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Burnout among Male Physicians: A Controlled Study on Pathological Personality Traits and Facets

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Abstract: There is a high prevalence of job burnout in physicians, impacting both the professional and personal levels. This study aimed to investigate whether physicians with burnout show specific pathological traits and facets of their personalities compared with healthy controls, according to the dimensional personality models in the ICD-11 and DSM-5. The role of perceived stress, anxiety, and depression were exploratively investigated regarding group differences. Male physicians (n = 60) were recruited into two groups (burnout vs. healthy). The Personality Inventory for the DSM-5 Brief Form Plus (PID5BF+) and the Maslach Burnout Inventory (MBI) were applied. The Wilcoxon rank-sum test (WRS) showed group differences in five of the six traits and in six of the seventeen facets of the PID5BF+. Multiple binary logistic regression, controlling for age, showed that deceitfulness (3.34 (1.36–9.35), p = 0.013) and impulsivity (10.20 (2.4–61.46), p = 0.004) significantly predicted burnout. Moreover, the WRS showed significant group differences in perceived stress, depressive, and anxiety symptoms (all $p < 0.00$)]. The findings suggest a relationship between pathological personality facets and burnout in a sample of male physicians. In particular, the facets of deceitfulness and impulsivity appear to play an important role. Furthermore, burnout showed well-known associations with perceived stress, depressive, and anxiety symptoms.

Keywords: burnout among physicians; PID5BF+; pathological personality traits and facets; deceitfulness; impulsivity

Citation: Holzgang, S.A.; Pazhenkottil, A.P.; Princip, M.; Auschra, B.; Euler, S.; von Känel, R. Burnout among Male Physicians: A Controlled Study on Pathological Personality Traits and Facets. *Psych* **2023**, *5*, 1–13. https://doi.org/10.3390/psych5010001

Academic Editor: Mosad Zineldin

Received: 5 November 2022
Revised: 14 December 2022
Accepted: 19 December 2022
Published: 22 December 2022

1. Introduction

Burnout has been defined as a negative affective risk state, first described by Freudenberger [1] half a century ago. He had pointed out that workers in social institutions are especially affected by burnout symptoms, including exhaustion, fatigue, insomnia, headaches, digestive problems, increased irritability, and impatience. Moreover, a loss of flexibility in thinking was reported. The current definition of burnout much relies on the Maslach Burnout Inventory (MBI), which assesses the three core symptoms: feelings of emotional exhaustion, alienation and disengagement from work, and the reduced ability to perform at work [2]. This definition has found its way into the International Statistical Classification of Diseases and Related Health Problems (ICD-11) [3]. In the ICD-11 (2019), the following definition is given: "Burnout is a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed. It is characterized by three dimensions: (1) feelings of energy depletion or exhaustion; (2) increased mental distance from one's job, or feelings of negativism or cynicism related to one's job; and (3) a sense of ineffectiveness and lack of accomplishment. Burnout refers specifically to

phenomena in the occupational context and should not be applied to describe experiences in other areas of life".

With a prevalence of about 50%, physicians belong to the occupational groups that are particularly frequently affected by burnout [4,5]. Other studies showed a range of variation from 2.5% to 72% in prevalence rates for burnout among physicians [6,7].

Much research has been done on the relationship between personality and burnout. A meta-analysis from 2009 showed significant associations of burnout with self-esteem, self-efficacy, locus of control, emotional stability, extraversion, conscientiousness, agreeableness, positive affectivity, negative affectivity, optimism, and proactive personality [8]. A significant amount of variance in each burnout dimension was explained by the personality traits of the five-factor model [9], among others. Whereas most of these previous studies were cross-sectional, one study found that neuroticism and conscientiousness prospectively predicted global burnout as well as emotional exhaustion [10].

The relationship between burnout and personality has also been extensively investigated in physicians. In a review regarding interventions for physician burnout, a high level of neuroticism, being more introverted, and a low level of agreeableness emerged as particularly relevant traits [11]. Studies regarding anesthesiologists also showed that neuroticism was positively associated with burnout, whereas extroversion and agreeableness were negatively associated with burnout [12]. A recently published multinational study showed that neuroticism, agreeableness, and conscientiousness affect burnout among physicians [13]. For neuroticism, the authors found a negative correlation with personal achievement and a positive correlation with emotional exhaustion and depersonalization; for agreeableness and conscientiousness, they found positive correlations with personal achievement and negative correlations with depersonalization.

Apparently, most of the studies investigating the relationship between personality and burnout have used the Big Five Inventory to map personality according to the five-factor model [11,13–15]. Due to various shortcomings of categorical personality models, the current versions of ICD-11 and DSM-5 included a dimensional model to assess personality function. These new models allow for a consideration of individual differences in personality style and severity [16]. Based on the two models, Kerber, et al. [17] developed the "Personality Inventory for DSM-5, Brief Form Plus" (PID5BF+). The PID5BF+ consists of 17 facets of the PID-5 and covers all maladaptive trait domains of the DSM-5 AMDP and ICD-11, therefore including 6 personality traits.

In light of this paradigm shift and the changes in diagnostic systems, we aimed to investigate the extent to which these pathological personality traits and facets are predictive of burnout in physicians. To take advantage of the latest developments in personality models in psychiatry and clinical psychology, we examined whether physicians with burnout showed pathologies in certain personality traits and facets compared with healthy controls. Furthermore, the role of perceived stress, anxiety, and depression were exploratively investigated in terms of group differences.

2. Materials and Methods

2.1. Study Participants

We recruited male physicians in Switzerland through hospitals, clinics, medical associations, professional journals, and direct email contact. The study, the procedure, and the objectives were presented to the physicians in a text/flyer. If interested, physicians could contact the study management. Subsequently, inclusion and exclusion criteria were queried in a telephone interview, and if the inclusion criteria were met, the participant was enrolled in the study. Participation in our study was voluntary. Data were collected between September 2019 and December 2021. A total of 60 male participants were included. These 60 participants consisted of 2 groups of 30 participants each, the burnout group, and the healthy control group. Screening and classification for group assignment was done by phone with the MBI-HSS [18] and the PHQ-9 [19]. Our goal was to study two very separate groups, so we set our cutoffs based on the review by Rotenstein, et al. [4]. In

order to exclude burnout in the healthy control group with the greatest possible probability, the cutoffs for the healthy control group were set markedly lower. However, this also meant that we were unable to include many potential participants during the recruitment process because they had values that were either too low for the burnout group or too high for the healthy control group. Consequently, with the approval of the ethics committee, we were required to relax the criteria slightly in order to reach the recruitment target of 60 participants. For the burnout group we used the following cutoff for the MBI-HSS: Emotional exhaustion (EE) $\geq$ 27 and/or Depersonalization (DP) $\geq$ 10 (with min. EE $\geq$ 20). Complementary for the healthy control group: EE < 16 and DP < 7 [4]. We did not use the personal accomplishment (PA) subscale for group assignment, since the literature has shown that PA unfolds fairly independently from the other two subscales [20–22]. For the burnout group, a PHQ-9 score $\leq$ 14, reflecting the most moderate depressive symptoms was required. For the healthy control group, a PHQ-9 score $\leq$ 10 reflecting at the most mild depressive symptoms was required [23].

2.2. Psychometric Assessment

Personality Inventory for DSM-5 Brief Form Plus (PID5BF+): To assess the maladaptive personality traits, we used the German version of the PID5BF+ [17]. The 34-item self-report questionnaire contains 6 superordinate maladaptive trait domains (negative affectivity, detachment, antagonism, disinhibition, psychoticism, and anankastia), the first 5 consisting of 3 subordinate trait facets. The sixth domain corresponds to the sixth ICD-11 trait domain anankastia and is composed of two subordinate trait facets. Questions are answered on a 4-point Likert scale from 0 = "very false" to 3 = "very true". The raw domain values were calculated [24]. A study showed descriptive norm range from 0.33 to 0.83 [25]. In the present study, internal consistency was good for the domain's negative affectivity (Cronbach's α = 0.77), disinhibition (Cronbach's α = 0.74) and psychoticism (Cronbach's α = 0.74), and acceptable for the domain's detachment (Cronbach's α = 0.68), anankastia (Cronbach's α = 0.67) and antagonism (Cronbach's α = 0.59).

Maslach Burnout Inventory (MBI): The MBI is a self-assessment questionnaire used to assess burnout severity [26]. We used the 22-item German version of MBI-Human Services Survey [18]. Each item is rated on a 7-point scale from "never" to "daily". These 22 items form the 3 subscales of burnout: "Emotional exhaustion" (EE, 9 items), "Depersonalization" (DP, 5 items), and "Personal accomplishment" (PA, 8 items). The EE subscale assesses the feeling of being emotionally overwhelmed and exhausted, whereas the DP subscale assesses a callous and impersonal response toward care recipients, such as patients. The PA subscale includes feelings of competence and successful achievement at work. Each subscale can be considered separately. In the present study, we found an excellent internal consistency for the subscale EE (Cronbach's α = 0.94), and a good internal consistency for the subscales DP (Cronbach's α = 0.89) and PA (Cronbach's α = 0.81).

General Anxiety Disorder Scale-7 (GAD-7): The German version of GAD-7 was used to evaluate worry and anxiety symptoms [27]. Questions are answered on a 4-point Likert scale from 0 = "not at all" to 4 = "nearly every day". A total score was calculated, which ranged from 0 to 21, with higher scores reflecting greater severity of anxiety. The internal consistency of the total score was very good in our sample (Cronbach's α = 0.87).

Patient Health Questionnaire-9 (PHQ-9): The PHQ-9 is an instrument used to evaluate depressive symptoms with nine questions [23]. We used the German version of the PHQ-9 [19]. Each item is rated on a Likert scale ranging from 0 to 3 with total scores ranging from 0 to 27. Higher scores are associated with a higher severity of depression. The internal consistency of the total score was good in our sample (Cronbach's α = 0.79).

Perceived Stress Scale (PSS-4): To assess the degree to which situations are perceived as stressful in the past month, the 4-item German version of the PSS was used [28]. Questions are answered on a 5-point Likert scale from 0 = "never" to 4 = "very often". Higher scores on the PSS-4 indicate more perceived stress. The internal consistency of the total score was very good in our sample (Cronbach's α = 0.86).

MBI and PHQ-9 were collected by phone at screening, all other questionnaires (PID5BF+, GAD-7, PSS-4) were answered by participants on printed questionnaires.

2.3. Data Analysis

The present analysis is a secondary analysis of the cross-sectional study "Effect of burnout on myocardial blood flow", which assessed cardiovascular health in male physicians with burnout. The sample size and test regarding sufficient statistical power were chosen with respect to the primary endpoints of this study. Therefore, the N of this study is smaller compared to other studies that have examined personality. Statistical analyses were performed using R statistical software [29]. A p-value of < 0.05 was considered statistically significant. As our data were not normally distributed, group differences and independence were calculated using non-parametric tests: Fisher's exact test and the Wilcoxon rank-sum test. Our goal was to go beyond group differences and use logistic regression to find out which facets of the PID5BF+, in one common model, might predict group membership. We intentionally examined facets per trait so that we could obtain an independent correlation per facet. In addition, we controlled the logistic regression for the variable "age". Regression output revealed no concern for multicollinearity with variance inflation factor (VIF) < 2.5 for all variables in the model.

The sample size of the analysis with PID5BF+ data comprises 58 participants, as 2 participants did not return the PID5BF+ questionnaire. In accordance with previous scoring practice for the PID5BF, the "proportionate raw score" and thus, the extrapolated score for the respective traits were calculated for the 0.15% missing items [30].

3. Results

As shown in Table 1, the two groups were very similar in terms of demographic aspects, except for their age and job satisfaction. One-third were internists, just under one-fifth were surgeons, and one-tenth were psychiatrists. The groups differed significantly with regard to depression, anxiety, and perceived stress (Table 2). Furthermore, the two groups varied in terms of the mean values of the PID5BF+ traits, except for psychoticism. Despite the differences, the mean values of both groups fell within the range of the population norm values. The groups moreover differed significantly regarding the following PID5BF+ facets: anxiety, anhedonia, deceitfulness, impulsivity, distractibility, and perseveration. As expected, the two groups were significantly different in the total score and the three subscales of the MBI.

Table 1. Sample characteristics.

Characteristic		Total Sample, n = 60		Burnout, n = 30				Control, n = 30					
		n (%)	Mean (SD)	n (%)	Mean (SD)	Median	IQR	n (%)	Mean (SD)	Median	IQR	z-Value [1]	p-Value [1]
Age (years)			49.85 (9.59)		46.77 (10.56)	45.00	18.25		52.93 (7.48)	52.00	12.00	−2.29	0.022
BMI (m^2/kg)			24.99 (2.96)		25.63 (3.09)	25.25	3.29		24.35 (2.72)	23.92	2.90	1.75	0.800
Marital status	married other	44 (73%) 16 (27%)		21 (70%) 9 (30%)				23 (77%) 7 (23%)					0.771
Job status	full time part time	48 (80%) 12 (20%)		25 (83%) 5 (17%)				23 (77%) 7 (23%)					0.748
Years working as a doctor			21.71 (9.97)		19.08 (10.97)	17.50	17.75		24.33 (8.23)	22.50	13.50	−1.92	0.055
Working hours per week	≤42.5 h 42.6–50 h >50 h	7 (12%) 14 (23%) 39 (65%)		2 (6.7%) 9 (30%) 19 (63%)				5 (17%) 5 (17%) 20 (67%)					0.288
Providing emergency service		42 (70%)		22 (73%)				20 (67%)					0.779
Work at night		35 (58%)		18 (60%)				17 (57%)					1.000
Employment relationship	self-employed hospital self-employed and hospital	20 (33%) 38 (63%) 2 (3.3%)		10 (33%) 19 (63%) 1 (3.3%)				10 (33%) 19 (63%) 1 (3.3%)					1.000
Job satisfaction	very dissatisfied dissatisfied partly satisfied, partly dissatisfied satisfied very satisfied	1 (1.7%) 1 (1.7%) 14 (23%) 21 (35%) 23 (38%)		1 (3.3%) 1 (3.3%) 14 (47%) 11 (37%) 3 (10%)				0 (0%) 0 (0%) 0 (0%) 10 (33%) 20 (67%)					<0.001

Table 1. *Cont.*

Characteristic		Total Sample, *n* = 60		Burnout, *n* = 30				Control, *n* = 30					
		n (%)	Mean (SD)	*n* (%)	Mean (SD)	Median	IQR	*n* (%)	Mean (SD)	Median	IQR	*z*-Value [1]	*p*-Value [1]
Medical specialty	Psychiatry	6 (10%)		2 (6.7%)				4 (13.3%)					0.175
	Cardiology	3 (5%)		1 (3.3%)				2 (6.7%)					
	Internal medicine	20 (33%)		12 (40%)				8 (27%)					
	Oncology	4 (6.7%)		0 (0%)				4 (13%)					
	Surgery	11 (18.3%)		4 (13.3%)				7 (23.3%)					
	Neurology	3 (5%)		2 (6.7%)				1 (3.3%)					
	other	13 (22%)		9 (30%)				4 (13.3%)					

[1] Wilcoxon rank-sum test, Fisher's exact test.

Table 2. Descriptive Statistics of Depression, Anxiety, Perceived Stress, Maslach Burnout Inventory, and Personality Inventory for DSM-5 Brief Form Plus traits and facets.

Variables		Total Sample, *n* = 60	Burnout, *n* = 30			Control, *n* = 30				
		Mean (SD)	Mean (SD)	Median	IQR	Mean (SD)	Median	IQR	*z*-Value [1]	*p*-Value [1]
Depressive symptoms (PHQ-9)		6.27 (4.21)	9.4 (2.69)	9.00	3.75	3.13 (2.92)	2.00	3.00	5.67	<0.001
Anxiety symptoms (GAD-7)		4.53 (3.98)	6.83 (3.86)	6.00	5.00	2.23 (2.51)	2.00	3.00	4.92	<0.001
Perceived stress (PSS-4)		4.66 (3.1)	6.45 (2.73)	7.00	4.00	2.93 (2.39)	3.00	2.75	4.53	<0.001
Maslach Burnout Inventory (MBI) [2]	Total score	1.68 (1.11)	2.68 (0.57)	2.62	0.91	0.68 (0.33)	0.71	0.50	6.65	<0.001
	Emotional Exhaustion	19.53 (12.78)	31.13 (5.84)	30.50	8.75	7.93 (4.43)	7.00	6.75	6.66	<0.001
	Deperson-alization	8.05 (7.26)	13.77 (6.08)	12.00	8.75	2.33 (1.67)	2.00	2.00	6.45	<0.001
	Personal ac-complishment	8.68 (5.58)	12.43 (4.61)	12.00	6.75	4.93 (3.6)	5.50	5.00	5.45	<0.001

Table 2. *Cont.*

Variables		Total Sample, n = 60	Burnout, n = 30			Control, n = 30				
		Mean (SD)	Mean (SD)	Median	IQR	Mean (SD)	Median	IQR	z-Value [1]	p-Value [1]
PID5BF+ traits	Negative affectivity	0.58 (0.52)	0.73 (0.60)	0.67	0.58	0.43 (0.38)	0.33	0.50	2.02	0.044
	Detachment	0.58 (0.58)	0.74 (0.50)	0.67	0.83	0.43 (0.34)	0.33	0.50	2.44	0.015
	Antagonism	0.51 (0.39)	0.65 (0.41)	0.67	0.33	0.37 (0.32)	0.27	0.46	2.63	0.008
	Disinhibition	0.56 (0.49)	0.74 (0.53)	0.67	0.42	0.40 (0.38)	0.33	0.33	2.79	0.005
	Psychoticism	0.40 (0.41)	0.50 (0.47)	0.33	0.45	0.31 (0.32)	0.25	0.50	1.71	0.088
	Anankastia	0.66 (0.49)	0.81 (0.55)	0.75	0.75	0.51 (0.37)	0.50	0.50	2.14	0.032
PID5BF+ facets										
Negative affectivity	Emotional lability	0.84 (0.78)	1.04 (0.87)	1.00	1.00	0.65 (0.65)	0.50	1.00	1.69	0.091
	Anxiety	0.65 (0.73)	0.88 (0.81)	0.50	1.50	0.43 (0.58)	0.25	0.50	2.24	0.025
	Separation insecurity	0.25 (0.41)	0.29 (0.46)	0.00	0.50	0.22 (0.36)	0.00	0.50	0.37	0.711
Detachment	Withdrawal	0.72 (0.66)	0.89 (0.74)	1.00	1.50	0.55 (0.53)	0.50	1.00	1.73	0.084
	Anhedonia	0.51 (0.62)	0.73 (0.67)	0.50	1.50	0.30 (0.48)	0.00	0.50	2.63	0.008
	Intimacy avoidance	0.51 (0.58)	0.59 (0.68)	0.50	1.00	0.43 (0.47)	0.50	0.50	0.72	0.469
Antagonism	Manipul-ativeness	0.53 (0.54)	0.61 (0.63)	0.50	1.00	0.47 (0.43)	0.50	0.88	0.63	0.529
	Deceitfulness	0.71 (0.71)	1.00 (0.75)	1.00	1.00	0.43 (0.55)	0.00	0.88	2.99	0.003
	Grandiosity	0.28 (0.43)	0.34 (0.49)	0.00	0.50	0.22 (0.37)	0.00	0.50	0.90	0.367
Disinhibition	Irresponsibility	0.37 (0.54)	0.43 (0.60)	0.25	0.50	0.32 (0.48)	0.00	0.50	0.76	0.446
	Impulsivity	0.52 (0.63)	0.82 (0.71)	0.50	0.50	0.23 (0.39)	0.00	0.50	3.69	<0.001
	Distractibility	0.83 (0.64)	1.04 (0.62)	1.00	1.00	0.65 (0.62)	0.50	1.00	2.35	0.019

Table 2. *Cont.*

Variables		Total Sample, n = 60	Burnout, n = 30			Control, n = 30				
		Mean (SD)	Mean (SD)	Median	IQR	Mean (SD)	Median	IQR	z-Value [1]	p-Value [1]
Psychoticism	Unusual Beliefs and Experiences	0.64 (0.55)	0.73 (0.59)	0.50	0.50	0.55 (0.51)	0.50	1.00	0.97	0.330
	Eccentricity	0.37 (0.54)	0.48 (0.63)	0.50	0.50	0.27 (0.43)	0.00	0.50	1.52	0.128
	Perceptual Dysregulation	0.20 (0.40)	0.29 (0.48)	0.00	0.50	0.12 (0.28)	0.00	0.00	1.46	0.143
Anankastia	Perseveration	0.56 (0.53)	0.71 (0.57)	1.00	1.00	0.42 (0.46)	0.25	1.00	2.03	0.043
	Rigid Perfectionism	0.75 (0.62)	0.91 (0.68)	1.00	0.63	0.60 (0.53)	0.50	1.00	1.77	0.077

[1] Wilcoxon rank-sum test. [2] Screening and classification for group assignment was done with the MBI [18].

The multiple binary logistic regressions were calculated to test the prediction of group membership (burnout vs. healthy) by the pathological personality facets grouped by the pathological personality traits and controlled for age. Table 3 shows the results for the facets of the trait antagonism. Deceitfulness was significantly predictive of group membership (burnout vs. control), meaning that the higher a person's deceitfulness, the more likely that this person belonged to the burnout group.

Table 3. Multiple binary logistic regression analysis to predict burnout vs. control by pathological personality facets of the trait antagonism controlled for age.

Predictors	Odds Ratios	Std. Error	Group 95% CI	*z*	*p*
(Intercept)	7.83	15.75	0.16–494.45	1.02	0.306
Manipulativeness	0.67	0.45	0.18–2.48	−0.60	0.550
Deceitfulness	3.34	1.62	1.36–9.35	2.49	0.013
Grandiosity	1.67	1.17	0.43–7.49	0.74	0.462
Age	0.94	0.03	0.88–1.01	−1.57	0.117
Observations			57		
R^2 Tjur			0.203		

Table 4 shows the results for the facets of the trait disinhibition. Impulsivity was significantly predictive of group membership (burnout vs. control). This indicates that the higher a person's impulsivity, the more likely that this person belonged to the burnout group.

Table 4. Multiple binary logistic regression analysis to predict burnout vs. control by pathological personality facets of the trait disinhibition controlled for age.

Predictors	Odds Ratios	Std. Error	Group 95% CI	*z*	*p*
(Intercept)	27.46	56.26	0.56–2027.74	1.62	0.106
Irresponsibility	0.17	0.17	0.02–1.07	−1.75	0.081
Impulsivity	10.20	8.31	2.46–61.46	2.85	0.004
Distractibility	3.41	2.56	0.84–16.84	1.64	0.101
age	0.91	0.04	0.83–0.98	−2.30	0.021
Observations			57		
R^2 Tjur			0.338		

None of the other facets of the personality traits such as, negative affectivity, detachment, psychoticism, or anankastia were significantly predictive of group membership (all $p > 0.05$, statistics not shown).

4. Discussion

Our study revealed significant group differences in five of the six traits and in six of the seventeen facets, indicating that a pathological personality may play a role in the experience of job burnout among physicians (Table 2). Furthermore, we looked at the underlying facets independently of each other and found that two pathological personality facets stand out regarding physicians with burnout. Both deceitfulness, a facet of the trait antagonism, and impulsivity, a facet of the trait disinhibition, significantly predicted group membership, meaning that physicians who were more deceitful and more impulsive are more likely to experience burnout (Tables 3 and 4). As personality traits are assumed to be stable [31,32], our results indicate that pathological personality facets purported in the DSM-5 and ICD-11 may be related to burnout among physicians. The significant group differences found for the pathological personality traits should be interpreted with caution, as they show the mean values of the two groups to fall within the norm range.

To our knowledge, there are no studies that have compared physicians or other professions with and without burnout, in terms of pathological personality traits and facets according to the dimensional models in the ICD-11 and DSM-5. Studies so far have shown the association between the traits of the Big Five Inventory and burnout in physicians [11,13–15]. Regarding impulsivity, a study showed that impulsivity was predictive for burnout among medical students, but using the Health Relevant Personality from a five-factor perspective inventory (HP5-i) [33]. Furthermore, impulsivity is a facet of the trait disinhibition, which is associated with low conscientiousness [34]. As conscientiousness is considered as a factor protecting from burnout, our results are in line with these previous findings, in the sense that impulsivity contributes to, rather than protects from burnout [35–37].

Similarly, deceitfulness is associated with low levels of agreeableness [38], which is also considered to protect from burnout [35]. That would mean that higher levels of deceitfulness (equal to low agreeableness) seem to be related to more severe burnout. This corresponds with the results from previous studies [13,14].

Although we found group differences for negative affectivity and anankastia, consistent with previous research (neuroticism and perfectionism) [8,10,11,13,14,39–41], neither predicted burnout. On the one hand, it could be that this is related to the new personality model that captures the maladaptive trait domains. In contrast to conventional questionnaires, which map personality according to the five-factor model (e.g., the Big Five Inventory), the PID5BF+ exclusively maps the maladaptive trait domains of the DSM-5 AMPD and the ICD-11. Based on this, we assume that our results were not significant because, in comparison to most studies, we only asked about the maladaptive trait domains (negative affectivity and anankastia), meaning that the threshold to capture subclinical levels of neuroticism and perfectionism was decreased. However, to confirm this, further studies are required, in which questionnaire data according to both the five-factor model and the PID5BF+ model are collected simultaneously. On the other hand, we can also imagine that other facets might prove to be predictive in a larger sample. In addition, it could also be because we did not include women in our study. After all, research has shown that women have higher neuroticism scores and are also more affected by burnout [42–45].

We found significant group differences for the trait disinhibition as well as for two of the three facets, impulsivity, and distractibility. For the third facet of the disinhibition trait, irresponsibility, however, no significant group difference was found. Here, we can assume that the area of irresponsibility, perhaps due to a high level of professional ethics, is the least present of the three. However, this interpretation is speculative and would need to be confirmed in studies specifically addressing this issue.

As we used the recent dimensional personality models according to the ICD-11 and DSM-5, examining pathological personality in more detail than the conventional models, our results corroborate previous findings, as they shed light on what finer characteristics (facets) might underlie the coarser traits. Further studies may want to examine to what extent the pathological personality traits and facets are related to burnout in non-physician groups. Furthermore, sex differences will be of great interest for further studies on burnout in physicians in the context of personality. Additional and larger studies should confirm our results.

It needs to be taken into account that this study was conducted during the COVID-19 global pandemic, which was a time when health care workers were particularly challenged. This increased stress may have increased the prevalence rates of burnout among physicians and may also have reduced their willingness to participate in a study due to low capacity.

We further found that physicians with burnout had significantly more depressive symptoms, more anxiety symptoms, and higher perceived stress than their counterparts without burnout.

Our results concur with the existing literature. With regard to depressive symptoms, the literature has shown a conceptual overlap of depression and burnout [46]. Furthermore, numerous studies have also shown an association between anxiety symptoms and

burnout [47–49]. Increased levels of perceived stress in physicians with burnout have also been reported in the literature [50,51]. The latter aligns with the ICD-11 definition of burnout, which requires occupational stress as a contributing factor that could not be successfully managed [3].

5. Limitations

Our study has several notable limitations. The sample size was small and divided into two predefined extreme groups, preventing us from analyzing continuous scores of the MBI. In addition, with the approval of the ethics committee, we were required to relax the criteria slightly in order to reach the recruitment target of 60 participants; therefore, methodological limitations cannot be completely excluded. The male physicians assessed in our study were carefully selected in terms of the rigorous inclusion criteria of the parent study, "Effect of burnout on myocardial blood flow". We studied only male physicians to minimize confounding variables (e.g., hormonal influences). This is particularly relevant for the biological outcomes of our study, which will be published elsewhere. Furthermore, we only examined physicians from Switzerland. Therefore, the generalizability of our findings is limited. However, this approach also allowed us to study a very homogeneous group of physicians. Because participation in our study was voluntary and depended on participants' interest in participating, the possibility of a self-selection bias cannot be excluded. Finally, the cross-sectional design of our study precludes casual inferences about the direction of the association of personality and burnout, as well as depressive and anxiety symptoms and perceived stress with burnout.

6. Conclusions

In conclusion, five of the six traits and six of the seventeen facets showed significant group differences, and two pathological personality facets, namely, deceitfulness and impulsivity, were predictive of burnout in physicians. The findings suggest a relationship between pathological personality facets and burnout in a sample of male physicians. This may indicate that pathological personality facets as purported in the ICD-11 and DSM-5 may be related to burnout among physicians. Furthermore, this study marks an important contribution with regard to personality because it provides fine-grained information on a lower-order level. However, larger, prospective studies are warranted to replicate and further elucidate these associations in individuals with burnout. In addition, the new personality concepts of the ICD-11 and the DSM-5 with their new assessment tools should be considered in future research on job burnout.

Author Contributions: Conceptualization, S.A.H., A.P.P., M.P., S.E., R.v.K.; Investigation, S.A.H., A.P.P., M.P., R.v.K.; Data curation, S.A.H., A.P.P., M.P., R.v.K.; Formal analysis, S.A.H., B.A.; Writing—original draft, S.A.H.; Writing—review & editing, S.A.H., A.P.P., M.P., B.A., S.E., R.v.K.; Supervision, R.v.K.; Project administration: S.A.H., M.P. All authors have read and agreed to the published version of the manuscript.

Funding: The study was financially supported by an institutional grant from the University of Zurich to R.v.K.

Institutional Review Board Statement: Approval was obtained from the local ethics committee Zurich (BASEC-Nr. 2018-01974).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data is contained within the article. All other employed data cannot be publicly disclosed due to privacy and ethical restrictions. The data can be provided upon reasonable request.

Conflicts of Interest: The authors declare no conflict of interest.

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