Physicians' perceptions of psychosocial factors and coping strategies in their ability to work: a multivariate analysis

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ABSTRACT

Background/Objective: Physicians play a crucial role in healthcare systems but face negative impacts from a challenging work environment, leading to burnout. Burnout has negative effects on physician health and patient care. Understanding psychosocial aspects of work and coping strategies used by physicians is essential. Validated tools, including COPSOQ-II, BriefCOPE, and WAI scales, can provide insight into the psychosocial impact of the medical profession. The study aims to use these scales to explore the relationship between job demands (COPSOQ-II), coping strategies (BriefCOPE), and work ability (WAI) among Portuguese physicians.

Methods: Participants were recruited through professional associations and organizations with access to physicians, and data was collected via a self-administered web-based questionnaire. Participants' sociodemographic characteristics were associated with WAI scores through Chi-Square analysis and One-way ANOVA. Outliers were detected through sensitivity analysis, and exploratory and confirmatory factor analyses were performed for the COPSOQ-II and BriefCOPE scales. Associations between WAI scores and COPSOQ-II and BriefCOPE scales were also analyzed.

Results: The study surveyed 55 physicians and found that except for sex, there were no significant differences in the work ability index (WAI) by sociodemographic characteristics. Significant differences were found between WAI and higher scores in job purpose, quality of management, and general health, while higher stress, sleep issues, and depressive symptoms were associated with lower WAI groups. Exploratory (EFA) and confirmatory factorial analyses (CFA) were conducted on the BriefCOPE and COPSOQ-II scales, revealing disconnection with the theoretical model. Under EFA, the BriefCOPE items related to theoretical dimension of "dysfunctional coping" are scattered into other coping dimensions, and the empirical model of the COPSOQ-II scale presented a different configuration from its theoretical model, either in the number of dimensions or in the distribution of items by their dimensions. Under CFA, these differences between the theoretical and empirical models are even clearer, as neither dataset fits to its theoretical counterpart without changes. In BriefCOPE, removing self-blaming is sufficient to correct this, while in COPSOQ, a minimum of 9 dimensions needed to be excluded. Even then this result presents unacceptable CFI(Comparative Fit Index), TLI(Tucker-Lewis Index) and RMSEA(Root Mean Square Error of Approximation) values.

Conclusions: This study analyzed physician perceptions of workplace environment and job-related and psychosocial factors using a questionnaire. However, the results did not provide any significant findings, and only suggested some possible associations between certain workplace factors, coping abilities, and work ability. The study had a small sample size and further research with larger sample sizes is needed to confirm these findings.

Introduction

Physicians play a critical role in healthcare systems, but they also face a challenging work environment that can lead to negative psychosocial impacts such as poor mental health outcomes, unsatisfaction with the profession, reduced work ability, and burnout [1]. Burnout is a significant problem among physicians worldwide, affecting the physician's health, including increased risk of depression, anxiety, and suicide, but also has an impact on the quality of patient care and efficiency of the healthcare system [2], with high

rates in Portugal [3,4]. A national survey revealed that 66% of physicians present with high levels of emotional exhaustion, 33% of physicians have high levels of depersonalization, and 39% of physicians report a significant decrease of personal accomplishment [5].

Even though the traditional tool to assess burnout is the Maslach Burnout Inventory [6], to fully address the negative mental impacts of the demands of the medical profession, it is important to understand various psychosocial aspects of work and the coping strategies used by physicians in response to stressors. Coping strategies are defined as cognitive and behavioral efforts to manage stress [7,8]. Different coping strategies, associated with adequate social support, lead to different effects on mental health outcomes [9], indicating that there are personality traits that impact the perception of the psychosocial aspects of work [10].

Understanding the psychosocial aspects of work and the coping strategies used by physicians is essential. To gain insight into the psychosocial impact of the medical profession, validated tools available to measure these constructs, such as the Copenhagen Psychosocial Questionnaire II (COPSOQ-II), the Work Ability Index (WAI), and the BriefCOPE scale stand out for their validity and reliability in various populations worldwide [10–17].

The COPSOQ-II is a revised version of a multidimensional questionnaire originally developed to assess psychosocial working conditions, including aspects related to work demands, job control, social support, leadership, and job satisfaction [18–20].

The BriefCOPE scale [21] is a self-report questionnaire developed to effectively assess coping strategies, that is, the individual ability to use cognitive and behavioral strategies to manage the demands of a situation when these are appraised as taxing or exceeding one's resources [22]. The concept of coping presumes the existence of a condition of adversity or stress, associated with negative emotions and conflict, particularly relevant in an healthcare related workplace.

The WAI was developed to assess work ability, considering the physical and mental demands of the job, health status, and personal resources.

Therefore, the aim of this study is to analyze the psychosocial impact of the medical profession in Portugal, by using the COPSOQ-II, the BriefCOPE, and the WAI scales simultaneously and exploring how these interact, and what is the relationship between job demands, coping strategies and their impact on work ability among Portuguese physicians.

Methods

This study was designed as an exploratory cross-sectional quantitative survey developed to identify the psychosocial factors of health-related professions and to characterize coping and work abilities of Portuguese physicians [23].

Participant recruitment and data collection

Data were collected using a self-administered web-based questionnaire. Information about the study, investigator and access to the online questionnaire was distributed via e-mail using the lists of professional associations and organizations with access to health workers, namely physicians. The e-mail also contained an individual request for the recipient to forward the email to their peers or people in their relationships who could match the inclusion criteria of the study population.

All participants were informed, before the survey, of the purpose and importance of the study and voluntarily signed an online consent form. Participants were guaranteed confidentiality of the information provided.

The questionnaire was available to the population from January 10th, 2012 to July 18th, 2012 and the sampling strategy resulted in a convenience sample with 55 physicians.

Measures

The questionnaire was structured to collect primarily data on socio-demographic characteristics including sex, age, years of experience at work, marital status, and education level. The questionnaire followed with the evaluation of social and psychological factors associated with the workplace using the Copenhagen Psychosocial Questionnaire II (COPSOQ-II), which is composed of 76 items that assess 29 dimensions using a 5-point Likert scale (1-Always; 5-Never/almost never). Physician's coping strategies were evaluated using the BriefCOPE scale. The scale comprises a total of 28 items that assess 14 dimensions using a 4-point Likert scale (0 – I never do this; 3- I always do this). To evaluate the capacity for work, the seven items of the work ability index (WAI) were used. All scales were presented to the participants in a translated and validated Portuguese version.

Statistical analysis and variable operationalization

To operationalize the variables, the means of each item for both COPSOQ-II and BriefCOPE dimensions were obtained. The WAI scores, previously divided into four levels, were reduced to three levels:

"Poor/Moderate", "Good", and "Excellent". Outliers were detected through 0.975 Mahalanobis distance. Only one individual was detected through this method (BriefCOPE scale) and a sensitivity analysis determined that had no impact on the results, therefore, no exclusions were made.

First, exploratory analyses were conducted. Sociodemographic characteristics' association with WAI scores were analyzed through Chi-Square analysis and One-way ANOVA after verification of method assumptions. If all assumptions were not met, the corresponding non-parametric version (Kruskal-Wallis test) was used to confirm inference decisions. Associations between WAI scores and the COPSOQ-II and BriefCOPE scales have been performed through one-way ANOVA analyses. Exploratory and confirmatory factor analyses were conducted for COPSOQ-II and BriefCOPE scales. Data was curated and analyzed with R software (version 4.2.2) and using the packages car, forcats, dplyr, MVN, lavaan and psych. Significant results were considered if p<0.05.

Results

Fifty-five physicians replied to the questionnaire, 38 (69%) were female and 17 (31%) were male. The mean age was 40.45, with a standard deviation of 13.60. The mean years of experience is 15.47, with a standard deviation of 13.02. The sociodemographic characterization is presented at the Table 1, along with the distributions among WAI levels and respective chi-square test results for categorical variables.

Except for sex, no significant differences were found between groups when comparing the work ability index by sociodemographic characteristics.

Table 1 - Sociodemographic characterization and distribution among WAI scores

	Total (%)	Work Ability Index			Statistical result
		Poor/Mod (n=7)	Good (n=30)	Excellent (N=18)	
Categorical variables			Frequency		
Sex					
Female	38 (69.1)	4(7.7)	26(47.3)	8(14.5)	**X²(2)=9.93**
Male	17 (30.9)	3(5.5)	4(7.7)	10(18.2)	**p = 0.006**
Age					
24-35	29 (52.7)	2(3.6)	16(29.1)	11(20)	
36-55	15 (27.2)	3(5.5)	8(14.5)	4(7.7)	X²(4)=2.17 p = 0.705
>55	11 (20.0)	2(3.6)	6(10.1)	3(5.5)	
Years experience					
0-15	30 (54.5)	2(3.6)	16(29.1)	12(21.8)	
16-30	16 (29.0)	3(5.5)	9(16.4)	4(7.7)	X²(4)=3.06 p = 0.548
>30	9 (16.4)	2(3.6)	5(9.1)	2(3.6)	
Civil status					
Single/Wid/Sep/Div	24 (43.6)	2(3.6)	15(27.3)	7(12.7)	X²(4)=1.30
Married/Union	31 (56.4)	5(9.1)	15(27.3)	11(20)	p = 0.521
Educational level					
Up to BSc	37 (67.3)	6(10.1)	18(32.7)	13(35.1)	X²(4)=2.00
MSc and above	18 (32.7)	1(1.8)	12(21.8)	5(9.1)	p = 0.368
Continuous variables			Mean ± SD		
Age	40.5 ± 13.6	49.1 ± 13.0	39.3 ± 13.9	39.1 ± 12.7	F(2;52)=1.67 p = 0.197
Years of experience	15.47 ± 13.0	22.4 ± 12.4	14.9 ± 13.6	13.7 ± 12.0	F(2;52)=1.21 p = 0.307

Both questionnaires were restricted to cases lacking missing values in any of their items, leaving 55 cases for BriefCOPE. For COPSOQ-II, only 45 were completed, representing a loss of 10 participants in the WAI scale (8 in the "good" category and 2 in the "excellent" one)".

Table 2 presents the distribution between BriefCOPE and COPSOQ-II scores, along with the distributions among WAI levels and respective test results. No significant results are found, but dimensions "active coping", "positive reinterpretation" and "humor" presents the highest value for the excellent WAI category, while for "denial" it presents the lowest value for the same WAI category.

Restricting to its 45 complete cases, and considering that in COPSOQ-II a higher score translates into a lower frequency of a metric, significant differences are found in 8 dimensions. Of these, an increased feeling of meaning at work, quality of leadership, justice and respect, and self rated health were associated with the excellent WAI category. In the opposite course we find higher stress, sleep sleeping troubles and depressive symptoms associated with lower WAI groups. Significant, but lacking a clear direction stands acknowledgement, being more frequent in both extremes.

Table 2 - BriefCOPE (n=55) and COPSOQ-II (n=45) distribution among WAI scores with p <0.1. Significant results are presented in bold (p<0.05)

Dimension		Work Ability Index (Mean ± SD)			Statistical result
		Poor/Mod (n=7)	Good (n=30)	Excellent (N=18)	
BriefCOPE	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	
P1 - Active coping	2.06 ± 0.60	1.92 ± 0.53	1.86 ± 0.49	2.40 ± 0.66	$X^2(2) = 5.77$ p = 0.055
E1 - Positive reinterpretation	1.72 ± 0.81	1.5 ± 0.91	1.5 ± 0.67	2.12 ± 0.84	$X^2(2) = 5.68$ p = 0.058
E3 - Humor	1.1 ± 0.60	1.07 ± 0.73	0.95 ± 0.55	1.31 ± 0.60	$X^2(2) = 5.02$ p = 0.081
D2 - Denial	0.44 ± 0.62	0.78 ± 0.63	0.45 ± 0.54	0.30 ± 0.73	$X^2(2) = 5.42$ p = 0.066
COPSOQ-II		Poor/Mod (n=7)	Good (n=30)	Excellent (N=18)	Statistical result
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	
WO3 - Meaning of work	1.59 ± 0.65	1.80 ± 0.57	1.78 ± 0.71	1.22 ± 0.41	**$X^2(2) = 9.50$ p = 0.008**
RL2 - Rewards (recognition)	2.14 ± 0.88	1.95 ± 0.67	2.51 ± 0.91	1.70 ± 0.70	**$X^2(2) = 8.15$ p = 0.016**
RI5 - Quality of leadership	2.56 ± 0.97	2.67 ± 0.44	2.96 ± 1.04	1.96 ± 0.73	**$X^2(2) = 11.24$ p = 0.003**
WII2 - Meaning of work	2.36 ± 0.66	2.60 ± 0.69	2.51 ± 0.63	2.04 ± 0.62	$X^2(2) = 5.03$ p = 0.080
V3 - Justice and respect	2.61 ± 0.79	3 ± 0.86	2.80 ± 0.77	2.18 ± 0.62	**$X^2(2) = 8.00$ p = 0.018**
H1 - Self rated health	2.22 ± 0.92	3.57 ± 1.27	2.22 ± 0.52	1.62 ± 0.5	**$F(2;42) = 20.05$ p < 0.001**
H2 - Stress	3.28 ± 0.91	2.64 ± 0.98	3.20 ± 0.93	3.68 ± 0.68	**$X^2(2) = 6.89$ p = 0.031**
H3 - Burnout	3.03 ± 0.89	2.42 ± 0.53	3.02 ± 1.02	3.31 ± 0.70	$X^2(2) = 5.72$ p = 0.057
H4 - Sleeping troubles	3.82 ± 1.10	2.92 ± 1.39	3.75 ± 1.06	4.31 ± 0.75	**$X^2(2) = 6.48$ p = 0.039**
H5 - Depressive symptoms	3.86 ± 0.89	3.07 ± 1.05	3.70 ± 0.79	4.43 ± 0.57	**$X^2(2) = 12.84$ p = 0.001**

Note: Kruskal-Wallis test was used when homogeneity of variances (Bartlett test) or residual normality (Shapiro-Wilk test) was rejected. P: Problem focus copying; E: Emotional focus copying; D: Dysfunctional copying; LD: Labor demands; WO: Work organization; RL: relations and Leadership; WII: Work individual integrity; V: values; P: Personality; H: Health: OB: Offensive behaviors

Exploratory and confirmatory factorial analysis

Tables 3 and 4 present the results of the exploratory factorial analysis for the BriefCOPE and COPSOQ-II scales, respectively. In comparison with the theoretical models (supplementary tables 1 and 2), even when forcing the same number of factors, the dimensions of each model end up scattered.

Considering a criterion of explaining 80% of each model's variance, BriefCOPE focuses functional coping strategies under the first two factors, with the rest being mostly reserved for single dysfunctional strategies with suspiciously high loadings. Still, it is interesting to observe the mixing of all three theoretical latent variables in the second factor, saturating the use of instrumental support and emotional support with behavioral disinvestment and self-blaming.

In the case of COPSOQ-II, only social relations and leadership(3rd), work values(5th) and health and wellbeing(7th) seem to stay somewhat clustered as they were supposed. A consistent finding was the grouping of the end of labor demands(1st) with the beginning of labor organization(2nd), in this case in RC7.

Table 3 - Exploratory factor analysis results for BriefCOPE. Light grey denotes a square ratio between a loading to its next largest of each dimension between 1.5 and 2. Grey for a value over 2 (Method: Principal axis factoring, Rotation: Varimax)

Dimensions (Cronbach's Alpha)	Theoretical Model			Proposed model (80% explained variation)						
	F1	F2	F3	RC1	RC2	RC3	RC5	RC4	RC6	RC7
P1 - Active coping (.63)	X			.50		-.69				
P2 - Planning (.58)	X			.64		-.46				
P3 - Use of instrumental support (.75)	X				.77					
E1 - Positive reinterpretation (.88)		X		.82						
E2 - Acceptance (.57)		X		.72						
E3 - Humor (.62)		X		.84						
E4 - Religion (.89)		X					.91			
E5 - Use of emotional support (.85)		X			.67					
D1 - Self-distraction (.66)			X			.85				
D2 - Denial (.63)			X						.97	
D3 - Expression of feelings (.80)			X					.91		
D4 - Substance use (1)			X							.96
D5 - Behavioral disinvestment (.65)			X		.62	.54				
D6 - Self-blaming (.42)			X		.75					
SSloadings				2.65	2.17	1.80	1.26	1.20	1.08	1.08
PropVar				0.19	0.15	0.13	0.09	0.09	0.08	0.08
CumVar				0.19	0.34	0.47	0.56	0.65	0.73	0.80

P: Problem focus copying; E: Emotional focus copying; D: Dysfunctional copying;

Table 4 - Exploratory factor analysis results for COPSOQ-II. Light grey denotes a square ratio between a loading to its next largest of each dimension between 1.5 and 2. Grey for a value over 2. (Method: Principal axis factoring; Rotation: Varimax)

Dimensions (Cronbach's Alpha)	F1	F2	F3	F4	F5	F6	F7	F8	RC3	RC5	RC2	RC1	RC7	RC4	RC6	RC8	RC9	RC10
LD1 - Quantitative demands (.65)	X										.86							
LD2 - Work pace (univariate)	X										.70							
LD3 - Cognitive demands (.67)	X											.83						
LD4 - Emotional demands (univ.)	X											.53		.60				
WO1 . Influence (.8)		X										.31	.68					
WO2 - Possibilities for development (.57)		X										.83						
WO3 - Meaning of work (.89)		X											.37	.36	.34	.48		
WO4 - Commitment to the workplace (.64)		X													.77			
RL1 - Predictability (.67)			X						.32					.47				-.59
RL2 - Rewards (recognition) (.89)			X						.88									
RL3 - Role clarity (.79)			X										.54					
RL4 - Role conflicts (.69)			X						.47				.35			.38		
RL5 - Quality of leadership (.90)			X						.76									
RL6 - Social support from superiors (.86)			X						.59					-.42		-.32	.37	
RL7 - Social support from colleagues (.73)			X						.47				.41		.37	-.44		
WII1 - Job insecurity (univ.)				X												.83		
WII2 - Job satisfaction (.75)				X										.84				
WII3 - Work/Family conflict (.82)				X							.80							
V1 - Trust regarding management (.59)					X				.53				.64					
V2 - Mutual trust between employees (.83)					X								-.78					
V3 - Justice and respect (.88)					X				.76				.46					
V4 - Social inclusiveness (.82)					X								.79					
P - Self-efficacy (.76)						X											.80	
H1 - Self rated health (univ.)							X			-.73								
H2 - Stress (.77)							X			.65								
H3 - Burnout (.76)							X		-.39	.47	.62							
H4 - Sleeping troubles (.76)							X			.80								
H5 - Depressive symptoms (.74)							X			.85								
OB - Bullying (.74)								X										.79
SSloadings									3.59	3.03	2.8	2.67	2.6	2.29	1.87	1.57	1.46	1.43
PropVar									.12	.10	.10	.09	.09	.08	.06	.05	.05	.05
CumVar									.12	.22	.32	.42	.51	.59	.65	.70	.75	.80

The two spanning headers over the columns are: **Theoretical Model** (F1–F8) and **Proposed model (80% Explained Variation)** (RC3–RC10).

LD: Labor demands; WO: Work organization; RL: relations and Leadership; WII: Work individual integrity; V: values; P: Personality; H: Health: OB: Offensive behaviors

We have also conducted a confirmatory factorial analysis, resorting to MLMV(Maximum Likelihood Mean-Variance adjusted test statistic via a scale-shifted approach) as an estimator as data lacked the adequate sample size to properly apply WLS(Weighted Least Squares). Both models were unable to be fitted without cutting off dimensions, which was done sequentially, from the lowest Cronbach's alpha level, present in Tables 3 and 4.

The minimum number of changes to get the models to fit was 1 in BriefCOPE, with the exclusion of self-blaming, and 9 in COPSOQ-II, counting on the exclusion of variables mostly along the theoretical latent variables of Labor Demands (LD1, LD3), work organization (WO2, WO4), Relations and lidership (RL1, RL4, RL7), Values (V1), and Health (H5). This still only bore a robust CFI of 0.662, TLI of 0.575 and RMSEA of 0.117 in the case of BriefCOPE, and, in the same order, 0.569, 0.432 and 0.138 for COPSOQ-II, all missing typical cut-off values for the corresponding model complexity of 0.97 for CFI and TLI and 0.08 for RMSEA.

As an exercise on how close to acceptable levels of these metrics we could get, we turned to iteratively removing dimensions by their effect in the overall internal consistency of the dataset. As such the dimension that would increase the dataset's alpha the most in their absence would be excluded each time. This resulted in the removal of 4 dimensions from the BriefCOPE model (Religion, Denial, Expression of feelings and Substance use), mirroring the observed EFA, with a robust CFI of 0.742, TLI of 0.637 and RMSEA of 0.144. Under COPSOQ-II, 13 dimensions were removed, along with latent variables: Labor Demands (LD1; LD2, LD3, and LD4), work organization (WO1, WO2), Relations and leadership (RL3, RL4, RL6), Work individual integrity (WII1 and WII3), and Offensive behaviour (OB), resulting in robust levels of CFI of 0.814, TLI of 0.765 and RMSEA of 0.116.
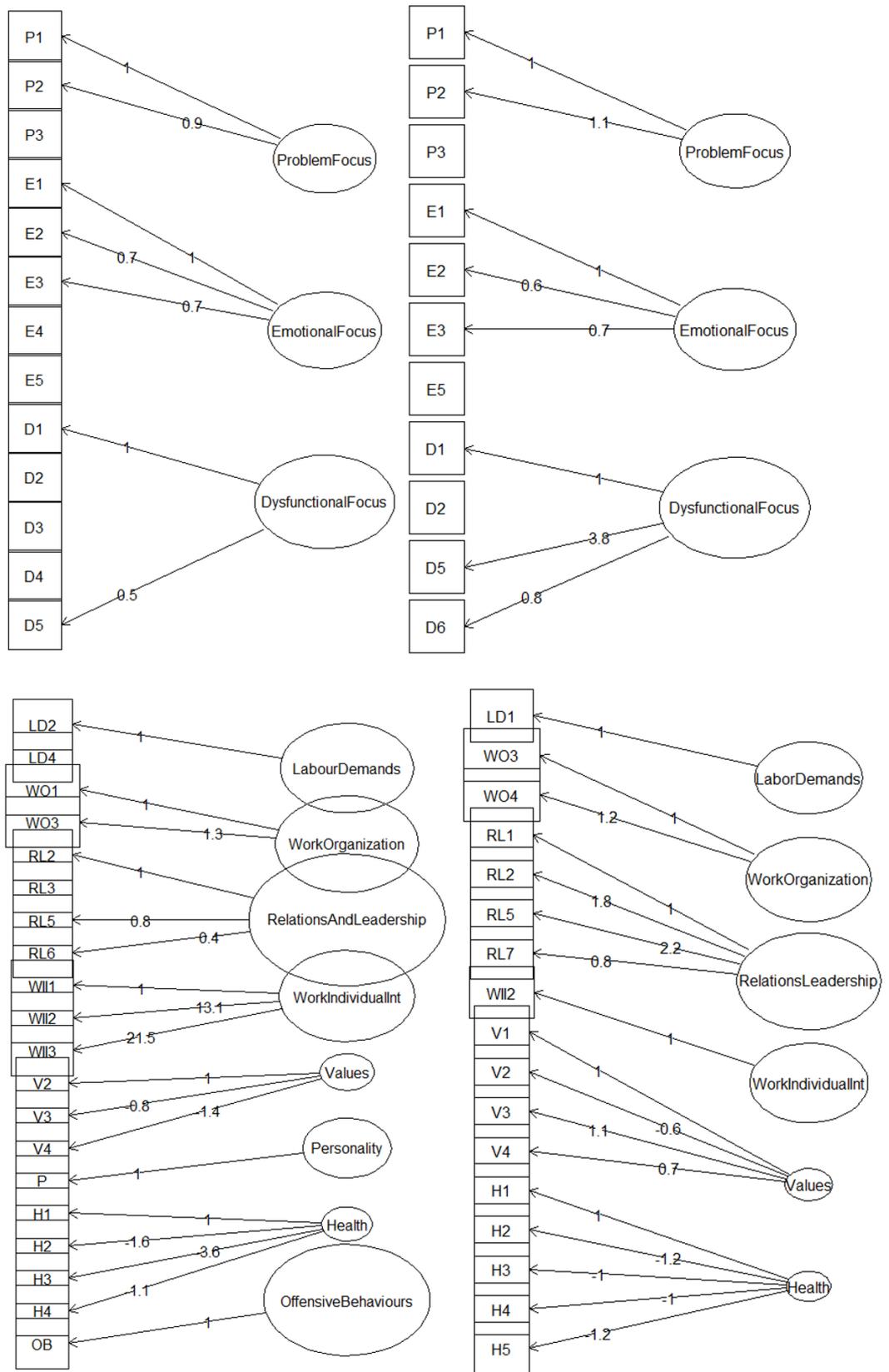
Figure 1 – Models from the confirmatory factorial analysis of minimum changes models BriefCOPE (top left) and COPSOQ-II (bottom left) against the best obtained scores in TLI, CFI and RMSEA (BriefCOPE: top right and COPSOQ-II: bottom right), respectively. Coding for each dimension in Tables 3 and 4.

Discussion:

This study aimed to analyze physicians' perceptions on workplace environment and job-related and psychosocial factors. Despite our initial hypotheses and thorough experimentation, the results of this study do not provide any significant findings, thus not supporting the proposed theories or indicating any clear patterns or trends.

The study recruited 55 physicians and analyzed their responses to a questionnaire that included the Work Ability Index (WAI), the Copenhagen Psychosocial Questionnaire (COPSOQ-II), and the Brief-COPE scale. Chi-square and one-way ANOVA results indicate no significant differences in the sociodemographic characteristics of the participants among the different WAI levels aside from sex. Analyzing the COPSOQ-II and BriefCOPE scores, our results show that the only metric that approaches a significant difference between WAI groups is denial, with low values across the board, and it seems to decrease as the WAI group increases. Furthermore, we observed significant differences in 8 metrics of COPSOQ-II scores, with a better WAI group being correlated with an increased feeling of meaning at work, quality of leadership, and self rated health. On the other hand, higher stress, burnout, sleep troubles, and depressive symptoms are associated with lower WAI groups.

Under the established criteria of explaining 80% of the observed variance, the exploratory factor analysis for the BriefCOPE and COPSOQ-II scales identified seven dimensions for BriefCOPE and ten for COPSOQ-II. Though these dimensions do not agree with the theoretical models, the published literature presents some heterogeneity regarding the number of dimensions obtained for each scale. For that reason, we are unable to validate the construct for both theoretical models in our study [24–26]. Furthermore, our models were characterized by scattered loadings, with singular dysfunctional coping mechanisms with suspiciously high loadings tending to define factors by themselves in BriefCOPE. Under COPSOQ-II, the increased complexity of the model exacerbated this trend, with only social relations and leadership (3rd), work values (5th) and health and wellbeing (7th) resembling their theoretical counterparts. Curiously, the end of the theoretical labor demands consistently grouped with the beginning of labor organization.

Confirmatory factor analysis was also conducted, with both models unable to be fitted without changes, requiring cutting self-blaming in BriefCOPE and 9 dimensions in COPSOQ-II, focused on the theoretical latent variables of Labor demands, Work organization and content and Social relations and leadership. However, their fitting indices did not reach the usual cut-off levels for the models' complexity. Overall, the results of this study suggest that there may be some associations between certain workplace social and psychological factors, coping abilities, and work ability among physicians [27]. These findings suggest that certain aspects of the workplace social and psychological factors [28] may be more closely associated with work ability than others.

However, due to the small sample size, the results should be interpreted with caution and further research with larger sample sizes is needed to confirm these findings. It is also possible that there are factors outside of the scope of this study that are impacting the outcome. Further research, with different techniques or a larger sample size, may be necessary to gain a better understanding of the phenomenon in question, especially considering how rare comparisons of the three researched questionnaires are, even more so if we limit them to a physician population. However, it is worth noting that negative results, or the absence of significant findings, are an important part of scientific progress. The failure to confirm a hypothesis can lead to the development of new ideas and approaches, and further our understanding of the topic at hand. Furthermore, one additional limitation may be the fact that this study was conducted over 10 years ago. While the general trends observed may still be relevant, the context around them absolutely is not the same. Most obviously since 2012, stands the COVID-19 pandemic, and how much it stood to test everyone's coping mechanisms, even more so those relevant to our study. Still, while this can be seen as a disadvantage, we believe these results may open the opportunity to perform a comparative study among physicians.

While this may be disappointing, it is important to note that the lack of a significant relationship does not necessarily mean that no relationship exists. It is also important to consider the implications of non-significant results. In some cases, a lack of a relationship between two variables may be just as important as a significant relationship, thus they do not necessarily indicate a failure. Instead, they highlight the importance of ongoing research and the need for further investigation in this area.

Ethics committee and informed consent:

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