals' different personality dispositions.

Amirkhan, Risinger and Swickert (1995) found that Extraversion was related to social support seeking, optimism was related to problem solving, and both dispositions were negatively related to avoidance. In a second study, Extraversion again proved to be associated with help seeking.

McCrae and Costa (1986) found that those high on Openness were more likely to employ humor in the face of stress, whereas those low on Openness were more likely to rely upon faith to cope with stress. The mixed findings of the few published studies make it difficult to form firm expectations about how those high on Openness would be likely to cope with stress.

Although the evidence to date indicates a strong relationship between personality and coping, the vast majority of research studies have been conducted in North America and Europe. So, the present study aims to explore the relationship between coping strategies and personality among Turkish college students.

Method

Participants

The population of the study is all college students at Marmara University. Among them, using the convenient sampling method, the sample of the study was selected. The sample of the study consisted of 237 student-teachers (53.2 % male; mean age = 22.22 years old, range: 19-28 years old) from different departments in the faculty of Education at Marmara University, Istanbul.

Measures

A demographic data sheet (including items of gender, age, income, and etc.), the Ways of Coping Style Scale (WCSS), the Turning to Religion subscale of the COPE (Carver et al., 1989) and the NEO Five Factor Inventory (NEO FFI) were used to collect data in the present study.

Coping Styles: The WCSS is derived from the Ways of Coping Inventory (Folkman & Lazarus, 1984) which is adopted into Turkish by Şahin and Durak (1995) and measures coping styles of students. The scale is

consisted of 30 items and five subscales; Self-Confident, Optimistic, Helpless, Submissive, and Seeking of Social Support. Factor analytic studies showed that the scale is divided into two categories; problem focused/active and emotion focused/passive. Three different studies showed the scale posses reliability and validity. Cronbach alpha reliability scores range from .47 to .80. Due to growing body of research on religious coping (see Folkman & Moskowitz, 2004, for a detailed review), the Turning to Religion subscale of COPE, one of the most used scales in coping research was also filled by participant. The scale was standardized into Turkish by Gök (1995) and Turning to Religion had the highest reliability Cronbach alpha score (r=.96).

Personality Traits: the NEO-FFI (Costa & McCrae, 1992) is a 60-item questionnaire, comprising five scales, each measuring one dimension of the normal personality (i.e. Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness). Each scale comprises 12 items. Respondents are asked to rate on a five-point Likert-type scale (1-strongly disagree, 5-strongly agree) the extent to which each statement corresponds to their perception of self. A high score on each personality trait denotes a high level of this trait. To test hypotheses about the universality of personality traits, college students in 50 cultures identified an adult or college-aged man or woman whom they knew well and rated the 11,985 targets using the 3rd-person version of the Revised NEO Personality Inventory. Factor analyses within cultures showed that the normative American self-report structure was clearly replicated in most cultures and was recognizable in all. Sex differences replicated earlier self-report results, with the most pronounced differences in Western cultures. Cross-sectional age differences for 3 factors followed the pattern identified in self-reports, with moderate rates of change during college age and slower changes after age 40. With few exceptions, these data support the hypothesis that features of personality traits are common to all human groups (McCrae & Terracciano, 2005). The NEO-FFI was translated and standardized by Sunar (1986). Cronbach's alpha reliability scores for sub-scales are .76 for Neuroticism, .76 for Extraversion, .65 for Openness to Experience (O), .70 for Agreeableness, and .80 Conscientiousness.

Procedure

Canonical correlation analysis was used to investigate which variables in the personality traits set are related to the variables in the ways of coping set. Canonical correlation is a parametric analysis that investigates the structure of the relationship between two sets of variables. In this type of an analysis, the relationships among more than one dependent variable and more than one independent variable can be investigated (Thompson, 1984). In the present study, six dimensions of the ways of coping were used as multivariate dependent variables profile and five dimensions of the personality traits were used as multivariate independent variables profile. For any data set, the number of canonical variable set is the smaller of the two variables set (Onwuegbuzie, 1998). In the present study, five canonical variables were calculated because smaller between the two variables set was the personality traits set, which had five variables.

Results

The first analyses examined the coping strategies and personality traits of students. Table 1 represents the descriptive statistics for scores on the both scales. As it can be seen in this table, the most frequently used coping style was self-confident (\bar{x} = 2.10) and least frequent was submissive (\bar{x} = .91).

Table 1.					
Descriptive Statistics					
	N	Minimum	Maximum	Mean	SD
Neuroticism	237	8	41	23,02	6,77
Extraversion	237	9	44	29,26	6,39
Openness to Experience	237	9	43	27,02	5,76
Agreeableness	237	5	40	29,57	4,67
Conscientiousness	237	12	48	32,80	6,85
Self confident	237	,71	3,00	2,10	,49
Helpless	237	,00	2,63	1,22	,47
Submissive	237	,00	1,83	,91	,38
Optimistic	237	,40	3,00	1,75	,56
Seeking of Social Support	237	,50	3,00	2,03	,46
Turning to Religion	237	,00	3,00	1,92	,84

Independent sample t test results revealed some gender differences in both coping styles and personality traits. Women are high in Openness to Experience (\bar{x} =-2,07, p < .05) and Conscientiousness (\bar{x} =-3,63, p < .01) as seen Table 2. While men reported using optimistic style more (\bar{x} =- 4, 22, p < .01) and women tended to use seeking of social support more (\bar{x} =- -3, 50, p < .01)

Subscales	Sex	N	Mean	SD	t
Neuroticism	Male	126	22,48	6,04	-1,31
	Female	111	23,63	7,53	
Extraversion	Male	126	28,72	6,21	-1,38
	Female	111	29,86	6,57	
Openness to Experience	Male	126	26,29	6,17	-2,07*
	Female	111	27,84	5,16	
Agreeableness	Male	126	29,75	4,67	,66
	Female	111	29,35	4,69	
Conscientiousness	Male	126	31,33	6,27	-3,62**
	Female	111	34,48	7,12	
Self confident	Male	126	2,13	,45	1,02
	Female	111	2,06	,53	
Helpless	Male	126	1,18	,47	-1,43
	Female	111	1,26	,46	
Submissive	Male	126	,92	,41	,75
	Female	111	,88	,34	
Optimistic	Male	126	1,88	,51	4,22**
	Female	111	1,58	,57	
Seeking of Social Support	Male	126	1,94	,45	-3,50**
	Female	111	2,14	,45	
Turning to Religion	Male	126	1,89	,87	-1,31
	Female	111	1,95	,82	

^{*}p < .05, **p < .01

In order to find the relationships between a set of personality traits variables with a set of ways of coping variables canonical correlation was computed by using SPSS-CANCORR function. Personality set includ-

ed Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness variables. The way of coping set included Self-confident, Helpless, Submissive, Optimistic, Seeking of Social Support, and Turning to Religion variables. Values for the five computed canonical variables were given in Table 3.

Table 3.The Correlations, Standardized Canonical Correlations, Canonical Coefficients, Percent Variance And Redundancy Among Personality Traits and Coping Styles

	1.Canonical Variable		2. Canonical Variable		3. Ca	3. Canonical Variable	
	Cor.	Coe.	Cor.	Coe.	Cor.	Coe.	
Ways of coping set							
Self confident	.70	.16	36	64	.43	.67	
Helpless	91	68	15	10	.21	.32	
Submissive	-47	09	.11	07	.26	.31	
Optimistic	.67	.14	.42	1.0	.17	.03	
Seeking of Social Support	.04	.04	.24	.32	.79	.75	
Turning to Religion	.64	.22	48	.55	.20	13	
Percent Variance	.40		.11		.16	Total = .66	
Redundancy	.22		.02		.02	Total = .26	
Personality set							
Neuroticism	96	88	08	20	.19	.61	
Extraversion	.53	.19	.17	.30	.81	.97	
Openness to Experience	.32	.17	24	24	.08	11	
Agreeableness	.15	08	.29	.41	.21	.18	
Conscientiousness	.35	.05	.79	97	.29	.24	
Percent Variance	.29		16		.17	Total = .62	
Redundancy	.16		.02		.02	Total = .20	
Canonical Correlation	.74		.38		.34		

Along with the variables, correlations between five canonical variables, standardized canonical variable coefficients, and the amount of within-set variability explained by the canonical variable (Variance percentage), redundancies, and canonical correlations were given. The first canonical correlation was found to be .74 (55% shared variability; $X^2_{(30)} = 254.22$ p<.0005); second canonical correlation .38 (13% shared variability; $X^2_{(20)} = 71.38$,p<.0005); third canonical correlation .34 (12% shared variability; $X^2_{(12)} = 34.38$,p<.0005); forth .14 (1% shared variability)

ability; $X_{(6)}^2 = 5.87$,p<.44), and fifth .07 ($X_{(2)}^2 = 1.27$,p<.0005). Three of the five canonical correlation coefficients were found to be significant, which meant that variability between the dependent variables set and independent variables set overlap significantly. In this section, only statistically significant results were reported. First canonical variable accounted for 40% of the variability in the personality set and 29% of the variability in the ways of coping set. Second canonical variable accounted for 11% of the variability in the personality set and 16% of the variability in the ways of coping set. Third variable set accounted for 16% of the variability in the personality set and 17% of the variability in the ways of coping set. All three canonical variables together accounted for 66% of the variability in the ways of coping set and 62% in the personality set. In short, total amount of variability and redundancies in all three canonical variables showed that canonical variables are related. That is, ways of coping strategies and personality traits are significantly related.

In canonical correlation analysis, canonical variables are found by linear combination of the variables in the set. Variables that load .30 or higher in the loading matrix are considered as a part of that particular canonical variable and those variables that load less than .30 are not considered as a part of the canonical variable (Tabachnick & Fidell, 2001). In this study, in the first canonical set, all variables were loaded higher than .30 with the exception of Seeking of Social Support. Therefore, Self-confident, Helpless, Submissive, Optimistic, Seeking of Social Support, and Turning to Religion ways of coping strategies were found to be significantly related to Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness personality traits. In the second canonic variable, Self-confident, Optimistic, and Turning to Religion in the ways of coping set and Responsibility in the personality set highly loaded. That means, people who are highly responsible were found to be Self-confident, Optimistic, and used Turning to Religion ways of coping. In the third canonic variable, Self-confident and Seeking of Social Support in the ways of coping set and Extraversion in the personality set highly loaded. Therefore, Extraversion personality types were found to use Self-confident and Seeking of Social Support ways of coping strategies.

Discussion

The main goal of the study is to investigate how personality and coping relate each other. The results partially support the main hypotheses, that is, canonical correlation analysis a moderate amount of variance of coping strategies is explained by personality traits. Before interpreting canonical correlation finding in detail, first we will focus on the demographic variables of the study.

As gender differences with two forms of coping were found: Women reported more Seeking of Social Support than men, and men admitted to more Optimistic Coping than women. Higher Seeking of Social Support in women is commonly found within the literature on social support (e.g. Jordan & Revenson, 1999; Matud, 2004; Pika, 2001). Tamres et al. (2002), in a meta-analytic review, also concluded that the one significant effect that was homogenous in the overall meta-analysis remained consistent when the nature of the stressor was examined. Women were more likely than men to seek social support for emotional reasons. Matud (2004) concluded that the socialization patterns and the relatively low status of women situations, it is not surprising that women, more often than men, perceive having inadequate resources for coping with a threatening situation and also see a stressful situation as unchangeable, and tend to turn to others for support.

Gender differences were also found in two subscales of NE-FFI, namely Openness to Experience and Conscientiousness on the behalf of women. A Secondary analyses of Revised NEO Personality Inventory data from 26 cultures (N = 23,031) suggest that gender differences are small relative to individual variation within genders; differences are replicated across cultures for both college-age and adult samples, and differences are broadly consistent with gender stereotypes: Women reported to be higher in Neuroticism, Agreeableness, and Openness to Feelings, whereas men were higher in Assertiveness and Openness to Ideas (Costa, Terracciano, & McCrae, 2001). Although gender differences on Neuroticism have been consistently reported, namely, women scoring higher than men (e. g, Lynn & Martin, 1997), our study did not yield any significant differences. In spite of scarcity, Foot and Koszycki (2004) found no gender differences in patients with panic disorder. Watson and Hubbard (1996) found that high Neurotics are prone to negativistic appraisals of the environment. That is, they tend to interpret ambiguous stimuli in a negative or threatening manner and, therefore, are likely to see threats, problems, and crises where others do not.

The canonical covariation revealed that those who are high in Conscientiousness tend to use self-confident, optimistic, and turning to religion coping while high in Extraversion are more likely to apply Self-Confident and Seeking of Social Support in stressful situations. Even though Conscientiousness is not investigated much, most studies conducted related it with positive /active coping (e.g. Bishop et al. with problem-solving approaches of coping; with active, problem-focused coping Watson & Hubbard, 1996; with adaptive, proactive, reflective coping Hambrick & McCord, 2010). High scores on Conscientiousness are associated with more organized, thorough, careful, diligent, self-disciplined, dependable, and achievement-orientedness, hardworking, reliableness, purpose-driven, and trustworthiness. These traits are expected inventible associated with such coping styles.

The relationship between Extraversion and seeking of social support is not sparse in the literature (e. g. Amirkhan et al., 1995; Ferguson, 2001; O'Brien & DeLongis, 1996 or for a detailed meta-analytical study, Connor-Smith & Flachsbart, 2007). Amirkhan et al found that Extraversion predicted support-seeking coping responses in both males and females, in both laboratory-simulated and real-life problems. On the other hand, McCrae and Costa (1986) found that Extraversion was consistently associated with the increased use of rational action, positive thinking, substitution (i.e., finding satisfaction elsewhere in life), and restraint.

Although an association between Neuroticism and emotion-focused / passive coping is one of the most well-replicated findings (e.g. Bouchard, 2003; Geisler, Wiedig-Allison, & Weber, 2009; Knoll et al., 2005; McCrae & Costa, 1986) in the literature, we found no direct evidence of this relationship. Costa and McCrae (1985) defined neuroticism as a dimension of normal personality raising people's vulnerability in regard to experiencing anxiety, anger, distrust, sadness, and stress-induced somatic complaints. The accumulating evidence demonstrates that those high in Neuroticism tend to use passive and ineffective coping strategies; that conscientious individuals engage in active planning and problem solving; and that extraverts turn to others for support. That is, only expectation with Neuroticism is not valid when considering results.

Beutler and Moos (2003b) offer to distinguish between coping style and coping response. While the former is largely a descriptive concept and closely related to one's enduring behavioral traits, the latter is much more specific to stressful environments and to the changes noted in one's behavior and cognitions during the times of stress (Beutler & Moos, 2003b).

The study has some limitations. It was a cross-sectional research which does not include the process of coping such as appraisals and outcome. In spite of all the limitations, it is valuable primarily because it was the first study showing personality might predict coping in a transitional Muslim society (i.e. Turkey).

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