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## 2 **Burnout and engagement: Personality profiles in** 3 **nursing professionals**

4 **María del Carmen Pérez-Fuentes**<sup>1,\*</sup>, **María del Mar Molero Jurado**<sup>1</sup>, **África Martos Martínez**<sup>1</sup>  
5 **and José Jesús Gázquez Linares**<sup>1,2</sup>

6 <sup>1</sup> Department of Psychology, Faculty of Psychology, University of Almería, 04120 Almería, Spain;  
7 mmj130@ual.es (M.d.M.M.J.); amm521@ual.es (Á.M.M.); jlinares@ual.es (J.J.G.L.)

8 <sup>2</sup> Department of Psychology, Universidad Autónoma de Chile, Región Metropolitana, Providencia 7500000,  
9 Chile

10 \* Correspondence: mpf421@ual.es; Tel.: +34-950-015-598

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12

13 **Abstract:** The burnout syndrome, which affects so many healthcare workers, has recently awakened  
14 wide interest due to the severe repercussions related to its appearance. Even though job factors are  
15 determinant to its development, not all individuals exposed to the same work conditions show  
16 burnout, which demonstrates the importance of individual variables such as personality. The  
17 purpose of this study was to determine personality characteristics of a sample of nursing  
18 professionals based on the Big Five model, and then, having determined the personality profiles,  
19 analyze the differences in burnout and engagement based on those profiles. The sample was made  
20 up of 1236 nurses. An ad hoc questionnaire was prepared to collect the sociodemographic data, and  
21 the Brief Burnout Questionnaire, the Utrecht Work Engagement Scale and the Big Five Inventory-  
22 10 were used. The results showed that the existence of burnout in this group of workers, is  
23 associated negatively with extraversion, agreeableness, conscientiousness and openness to  
24 experience, and positively with the neuroticism personality trait. These personality factors showed  
25 the opposite pattern with regard to engagement. Three different personality profiles were also  
26 found in nursing personnel, in which professionals who had a profile marked by strong neuroticism  
27 and low scores on the rest of the personality traits were those who were most affected by burnout.

28 **Keywords:** personality; burnout; engagement; Big Five; healthcare personnel.

29

### 30 **1. Introduction**

#### 31 *Burnout syndrome and individual factors in healthcare professionals*

32 The burnout syndrome, which mainly affects professionals who work directly with the  
33 beneficiaries of their services [1], is today one of the most studied subjects in health and occupational  
34 psychology due to results that confirm its severe economic and social consequences [2] to worker  
35 health and organizations [3, 4].

36 Even though job-related factors are key determinants to developing burnout [5], not all  
37 individuals who experience the same working conditions develop the syndrome, which suggests the  
38 importance of individual factors in its appearance [6, 8]. The study of burnout focused on an  
39 individualized approach through different profiles, would enable the directions of change in  
40 exhaustion and job commitment of workers, or job engagement, to be known [9, 10]. Along this line,  
41 hypotheses have been formulated which show that, although burnout occurs in response to stress  
42 factors in the workplace maintained over long periods of time, they do not typically cause this  
43 exhaustion, but are rather a way of coping with and managing them [11].

44 The personality characteristics of each individual play a relevant role in the way they work and  
45 the vitality and efficacy with which they perform their job [12, 13]. They are also related to the

46 perception of work events as stressful, such that individuals prone to anxiety are more vulnerable to  
47 job stress [14, 15]. Studies suggest that personality factors are related to the burnout syndrome in  
48 health professionals [16].

49

#### 50 *Burnout, engagement and personality in nursing personnel*

51 There is much debate in the literature on the theoretical construction of engagement and  
52 burnout. Some studies show that the engagement construct is the opposite of burnout [17-19]. Other  
53 studies have found that they are different concepts [20, 21].

54 In line with this perspective, Maricuțoiu, Sulea, & Iancu [22] mention the existence of slight  
55 crossed effects between the variables, while others have found that the relationship between burnout  
56 and engagement is weak in healthcare personnel [23]. Engagement and burnout have also been found  
57 to have different patterns in relation to different variables. Thus, to explain burnout, it is essential to  
58 know both contextual and individual aspects, while engagement would be mainly determined by the  
59 latter [24, 25], and more specifically, by the individual's personality [26]. So while the presence of  
60 burnout is associated with high neuroticism and low agreeableness, engagement of healthcare  
61 professionals shows a strong association with the extraversion and conscientiousness personality  
62 factors. Healthcare professionals may therefore have high scores in engagement and still be suffering  
63 from burnout [27].

64

#### 65 *The Big Five Model and its association with burnout in healthcare personnel*

66 One of the personality models most studied in relation to worker wellbeing is the Big Five [28].  
67 Studies done on personality in healthcare personnel specifically, have identified neuroticism as a  
68 factor which has a strong association with burnout [16, 18, 29, 30]. Individuals with high neuroticism  
69 levels are more prone to feeling angry, anxious, depressed or stressed [31, 32], are less able to control  
70 their emotions when faced with negative or stressful situations [30], and exhibit immature defense  
71 mechanisms which increase their exhaustion [33]. In this vein, Iorga et al. [34] found that neuroticism,  
72 along with the difficulty in identifying their feelings, were the two variables that best explained the  
73 burnout scores of healthcare professionals.

74 Continuing with the Big Five model, conscientiousness has been associated with a lower score  
75 in burnout among nursing personnel. In turn, the locus of control acts as a moderating factor in this  
76 relationship, such that the force of the negative relationship between conscientiousness and burnout  
77 syndrome is lessened in those nursing professionals who have an internal locus of control [35]. Both  
78 conscientiousness and perfectionism are personality factors which mostly lead to strong  
79 preoccupation for achieving results, which leads these individuals to deploy perseverant strict rules  
80 [36]. Both an exaggerated sense of conscientiousness and perfectionism have been described as  
81 common traits in healthcare professionals [37]. Perfectionism has been defined as the personality  
82 characteristic which refers to the struggle for correction and setting excessively high standards of  
83 performance, which as a result cause self-evaluation to be too critical [38]. Even just in common tasks,  
84 perfectionist individuals are not usually completely satisfied with the results, so exhaustion in these  
85 professionals is not only due to the task itself, but how they relate to it [34]. Within the study of  
86 personality and burnout, differences have been found in this syndrome based on the presence of  
87 maladaptive or healthy perfectionist personality traits [28]. People who have high maladaptive  
88 perfectionism tend to select coping strategies focused on emotions, which has been associated with  
89 the presence of burnout in healthcare workers [39]. While healthy perfectionism, which refers to  
90 employees who make an effort to reach these standards through initiative and motivation, show more  
91 innovation, which leads to lessening burnout [28].

92 Narcissism, which in the occupational sphere refers to persons who show a strong need to make  
93 their achievements visible and be recognized [40], is another personality factor which has been  
94 identified as a risk for developing burnout and more especially, with the dimensions of emotional  
95 exhaustion and depersonalization [41]. Personality traits pertaining to the Big Five model, such as  
96 agreeableness in interpersonal interaction, emotional stability, extraversion and openness to

97 experience, have also been shown to be inversely related to the presence of burnout in healthcare  
98 professionals [29, 33, 42-44].

99

### 100 *Personality patterns and their relationship with the burnout syndrome in nursing professionals*

101 Personality patterns constitute a network of stable traits which are related to an individual's  
102 behavior [45]. In the study of personality, Type D personality or distressed personality has been  
103 defined as the tendency to experience a high level of negative affectivity and social inhibition [46].  
104 Distressed personality has been associated with burnout in workers [47]. Thus, healthcare  
105 professionals who have a Type D personality, show more job stress and lower levels of professional  
106 satisfaction, which leads them to experience more burnout [48, 49].

107 Another personality pattern which has been related to the presence of burnout in healthcare  
108 professionals is Type A profile, which refers to impulsive, competitive, impatient and aggressive  
109 individuals who have problems fighting job stress [50]. Healthcare professionals who show this  
110 behavior pattern have higher levels of job anxiety and emotional exhaustion [51, 52]. While other  
111 studies, such as the one by Wlodarczyk & Pawliszewska [53] show that not all the components of  
112 Type A personality act in the same direction. Thus, while aggressiveness acts as a predictor of  
113 burnout and job dissatisfaction, factors of domination and effort to achieve exert a protective role  
114 against this syndrome.

115 With regard to the types of personality, Kennedy, Curtis, & Waters [54] mention in their review  
116 the possibility of certain factors being associated with the choice of training in nursing and with levels  
117 of stress, satisfaction and burnout. In this light, Jaracz et al. [55] suggested that most healthcare  
118 professionals show an anxious emotional temperament which is characterized by the need to care for  
119 themselves and those around them. This temperament makes them especially vulnerable to suffer  
120 anxiety, stress and burnout.

121 According to Zaninotto et al. [44], the complex interaction of burnout and personality traits is  
122 still not known in depth, and the relationship between the sociodemographic, work and personality  
123 factors in nursing personal must be known to understand the presence of burnout [56]. Therefore,  
124 the objective of this study was to determine the Big Five personality characteristics in a sample of  
125 nursing professionals. In addition, having determined the personality profiles, we wanted to  
126 analyzed the burnout and engagement scores based on those profiles.

## 127 **2. Experimental Section**

### 128 *Participants*

129 The sample was made up of 1236 nurses of whom 85.5% ( $n=1044$ ) were women and the  
130 remaining 15.5% ( $n=192$ ) were men.

131 Participants were aged 21 to 57 with a mean age of 31.50 ( $SD=6.18$ ). The mean age of women was  
132 31.65 years ( $SD=6.23$ ), and for men 30.71 ( $SD=6.17$ ).

133 As to the areas they were working in, 32% ( $n=396$ ) were staff nurses and 21.9% ( $n=271$ ) were on  
134 the emergency staff, 11.4% ( $n=141$ ) performed their duties in the ICU, 10.7% ( $n=132$ ) in surgery, 2.3%  
135 ( $n=28$ ) said they worked in outpatient care and 4% ( $n=50$ ) worked in mental health. The remaining  
136 17.6% ( $n=218$ ) were working in other areas.

137 Concerning their employment situation at the time of the survey, 69.3% ( $n=857$ ) were working  
138 with temporary contracts and 30.7% ( $n=379$ ) had permanent contracts.

139

### 140 *Instruments*

141 Ad hoc sociodemographic questionnaire. A questionnaire prepared by the authors for the  
142 sociodemographic and employment variables, acquire personal and job information and also the  
143 employment situation or work area.

144 The *Brief Burnout Questionnaire* (CBB) [57] was used for evaluating this syndrome in the  
145 professionals. This instrument consists of 21 items grouped in three blocks corresponding to the  
146 background, elements and consequences of burnout. Thus, even though the objective of the  
147 questionnaire is general evaluation of the professional burnout process, it is concerned with the

148 factors proposed in the Maslach & Jackson [58] model as well as components which precede and  
149 follow it. The instrument's reliability for the study sample was 0.87.

150 The *Utrecht Work Engagement Scale* (UWES) [59], specifically, the version adapted to Spanish by  
151 Valdez & Ron [60], was used to evaluate engagement. This scale is made up of 17 items which are  
152 answered on a seven-point Likert-type scale, where 0 is "never" and 6 is "always". These items are  
153 distributed in three factors: vigor (with regard to the energy with which the employee confronts  
154 his/her job), dedication (that is, the perception that the job performed makes sense) and absorption  
155 (related to the worker's immersion in his/her work). The reliability of each of these factors in this  
156 study was 0.84, 0.90 and 0.81, respectively.

157 The *Big Five Inventory-10* (BFI-10) [61] was used to evaluate personality traits. This questionnaire  
158 is a brief version of the original Big Five Inventory which has 44 items (BFI-44) [62], and has been  
159 shown to have adequate psychometric properties in spite of its brevity. It contains five subscales  
160 (extraversion, agreeableness, conscientiousness, neuroticism and openness to experience) which are  
161 evaluated by two items. For this the participants must answer on a Likert-type scale where 1 is  
162 "totally disagree" and 5 "totally agree". The reliability analysis for each of the subscales showed a  
163 Cronbach's alpha of 0.62 for extraversion, 0.67 for agreeableness, 0.71 for conscientiousness, 0.63 for  
164 neuroticism and 0.65 for openness to experience.

165

#### 166 *Procedure*

167 This study was approved by the Bioethics Committee of the University of Almeria. Participation  
168 in the study was voluntary, and participants were informed at all times of the purpose and the  
169 anonymity of their answers.

170 The questionnaires were implemented on a Web platform and filled in individually online. For  
171 control of incongruent or random answers by participants, control questions were included. Any  
172 such cases were discarded from the study sample.

173

#### 174 *Data analysis*

175 The descriptive statistics were analyzed for burnout and engagement and the personality  
176 factors. In addition, bivariate correlation analyses were performed to explore the relationship  
177 between variables.

178 A two-step cluster analysis was carried out to establish the professional groups by personality  
179 factors. When the groups or clusters had been identified, comparison of means (univariate analysis  
180 and multivariate analysis of variance) was performed to determine the existence of significant  
181 differences between the groups with respect to the burnout syndrome and engagement components.  
182 To determine which means were significantly different, the Scheffé post hoc comparison test was  
183 applied.

184 Finally, a two-step cluster analysis was done of the group of professionals in the sample affected  
185 by burnout to determine their different personality profiles.

186 The SPSS statistical package version .23 for Windows was used for data analysis and processing.

187

### 188 **3. Results**

#### 189 *3.1. Personality, burnout and engagement in nursing professionals*

190 As observed in Table 1, burnout correlated negatively with the three dimensions of engagement  
191 (Vigor:  $r=-.39$ ,  $p<.001$ ; Dedication:  $r=-.50$ ,  $p<.001$ ; Absorption:  $r=-.28$ ,  $p<.001$ ) and negative correlations  
192 with most of the personality factors (Extraversion:  $r=-.14$ ,  $p<.001$ ; Agreeableness:  $r=-.15$ ,  $p<.001$ ;  
193 Conscientiousness:  $r=-.20$ ,  $p<.001$ ; Openness to experience:  $r=-.18$ ) and positively with Neuroticism  
194 ( $r=.20$ ,  $p<.001$ ).

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**Table 1.** Personality, burnout and engagement. Bivariate correlations.

	1	2	3	4	5	6	7	8	9
<b>1. Extraversion</b>	–								
<b>2. Agreeableness</b>	.20***	–							
<b>3. Conscientiousness</b>	.25***	.19***	–						
<b>4. Neuroticism</b>	-.24***	-.19***	-.26***	–					
<b>5. Openness to experience</b>	.20***	.10***	.30***	-.20***	–				
<b>6. Burnout syndrome</b>	-.14***	-.15***	-.20***	.20***	-.18***	–			
<b>7. Vigor</b>	.15***	.15***	.30***	-.20***	.20***	-.39***	–		
<b>8. Dedication</b>	.10***	.15***	.26***	-.18***	.22***	-.50***	.83***	–	
<b>9. Absorption</b>	.18***	.10***	.16***	-.05*	.13***	-.28***	.77***	.74***	–

200

\*\*\* $p < .001$ .

201 In the relationships between engagement dimensions and personality factors, Vigor is observed  
 202 to have a negative correlation with Neuroticism ( $r = -.20, p < .001$ ) and positive correlations with the rest  
 203 of factors (Extraversion:  $r = .15, p < .001$ ; Agreeableness:  $r = .15, p < .001$ ; Conscientiousness:  $r = .30, p < .001$ ;  
 204 Openness to experience:  $r = .20, p < .001$ ). The Dedication dimension has a negative correlation with  
 205 Neuroticism ( $r = -.18, p < .001$ ) while it correlates positively with: Extraversion ( $r = .10; p < .001$ ),  
 206 Agreeableness ( $r = .15, p < .001$ ), Conscientiousness ( $r = .26, p < .001$ ), and Openness to experience ( $r = .22,$   
 207  $p < .001$ ). Finally, Absorption is negatively correlated with Neuroticism ( $r = -.05, p < .05$ ) and positively  
 208 correlated with: Extraversion ( $r = .18; p < .001$ ), Agreeableness ( $r = .10, p < .001$ ), Conscientiousness ( $r = .16,$   
 209  $p < .001$ ), and Openness to experience ( $r = .13, p < .001$ ).

### 210 3.2. Personality profiles of nursing professionals: Differences in burnout and engagement

211 A two-step cluster analysis of the personality factors was performed to form the groups. Three  
 212 groups resulted from the inclusion of these variables (Figure 1) with the following distribution: 39%  
 213 ( $n = 482$ ) of the participants in Cluster 1, 37.7% ( $n = 466$ ) in Cluster 2 and 23.3% ( $n = 288$ ) in Cluster 3. The  
 214 following table summarizes the means of the personality factors for the total sample of participants  
 215 and each of the clusters.

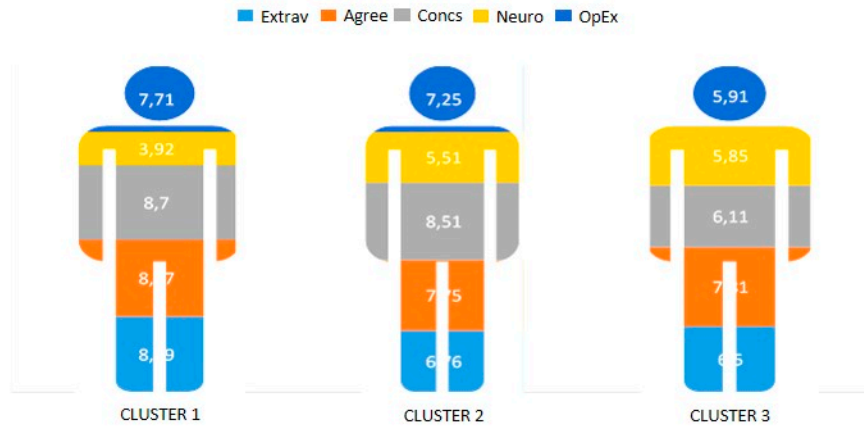
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**Table 2.** Mean scores for the total sample and clusters ( $N = 1236$ )

	Total sample ( $N = 1236$ )	Cluster		
		1 ( $n = 482$ )	2 ( $n = 466$ )	3 ( $n = 288$ )
<b>Extraversion</b>	$M = 7.53 (SD = 1.88)$	$M = 8.89 (SD = 1.00)$	$M = 6.76 (SD = 1.76)$	$M = 6.50 (SD = 1.87)$
<b>Agreeableness</b>	$M = 8.24 (SD = 1.23)$	$M = 8.97 (SD = .72)$	$M = 7.75 (SD = 1.26)$	$M = 7.81 (SD = 1.27)$
<b>Conscientiousness</b>	$M = 8.02 (SD = 1.39)$	$M = 8.70 (SD = .96)$	$M = 8.51 (SD = .77)$	$M = 6.11 (SD = .98)$
<b>Neuroticism</b>	$M = 4.97 (SD = 1.72)$	$M = 3.92 (SD = 1.16)$	$M = 5.51 (SD = 1.65)$	$M = 5.85 (SD = 1.74)$
<b>Openness to exper.</b>	$M = 7.12 (SD = 1.76)$	$M = 7.71 (SD = 1.64)$	$M = 7.25 (SD = 1.55)$	$M = 5.91 (SD = 1.68)$

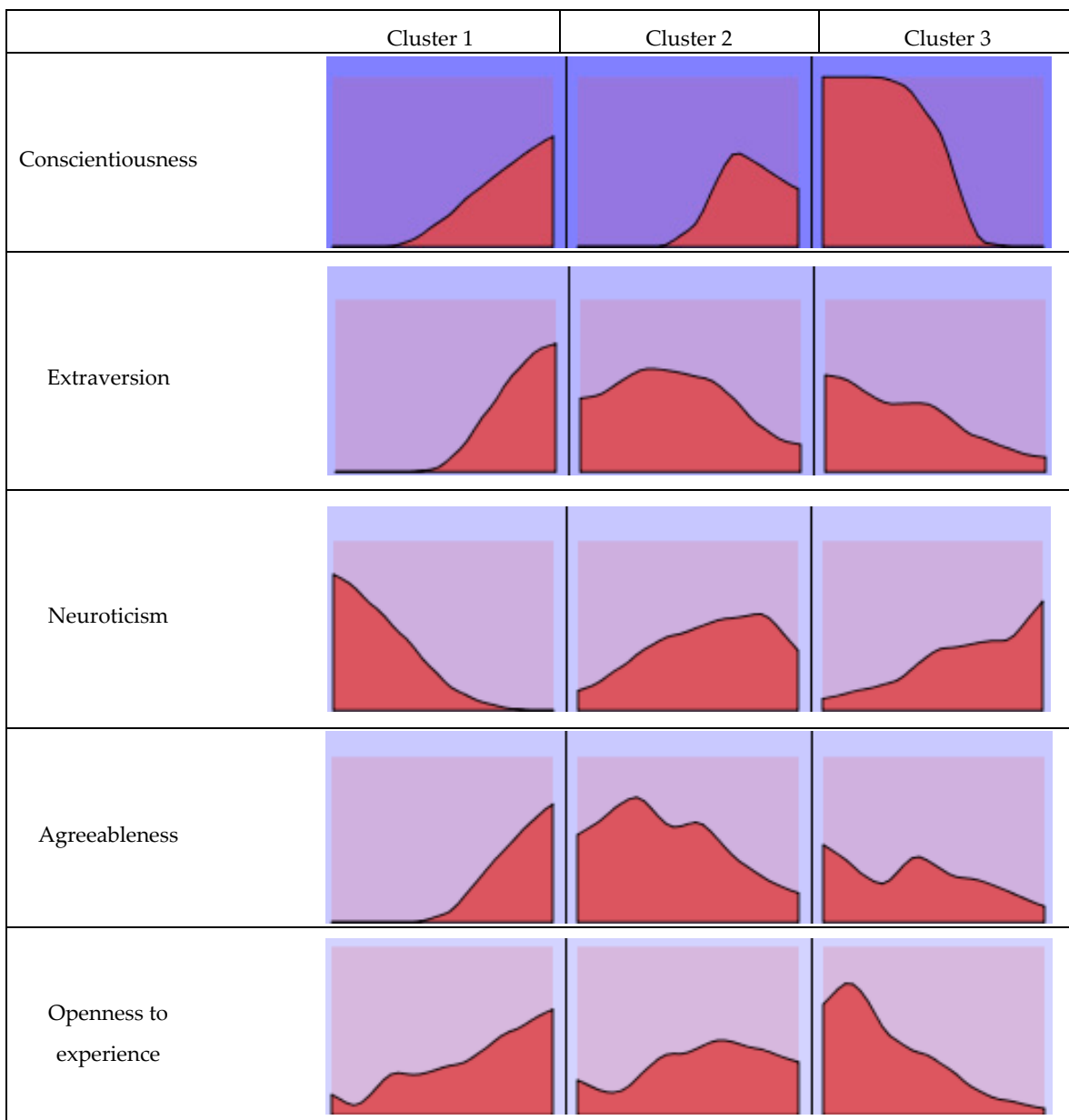
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Figure 1. Mean scores on personality factors by cluster



221

Figure 2. Cluster composition (N=1236). Note. Factors in order of importance of input

222 The first group resulting from the cluster analysis (Cluster 1) is characterized by scores above  
 223 the mean of the total sample in Extraversion ( $M=8.89$ ), Agreeableness ( $M=8.97$ ), Conscientiousness  
 224 ( $M=8.70$ ), and Openness to experience ( $M=7.71$ ), while Neuroticism had a mean below the total  
 225 sample ( $M=3.92$ ).

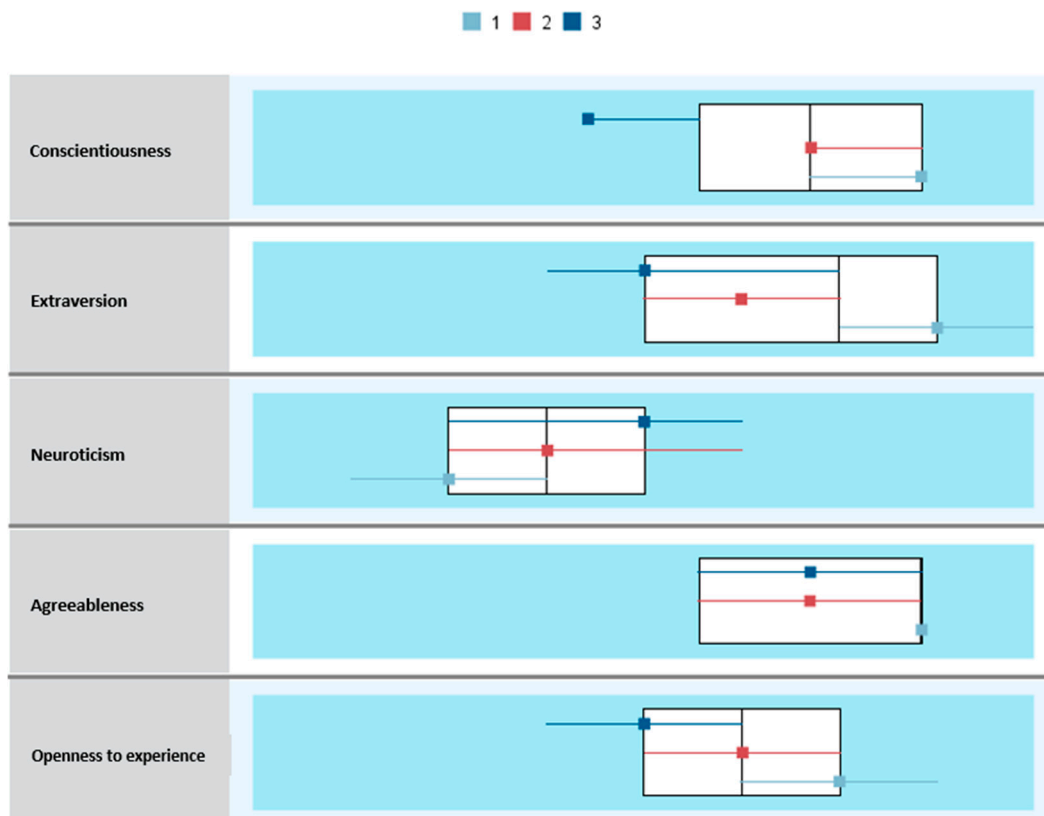
226 The second group (Cluster 2) identifies professionals with scores above the mean of the total  
 227 sample in Conscientiousness ( $M=8.71$ ), Neuroticism ( $M=5.51$ ), and Openness to experience ( $M=7.25$ ).  
 228 In this case, for Extraversion ( $M=6.76$ ) and Agreeableness ( $M=7.75$ ), the scores were below the mean  
 229 of the total sample.

230 The third group (Cluster 3) clusters professionals with mean scores below the total sample in  
 231 almost all the personality factors: Extraversion ( $M=6.50$ ), Agreeableness ( $M=7.81$ ), Conscientiousness  
 232 ( $M=6.11$ ), and Openness to experience ( $M=5.91$ ), except Neuroticism ( $M=5.85$ ), for which the mean  
 233 was above the one for the total sample.

234 After classification into groups based on the three-cluster solution, a univariate analysis of  
 235 variance (ANOVA) was performed for burnout and multivariate analysis (MANOVA) with the three  
 236 dimensions of engagement.

237 The results of the comparative analysis between profiles by burnout syndrome are shown in  
 238 Table 3, where differences between clusters are statistically significant ( $F_{(2,1233)}=33.87$ ,  $p<.001$ ,  $\eta_p^2=.05$ ,  
 239 observed power =1.0).

240



241

242

**Figure 3.** Comparison of clusters ( $N=1236$ )

243 The post hoc comparisons show that Cluster 3 (with scores below the mean in all the personality  
 244 factors except Neuroticism, with a mean above the one in the total sample) had a significantly higher  
 245 score ( $M=21.66$ ) than the rest of the groups. The Cluster 2 score ( $M=20.70$ ) was, in turn, significantly  
 246 higher than Cluster 1 ( $M=18.93$ ).

247 A comparison of personality profiles with engagement dimensions were performed by the  
 248 multivariate analysis of variance (MANOVA).

249 Homogeneity of covariance was examined by the Box  $M$  test, and the null hypothesis of data fit  
 250 was rejected ( $M_{Box}=79.48$ ,  $F=6.59$ ,  $p<.05$ ). The multivariate comparison demonstrated the existence of

251 significant between-group differences (Wilks' Lambda =.88,  $F_{(3, 1231)}=25.16$ ,  $p<.001$ ,  $\eta_p^2=.05$ , observed  
252 power=1.0).

253 Analyzing this relationship individually for each of the dependent variables (Vigor, Dedication,  
254 Absorption), the results were statistically significant in all cases (Table 4).

255 **Table 3.** Burnout and personality profiles. Univariate analysis of variance and *post hoc*

	Cluster	N	Mean	SD	ANOVA		Difference in means
					F	Sig.	
Burnout	Cluster 1 (c1)	482	18.93	4.56	33.87	.000	g1-g2 ***  g2-g3 *  g1-g3 ***
	Cluster 2 (c2)	466	20.70	4.79			
	Cluster 3 (c3)	288	21.66	4.84			

256 \*\* $p<.01$ ; \*\*\* $p<.001$ .

257 **Table 4.** Multivariate analysis (between-subject effects by cluster) based on the *engagement*  
258 dimensions

Engagement	Cluster 1 (n=482)		Cluster 2 (n=466)		Cluster 3 (n=288)		F	p	$\eta_p^2$	Observed power
	M	SD	M	SD	M	SD				
Vigor	28.95	4.42	26.87	5.20	24.50	6.46	65.37	.000	.09	1.00
Dedication	25.30	4.08	23.62	4.75	21.65	5.96	52.05	.000	.07	1.00
Absorption	25.55	5.34	24.17	5.76	22.85	6.86	19.46	.000	.03	1.00

259 In Vigor, there were significant differences between groups ( $F_{(2,1233)}=65.37$ ,  $p<.001$ ,  $\eta_p^2=.09$ ,  
260 observed power=1.0). Post hoc comparisons (Table 5) showed that Cluster 1 (with scores above the  
261 mean in all personality factors except Neuroticism which was below the total sample) had a  
262 significantly higher score ( $M=28.95$ ) than the rest of the groups. Furthermore, Cluster 2 ( $M=26.87$ ) had  
263 a significantly higher score than Cluster 3 ( $M=24.50$ ).  
264

265 **Table 5.** Post hoc tests by cluster for engagement dimensions

Engagement	Difference in means		
	Cluster 1 vs Cluster 2	Cluster 1 vs Cluster 3	Cluster 2 vs Cluster 3
Vigor	2.07**	4.44**	2.37**
Dedication	1.68**	3.65**	1.97**
Absorption	1.38**	2.70**	1.32**

266 \*\* $p<.01$ ; \*\*\* $p<.001$ .

267 Significant differences were also found between the three clusters for the Dedication dimension  
268 ( $F_{(2,1233)}=52.05$ ,  $p<.001$ ,  $\eta_p^2=.07$ , observed power=1.0). The post hoc comparisons showed that Cluster 1  
269 ( $M=25.30$ ) had the highest mean score in Dedication with statistically significant differences from  
270 Cluster 2 ( $M=23.62$ ), and it in comparison with Cluster 3 ( $M=21.65$ ).

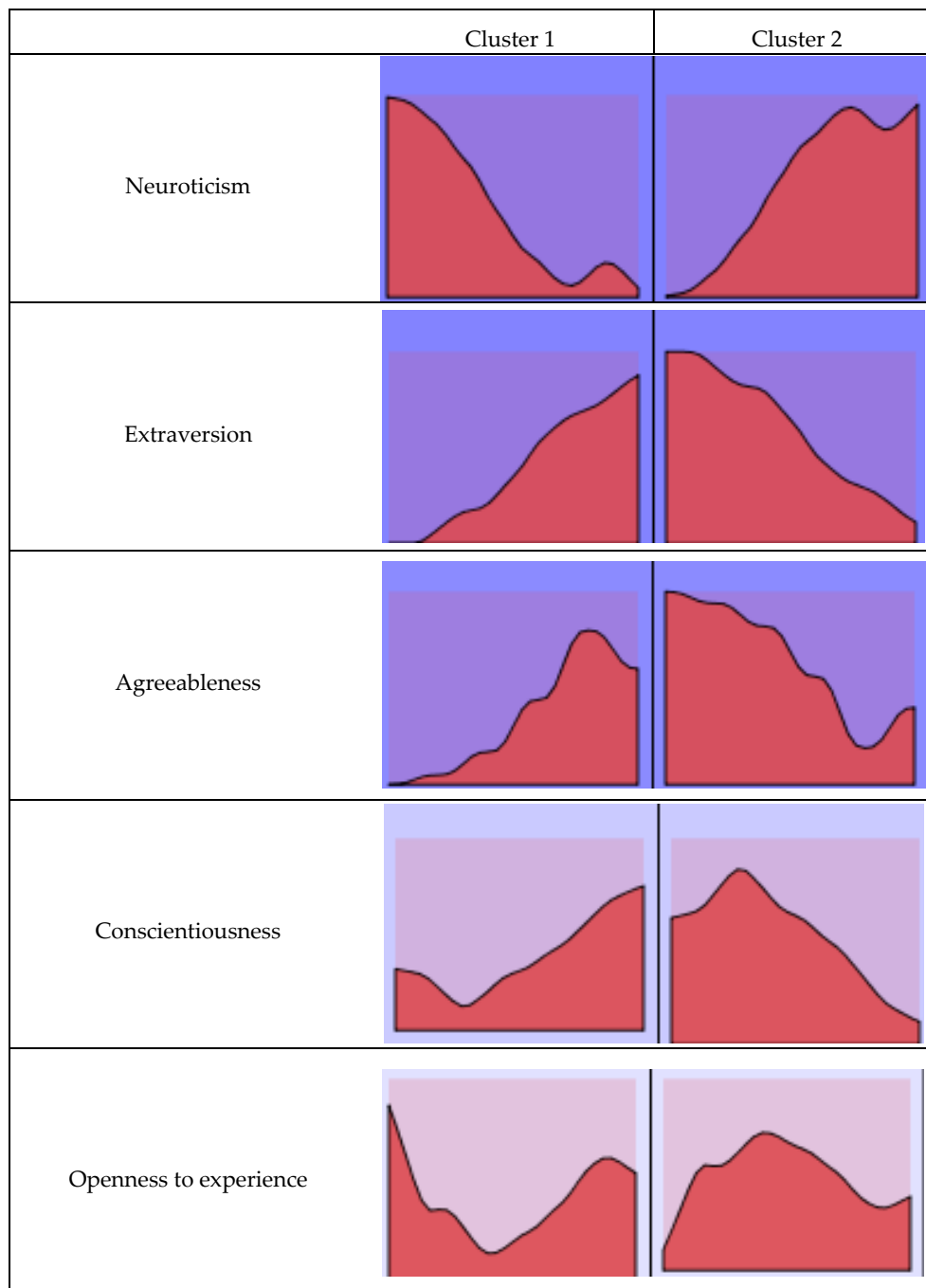
271 Finally, significant between-groups differences were also found in the Absorption dimension of  
272 engagement ( $F_{(2, 1233)}=19.46$ ,  $p<.001$ ,  $\eta_p^2=.03$ , observed power =1.0). The post hoc comparisons indicated  
273 that Cluster 1 had a significantly higher score ( $M=25.55$ ) than the rest of the groups. In turn, the score  
274 for Cluster 2 ( $M=24.17$ ) was significantly higher than Cluster 3 ( $M=22.85$ ).  
275  
276  
277



278 3.3. Personality profiles of nursing professionals with burnout syndrome

279 Selecting the part of the sample affected by the burnout syndrome, a two-step cluster analysis  
 280 was done to test for different profiles by combination of the personality factors analyzed. Two groups  
 281 or clusters were found: Cluster 1 which represented 46.6% ( $n=102$ ) of the subsample selected and  
 282 Cluster 2, where the remaining 53.4% ( $n=117$ ) were clustered.

283 Unlike the clusters resulting for the total sample of professionals, in this case (affected by  
 284 burnout), Neuroticism appeared as the most relevant factor in determining the profiles (Figure 4).  
 285



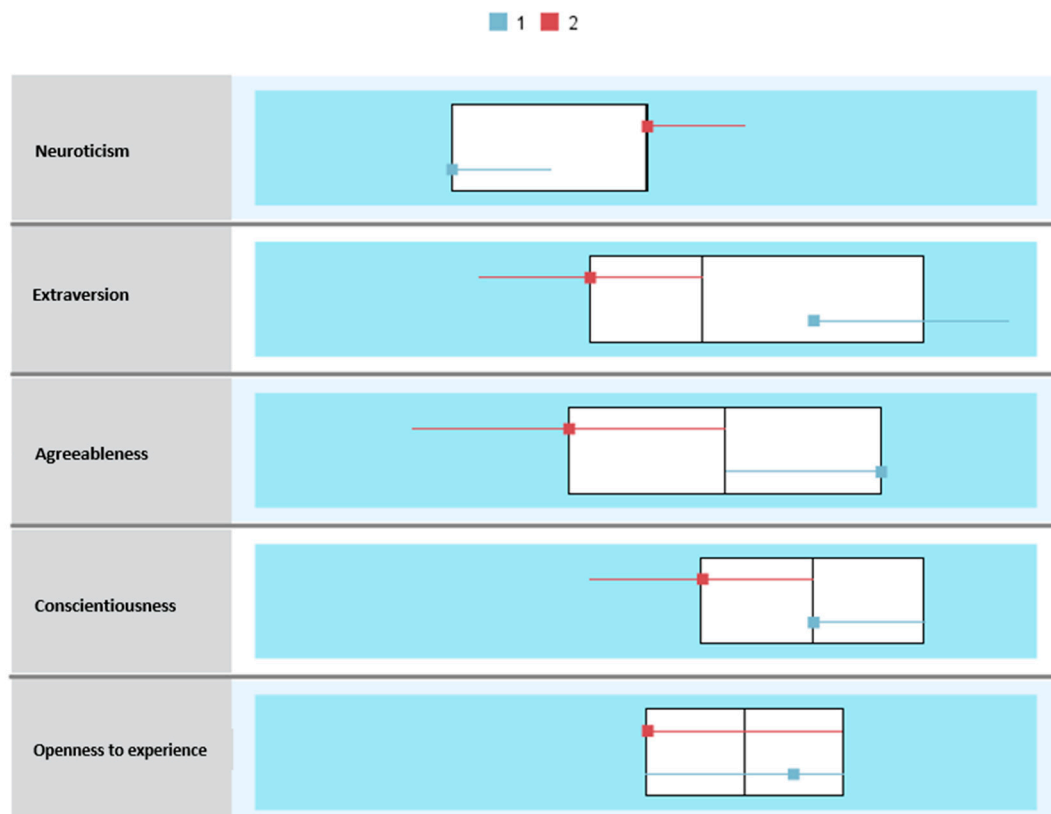
286 **Figure 4.** Cluster composition ( $n=219$ ). Note. Factors in order of importance of input

287 Cluster 1 identifies professionals with scores above the mean in all the personality factors  
 288 (Extraversion:  $M=8.30$ , Agreeableness:  $M=8.70$ , Conscientiousness:  $M=8.09$ , and Openness to  
 289 experience:  $M=6.99$ ), except Neuroticism ( $M=4.47$ ) which was below the mean in professionals  
 290

291 affected by the syndrome. On the contrary, Cluster 2 grouped professionals with scores below the  
 292 mean in almost all the personality factors (Extraversion:  $M=6.08$ , Agreeableness:  $M=7.28$ ,  
 293 Conscientiousness:  $M=7.14$ , and Openness to experience:  $M=6.76$ ), while Neuroticism ( $M=5.48$ ) had a  
 294 score above the subsample of professionals affected by burnout (Figure 5).

295 Finally, to check whether the differences in the degree of burnout between the two personality  
 296 profiles of those affected by the syndrome were statistically significant, a Student's  $t$  test for  
 297 independent samples was carried out. The results showed that the differences between the two  
 298 profiles were not statistically significant ( $t_{(217)}=-1.54, p=.12$ ).

299 Nevertheless, in the comparison of means, a higher mean score was observed in burnout for  
 300 Cluster 2 ( $M=28.08, SD=3.32$ ) than Cluster 1 ( $M=27.48, SD=2.35$ ).  
 301



302  
 303

Figure 5. Comparison of clusters ( $n=219$ )

#### 304 4. Discussion

305 This study analyzed the relationship between certain personality factors and the presence of  
 306 burnout in nursing personnel. The results showed that burnout in this group of workers was  
 307 associated negatively with Extraversion, Agreeableness, Conscientiousness and Openness to  
 308 experience, but has a positive relationship with Neuroticism. These results agree with the findings of  
 309 other studies, where based on the Big Five model, all personality factors were shown to be negatively  
 310 related to development of the burnout syndrome in healthcare workers [29, 33, 42-44], except  
 311 neuroticism which was positively related [16, 18, 29, 30].

312 And on the contrary, these personality factors showed the opposite pattern in relation to  
 313 engagement in nursing professionals. Thus, while neuroticism showed a negative relationship in this  
 314 construct, the Extraversion, Conscientiousness, Agreeableness and Openness to experience factors  
 315 correlated positively. Although these results are insufficient to take a position in the debate  
 316 concerning burnout and engagement as different constructs or different poles of the same construct,  
 317 it can be said that there are interrelated effects, which coincides with the results of other authors [22].

318 When the personality profiles in nursing personnel were analyzed, three different groups were  
 319 found. The first one had positive scores on all the personality factors analyzed except neuroticism.

320 The second profile referred to professionals less agreeable and extroverted than the rest, but who  
321 showed high scores on the rest of the factors (that is, conscientiousness, openness to experience and  
322 neuroticism). Finally, the third group resulting from the cluster analysis was made up of  
323 professionals with a personality profile contrary to the one shown by the first group. Thus, the third  
324 group was characterized by showing scores above the mean in neuroticism and below in the rest.  
325 After comparing the burnout and engagement scores in these three profiles, the third group, marked  
326 by low scores on all the traits except neuroticism, was found have the most burnout syndrome,  
327 followed by the second group made up of professionals with low agreeableness and extraversion and  
328 high neuroticism scores (although the scores on this factor were lower than in the third group). These  
329 results coincide with those found by Iorga et al. [34], who identified neuroticism as the key personal  
330 element in developing burnout. The second group, which was also the second most burnt, show a  
331 similar pattern to the one established in the literature as Type D personality, identified as risk of  
332 developing burnout [47-49].

333 Meanwhile, the highest scores in engagement were shown by the first group, marked by high  
334 scores in Extraversion, Agreeableness, Openness to experience and Conscientiousness [18, 30]  
335 followed by the second and third groups, respectively.

336 Finally, several different personality profiles were found among the nursing personnel who  
337 were suffering from burnout. After identifying the professionals who had this syndrome, a cluster  
338 analysis was done which indicated two different groups. The second, made up of workers with scores  
339 below the mean in all the traits in the Big Five model except neuroticism, showed higher burnout  
340 scores than the first group, where the opposite personality pattern was found. Even though these  
341 differences were not significantly higher, they highlight again the importance of the neuroticism  
342 factor in developing burnout and even in showing higher levels of this syndrome.

## 343 5. Conclusions

344 Personality factors are relatively stable traits which influence behavior and the way daily  
345 situations are faced by healthcare professionals. Certain factors, such as neuroticism, show a strong  
346 relationship with the development of burnout in nursing personnel. Knowing how the personality of  
347 the individual can affect the development of this ever more prevalent phenomenon, is a challenge  
348 and at the same time, an opportunity for optimizing human resources within the organization and  
349 improving the general quality of life of healthcare professionals.

350 Among the limitations of the study is the selection of questionnaires. In the first place, the CBB  
351 [57] cannot find the influence of the personality variables on each of the burnout factors, as it only  
352 provides a total score. On the other hand, and according to the authors of the Big Five Inventory-10  
353 [61], although the questionnaire's properties are adequate, given its brevity, there are losses in  
354 evaluating personality adequately. It is therefore recommended for future studies to use the 44-item  
355 version of the Big Five Inventory *Big Five Inventory* [62] and recur to other questionnaires that evaluate  
356 the various factors of the burnout syndrome more precisely.

357 This study shows the need for continued analysis of the individual factors, and more specifically,  
358 personality, in relation to the burnout syndrome, at the same time other factors are also analyzed. So  
359 new studies in which the role of personality along with other factors such as coping strategies or job  
360 stress levels would be appropriate to demonstrate the decisive role of personality in developing  
361 burnout given exposure to the same work factors.

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363 review. J.J.G.L. applied the search strategy. All authors applied the selection criteria. All authors completed the  
364 assessment of risk of bias. All authors analyzed the data and interpreted data. M.d.M.M.J., M.d.C.P.-F., and  
365 A.M.M. wrote this manuscript. M.d.C.P.-F. and J.J.G.L. edited this manuscript. M.d.C.P.F. is responsible for the  
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### 373 References

- 374 1. Schaufeli, W.B.; Leiter, M.P.; Maslach, C. Burnout: 35 años de investigación & práctica. *Career Dev Int* **2009**,  
375 *14*, 204-220. doi: 10.1108/13620430910966406
- 376 2. Maslach, C. Finding solutions to the problem of burnout. *Consult Psychol J* **2017**, *69*, 143–152. doi:  
377 10.1037/cpb0000090
- 378 3. Bakker, A.B.; Demerouti, E. Job Demands–Resources theory. In *Wellbeing: A complete reference guide*; Cooper  
379 C., Chen P., Eds.; Wiley-Blackwell: Chichester, UK, 2014; pp. 37-64.
- 380 4. Zarei, E.; Khakzad, N.; Reniers, G.; Akbari, R. On the relationship between safety climate and occupational  
381 burnout in healthcare organizations. *Saf Sci* **2016**, *89*, 1-10. doi: 10.1016/j.ssci.2016.05.011
- 382 5. O'Connor, K.; Muller, D.; Pitman, S. Burnout in mental health professionals: A systematic review and meta-  
383 analysis of prevalence and determinants. *Eur Psychiatry* **2018**, *53*, 74-99. doi: 10.1016/j.eurpsy.2018.06.003
- 384 6. Alarcon, G.; Eschleman, K.J.; Bowling, N.A. Relationships between personality variables and burnout: a  
385 meta-analysis. *Work Stress* **2009**, *23*, 244-263.
- 386 7. Molero, M.M.; Pérez-Fuentes, M.C.; Gázquez, J.J.; Simón, M.M.; Martos, Á. Burnout Risk and Protection  
387 Factors in Certified Nursing Aides. *Int J Env Res Pub He* **2018**, *15*, 1-9. doi:10.3390/ijerph15061116
- 388 8. Pérez-Fuentes, M.C.; Molero, M.M.; Gázquez, J.J.; Simón, M.M. Analysis of Burnout Predictors in Nursing:  
389 Risk and Protective Psychological Factors. *Eur J Psychol Appl L* **2019**, *11*, 33-40. doi: 10.5093/ejpalc2018a13
- 390 9. Mäkikangas, A.; Hyvönen, K.; Feldt, T. The energy and identification continua of burnout and work  
391 engagement: Developmental profiles over eight years. *Burn Res* **2017**, *5*, 445-454. doi:  
392 10.1016/j.burn.2017.04.002
- 393 10. Molero, M.M.; Pérez-Fuentes, M.C.; Gázquez, J.J.; Barragán, A.B. Burnout in Health Professionals  
394 According to their Self-Esteem, Social Support and Empathy Profile. *Front Psychol* **2018**, *9*, 1-6. doi:  
395 10.3389/fpsyg.2018.00424
- 396 11. Mealer, M.; Burnham, E.L.; Goode, C.J.; Rothbaum, B.; Moss, M. The prevalence and impact of post  
397 traumatic stress disorder and burnout syndrome in nurses. *Depress Anxiety* **2009**, *26*, 1118-1126. doi:  
398 10.1002/da.20631
- 399 12. Deniz, M.E.; Satici, S.A. The Relationships between Big Five Personality Traits and Subjective Vitality. *An*  
400 *Psicol* **2017**, *33*, 218-224. doi: 10.6018/analesps.33.2.261911
- 401 13. Mirbaha, S.; Kashani, P.; Dolatabadi, A.A.; Amini, A.; Meschi, F.; Baratloo, A. The prevalence of personality  
402 disorders in nurses: role of the workplace environment. *Journal of Emergency Practice and Trauma* **2017**, *3*,  
403 59-63. doi 10.15171/jept.2017.22
- 404 14. Duan-Porter, W.; Hatch, D.; Pendergast, J.F.; Freude, G.; Rose, U.; Burr, H.; Müller, G.; Martus, P.; Poht, A.;  
405 Potter, G. 12-month trajectories of depressive symptoms among nurses—Contribution of personality, job  
406 characteristics, coping, and burnout. *J Affect Disord* **2018**, *234*, 67-73. doi: 10.1016/j.jad.2018.02.090
- 407 15. Wersebe, H.; Lieb, R.; Meyer, A.H.; Hofer, P.; Gloster, A.T. The link between stress, well-being, and  
408 psychological flexibility during an Acceptance and Commitment Therapy self-help intervention. *Int J*  
409 *Clin Health Psychol* **2018**, *18*, 60-68. doi: 10.1016/j.ijchp.2017.09.002
- 410 16. Ang, S.Y.; Dhaliwal, S.S.; Ayre, T.C.; Uthaman, T.; Fong, K.Y.; Tien, C.E.; Zhou, H.; Della, P. Demographics  
411 and Personality Factors Associated with Burnout among Nurses in a Singapore Tertiary Hospital. *Biomed*  
412 *Res Int* **2016**, *2016*, 1-12. doi: 10.1155/2016/6960184
- 413 17. Cole, M.S.; Walter, F.; Bedeian, A.G.; O'Boyle, E.H. Job burnout and employee engagement a meta-analytic  
414 examination of construct proliferation. *J Manage* **2012**, *38*, 1550-1581. doi: 10.1177/0149206311415252
- 415 18. Maslach, C.; Leiter, M.P. Stress: Concepts, Cognition, Emotion, and Behavior. In *Handbook of Stress Series*;  
416 Frink, G., Eds.; Elsevier, Estados Unidos, 2016; pp. 351-357.
- 417 19. Taris, T.W.; Ybema, J.F.; van Beek, I. Burnout and engagement: Identical twins or just close relatives? *Burn*  
418 *Res* **2017**, *5*, 3-11.
- 419 20. Goering, D.D.; Shimazu, A.; Zhou, F.; Wada, T.; Sakai, R. Not if, but how they differ: A meta-analytic test  
420 of the nomological networks of burnout and engagement. *Burn Res* **2017**, *5*, 21-34. doi:  
421 10.1016/j.burn.2017.05.003

- 422 21. Schaufeli, W.B.; Salanova, M. Burnout, boredom and engagement in the workplace. In *An introduction to*  
423 *contemporary work psychology*; Peeters, M.C., de Jonge, J., Taris, T.W., Eds.; Wiley-Blackwell: Chichester, UK,  
424 2014; pp. 293-320.
- 425 22. Maricuțoiu, L.P.; Sulea, C.; Iancu, A. Work engagement or burnout: Which comes first? A meta-analysis of  
426 longitudinal evidence. *Burn Res* **2017**, *5*, 35-43. doi: 10.1016/j.burn.2017.05.001
- 427 23. Konstantinou, A.K.; Bonotis, K.; Sokratous, M.; Siokas, V.; Dardiotis, E. Burnout Evaluation and Potential  
428 Predictors in a Greek Cohort of Mental Health Nurses. *Arch Psychiatr Nurs* **2018**, *32*, 449-456. doi:  
429 10.1016/j.apnu.2018.01.002
- 430 24. Martos, Á.; Pérez-Fuentes, M.C.; Molero, M.M.; Gázquez, J.J.; Simón, M.M.; Barragán, A.B. Burnout &  
431 engagement en estudiantes de Ciencias de la Salud. *European j investiga* **2018**, *8*, 23-36. doi:  
432 10.30552/ejihpe.v8i1.223
- 433 25. Pérez-Fuentes, M.C.; Molero, M.M.; Gázquez, J.J.; Oropesa, N.F. The Role of Emotional Intelligence in  
434 Engagement in Nurses. *Int J Environ Res Public Health* **2018**, *15*, 1-13. doi: 10.3390/ijerph15091915
- 435 26. Mojsa-Kaja, J.; Golonka, K.; Marek, T. Job burnout and engagement among teachers - worklife areas and  
436 personality traits as predictors of relationships with work. *Int J Occup Med Environ Health* **2015**, *28*, 102-119.
- 437 27. McManus, I.C.; Jonvik, H.; Richards, P.; Paice, E. Vocation and avocation: leisure activities correlate with  
438 professional engagement, but not burnout, in a cross-sectional survey of UK doctors. *BMC Medicine* **2011**,  
439 *9*, 2-18.
- 440 28. Chang, H.T.; Chou, Y.J.; Liou, J.W.; Tu, Y.T. The effects of perfectionism on innovative behavior and job  
441 burnout: Team workplace friendship as a moderator. *Pers Individ Dif* **2016**, *96*, 260-265. doi:  
442 10.1016/j.paid.2016.02.088
- 443 29. Bilehsavar, A.S.; Nohesara, S.; Najarzadegan, M.; Molaei, P.; Alavi, K.; Nadoushan, A. Investigation of  
444 Personality Traits in Attending of Iran University of Medical Sciences and Its Relation with General Health,  
445 Quality of Life and Job Burden. *Journal of Ardabil University of Medical Sciences* **2017**, *17*, 90-103.
- 446 30. Yu, H.; Jiang, A.; Shen, J. Prevalence and predictors of compassion fatigue, burnout and compassion  
447 satisfaction among oncology nurses: A cross-sectional survey. *Int J Nurs Stud* **2016**, *57*, 28-38. doi:  
448 10.1016/j.ijnurstu.2016.01.012
- 449 31. Wang, Y.; Yao, L.; Liu, L.; Yang, C.; Wu, H.; Wang, J.; Wang, L. The mediating role of self-efficacy in the  
450 relationship between Big five personality and depressive symptoms among Chinese unemployed  
451 population: a cross-sectional study. *BMC Psychiatry* **2014**, *14*, 61. doi: 10.1186/1471-244X-14-61
- 452 32. Sandín, B.; Simons, J.S.; Valiente, R.M.; Simons, R.M.; Chorot, P. Psychometric properties of the spanish  
453 version of the Distress Tolerance Scale and its relationship with personality and psychopathological  
454 symptoms. *Psicothema* **2017**, *29*, 421-428. doi: 10.7334/psicothema2016.239
- 455 33. Ntantana, A.; Matamis, D.; Savvidou, S.; Giannakou, M.; Gouva, M.; Nakos, G.; Koulouras, V. Burnout and  
456 job satisfaction of intensive care personnel and the relationship with personality and religious traits: An  
457 observational, multicenter, cross-sectional study. *Intens Crit Care Nur* **2017**, *41*, 11-17. doi:  
458 10.1016/j.iccn.2017.02.009
- 459 34. Iorga, M.; Socolov, V.; Muraru, D.; Dirtu, C.; Soponaru, C.; Ilea, C.; Socolov, D.G. Factors Influencing  
460 Burnout Syndrome in Obstetrics and Gynecology Physicians. *Biomed Res Int* **2017**, *2017*, 1-10. doi:  
461 10.1155/2017/9318534
- 462 35. Izedi, R.; Bahrami, M.A. The correlation of nurses' job burnout and their social responsibility considering  
463 the role of control locus. *Bali Medical Journal* **2016**, *5*, 330-334. doi: 10.15562/bmj.v5i2.258
- 464 36. Davey, G.C.L.; Meeten, F. The perseverative worry bout: A review of cognitive, affective and motivational  
465 factors that contribute to worry perseveration. *J Biol Psychol* **2016**, *121*, 233-243. doi:  
466 10.1016/j.biopsycho.2016.04.003
- 467 37. Panagioti, M.; Geraghty, K.; Johson, J. How to prevent burnout in cardiologists? A review of the current  
468 evidence, gaps, and future directions. *Trends Cardiovasc Med* **2018**, *28*, 1-7. doi: 10.1016/j.tcm.2017.06.018
- 469 38. Childs, J.; Stoeber, J. Self-oriented, other-oriented, and socially prescribed perfectionism in employees:  
470 Relationships with burnout and engagement. *J Workplace Behav Health*, **2010**, *25*, 269-281.
- 471 39. Chang, Y. The relationship between maladaptive perfectionism with burnout: Testing mediating effect of  
472 emotion-focused coping. *Pers Individ Dif* **2012**, *53*, 635-639. doi: 10.1016/j.paid.2012.05.002
- 473 40. Kohut, H. *The analysis of the self: a systematic approach to the psychoanalytic treatment of narcissistic personality*  
474 *disorders*; Institute of Personality and Social Research, California, Berkeley, 2013.

- 475 41. Schwarzkopf, K.; Straus, D.; Porschke, H.; Znoj, H.; Conrad, N.; Schmidt-Trucksäss, A.; von Känel, R.  
476 Empirical evidence for a relationship between narcissistic personality traits and job burnout. *Burn Res* **2016**,  
477 3, 25-33. doi: 10.1016/j.burn.2015.12.001
- 478 42. Golpayegan, M.A. Evaluating the Relation between Personality Properties with Job Satisfaction of the Staff.  
479 *Journal of History Culture and Art Research* **2017**, 6, 937-949. doi: 10.7596/taksad.v6i3.964
- 480 43. Martínez-Zaragoza, F. Personality and interpersonal behaviour may impact on burnout in nurses. *Evid*  
481 *Based Nurs* **2018**, 21, 24. doi: 10.1136/eb-2017-102797
- 482 44. Zaninotto, L.; Rossi, G.; Danieli, A.; Frasson, A.; Meneghetti, L.; Zordan, M.; ... Solmi, M. Exploring the  
483 relationships among personality traits, burnout dimensions and stigma in a sample of mental health  
484 professionals. *Psychiatry Res* **2018**, 264, 327-333. doi: 10.1016/j.psychres.2018.03.076
- 485 45. Wechsler, S.M.; Benson, N.; Machado, W.L.; Bachert, C.M.A.; Gums, E.F. Dult temperament styles: a  
486 network analysis of their relationships with the Big Five Personality Model. *Eur J Educ Psychol* **2018**, 11, 61-  
487 75. doi: 10.30552/ejep.v11i1.186
- 488 46. Denollet, J. Type D or not Type D: That's the question. *Health Psychol Rev* **2012**, 14, 58-63.
- 489 47. Aramon, G. Type D personality and job burnout: The moderating role of physical activity. *Pers Individ Dif*  
490 **2014**, 58, 112-115. doi: 10.1016/j.paid.2013.10.020
- 491 48. Kim, Y.H.; Kim, S.R.; Kim, Y.O.; Kim, H.Y.; Kim, H.Y. Influence of type D personality on job stress and job  
492 satisfaction in clinical nurses: the mediating effects of compassion fatigue, burnout, and compassion  
493 satisfaction. *J Adv Nurs* **2017**, 73, 37-45. doi: 10.1111/jan.13177
- 494 49. Tekin, A.; Montenegro, H.; Yayla, S. The relationship between burnout symptoms and Type D personality  
495 among health care professionals in Turkey. *Arch Environ Occup Health* **2017**, 72, 173-177. doi:  
496 10.1080/19338244.2016.1179168
- 497 50. Friedman, M.; Rosenman, R.H. *Type A Behavior and Your Heart*, Nueva York: Fawcett Crest, 1974.
- 498 51. Jeung, D.Y.; Lee, H.O.; Chung, W.G.; Yoon, J.H.; Koh, S.B.; Back, C.Y.; Hyun, D.S.; Chang, S.J. Association  
499 of Emotional Labor, Self-efficacy, and Type A Personality with Burnout in Korean Dental Hygienists.  
500 *J Korean Med Sci* **2017**, 32, 1423-1430. doi: 10.3346/jkms.2017.32.9.1423
- 501 52. Lemaire, J.B.; Wallace, J.E. How physicians identify with predetermined personalities and links to  
502 perceived performance and wellness outcomes: a cross-sectional study. *BMC Health Serv Res* **2014**, 14, 1-9.  
503 doi: 10.1186/s12913-014-0616-z
- 504 53. Włodarczyk, D.; Pawliszewska, A. Type a behaviour as a predictor of burnout and job satisfaction in  
505 intensive care unit nurses. *Med Pr* **2015**, 66, 213-224. doi: 10.13075/mp.5893.00117
- 506 54. Kennedy, B.; Curtis, K.; Waters, D. Is there a relationship between personality and choice of nursing  
507 specialty: an integrative literature review. *BMC Nurs* **2014**, 13, 1-9.
- 508 55. Jaracz, M.; Rosiak, I.; Bertrand-Bucińska, A.; Jaskulski, M.; Nieżurawska, J.; Borkowska, A. Affective  
509 temperament, job stress and professional burnout in nurses and civil servants. *Plos One* **2017**, 12, e0176698.  
510 doi: 10.1371/journal.pone.0176698
- 511 56. Queiros, C.; Carlotto, M.S.; Kaiseler, M.; Dias, S.; Pereira, A.M. Predictors of burnout among nurses: An  
512 interactionist approach. *Psicothema* **2013**, 25, 330-335. doi: 10.7334/psicothema2012.246
- 513 57. Moreno-Jiménez, B.; Bustos, R.; Matallana, A.; Miralles, T. La evaluación del burnout. Problemas y  
514 alternativas. El CBB como evaluación de los elementos del proceso. *Revista de Psicología del Trabajo y las*  
515 *Organizaciones* **1997**, 13, 185-207.
- 516 58. Maslach, C.; Jackson, S.E. The measurement of experienced burnout. *J Organ Behav* **1981**, 2, 99-113.
- 517 59. Schaufeli, W.; Bakker, A. *Utrecht Work Engagement Scale*. Utrecht University, Holanda, 2003.
- 518 60. Valdez, H.; Ron, C. UWES. *Utrecht Work Engagement Scale. Escala Utrecht de Engagement en el Trabajo*. Módulo  
519 de Atención Integral de la Comisaría General de Prevención & Reinserción Social del Estado de Jalisco:  
520 México, México, 2011.
- 521 61. Rammstedt, B.; John, O.P. Measuring personality in one minute or less: A 10-item short version of the Big  
522 Five Inventory in English and German. *J Res Pers* **2007**, 41, 203-212. doi: 10.1016/j.jrp.2006.02.001
- 523 John, O.P.; Donahue, E.M.; Kentle, R.L. *The Big Five Inventory-Versions 4a and 54*; Institute of Personality and  
524 Social Research, California, Berkeley, 1991.