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Big five personality factors and other elements in understanding work stress of Turkish health care professionals

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Work stress has been a vital issue for the past decades in healthcare setting as well as the role of personality in stress. The purpose of this study is to improve the understanding of the effect of personality and other related elements (individual characteristics and work environment) on work stress based on a cybernetic framework. In order to define work stress, the framework points out individual characteristics, personality and environment, which play a systematic role interactively. This study investigated the effect of personality and other elements on work stress among Turkish health care professionals. The Big Five personality factors were taken into account. It consists of neuroticism, extraversion, conscientiousness, agreeableness, and openness to new experience. Data were collected using questionnaires from 462 health care professionals who are working in 25 different state hospitals and 12 cities in Turkey. The results of correlation analysis showed that extraversion was negatively linked with work stress, and neuroticism was positively linked with work stress. The results of regression analysis revealed that neuroticism as a personality factor, gender as a personal characteristic; and position variables as a work environment, were the predictor of work stress.

Key words: Personality elements, The Big Five, work stress, Turkey, health care.

INTRODUCTION

Stress has been a vital area of studies ever since Hans Selye's study on stress. Thus far, it has been proven that we can improve our stress management better, through minimizing the stress around ourselves by lifestyle changes or understanding our personality better, or mindset to stress response, among other things (Cunningham, 2004: 55).

There is an increasing acceptance that interpersonal elements may affect virtually every aspect of the stress, including the happening and evaluation of stressful events, the selection and efficiency of dealing strategies, and the impact of stress on well-being (O'Brein and DeLongis, 1996: 776). For the last 10 years, there has been an increasing concern in the literature on stress at

work, both from a theoretical point of view and an empirical point of view, and the impact of work stress on personal and organizational results. Because of the reasons like probable legal and productivity assumptions of work stress for organizations, the substantial amount of time that most people spend at work, the importance of work as a fundamental means for implementing and fulfilling personal aspirations and expectations stress at work has been chosen as an important area of researches (Fried et al., 1984: 583-584).

A person's personality affects how that person experiences the stress. We generally assume that a competitive person may take on more work and can endure more stress due to it. However, an aggressive, hostile, person might become angry or upset when facing difficult people or events, which might bring stress. Anxious people might be more stressed at work, or frustrated and dissatisfied when things do not go according to the plan. All these individual characteristics and other

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issues are vital in explaining how an individual experience the stress, including the happening and the evaluation of stressful events, the selection and use of dealing methods, and how the stress impacts the individual's psychological well-being and health (Cunningham et al., 2004: 55-56).

For the last 10 years, there has been a need for research, investigating the role of personality in stress. Researchers offer a range of frameworks linked to personality and the stress that a person experience. Hart developed a model for relation between personality and work, non-work and life satisfaction. Bolger and Zuckerman's framework pictures illustrate how personality affects both the display and reactivity to stress, health and physiological results. O'Brien and Delongis suggest that personality and situational factors play a crucial role in three forms of dealing responses: problem-, emotion-, and relationship-centered. Other researchers such as Costa and McCrae has extended the definition of personality by including the Big Five personality characteristics of neuroticism, extraversion, openness to experience, agreeableness and conscientiousness (Cunningham et al., 2004: 56). At the same time, the five-factor model of personality has come out as the prevalent model for defining personality structure. These five factors have become widely accepted as being core dimensions of personality (O'Brein and DeLongis, 1996: 776).

In this study, we depended on a cybernetic framework suggested by Edwards (1992) that links personality with other variables to understand the work stress. This framework specifies that individual characteristics (such as, age), personality factors and environment all play a role, each interacting systemically.

Stress of health care professionals remains a source of attention. There are various reasons of this. Due to its specific characteristics, health organizations have been working environments, which have intense stress (Tel et al., 2003: 14). Time pressure, busy pace of the working schedule and to have to make important decisions are the main reasons of this stress of health care organization professionals. Furthermore, high possibility of facing unexpected situations, working environment with high risk (being exposed to infection elements), to encounter patients and relatives of them with different physiology and lengthy working owners who are specific to their jobs are the other elements that affect the stress level of the health care organization professionals (Shen et al., 2005: 218; Peltier and Dahl, 2009: 9-10; Cox et al., 1996: 6). Besides the difficulty of providing service to a patient with intense stress, insufficient manpower or the unfair workload of the professionals and financial problems are other contributing factors to stress (Tel et al., 2003:14; Viganò, 2009: 233).

Healthcare is an industry which is extremely human centered. Almost all the treatment and the procedures are conducted by humans. The management of the

healthcare professionals happens in an environment that includes elements like different experts, intense material and equipment usage, food, accommodation and training, which are beyond healthcare. Therefore, these difficult situations in the working environment causes stress (Peltier and Dahl, 2009: 2).

Significant research has been done on stress among doctors and nurses in different countries, but most research studies available on this topic have used European samples. Due to differences in health care systems around the world (Aziz, 2004: 28), the data from other countries may not be generalized to Turkish health care professionals.

Turkey is a country where the main religion is Islam. Although 98% of Turks are Muslim, Turkey has officially been a secular state since the early 1920s with the adoption of the Parliamentary Democratic Government System. After the Islamic Ottoman Empire collapsed, Atatürk, the founder of the modern Turkish Republic, started the era of modernization in Turkey with a strong emphasis on liberalization (Aycan, 2004: 455). Today's Turkish culture consists of elements of both Eastern and Western values with modernity, traditionalism, and Islamic values existing side by side at all layers of society and organizations (Kabasakal and Bodur, 1997).

A CYBERNETIC FRAMEWORK LINKING PERSONALITY AND OTHER VARIABLES IN UNDERSTANDING WORK STRESS

Work stress was considered in three different areas, psychological, behavioral, or physiological, in the studies conducted recently in the literature. It brings two conceptual perspectives on the definition of stress. One of these is the physiological perspective. Selye's work is based on this perspective. Selye's basic ideas are that stress is a nonspecific bodily response to environmental incentive, and that environmental incentive can directly impact a person's physiological responses without any subjective evaluation of those incentives. The second perspective is the psychological perspective in which stress is the result of the interaction between the human and the environment and may be linked with psychological, behavioral, and physiological results. This perspective is based on the work of Lazarus and McGrath (Fried et al., 1984: 584). According to McGrath, there is a stress potential when an environmental situation is perceived as presenting a demand which threatens to exceed the person's capabilities and resources for meeting it, under conditions where he expects a substantial in the rewards and costs from meeting the demand versus not meeting it (Beehr and Newman, 1978: 668). Another variation of the psychological perspective is person-environment fit theory. In addition to the person's capabilities, this theory includes an evaluation of the person's needs and expectations; that is, the discrepancy between what the

people desires or expects to get from the environment and what the person actually gets. Both the physiological and the psychological perspectives are in the position that stress is the result of some environmental incentives or demands from the person. However, while the physiological perspective suggests that stress is a direct function of environmental stimuli, the psychological perspective suggests that stress is more a result of an interaction between environmental demands and the human's emotional evaluation of those demands (Fried et al., 1984: 585).

Different models have been developed to understand the occupational stress, such as the person-environment fit model and the demand-control model of Karasek. The previous approach views psychological and physical stress as being the result of a different person-environment fit, while the demand-control model looks at the interaction between the demands of the situation and the individual's decisional freedom in terms of meeting the job requirements. Even though these models influenced a considerable body of research on stress. They focus on the general demands of the job and the skills and abilities of the incumbent, not taking into account the specific pressures and the role of individual differences in personality and dealing resources (Colff and Rothmann, 2009: 2).

The theoretical and empirical literature suggests that occupational stress is not a characteristic of either environment or individual, but is the result of the interaction of these two main categories. Lazarus emphasized that it is an individual's understanding of a situation, referred to as the "cognitive evaluation," that describes that situation as stressful: the individual's response depends on the evaluation of the situation. The result of the evaluation can be considered as harmful, disgusting, or challenging (Ivancevich et al., 1982: 374).

Cybernetics, or control theory, is becoming widely accepted as a general theoretical framework for understanding human behavior. Cybernetics concerns the functioning of self-regulating systems. As its core is the negative feedback loop, which acts to minimize (that is, negate) discrepancies between environmental characteristics and relevant reference criteria. The principles of cybernetics have been applied to general theories of human behavior and mental and physical health as well as theories in the organizational behavior literature (Edwards, 1992: 238). Principles of cybernetics, particularly the negative feedback loop, are evident in numerous organizational stress (OS) theories. Of these, four are widely cited and represent the larger population of OS models. These include Kahn's role stress theory, McGrath's stress cycle, Beehr and Newman's facet model and person-environment fit theory. Cumming and Cooper framework and finally, Lazarus's transactional model should be considered (Edwards, 1992: 240). Beehr and Newman's facet model have been reviewed within the context of six facets (that is, environmental,

personal, process, human consequences, organizational consequences, and time) of a seven facet conceptualization of the job stress-employee health research domain. A general and a sequential model are proposed for tying the facets together (Beehr and Newman, 1978: 665).

Edwards has cited a cybernetic theory of stress in organizations. This theory integrates and extends existing OS theories, particularly those that propose feedback mechanisms, by resolving their inconsistencies and building on their strengths, primarily through the comprehensive application of principles from cybernetic theory. Hence, the present theory provides a unifying framework for the study of stress in organizations and establishes a basis for its empirical examination (Edwards, 1992: 265).

Edwards "A Cybernetic Model of Stress" indicated that employee's understanding of stress is influenced by three classes of elements. The first consists of the physical and social environment and the employee's individual characteristics. The physical environment includes objective features of the employee's environments, such as working conditions and geographic location, whereas the social environment involves the people, interpersonal relationships, social arrangements in the employee's social environment. Personal characteristics refer to the employee's own features, such as skills, abilities, and physical appearance. Both the physical and social environment and the employee's personal characteristics are filtered by perceptual processes (Edwards, 1992: 249).

Research model

Cybernetics models suggest that any system will be based on the feedback from a number of interacting components. In our transformation of Edwards' model, health care professionals understandings of work stress were affected by a number of interacting elements, including age, gender, education, marital status, having children, children number, working hours, position, function and personality characteristics (Figure 1).

Purpose of the study

The importance of defining personality traits, individual characteristics and work environment associated to work stress is inarguably important to better the standard of health services and care in the health care profession. This research adds to our understanding of the potential role of personality factors and other elements in explaining work stress among health care professionals working in state hospitals in Turkey. This study specifically examines the relationship of the big five personality factors described above with work stress. It is likely that the personality factors would have a different relationship

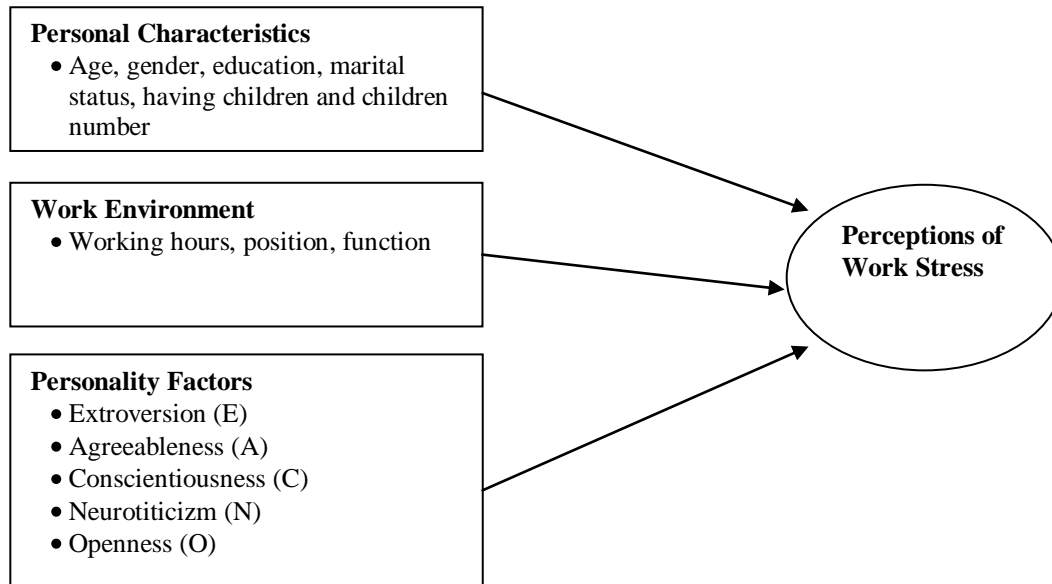


Figure 1. The research model (Edwards, 1992).

with the components either positive or negative.

HYPOTHESES

The Big Five personality factors and work stress

The relationship of work stress, an individual difference variable, to a broader theoretical context, personality, is just beginning to explore. The current extant literature indicates the possibility that individual variation has an important role on the work stress understanding of the humans. The main problem that the literature still cannot provide us enough information is the effect of personality on the work stress.

In the last ten years, there has been need for a research, investigating the role of personality in stress. At the same time, the five-factor model of personality has emerged as the prevalent model for defining personality structure (O'Brien and DeLongis, 1996: 776). Although these five factors have become widely accepted as being core dimensions of personality, relatively few studies have investigated their role in work stress, and few studies have examined the independent effects of each of the five factors individually on work stress.

There are no empirical studies giving information on the relationship between traits that are included in The Big Five and work stress on health care professionals face in Turkey. Consequently, hypotheses were logically formulated by considering the characteristics linked with each of the big five traits.

In recent years, the "Five - Factor Model" of personality (neuroticism, extroversion, openness, agreeableness, and conscientiousness) has emerged as a unifying

framework to understand the complete domain of normal personality and more research is appearing that explores the influence of these five general personality dimensions on organizational behavior (Bartone et al., 2009: 499).

A profound supported theoretical basis for trait psychology is the five-factor model (FFM), which provides the taxonomy of five personality traits, proven by independent research teams to have validity at a broad level, that is, extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience by Digman (1990), Goldberg (1992), McCrae and Costa (2003), and Norman (1963). Numerous empirical studies of the FFM show strong evidence for consistency in personality terminology by subjects to describe themselves and others, with stability throughout adult-life spans. The consensus within the research community led to the 1996 online establishment of the International Personality Item Pool (IPIP) in the public domain to promote ongoing research in the FFM (Migliore, 2011: 39).

The five-factor model of personality is a hierarchical organization of personality traits in terms of five basic dimensions: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. Research using both natural language adjectives and theoretically based personality questionnaires supports the comprehensiveness of the model and its applicability across observers and cultures (McCrae and John, 1992: 175).

The five broad-level personality traits can be different in degree, from low to high, among different individuals. The inter-relational aspects of the five-factor theory of personality and culture are supported through the extensive work of McCrae and Costa, which emphasize distinctions between biologically based tendencies and

culturally shaped adaptations. For example, language is a universal basic tendency, but its adaptation is based on the cultural environment. The other studies focusing on the inter-relational aspects of personality with culture include Digman (1990), Goldberg (1992), and Goldberg et al. (2006). These studies differentiate national-culture-level values and individual personality traits, based on the premise of adaptation to act and react according to the circumstances at hand, utilizing one's repertoire of learned responses (Migliore, 2011: 39).

The studies that will lead to generalization of the model among the cultures were done in English language and translated to the other languages (Somer et al., 2004: 41). The authors used International Personality Item Pool to create the five factor personality inventory suggested by Somer et al. (2004) as cited in Goldberg (1999).

In the present study, relating basic personality factors to work stress may give us more insight information whether work stress is more related to individual variability. Moreover, such studies will help us to identify individuals who are at risk for developing more stress. There is accumulating evidence that almost all personality measures can be contained in the Big Five: neuroticism, extraversion, agreeableness, openness to experience, and conscientiousness.

Neuroticism (N)

Some adjectives defining the factor of normal personality for neuroticism are divided into high and low scores. The high scorers are defined as worrying, nervous, emotional, insecure, inadequate, hypochondriacal, whereas the low-scorers are defined as calm, relaxed, unemotional, hardy, secure, self-satisfied (Costa et al., 1986: 641). A tendency to experience negative, distressing emotions and to possess associated behavioral and cognitive traits characterizes neuroticism. Some of the features that classify this dimension are fearfulness, irritability, low self-esteem, social anxiety, poor inhibition of impulses, and helplessness (Bakker et al., 2006: 36). Neuroticism is linked with instability, stress proneness, personal insecurity and depression. Individuals scoring higher on Neuroticism are more likely to experience negative moods and physical symptoms, to be more strongly affected by negative life events, and to have their negative moods last longer (Burke et al., 2006: 1225). One of the characteristics of neuroticism is that those high on the trait tend to experience more emotional discomfort. Those high on N have been found to report more discomfort when faced with overload either at work or home, or when faced with interpersonal stress, than those low on N (O'Brein and DeLongis, 1996: 804). In general, individuals who are high in neuroticism have the tendency to set extremely high goals for themselves and tend to underestimate their own performance. People high in neuroticism seem to use avoiding and distracting

strategies-such as denying, wishful thinking, and self-criticism-rather than more approaching strategies-such as problem - solving and proactive behavior to deal with issues. Moreover, neuroticism seems to be linked with strong emotional reactions to stressful situations, finally leading to physical illness, and with a higher risk of the development of psychopathology (Bakker et al., 2006: 36):

H₁: There is an existing positive relationship between neuroticism and work stress.

Extraversion (E)

Several adjectives describing the extraversion factor of normal personality are divided into a high and low scorer. The high scorer adjectives are sociable, active, talkative, person-oriented, optimistic, fun-loving, and affectionate. In addition, the low-scorers are reserved, sober, enuberant, aloof, task-oriented, retiring, and quiet (Costa et al., 1986: 641). E is distinguished by its breadth of content. In their review, Watson and Clark identified seven components of E: venturesomeness, affiliation, positive affectivity, energy, ascendance, and ambition. Individuals low in E can be described as quiet, reserved, retiring, shy, silent, and withdrawn (McCrae and John, 1992: 196). Extraverts show positive emotions, higher frequency and intensity of personal interactions, and a higher need for incentive. In addition, extraversion is, in general, linked with a tendency to be optimistic and a tendency to reevaluate the problems positively (Bakker et al., 2006: 34). That is why, they tend to engage in more support seeking, positive thinking, substitution, and restraint (McCrae and Costa, 1986: 392), but use less self-blame, wishful thinking, and avoidance than those low on E (O'Brien and DeLongis, 1996: 777):

H₂: Extraversion will be negatively linked to work stress.

Agreeableness (A)

The adjectives describing the factor of normal personality for agreeableness are divided also into the high and low scorer. The high scorer adjectives are softhearted, good-natured, trusting, helpful, forgiving, gullible, straight-forward, whereas the low-scorers are cynical, rude, suspicious, uncooperative, vengeful, ruthless, irritable, manipulative (Costa et al., 1986: 641). Agreeableness has been described as the opposite side of antagonism. It reflects a proclivity to be good-natured, acquiescent, courteous, helpful, and trusting (O'Brien and DeLongis, 1996: 778). Agreeableness is associated with cooperative, caring and appealing. Altruism, nurturance, and caring in contrast to hostility, indifferent towards others, independent, and noncompliance, characterizes

agreeableness (Bakker et al, 2006: 35):

H₃: Agreeableness will be linked with work stress negatively.

Conscientiousness (C)

This has been described as the opposite pole of undirectedness. The adjectives describing the factor of normal personality for Conscientiousness are divided also into the high and low scorer. The high scorer adjectives are organized, reliable, hard-working, self-disciplined, punctual, scrupulous, neat, ambitious, persevering. The low-scorers are aimless, unreliable, lazy, careless, lax, negligent, weakwilled, hedonistic (Costa et al., 1986: 641). Those high on C have been classified as having a tendency to be habitually careful, reliable, hard-working, well-organized, and purposeful (O'Brien and DeLongis, 1996: 778). Besides, Costa, et al. (1986) and McCrae and Costa (1986, 2003) have linked conscientiousness with self-discipline, achievement striving, compliance, and competence. The conscientious individual's persistency and self-discipline will probably also lead a person to finish tasks and to achieve things (Bakker et al., 2006: 36). Conscientiousness is naturally related to job performance. It is linked with persistence, dependability and good organization skills (Burke et al, 2006: 1225). Like A, C is a highly evaluated dimension; indeed, A and C are the classic dimensions of character, describing "good" versus "evil" and "strong-willed" versus "weak-willed" individuals. Perhaps it was the overtones of these moral that often led scientific psychologists to ignore these factors, but in fact, both represent objectively observable dimensions of individual differences. Some people are thorough, neat, well organized, diligent, and achievement-oriented, whereas others are not, and self-reports of these characteristics can be validated by peer or spouse ratings. A number of different conceptions of C have been offered. C as a dimension that holds impulsive behavior in check and C as a dimension that organizes and directs behavior. The term Conscientiousness combines both aspects, because it can mean either governed by conscience or diligent and thorough. Empirically, both kinds of traits seem to cover (McCrae and John, 1992: 197):

H₄: The relationship between conscientiousness and work stress will be positive.

Openness to experience (O)

Those high on O are inclined to be curious, imaginative, creative, original, broad interests and untraditional. Those low on O are inclined to be conventional, down-to-earth, narrow interests, unartistic and unanalytical (Costa et al., 1986: 641). The intelligence and curiosity that are intellectual / autonomy may be associated with a

tendency to try to learn something valuable in demanding experiences in terms of, for example, personal growth or other positive results. Intellect is largely unrelated to coping but resembles to reflect a more flexible, creative, and intellectually curious approach in dealing with stressful situations (Bakker et al., 2006: 37). In addition to this, open individuals are more likely to use humor in dealing with stress; closed individuals are more likely to use faith (McCrae and Costa, 1986: 392). Openness may be linked with stress reduction because situations are evaluated as less threatening by the individuals who score high on this factor (Bakker et al., 2006: 37):

H₅: Openness will be linked with work stress negatively.

Personal characteristics and work environment on work stress

Work stress may stem from a complicated interaction between an individual's personality and the work environment. Therefore, age, a person's job level, personality, and understanding of stress are all important factors in defining the work stress someone might experience (Beehr and Newman, 1978). It is difficult to measure all the variables that are part of a cybernetic model of stress. Therefore, what we have provided here is a partial illustration only. Edwards' (1992) review of a number of quasi-cybernetic stress models exemplifies their variety, as each offers unique interpretations of how to structure the relationships among different variables. At the very least, our study provides an empirical test of a multifaceted stress model and establishes the need to continue researches aimed at this line.

Some researchers have mentioned that men and women handle stress in a different way; on average, women report higher levels of job strain, perhaps because they have control issues at their work (Cunningham et al., 2004: 59).

H₆: Work stress understandings will result in interaction between health care professionals personality factors (big five), personal characteristics (age, gender, education, marital status, having a children or not, number of children) and work environment (working hours, positions, function).

METHODOLOGY

Procedure

Data were gathered between August 2010 and March 2011 from health care organizations located in 12 big cities in Turkey. Members of the research team contacted about 25 government hospital organizations in these cities requesting their participation in the research. Approximately, 505 health care professionals and managers (doctors, nurses and managers/assistant managers) were contacted; of which 43 were excluded from the study as they did not complete the questionnaires. 462 others provided the

questionnaires fully completed. The respondents are best described as a large convenience sample of Turkish health care managers and professionals in a variety of state hospitals.

Respondents

Table 1 presents the demographic characteristics of the sample. Just over half of the samples are women (57.6%), fell between 30 and 39 years of age (49.2%), married (75.1%), most had children (68.8%), most of the parents had 2 children (36.3%). Education levels of the samples had graduate school (42.8%), fell between 45 and 54 h worked week (54%), were in nursing roles (61.8%) and function in internal medicine (44.1%).

Measures

As an individual's personality, people's adaptation to stress may account for some variability. Furthermore, biographical features, such as age and gender are extremely important to understand work stress (Cunningham et al., 2004: 59).

Personal demographic and work situation characteristics

A number of personal demographics (for example age, gender, level of education) and work situation characteristics (for example, hours worked per week, organizational position) were measured by single items (Table 1).

Big five personality factors

These factors (neuroticism, extroversion, openness, agreeableness, and conscientiousness) were assessed using a scale developed by Somer et al. (2002), which originally consisted of 220 elements, but on this study, the scale was shortened to 85 elements. Samples indicated their agreement with each element on a five-point scale (1= strongly disagree, 5= strongly agree). Table 2 shows the high point characteristics of each factor and the reliability coefficients of the samples in the scale.

Work stress

This was measured by nine item scale ($\alpha=0.727$) developed by Spence and Robbins (1992). One item was "Sometimes I feel like my work is going to overwhelm me." Job stress scale in this study was used as previously performed in Turkey by Burke et al. (2008) who developed and translated from English to Turkish using the back translation method.

RESULTS

A descriptive statistics, correlation analyses for study variables and hierarchical regression analyses using work stress as the criterion variable and personality and other factors as predictor variables are used to present the results of this study.

Stress levels according to doctors, nurses and manager/assistant manager professional groups

Table 3 provides the descriptive statistics (that is, cross

tab, means and standard deviations) that were computed to gain a perception of the stress factors according to doctors, nurses and manager/assistant manager professional groups.

60% of the doctors, 56% of the nurses and 36% of the manager/assistant managers were with work stress level above the average according to Table 3. After using the ANOVA test to understand whether there was a statistically significant difference among the health care professional, it was found that there is a statistically significant difference among the groups with the results ($F=2.166$, $p=0.116$).

Correlations

Table 4 shows the inter correlations among the five personality dimensions and work stress. Correlation analyses were conducted to test relationship between work stress and neuroticism, extraversion, openness, agreeableness and conscientiousness (H_1 , H_2 , H_3 , H_4 and H_5).

Relations between personality factors

Consistent with past research (O'Brien and DeLongis, 1996; Burke et al., 2006), the personality factors as seen in Table 4 (neuroticism), was negatively correlated with the four other Big Five measures; the other four significant correlations between the other four factors were positive.

Relations between personality and work stress

The magnitude of the correlations between personality and work stress collected in this study is -0.093 to 0.162. According to the correlation analysis, $r = -0.093$, $p < 0.05$, level of negative significant relation between work stress and extroversion personality characteristic and $r = 0.0162$, $p < 0.01$ level of positive significant relation between work stress and neuroticism personality characteristics was determined. H_2 and H_1 were verified when the data were examined. However, expected significant relation between work stress and other personality variables could not be determined. Individual characteristics and work environment effects in work stress were evaluated in regression analyses and will be discussed later on.

Multiple regression analyses of personality and other variables on work stress

We predicted that personal factors (neuroticism, extraversion, openness, agreeableness, conscientiousness), individual characteristics and work environment, have

Table 1. Demographic characteristics of sample.

Variable	N	%
Gender		
Male	189	39.9
Female	273	57.6
Age		
20-29	92	19.4
30-39	233	49.2
40-49	115	24.3
50-59	19	4
Marital status		
Married	356	75.1
Single	93	19.6
Widowed	13	2.7
Children		
Yes	326	68.8
No	136	28.7
Number of children		
1	111	23.4
2	172	36.3
3 or more	43	9.1
Education		
High school	64	13.5
Vocational high school	203	42.8
Master	80	16.9
Doctoral program	111	23.4
Work hours per week		
35-44	152	32.1
45-54	256	54
55-64	32	6.8
65 or more	6	1.3
Organizational position		
Doctor	139	29.3
Nurse	293	61.8
Hospital manager/Asst. hospital manager	30	6.3
Function		
Internal medicine	209	44.1
Surgery	116	24.5
Basic medical science	64	13.9
Intensive care	43	9.1
Administrative	30	6.3

a significant effect on how someone perceives the stress among the health care professionals (H_6). To test these

hypotheses, hierarchical regression analyses were conducted. Hierarchical regression to allow an investigation

Table 2. Five factor personality inventory basic factors.

Factor name	High point charecteristics	Cronbach's alpha
Extroversion (E)	Lively, outgoing, social, mobile, enthusiastic, relaxed, natural, optimistic	0.77
Agreeableness (A)	Avoiding the conflict, sensitive, compassionate, compatible, calm, trusting to people, prone to cooperation	0.82
Conscientiousness (C)	Tidy, planned, purposeful, determined, cautious, cautious, responsible	0.66
Neuroticism (N)	Sensitive, emotional, anxious, tense, unresisting, impulsive	0.83
Openness (O)	Analytical thinking, sensitive, wide interests, open to new ideas, creative	0.77

Table 3. Cross tab stress levels according to doctors, nurses and manager/assistant manager professional groups.

N=462	Professional groups					
	Doctors (N=139) Stress Mean=3.27, S.D.=0.64		Nurses (N=293); Stress Mean=3.19, S.D.=0.71		Manager/ Ass.Manager (N=30); Stress Mean=2.99, S.D.=0.56	
Stress levels	Frequency	Percent	Frequency	Percent	Frequency	Percent
1.00-2.00	6	4	14	4	-	-
2.01-3.00	51	36	120	40	19	63
3.01-4.00	65	46	137	46	9	30
4.01-5.00	20	14	32	10	2	6

" \bar{X} =1, Very Low"; " \bar{X} =2, Low"; " \bar{X} =3, Average"; " \bar{X} =4, High"; " \bar{X} =5, Very High".

of the variance in work stress accounted for by personality and other variables (individual characteristics and work environment) (backward selection method was used). The five personality factors were entered as a block on Step 1. The five personality factors and individual characteristics were entered as a block on Step 2. All independent variables were entered as a block on Step 3. The data gathered from the regression analysis was shown in Table 5.

Regression of personality factors on work stress

To examine the relationship between personality factors and work stress, we first conducted a hierarchical regression analysis with neuroticism, extraversion, openness, and agreeableness, conscientiousness as the predictor variables and work stress as the criterion variable. The results showed that neuroticism was the sole predictor of work stress ($\beta = 0.172$, $p < 0.01$). This predictor accounted for 17% of the variance in work stress, which was highly significant ($F = 3.166$, $p < 0.01$).

Regression of personality factors and individual characteristics on work stress

In the second stage, we conducted a regression analysis with neuroticism, extraversion, openness, agreeableness, conscientiousness and individual characteristics (for example, age, gender) as the predictor variables and

work stress as the criterion variable. The results showed that gender was the sole individual characteristics predictors of work stress ($\beta = 0.105$, $p < 0.05$). This predictor accounted for 10% of the variance in work stress, which was considered significant ($F = 1.924$, $p < 0.05$).

Regression of personality factors and other variables on work stress

To test our general hypothesis that personality factors and other variables interactions would contribute significant variance to the prediction of work stress, we entered all independent variables (personality factors, individual characteristics and work environment) as a set on the third step of the equation. The results showed that position ($\beta = -0.127$, $p < 0.01$) was the environmental characteristics predictors of work stress. This predictor accounted for 12.7% of the variance in work stress. In cybernetic model content and together with all independent variables (personality factors, individual characteristics and work environment) tested with regression analysis, these predictors accounted for almost 40% of the variance in work stress, which was considered significant ($F = 2.760$, $p < 0.01$).

DISCUSSION

This research investigated the role of personality factors and other variables in predicting work stress suggested

Table 4. Correlations among measures.

Variable	Mean	Std. deviation	Extroversion	Agreeableness	Conscientiousness	Neuroticizm	Openness	Work stress
Extroversion	3.39	0.615	1					
Agreeableness	3.57	0.639	0.387**	1				
Conscientiousness	3.50	0.475	0.432**	0.571**	1			
Neuroticizm	2.54	0.633	-0.350**	-0.458**	-0.397**	1		
Openness	3.69	0.609	0.438**	0.616**	0.660**	-0.415**	1	
Work stress	3.20	0.680	-0.093*	-0.044	-0.068	0.162**	-0.024	1

**Correlation is significant at the 0.01 level; *correlation is significant at the 0.05 level.

Table 5. Multiple regression analyses of personality factors and other variables on work stress.

Work stress (N=462)	R	R ²	ΔR ²	β
Step 1. Personality factors	0.183	0.034	0.034**	
Neuroticism				0.172**
Extraversion				-0.063
Openness				0.086
Agreeableness				0.034
Conscientiousness				-0.048
F= 3.166, p=0.008, Constant= 2.759				
Step 2. Personality and personal characteristics	0.230	0.053	0.053*	
Age				0.015
Gender				0.105*
Marital status				0.040
Children Number				-0.059
F= 1.924, p= 0.026, Constant= 2.375				
Step 3. Personality and personal characteristics and work environment	0.231	0.053	0.053*	
Working hours				0.012
Position				-0.127**
Function				0.077
Education				0.038
Overall R ²	0.228	0.052	0.000	
F= 2.760, p=0.004, Constant=2.751				

*p<0.05, **p<0.01, ***P<0.001; Dependent variable: Work stress; independent variables: Neuroticism, gender, position.

by Edwards (1992) cybernetic framework. This research makes an important contribution by considering both work stress and big five personality factors and other factors, concurrently. Neuroticism predicted work stress. Except gender, any personal demographic and except position, any work environment characteristic did not predict work stress. There are perhaps important issues of these findings that need to be discussed. Neuroticism, gender and position (doctor, nurse, and manager/assistant manager) came out as a considerably more powerful predictor of work stress.

Our findings support that people who are of different gender, position, and personality types are likely to react to work stress in a different way. Cybernetic model illustrates that, while some personality and stress measures are directly linked with others, such as conclusions are only a partial explanation of the overall stress issue. Therefore, several studies point out that individual characteristic may have an important role while explaining stress (Ivancevich et al., 1982). Our research indicates that we can improve our learning more if we consider that this might be moderated by other variables. According to the results of Cunningham et al. (2004:72), stress results from a combination of interactions between demographic variables (such as age, position, and job level) and personality. Aziz, in order to compare contribution of various sources of stress perceived, he found that the five highest mean scores were for the items on the number of hours worked per week (Aziz, 2004: 32). His study showed that doctors work average of 58.03 h per week. The doctors who reported a higher number of hours on call per week sensed more stress because of the heavy workload, relationship with physicians, lack of time for family, and quality of care by staff (Aziz, 2004: 35). Such research suggests that the stress experience is dynamic and interactive. Certain variables may effect the overall stress equation either directly or indirectly.

The present data suggest that there is a relationship between work stress and personality factors and other variables, but that it is complex and interactive. It seems that many interactions between different variables, personality factors and stress measures make it difficult to identify risk factors that will categorically offer just a prediction. The results in this study explain that stress may arise from a complex interaction among variables. The research model presented here provides a basis for illustrating these interactions. For example, while neuroticism is related to work stress positively, extraversion is related to it negatively. There was no significant relationship between other personality variables and work stress. While personality features are important risk factors, they will not, by themselves, be a predictor of stress. Stress arises from a combination of interactions among personal variables, environmental variables and personality factors.

Researchers claim that personality characteristics have resistant and comprehensive effects in peoples' lives. Researchers point out that interest has an important role

on success. However, they mention that along with interest, abilities, tendency, social capabilities, and ability to tolerate the stress, work ethic of the individuals affect the success together. Besides, personality characteristics may shed light on individuals' dissatisfaction in their job and their desire to quit their jobs. While open people change their jobs due to their openness to the change, people with high neuroticism might like to change their job as they are not easily satisfied in their lives. Furthermore, responsibility factor in five factor model is known as the strongest variables on regression of success in the work (Somer, 2004: 130). Because of this relation between five factor personality characteristic, job satisfaction, desire to quit and job success may be examined in further studies. These results give an idea that this might be used on 5FKE profiles, vocational guidance and recruitment process as well as career development in an organization (Somer, 2004: 132).

LIMITATIONS OF THE RESEARCH

Finally, there are several limitations on this study. Firstly, the data were self-reported responses, creating the possibility of response set tendencies and common method bias. Secondly, the data were based on doctors, nurses and manager/assistant manager samples only. Therefore, it is impossible to generalize these finding to other health occupational groups, in other cultures and countries. Thirdly, this study did not deal with long-term results; all data were collected at one point in time making it difficult to address issues of causality. Fourthly, there is also a disadvantage in using a questionnaire style, namely that one cannot get all the data or information required.

RECOMMENDATIONS

Workplace health issues are beginning to significantly affect employees, and by extension, organizations and the economy. Stress is a significant aspect of workplace health. Organizations may have to deal with this issue proactively, such as allowing for hours of rest during work, legislated in the European Union. Managers may also have to radically re-design jobs and re-visit the workload issue so as to decrease work intensity of the health care professionals (Burke et al., 2010: 357).

In order for employees to perceive that work expectations are manageable and within their, or importantly other peoples' power, employers should ensure that employees are equipped with the necessary knowledge, skills, material, instruments and other resources, and that there is balance in the load of duties to be managed. Job demands and work intensity should be managed by the organization to prevent stress of health care professionals. Coping strategies are also important areas of intervention. Improving the relationship amongst

members of the professional team (for example, doctors and nurses, including supervisors) may also relieve stress. This could be achieved by closer integration during training to enhance an understanding of each other's role, as well as implementing a higher level of education for nurses, which might lead to increased confidence and an ability to discuss issues as equals with professional colleagues. The problem of staff shortages needs to be addressed. A re-evaluation of salaries might be a good point of departure in addressing this problem (Colff and Rothmann, 2009: 9).

Future research directions

This study suggests that future research might begin to develop more explanations of stress when the interaction of a range of variables is taken into account. We do not argue that we have fully tested a cybernetic model of stress. Instead, we have only illustrated that there is potential in such research. Our knowledge of the effects of big five personality factors on work stress would be improved by conducting similar researches in different cultures and countries and this would determine if there are any boundary conditions limiting the generalizability of the findings. In addition to this, future research needs to be done on big five personality factors and work stress issues of causality point of view. Cross-sectional data would be used. Further research is also needed to explore the differential effect of the ways to deal with stress. Future research should also specify the other aspects of the stress process. Our investigation of the role of personality in work stress was limited.

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