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ABSTRACT

Objective: Although most burnout research has focused on environmental job-related correlates, it is possible that personality factors also play an important role in the development of burnout. The aim of present study is to examine the relationship between personality and burnout in healthcare workers by using Cloninger's psychobiological model and Maslach's three-dimensional burnout model in a healthcare worker sample in Turkey.

Methods: Our samples consisted of 66 male, 14 female and totally 80 healthcare organization workers. Sociodemographic form for all the participants was completed during the interviews. The Maslach Burnout Inventory and Turkish TCI were completed by the participants. Multiple hierarchical regression analyses that determine best predictor of independent variables were performed to examine the association between the independent and dependent variables.

Results: The hierarchical regression analysis has indicated that Self-Directedness was a significant predictor of depersonalization ($\beta = -.347$, $R^2 = .233$, $F = 1.878$, $p = .013$) and Self-Transcendence and Self-Directedness were significant predictors of Personal Accomplishment ($\beta = -.317$, $R^2 = .176$, $F = 1.319$, $p = .029$; $\beta = -.328$, $R^2 = .176$, $F = 1.319$, $p = .022$; respectively), and Empathy and Self-Forgetfulness subscales were significant predictors of Personal Accomplishment ($\beta = -.426$, $R^2 = .106$, $F = 1.323$, $p = .013$; $\beta = -.400$, $R^2 = .106$, $F = 1.323$, $p = .030$; respectively).

Conclusions: Our findings have shown that Self-Directedness, Empathy subscale of Cooperativeness and Self-Transcendence with its Self-Forgetfulness subscale were significant predictors of personal accomplishment dimension of burnout. Our results suggested a strong association between temperament and character dimensions of personality and burnout in healthcare workers.

Introduction

For the first time, the concept of burnout was defined by Freudenberger for healthcare employees in 1974 and it was accepted as mental and physical energy depletion after developing work-related stress in the long term [1]. Later, Maslach argued that long-term work stress leads to burnout, and defined it as breaking away of people from the original meaning and purpose of the profession they do and giving up to take care of people they serve.

Maslach has developed a three-dimensional burnout model that explain what burnout is [2]. Maslach defined Emotional Exhaustion as the central dimension of burnout, and it meant being emotionally overextended and exhausted by one's work. The second critical dimension of burnout is depersonalization, which is characterized by exhibiting negative, cynical attitudes towards others and treating people as objects. To cope with the sense of exhaustion, workers exhibit cynical, solid, and distant behaviours. The last dimension of burnout in Maslach Burnout theory is Individual Accomplishment. That is

about the negative assessment of the performance of people [3]. People are doubtful about making a difference in their job, and they lose awareness of their personal competence in time [4–6].

Cloninger has developed a general psychobiological theory to identify the structure and development of personality [7,8]. This personality theory includes four temperament dimensions (Novelty Seeking, Harm Avoidance, Reward Dependence, and Persistence) which are thought to be genetically independent, moderately inheritable, and stable throughout life; and three character dimensions (Self-Directedness, Cooperativeness, and Self-Transcendence) which develop into adulthood defined to reflect individual differences in self-concepts about goals and values in functional relation to experience which is predominantly determined by socialization processes during the life-span. The three dimensions of Character mature, as one ages, through insight learning that deal with self-concepts and begin to influence personal and social effectiveness into adulthood. They are believed to be more

culturally inherited than the temperament traits [7–9]. The three aspects of self-concept are differentiating in accordance with to what extent a person identify himself/herself as autonomous (Self-Directedness), an integrated part of society (Cooperativeness), and an integrated part of the universe (Self-Transcendence). Furthermore, temperament is corresponded to sensation, link building, and motivational processes that create the integration of skills and habits based on emotions. Whereas, character is corresponded to symbolization and abstraction process based on conceptual learning [8].

Although the environment is considered as the primary trigger of burnout, personality and other factors may also have an effect on experiencing burnout [10]. In the literature, there are only a few studies that examined the relationship between personality and burnout. The existing studies examine the relationship between the five-factor model and burnout [11–13]. In these studies, it was found that some personality traits such as neuroticism and introversion/extraversion predicted burnout syndrome substantially. Specifically, neuroticism personality trait predicted emotional exhaustion; extraversion and agreeableness predict depersonalization; extraversion and openness predicted personal accomplishment [11–13].

In a study where the relationship between the Temperament and Character Inventory (TCI) and the Maslach Burnout Inventory was examined in a sample of 237 primary school teachers, it was found that Harm Avoidance dimension of temperament and Self-Directedness and Cooperativeness dimensions of character correlated with all three dimension of burnout. Emotional Exhaustion was found to be positively correlated with Harm Avoidance dimension of temperament and negatively correlated with Reward Dependence dimension of temperament and Self-Directedness and cooperativeness dimensions of character. Depersonalization was found to be negatively correlated with Self-Directedness, Cooperativeness, and Self-Transcendence and negatively correlated with Harm Avoidance. Finally, low personal accomplishment was found to be positively correlated with Harm Avoidance and negatively correlated with Self-Directedness and Cooperativeness [14].

The aim of present study is to examine the relationship between personality and burnout in healthcare workers by using Cloninger's psychobiological model and Maslach's three-dimensional burnout model in a healthcare worker sample in Turkey.

Methods

Study participants

This study included 66 male, 14 female and totally 80 healthcare organization workers from different occupations and from three different hospitals; Ege University Hospital, Dokuz Eylul University Hospital, and Atasam Hospital. Exclusion criteria were pregnancy, cancer, chronic liver disease, organic brain syndrome, and mental retardation. Sociodemographic form for all the participants was completed during the interviews. The Maslach Burnout Inventory and Turkish TCI were completed by the participants. Written informed consents were obtained from the participants following the study protocol was thoroughly explained.

Psychometric measurements

Sociodemographic data form
This form includes demographic variables including gender, age, departmant, education, hospital, and occupation.

Temperament and Character Inventory
The TCI is a self-administered, 240-item true/false questionnaire. Temperament dimension includes Novelty Seeking, Harm Avoidance, Reward Dependence and Persistence; the Character trait includes, Self-Directedness (SD), Cooperativeness (C), and Self-Transcendence (ST) subscales [8]. It measures the temperament dimensions of NS and HA using four subscales, RD by three subscales, and P by a single 8-item scale. The character dimensions of SD and C are assessed with five subscales, and ST consists of three subscales. The TCI has been adapted to Turkish by Kose et al. [15], and no items were excluded as being irrelevant to Turkish culture. In this study, the Cronbach alpha values for Temperament dimensions were between .60 and .85 and for character dimensions were between .83 and .82 in a normative sample in Turkey [15].

Maslach Burnout Inventory (MBI)
Maslach Burnout Inventory (MBI) developed by Maslach and Jackson is a 7-point Likert-type scale and composed of 22 items [6]. Maslach Burnout Inventory assesses three components of the burnout syndrome as emotional exhaustion, depersonalization, and personal accomplishment. The Turkish version translated by Ergin [16] is organized as a five-point Likert-type scale with options from "0-never" to "4-always." Its validity and reliability have been done and the three factors in the original form are also found to be valid for Turkish Form [16]. In the scale, 9 items (1, 2, 3, 6, 8, 13, 14, 16, 20) are used to evaluate emotional exhaustion, 5 items (5, 10, 11, 15, 22) are for depersonalization, and 8 items (4, 7, 9, 12, 17, 18, 19, 21) are for personal accomplishment. In emotional exhaustion and depersonalization subscales, items are scored in the same way, but the personal accomplishment subscale items are reverse scored and collected.

By this method, different points are collected for each subscale. Scale and subscale have no cut-off points. The total score of the emotional exhaustion subscale varies from 0 to 36, depersonalization from 0 to 24 and personal accomplishment's total score ranges from 0 to 32. The score of each subscale is not combined in one single total score. Therefore, for each respondent, three subscale scores are computed. Individuals who experience burnout are expected to be high in emotional exhaustion and depersonalization, and to be low in personal accomplishment.

Statistical analysis

Data analysis was performed by using SPSS for Windows, version 23 (SPSS Inc., Chicago, IL, United States). Data were shown as mean ± SD for metric discrete variables; number of cases and percentages were used for categorical ones. Degrees of association between metric discrete variables were calculated by Pearson's product–moment correlation coefficients. Multiple hierarchical regression analyses that determine best predictor of independent variables were conducted to examine the association between the independent and dependent variables. Hierarchical regression was preferred over another type of regression since regression models are build based on presumptions and it is more relevant for applied health professionals. A p value less than .05 was considered statistically significant.

Results

As seen from Table 1, the average age of the 80 participant in the study was 30.33 (SD = 9.14) years. The sample consisted of 66 (82.5%) males and 14 (17.5%) females. The majority of the people who participated the study have been worked in his/her profession 0–5 years (n = 43, 53.8%), 16.3% have been worked 6–10 years, 11.3% have been worked 11–15 years, and 18.8% have been worked 16 years and above. The large part of respondents (71.3%) has been worked in his/her department for 0–5 years. The majority of the participants had high school education (n = 24, 30.0%), 21.3% had two years degree, 43.8% were undergraduates, 5% were postgraduates. 30% have been worked in Ege University among all participants while 16.3% have been worked in Dokuz Eylul University, and 43.8% have been worked in Atasam Hospital. Out of this sample, 67.5% have been working intensive care department and 80% of the sample has been working as nurse. The detailed demographic characteristics of participants are presented in Table 1.

Some statistics which has been handled from the sample showed some differences than the Turkish normative values reported in Kose et al.'s Turkish TCI validation study [15]. The scores of Impulsiveness,

Table 1. Socio-demographical characteristics of the participants.

	Mean ± SD	n (%)
Age	30.33 ± 9.14	
Duration of working in this profession		
0–5 years		43 (53.8)
6–10 years		13 (16.3)
11–15 years		9 (11.3)
16 years and above		15 (18.8)
Duration of working in this department		
0–5 years		57 (71.3)
6–10 years		7 (8.8)
11–15 years		7 (8.8)
16 years and above		9 (11.3)
Gender		57 (71.3)
Male		66 (82.5)
Female		14 (17.5)
Education		
High school		24 (30.0)
Two years degree		17 (21.3)
Undergraduate		35 (43.8)
Post graduate		4 (5.0)
Hospital		
Ege University Hospital		32 (40.0)
Dokuz Eylul University Hospital		13 (16.3)
Atasam Hospital		35 (43.8)
Department		
Intensive care		54 (67,5)
Dialysis		20 (25.0)
Others		6 (7.5)
Occupation		
Nurse		64 (80.0)
Others		16 (20.0)

Disorderliness, Shyness, Fatigability, Harm Avoidance, Responsibility, Purposefulness, Resourcefulness, Empathy, Compassion, Cooperativeness, and Spiritual Acceptance are different than the Turkish average scores and these differences are statistically significant (μ = 4.050, p < .05; μ = 4.325, p < .05; μ = 3.938, p < .05; μ = 4.075, p < .05; μ = 18.025, p < .05; μ = 4.463, p < .05; μ = 5.000, p < .01; μ = 3.075, p < .05; μ = 3.788, p < .01; μ = 6.338, p < .05; μ = 27.278, p < .05; μ = 8.078, p < .05; respectively) (Table 2).

Pearson's correlation coefficients between the variables are shown in Table 3. There were no significant correlations between emotional exhaustion and age (p > .05), and there were no significant correlations between emotional exhaustion and TCI subscales (p > .05) either. It has been found that there were no significant correlations between depersonalization and age and TCI subscales except for Self-Directness (r = −.235, p < .05). It was found that there was a negative correlation between Self-Directedness and depersonalization. There were no significant correlations between personal accomplishment and age and TCI subscales (p > .05).

Pearson's correlation coefficients between MBI subscales and TCI subscales are shown in Table 4. As seen in the table, there were positive and statistically significant correlations between age and responsibility (r = .251, p < .05). There were no significant correlations between emotional exhaustion and TCI subscales (p > .05). It could also be seen that there was no significant correlation between depersonalization

Table 2. Comparison of average scores of TCI scale and subscales of the sample group with Turkish normative values.

	Healthcare organization workers ($n = 80$)		Kose et al.'s Turkish TCI sample ($n = 683$)		
	Mean	SD	Mean	SD	p
Exploratory Excitability	5.9	2.0	6.3	1.9	.261
Impulsiveness	4.1	1.5	3.6	1.9	.040*
Extravagance	4.4	1.9	4.6	2.1	.353
Disorderliness	4.3	1.7	3.9	1.8	.033*
NOVELTY SEEKING	18.6	3.8	18.5	5.00	.598
Anticipatory Worry	5.8	1.9	5.6	2.3	.246
Fear of Uncertainty	4.3	1.7	4.1	1.9	.054
Shyness	3.9	2.0	3.4	2.2	.015*
Fatigability	4.1	1.8	3.6	2.3	.024*
HARM AVOIDANCE	18.0	5.3	16.8	6.4	.019*
Sentimentality	6.6	1.6	6.9	1.9	.486
Attachment	4.5	1.6	4.5	1.9	.676
Dependence	2.4	1.4	2.7	1.4	.058
REWARD DEPENDENCE	13.5	2.8	14.1	3.2	.153
PERSISTENCE	4.9	1.6	4.8	1.9	.259
Responsibility	4.5	2.0	5.1	1.9	.023*
Purposefulness	5.0	1.9	6.0	1.6	.001**
Resourcefulness	3.1	1.1	3.4	1.3	.023*
Self-Acceptance	5.9	2.5	5.7	2.6	.758
Congruent 2nd Nature	8.7	1.9	8.9	2.0	.597
SELF-DIRECTEDNESS	27.1	6.5	29.1	6.2	.069
Social Acceptance	6.1	1.5	6.3	1.7	.739
Empathy	3.8	1.2	4.3	1.5	.007**
Helpfulness	4.5	1.1	4.8	1.4	.126
Compassion	6.3	2.1	7.1	2.7	.025*
Pure-Heartedness	6.5	1.3	6.9	1.4	.581
COOPERATIVENESS	27.3	4.0	29.4	5.9	.012*
Self-Forgetfulness	5.8	2.0	5.9	2.2	.833
Transpersonal Identification	4.9	2.1	4.9	2.1	.840
Spiritual Acceptance	8.1	2.1	7.8	2.8	.038*
SELF-TRANSCENDENCE	18.8	4.41	18.6	5.4	.342

Note: TCI: Temperament and Character Inventory.
*$p < .05$; **$p < .01$.

and TCI subscales except for extravagance, fatigability, and asthenia, and purposefulness ($r = .233$, $p < .05$; $r = .238$, $p < .05$; $r = −.266$, $p < .05$; respectively). Extravagance and fatigability and asthenia were positively correlated with depersonalization while purposefulness was negative correlated. The only TCI subscale is extravagance which was positively correlated with personal accomplishment ($r = .232$, $p < .05$).

Hypothesized relationship between relationship MBI scales and education and TCI scales were tested in two separate hierarchical multiple regression. The demographic variables (e.g. age, gender) were entered in the first step of the hierarchical multiple regression. TCI scales (Novelty Seeking, Harm Avoidance, Reward Dependence, Persistence, Self-Directedness, Cooperativeness, Self-Transcendence) and education were entered in the second steps of the hierarchical

regression analyses in eight models. The results of the regression analyses with the two sets of predictor and relationship satisfaction as criterion variable for each regression analysis is shown in Table 5. The results indicated that TCI scales were not significant predictors of emotional exhaustion but education was ($\beta = .263$, $R^2 = .153$, $F = 1.117$, $p = .046$). Education was significant predictors of depersonalization ($\beta = .282$, $R^2 = .233$, $F = 1.878$, $p = .025$). Also Self-Directedness was a significant predictor of depersonalization ($\beta = −.347$, $R^2 = .233$, $F = 1.878$, $p = .013$). It has been found that Self-Transcendence and Self-Directedness were significant predictors of Personal Accomplishment ($\beta = −.317$, $R^2 = .176$, $F = 1.319$, $p = .029$; $\beta = −.328$, $R^2 = .176$, $F = 1.319$, $p = .022$; respectively).

Similarly, hypothesized relationship between relationship MBI scales and education and TCI subscales was tested in two separate hierarchical multiple regression. The demographic variables (e.g. age, gender) were entered in the first step of the hierarchical multiple regression. TCI subscales and education were entered in the second steps of the hierarchical regression analyses in several models. The results of the regression analyses with the two sets of predictor and relationship satisfaction as criterion variable for each regression analysis are shown in Table 6. The results indicated that TCI subscales were not significant predictors of emotional exhaustion ($R^2 = .305$, $F = .755$, $p = .789$). Similarly, TCI subscales were not significant predictors of depersonalization; on the other hand, education variable was a significant predictor of depersonalization ($\beta = .351$, $R^2 = .427$, $F = 1.284$, $p = .037$). It has been found that Empathy and Self-Forgetfulness were significant predictors of Personal Accomplishment ($\beta = −.426$, $R^2 = .106$, $F = 1.323$, $p = .013$; $\beta = −.400$, $R^2 = .106$, $F = 1.323$, $p = .030$; respectively).

Discussion

In this present study, we aimed to examine the relationship between temperament and character and the burnout in a group of healthcare workers.

One of the outstanding results of our study was that there was a significant negative correlation between depersonalization and Self-Directedness. That means

Table 3. Correlations between MBI and TCI scales.

					TCI subscales			
MBI subscales		Age	Novelty seeking (NS)	Harm avoidance (HA)	Reward dependence (RD)	Persistence (P)	Self-directedness (SD)	Cooperativeness (C)	Self-transcendence (ST)
Emotional Exhaustion	r	.004	.056	.105	−.088	.104	−.069	−.031	−.215
Depersonalization	r	.008	.012	.143	−.142	−.095	−.235*	−.160	−.168
Personal Accomplishment	r	−.024	−.051	.031	.166	−.209	−.145	.032	−.104

Note: MBI: Maslach Burnout Inventory; TCI: Temperament and Character Inventory.
*$p < .05$.

Table 4. Correlation between MBI and TCI scales and subscales.

		Age	Emotional exhaustion	Depersonalization	Personal accomplishment
NS1 (Exploratory Excitability)	r	.162	.053	−.136	−.201
NS2 (Impulsiveness)	r	−.011	.062	.067	−.002
NS3 (Extravagance)	r	.067	.167	.233*	.232*
NS4 (Disorderliness)	r	−.091	−.176	−.135	−.137
HA1 (Anticipatory Worry)	r	.043	.132	.043	.006
HA2 (Fear of Uncertainty)	r	.049	.091	.040	−.026
HA3 (Shyness with Strangers	r	−.012	.050	.091	−.015
HA4 (Fatigability and Asthenia)	r	−.122	.031	.238*	.123
RD1 (Sentimentality)	r	−.028	−.158	−.066	.120
RD3 (Attachment)	r	.090	−.013	−.145	.054
RD4 (Dependence)	r	.005	.020	−.042	.133
Persistence	r	.106	.104	−.095	−.209
SD1 (Responsibility)	r	.251*	−.010	−.160	−.096
SD2 (Purposefulness)	r	.216	−.045	−.266*	−.130
SD3 (Resourcefulness)	r	.128	−.095	−.204	.057
SD4 (Self-Acceptance)	r	.025	−.094	−.131	−.114
SD5 (Congruent Second Nature)	r	.089	−.003	−.089	−.160
C1 (Social Acceptance)	r	.174	−.052	−.209	.039
C2 (Empathy)	r	.039	.119	.214	−.049
C3 (Helpfulness)	r	.014	−.107	−.144	−.014
C4 (Compassion)	r	−.018	−.035	−.130	.044
C5 (Integrated Conscience)	r	−.033	−.003	−.129	.042
ST1 (Self-Forgetfulness)	r	−.079	−.121	−.073	−.216
ST2 (Transpersonal Identity)	r	−.026	−.146	−.212	−.031
ST3 (Spiritual Acceptance)	r	.022	−.200	−.077	.018

Note: MBI: Maslach Burnout Inventory; TCI: Temperament and Character Inventory.
*p < .05; **p < .01.

Table 5. A multiple linear regression analysis between MBI domain and TCI scale and subscale scores.

Burnout dimension	TCI dimensions	B	p	F	df	R^2	Model p
Emotional Exhaustion	Education	.263	.046	1.117	11	.153	P < .05
Depersonalization	Education	.282	.025	1.878	11	.233	P < .05
	Self-Directedness	−.347	.013	1.878	11	.233	P < .05
Personal Accomplishment	Self-Directedness	−.317	.029	1.319	11	.176	P < .01
	Self-Transcendence	−.328	.022	1.319	11	.176	P < .01

Note: Adjusted by participants' gender, duration of working in this profession, and age. MBI: Maslach Burnout Inventory; TCI: Temperament and Character Inventory.

Table 6. A multiple linear regression analysis between MBI domain and TCI scale and subscale scores.

Burnout dimension		B	p	F	df	R^2	Model p
Emotional Exhaustion	—	—	.789	0.755	29	.305	NS
Depersonalization	Education	.351	.037	1.284	29	.427	P < .05
Personal Accomplishment	Empathy	−.426	.013	1.323	29	.106	P < .05
	Self-Forgetfulness	−.400	.030	1.323	29	.106	P < .05

Note: Adjusted by participants' gender, duration of working in this profession, and age. MBI: Maslach Burnout Inventory; TCI: Temperament and Character Inventory; NS: not significant.

individuals with high scores in depersonalization had low scores in Self-Directedness, which is identified by seeing themselves or others as worthless and seeing the life as a composed of a series of mechanical functions, and people identify him/her as not autonomous. This result was consistent with the findings of Sahinoglu and Arkar [14]. They found that Self-Directedness was negatively and significantly correlated with depersonalization [14]. We also found that Self-Directedness was predominantly associated with burnout. There was a negative and statistically significant correlation between Self-Directedness and burnout. That means autonomous people are less likely experience burnout when compared to those who are not autonomous. These findings are also consistent with the study of Melchers et al. [17]. Melchers et al. examined how personality would explain and predict disorders like

depression and burnout. They found that Self-Directedness of character dimension was a significant factor to explain and predict both burnout and depression [17]. For this reason, this result is important since we might speculate that people who identify themselves as highly autonomous may be more compatible for stressful jobs or jobs with a high possibility of experiencing burnout.

TCI subscales and age were found not to be significantly correlated with emotional exhaustion which is accepted as the main aspect of burnout syndrome. Emotional exhaustion subscale identifies the feeling of being emotionally overextended and exhausted by one's work. In this study, emotional exhaustion component was not correlated with age or any TCI subscales. This result was not consistent with the original study of Maslach and Jackson [6]. They have found

that younger individuals scored higher on Emotional Exhaustion. That can be interpreted as it is more likely that burnout occurs during first years of one's professional career [6]. Furhermore, Sahinoglu and Arkar found that Emotional Exhaustion was positively correlated with Harm Avoidance, and negatively correlated with Self-Directedness and Cooperativeness [14]. Therefore, further studies are needed to generalize these results.

Another important result of our study was that extravagance and fatigability/ asthenia were positively correlated with depersonalization while purposefulness was negative correlated. That is to say, people who are extravagant, prone to fatigue, and who feel powerless are more likely to experience depersonalization when compared to individuals with a sense of purposefulness. Previous studies showed that both Novelty Seeking and Harm Avoidance are positively correlated with burnout. Yazici et al. [18] found that higher Novelty Seeking scores speculate higher rate of the possibility of burnout. A total score for Novelty Seeking is calculated with the scores of excitability, impulsiveness, extravagance, and disorderliness [18]. People who get higher scores in Novelty Seeking scale may show intolerance to a regular 9-to-5 job; they may make decisions quickly and impatiently, become moody when they are not full of information and do not like frustrating rules [19]. In this present study, we found that only extravagance scale to be correlated with depersonalization. Furthermore, studies also showed that higher scores in Harm Avoidance also predicted burnout as these results were consistent with our findings. Pejušković et al. [20] conducted a study on physicians and have found that Harm Avoidance was the most important personality dimension to predict burnout syndrome. Harm Avoidance is the temperament dimension that consist of anticipatory worry, fear of uncertainty, shyness, and fatigability subscales [20]. Individuals with high scores in Harm Avoidance are generally cautious, careful, fearful, tense, apprehensive, nervous, timid, doubtful, discouraged, passive, and negativistic or pessimistic [19]. In this present study, higher scores of fatigability subscale of Harm Avoidance were shown to be a predictor for depersonalization dimension of burnout.

Our findings have shown that Self-Directedness, Empathy subscale of Cooperativeness, and Self-Transcendence with its Self-Forgetfulness subscale were significant predictors of personal accomplishment dimension of burnout. Individuals who have a sense of low self-accomplishment also start to self-blaming and negative self-judgement [2]. These individuals are also exhausted, tense, bored easily, difficult, have no goals, and insensitive towards the reward. Furthermore, when they encounter obstacles, they may show intense anger and inconsistency in interpersonal relationships [8]. Self-Transcendence that generally

refers to identification with everything conceived as essential and consequential parts of a unified whole and Self-Directedness that to what extent a person identify himself/herself as autonomous were found to prevent people from feeling low personal accomplishment in this study. In previous studies, Self-Directedness was found to be negatively correlated with burnout but not as a predictor [18]. Therefore, to generalize these results, more comprehensive studies are needed.

Limitations of this study included its small sample size, convenient sampling method, and the lack of equal distribution of female and male participants. Using an ordinal variable in regression analysis rather than a continuous variable for education level might be considered as another limitation. Our findings support that personality factors also play an important role in the development of burnout and further studies conducted with larger samples may explain this relationship between personality and burnout more precisely.

Disclosure statement

No potential conflict of interest was reported by the authors.

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