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Volunteer-aholism: A comprehensive model of personality, burnout, and mental distress in a sample of healthcare first responders of the Italian Red Cross Auxiliary Corps

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Abstract

Introduction: Whether burnout can be extended to explain occupational distress in unwaged personnel is an ongoing debate. Possible divergences could be observed for burnout among non-traditional working figures.

Methods: A total of 823 first responders during the COVID-19 pandemic were surveyed among Red Cross volunteers enrolled in the Italian Auxiliary Corps to the Armed Forces. An online questionnaire was proposed as composed of the Generalized Anxiety Disorder Assessment, Patient Health

Questionnaire, Single-item PTSD Screener, Maslach Burnout Inventory, and Big Five Inventory. A comprehensive model accounting for both personality and mental distress in influencing burnout dimensions was carried over through structural equation modeling.
Results: Almost perfect goodness of fit was achieved for the model (TLI >0.99; CFI >0.99; RMSEA <0.03). Emotional stability was negatively associated with depression (beta=-0.21) and anxiety (beta=-0.25). Conscientiousness (beta=0.29) and emotional stability (beta=0.21) were positively associated with personal accomplishment. Depression, anxiety, and personal accomplishment were positively associated with emotional exhaustion and depersonalization (minimum beta=0.2, maximum beta=0.36, all p<0.001).
Discussion: A theoretical framework was offered to interpret results, according to which the defining characteristic predisposing for burnout was not whether operators were waged or not, but rather their degree of involvement with the occupational demands.

Take-home message: During the COVID-19 pandemic, depression, anxiety, and personal accomplishment were positively associated with emotional exhaustion and depersonalization, while emotional stability and conscientiousness were associated with high personal accomplishment, in a sample of healthcare volunteers of the Italian Red Cross Auxiliary Corps.

Key words: Anxiety; burnout syndrome; depression; first responders; post-traumatic stress disorders; volunteers.

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INTRODUCTION

Burnout syndrome (BOS) has repeatedly been conceptualized as composed of three dimensions, each showing a complex interplay with the other. These three components are high emotional exhaustion (EE), depersonalization symptoms (DP), and a sense of low personal accomplishment (PA) [1].

Consistent evidence proved the validity of this conceptualization over different countries [2,3], different languages [4], and jobs [3,5-13]. Nonetheless, whether it is appropriate to use this construct for diverse populations - other than waged employees - is a current point of debate. Preliminary evidence showed that athletes, parents, and volunteers may demonstrate similar levels of occupational distress to regular workers [14-16]. Here, we refer to "occupational" by its broader definition, that is, "about an activity in which an individual may engage" to a certain degree of personal investment [17].

This degree of investment, commonly referred to as "personal accomplishment" (PA), encapsulates in a single term the composite entity that is the combined result of job demands, personal resources, organizational factors, and, eventually, social determinants, which inform and guide individual needs and expectations [18-20]. PA may ultimately be interpreted in light of intrinsic motivation or, in other terms, to a sense of purpose and finality to one's actions. This interpretation has been long debated, from the concept of human "*telos*" in Ancient Greece [21] to Heidegger's discourse on the conflict between authenticity and *Dasein* [22]. This line of reasoning leads us to many relevant questions, both for research and clinical practice. For instance, to what extent do individuals feel entailed in their occupations? Does this degree of involvement predict general well-being? And finally, what is the admixture between personal and occupation identities?

The relationship between PA and BOS has been proven protective [23]. Therefore, a high degree of investment and involvement in one's occupation has been considered a reliable predictor of positive mental status [24-26]. Moreover, personal accomplishment has been found to be strongly

correlated with work engagement [27]. Nonetheless, most empirical studies focused on the traditional occupation exerted by paid workers, which may not readily translate to those other categories recently characterized as exhibiting psychic phenomena comparable to BOS [28]. For instance, according to this framework of thought, waged workers may experience a dissonance between individual expectations and actual occupational demands, representing one of the sources of occupational distress. Job satisfaction could be an incentive to pursue the same occupation further in the face of these demands, but also as a sense of personal efficacy, which reassures one's prospects and reduces personal or economic worries [29]. By contrast, volunteers may conflate occupational demands at the expense of one's sense of self-efficacy, considering that these individuals may not be presented with the possibility of choosing whom to dedicate their time and care to or how much of their resources should be invested in a specific task. For volunteers, their association and group identity are not one a-specific entity but rather a precise orientation dictated by personal values and the degree of congruence with organizational objectives.

While a parallel may be driven with healthcare personnel, volunteers may be less prone to discriminate between occupational and personal identities, as a defining portion of their identity relies on the mission and values carried over through volunteering. Moreover, rewards could be less available to these populations, as financial incentives are normally reserved only for waged workers [30]. Interestingly, however, when organizational benefits supported volunteerism, individuals reported higher satisfaction levels and donated more time on average, improving the employee's perceptions of their skill levels [31]. Therefore, volunteering seems to be a phenomenon well inscribed within economic reasoning., as it responds to specific cost-benefit evaluations.

Nonetheless, as previously mentioned, rather than improving a sense of self-efficacy and individual self-worth as observed in waged workers, occupational engagement (whether intrinsic or extrinsic) could reinforce the fusion between personal and specific occupational identities in volunteers. Indeed, early evidence showed that perfectionism, whether self-oriented or socially prescribed, correlated with higher levels of BOS in volunteers [32]. For these reasons, a similar investigation is warranted for volunteers, with the working hypothesis that BOS may manifest in this population similarly to parental figures, and personal accomplishment could predict higher levels of distress when facing occupational demands.

Finally, personality factors might influence the disposition for correspondence between individual and occupational identities. In particular, consciousness has reliably been highly correlated with PA [33], signaling that conscious individuals might be more prone to identify themselves within their work and through their occupation [34-36]. Personality factors, as a whole, contribute to the risk of BOS, with emotional stability - or neuroticism - being implicated with a higher likelihood of experiencing emotional exhaustion [33]. However, the relationship between emotional stability and EE seems to be influenced primarily by symptoms attributable to depression (bereavement, adjustment disorders, or proper major depression) or anxiety [13,37,38].

High levels of anxiety, fear, stress, depression, BOS, and PTSD have been associated with the COVID-19 pandemic among healthcare workers. Workers employed in healthcare, education, social services, emergency services, and other sectors with critical tasks during the pandemic have been more susceptible to emotional exhaustion, strain, and poorer mental health due to increased and prolonged work pressure [39-44].

Here, volunteers were sampled from a cohort of first responders during the COVID-19 pandemic in Italy. All volunteers were enrolled in the auxiliary corps of the Italian Red Cross, with the primary role of healthcare aid and emergency response, both in support of the military and civil sectors. To the present day, no study has offered evidence in favor of a comprehensive account of personality, BOS, and mental distress, especially for a population exposed to unwaged occupational distress. The current work thus aimed at offering a novel development in this field of research.

Aims

The primary aim was to describe the relationship between personality factors, mental distress, and BOS, with the working hypothesis that conscientiousness would be highly correlated with both

mental distress (risk of anxiety and depression) and PA. Additionally, PA was hypothesized to be correlated with the other two domains of BOS in volunteers.

The secondary aim of the study was to offer a comprehensive model accounting simultaneously for personality factors, mental distress, and BOS, to elucidate the pattern of influence between each component.

Finally, in order to control whether BOS was indeed representative of occupation distress, the specificity of occupational stress was evaluated. The hypothesis was to observe higher mental distress associated with engaging in COVID activities beyond service in the auxiliary corps (as a dose-response) and contracting COVID during service. Moreover, the working hypothesis was also based on the notion that BOS is a specific syndrome of occupational distress. Therefore, family members infected or dead of COVID-19 would not be associated with individual burnout dimensions.

METHODS

Study design and sampling

The present study was cross-sectional. Participants were recruited from a sample of volunteers drafted in the Auxiliary Corps of the Red Cross, with an institutional role supporting the Italian Armed Forces. The volunteers were all active during the COVID-19 pandemic, and were surveyed between June and August 2021. A total of 1082 individual observations were collected, and 823 observations were retained after applying inclusion and exclusion criteria. These inclusion criteria were: active occupation in anti-COVID-19 operations, a minimum service of one month, and age less than 65 years. In the final sample, 299 were males, and 524 females.

Study instruments

An online survey was administered to collect the following variables: age; duration of service. A list of validated self-administered questionnaires was also presented: Generalized Anxiety Disorder Assessment; Patient Health Questionnaire; single-item Posttraumatic Stress Disorder (PTSD) screener; Maslach Burnout Inventory; Big Five Inventory. All variables and questionnaires had to be filled in for the observation to be retained and considered valid. Furthermore, volunteers were asked whether they engaged in anti-COVID-19 activities beyond their service in the auxiliary corps, whether they contracted COVID-19 themselves, if they contracted COVID-19 during service, whether a family member contracted COVID-19, and whether a family member died of COVID-19. No option to opt-out from a single study section was offered to enhance a comprehensive view of correlates and covariates.

Generalized Anxiety Disorder Assessment, GAD-7

GAD-7 is a commonly employed questionnaire for evaluating the risk for Generalized Anxiety Disorder [45]. The questionnaire comprises 7 items, which ask the participant to indicate the frequency of disturbance illustrated in each item. The questionnaire is scored on a 4-point Likert scale.

Patient Health Questionnaire, PHQ-8

On the other hand, concerning internalizing presentations of mental distress, PHQ-8 is an instrument apt to evaluate the risk of depression. The questionnaire comprises 8 items, on a 4-point Likert scale [46].

Single-item PTSD screener, SIP

This brief inventory evaluates the risk for PTSD through a single item on a 3-point Likert scale [47]. This screener has been compared to the then-mandated Veterans Affairs' four-items "Primary Care PTSD Screen" [48] and to the 17-item PTSD Checklist [49]. SIPS has demonstrated high efficiency in screening for PTSD, through a parsimonious instrument, with an Area Under the Curve of 0.77 (95% Confidence Interval 0.70-0.84), only minimally lower than the four-items questionnaire [48]. When the cutoff was 2, a 76% sensitivity and 79% specificity were observed (Positive Likelihood Ratio 2.28), and with a cutoff of 3, sensitivity increased to 91%. Moderate to high correlations were found with the 4-item Primary Care PTSD Screen and the 17-item PTSD Checklist (0.59 and 0.63, respectively, Spearman correlation coefficients). In 2016, two versions of the SIPS were compared to demonstrate convergent validity, also in comparison to the Primary Care PTSD Screen and PTSD

Checklist [50]. Version B showed better accuracy, with 90% sensitivity and 72% specificity. For these reasons, SIPS-B was used in the current study.

Maslach Burnout Inventory, MBI-22

The Maslach Burnout Inventory is a 22 items questionnaire asking the respondent to evaluate how often a given event occurs, using a 7-point Likert scale [1]. The instrument considers BOS as a phenomenon made of 3 individual constructs: Emotional Exhaustion (EE, Cronbach's Alpha=.088), Depersonalization (DP, Cronbach's Alpha=.070), and Personal Accomplishment (PA, Cronbach's Alpha=.083). High scores on the EE and DP scales indicate a condition of emotional exhaustion and depersonalization, respectively. In contrast, high scores on the PA scale indicate a positive consideration of one's accomplishment. BOS is characterized by high EE and DP and low PA [51,52].

Big Five Inventory short form, BFI-10

The short form of the Big Five Inventory, consisting of 10 items as proposed by Rammstedt and John [53], was later validated in Italian by Guido et al. [54]. It is designed to assess the size of the Big Five conveniently. The items are evaluated on a 7-point Likert scale. The instrument evaluates five traits: Agreeableness (AG, Cronbach's Alpha item 2=.51; item 7= .71); Conscientiousness (CO, Cronbach's Alpha item 3=.56; item 8=.65); Emotional stability/Neuroticism (NE, Cronbach's Alpha item 4=.67; item 9=.72); Extroversion (EX, Cronbach's Alpha item 1=.60; item 6=.77); Openness (OP, Cronbach's Alpha item 5=.56; item 10=.57).

Data analysis

As normality was not assumed, mean values between genders were compared through the Mann-Whitney U test for continuous variables and χ^2 test for categorical or ordinal. Fisher's exact test and Odds Ratios were calculated if a two-by-two contingency table could be created. Relationships between variables of interest were computed by Spearman's correlation coefficients. The level of significance for results was set at p=0.05. Comprehensive models and paths between variables were tested through structural equation modeling (SEM) [55]. Only the model explaining the highest degree of variance, accounting for the cost of increasing the number of predictors according to the Bayesian Information Criterion, was reported [55]. The Bayesian Information Criteria was chosen as, compared to other information criteria, it penalizes models with more parameters more severely [56]. This choice was adopted to enhance the replicability and reliability of current results. Based on previous literature, the risk for anxiety and depression were estimated as covarying [16]. The model was reported through its standardized solution. Solutions were computed by maximum likelihood estimation with robust standard errors and mean and variance-adjusted test statistics, as described by Satterthwaite [57]. The goodness of fit was evaluated through the following parameters: χ^2, comparison of variance explained between baseline and model, the proportion of variance accounted for by covariance (R^2), adjusted R^2, Tucker Lewis Index (TLI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Root Mean Square Residual (RMR), Standardized Root Mean Square Residual (SRMR), Relative Fit Index (RFI), Incremental Fit Index (IFI), Parsimony-Adjusted Measures Index (PNFI). All analyses were conducted in R 4.2.2 [58], with the support of the following libraries: *tidyverse* [59], *lavaan* [60], *lavaanPlot* [61], *performance* [62].

Goodness of Fit - interpretation

The goodness of fit parameters can be interpreted as follows [63]. The p-value associated with χ^2 should be above >0.05, as not to reject the hypothesis of an appropriate fit. R^2 and Adjusted R^2 should be above 0.95 and 0.90, respectively. TLI should be above 0.90 [64]. Similarly, CFI should also be >0.90. The closer the RMSEA to 0, the better fit is observed. A moderately good model is <0.08, and a highly performing model <0.05. RMR and SRMS should be below 0.08. RFI closer to 1 indicates a better fit. Finally, IFI should be above 0.90 [60].

Specificity of occupational stressors

In order to evaluate the specificity of occupational stress for burnout in the sample, exposure to either stress experienced during service or not was investigated. These exposures were whether the volunteer engaged in anti-COVID-19 activities outside the auxiliary corps (operatively conceptualized as a dose-response relationship), personal infection in general or during service in

particular (interpreted the first as a non-specific stressor, and the second specifically occupational), the infection of family members (interpreted as a non-specific stressor), the death of at least one family member for COVID-19 (interpreted as a non-specific stressor). Aggression here investigated both verbal and physical incidents. P values derived from the Mann Whitney U test and Hedges' g for effect size were computed and described for each stressor, as well as for the risk of depression, anxiety, PTSD, and burnout dimensions.

Ethical aspects

Ethical approval was obtained in June 2021 from the administrative board of the Auxiliary Corps of the Italian Red Cross. The protocol number for approval was 009/nap/21.

RESULTS

A total of 299 men and 524 women were retained after applying inclusion and exclusion criteria. The average age was 46.41 (SD=12.03) for men and 51.08 (SD=9.62) for women. Overall, the sample had a mean of 49.39 years (SD=10.79). Both men and women reported a similar duration of service (T value=-0.23, p=0.79). Women had a higher percentage of bachelor's degrees but lower master's. This might be influenced by the fact that the auxiliary corps of women typically employ nurses, considered a bachelor's degree in Italy (a 3-year course after high school). By contrast, the auxiliary corps of men typically employs lawyers, pharmacists, and medical doctors among its officers. The sample of women was also more likely unemployed or retired, more likely to be divorced or widowers, and less likely to live with a partner, dating or single. No difference was observed between genders for what concerns other individual variables such as: whether the volunteer engaged in anti-COVID-19 activities outside the auxiliary corps, the rate of personal infection in general or during service in particular, the rate of infection for family members, the rate of death within family members for COVID-19, the rate of death for colleagues or patients for COVID-19. A synthetic description of the sample was offered in Table 1.

Table 1. Sample statistics.

	Men	**Women**	**Comparisons**
Individuals (N)	299	524	/
Age (years old)	46.41 (±12.03)	51.08 (±9.62)	p <0.001 (Hedges'g -0.40)
Service Duration (days)	33.50 (±29.99)	35.95 (±32.75)	p 0.630 (Hedges'g -0.02)
Educational Level (highest obtained)	Middle School 10.7% High School 53.5% Bachelor's Degree 10.7% Master's Degree 20.7% Ph.D. 4.3%	Middle School 9.2% High School 52.9% Bachelor's Degree 16.8% Master's Degree 17.9% Ph.D. 3.2%	χ^2 197.877 p <0.001
Occupation (current)	Employee 65% Self-employed 17% Unemployed 7.3% Student 3.7% Retired 7%	Employee 61.6% Self-employed 13% Unemployed 11.5% Student 2.9% Retired 11.1%	χ^2 11.73 p 0.019
Relationship Status	Single 25.1% Dating 14% Domestic Partner 11.7% Married 42.5% Divorced 6.3% Widower 0.3%	Single 18.1% Dating 6.7% Domestic Partner 8.2% Married 48.9% Divorced 14.4% Widower 3.8%	χ^2 41.204 p <0.001
Agreeableness	7.71 (±1.48)	6.99 (±2.16)	p 0.481 (Hedges'g 0.09)

Conscientiousness	8.52 (±1.0)	8.10 (±2.31)	p 0.182 (Hedges'g 0.21)
Emotional Stability	7.95 (±1.62)	7.34 (±2.26)	p 0.001 (Hedges'g 0.30)
Extroversion	6.31 (±1.26)	5.85 (±1.78)	p 0.005 (Hedges'g 0.28)
Openness	6.91 (±1.77)	6.27 (±2.23)	p <0.001 (Hedges'g 0.31)
Risk of Depression, PHQ	3.62 (±3.46)	4.15 (±3.45)	p 0.004 (Hedges'g -0.15)
Risk of Anxiety, GAD	3.29 (±3.51)	3.73 (±3.46)	p 0.010 (Hedges'g -0.13)
Emotional Exhaustion	10.09 (±9.27)	9.37 (±7.05)	p 0.546 (Hedges'g 0.09)
Depersonalization	6.13 (±5.33)	5.32 (±4.36)	p 0.160 (Hedges'g 0.17)
Personal Accomplishment	27.10 (±10.44)	25.45 (±11.34)	p 0.077 (Hedges'g 0.15)
Risk of PTSD, SIPS-B	2.40 (±2.61)	2.77 (±2.62)	p 0.020 (Hedges'g -0.14)
COVID-19activities outside auxiliary corps	no 194 yes 105	no 324 yes 200	OR 0.877 p 0.409
Personal infection	no 269 yes 30	no 466 yes 58	OR 0.896 p 0.725
Personal infection during service	no 264 yes 5	no 508 yes 16	OR 0.864 p 0.362
Family member infected	no 240 yes 59	no 438 yes 86	OR 1.089 p 0.254
Family member dead of COVID-19	no 278 yes 21	no 489 yes 35	OR 1.020 p 0.886
Colleague dead of COVID-19	no 224 yes 75	no 408 yes 116	OR 1.063 p 0.346
Patient dead of COVID-19	no 110 yes 189	no 219 yes 305	OR 1.078 p 0.161

Note: *Mann Whitney U test for continuous variables. Chi-squared for categoricals. Fisher's exact test and Odds Ratios for 2x2 contingency tables

Primary results

Significant negative correlations were found for age and the risk of depression (rho=-0.160, p=0.001), anxiety (rho=-0.113, p<0.001), EE (rho=-0.133, p<0.001), DP (rho=-0.158, p<0.001). The duration of service was associated with a lower risk for PTSD (rho=-0.092, p=0.009) and with emotional stability as a personality factor (rho=0.093, p=0.008). Borderline significant results were found for agreeableness and conscientiousness positively correlated with service duration (rho=0.069, p=0.048 and rho=0.069, p=0.049 - respectively). The personality factors of agreeableness, conscientiousness, and emotional stability were all negatively correlated with the risk for depression, anxiety, and PTSD (minimum rho=-0.333, maximum rho=-0.170, all p<0.001). All five personality factors correlated positively with PA (minimum rho=0.173, maximum rho=0.370, all p<0.001). Emotional stability also negatively correlated with EE (rho=-0.090, p=0.010) and positively with DP (rho=0.076, p=0.030). Extroversion positively correlated with DP (rho=0.085, p=0.015). Finally, openness positively correlated with all three burnout dimensions (minimum rho=0.142, maximum rho=0.207, all p<0.001).

For what concerns burnout dimensions, as already mentioned, EE was negatively correlated

with age (rho=-0.133, p<0.001) but also positively associated with the risk for anxiety (rho=0.390, p<0.001), depression (rho=0.420, p<0.001) and PTSD (rho=0.190, p<0.001). Depersonalization, in turn, exhibited a similar trend, beyond the already mentioned negative correlations with age (rho=-0.158, p<0.001), with positive correlations with the risk for anxiety (rho=0.285, p<0.001), depression (rho=0.299, p<0.001) and PTSD (rho=0.159, p<0.001). Finally, PA positively correlated with both EE (rho=0.243, p<0.001) and DP (rho=0.342, p<0.001). Please see Supplementary Materials Table S1 for further details.

Secondary results

Goodness of fit indices showed excellent performance by the final model. In fact, the p-value for the χ^2 test was >0.05 (p=0.121). Both R^2 and adjusted R^2 were above 0.98. The Tucker-Lewis Index was >0.99. CFI was >0.99 as well, and RMSEA was <0.03. RFI was 0.984; IFI 0.998. Please see Supplementary Materials Table S2 for further details.

The final model accounted only for two personality factors highly correlated with PA, namely conscientiousness (beta=0.21, p<0.001) and emotional stability (beta=0.29, p<0.001). Emotional stability was also negatively correlated with the risk of anxiety (beta=-0.25, p<0.001) and depression (beta=-0.21, p<0.001). The risk for depression and anxiety, in turn, was positively correlated with both EE (depression: beta=0.29, p<0.001; anxiety: beta=0.30, p<0.001) and DP (depression: beta=0.30, p<0.001; anxiety: beta=0.20, p<0.001). The PA was also positively correlated with both EE (beta=0.29, p<0.001) and DP (beta=0.36, p<0.001). Therefore, an indirect influence of emotional stability on BOS was observed through the mediation of anxiety, depression, and PA. A similar indirect effect of conscientiousness was observed only through PA. Please see Figure 1 for a graphical representation of the model.

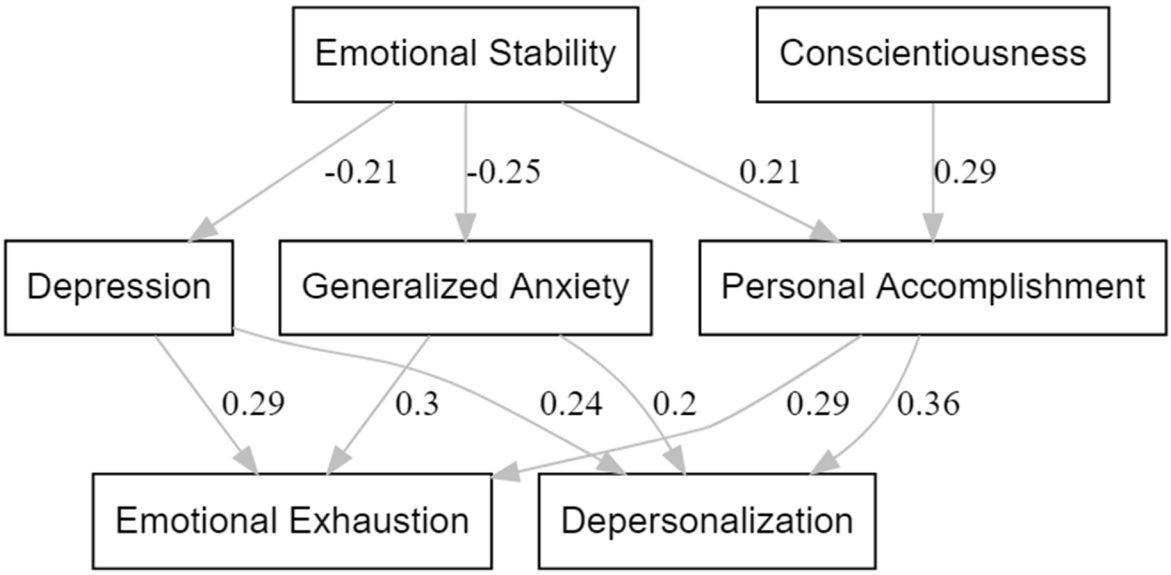

Figure 1. Structural Equation Modeling and Pathway Analysis. Anxiety was evaluated by the Generalized Anxiety Disorder Assessment; depression by Patient Health Questionnaire; personal accomplishment, emotional exhaustion, and depersonalization by the Maslach Burnout Inventory. A brief summary of the goodness of fit: R^2 0.994, RMSEA 0.026.

Specificity of occupational stressors

Being engaged in anti-COVID-19 activities beyond service in the auxiliary corps was associated with higher risks of depression (Hedges'g=-0.215, p=0.015), EE (g=-0.390, p<0.001), DP (g=-0.395, p<0.001) and PTSD (g=-0.221, p=0.029). In turn, the non-specific stressors of having contracted COVID-19 in general or having a family member infected or dying of COVID-19 were not observed

as significantly associated with any of the constructs under evaluation. The death of a family member, however, was strongly related to the risk of depression (g=-0.479, p=0.007), DP (g=-0.411, p=0.034), and PTSD (g=-0.565, p=0.004). Being infected during service was also not significantly associated with the risk of depression, anxiety, BOS, or PTSD. Please see Supplementary Materials Table S3 for further details**.**

DISCUSSION

The present study elucidated the specific role of individual factors as predictors of EE and DP in volunteers. Contrary to the working hypothesis, being infected during service was not significantly associated with mental distress as currently investigated. On the contrary, having a family member die of COVID-19 was strongly associated with depressive symptoms, as evaluated by PHQ, but also by the DP scale of MBI. Even though this finding contrasts with the preliminary working hypotheses, it is well supported by previous literature on the topic [65].

Regarding the role of personality factors in the development of burnout, all five personality traits were positively correlated with PA. Still, only openness was positively related to both EE and DP. By contrast, conscientiousness was positively correlated only with DP. Emotional stability was the only significant protective trait for BOS, which was negatively correlated with EE. These results contradict previous evidence collected among unwaged healthcare personnel [66]. Conscientiousness was previously observed as negatively correlated with DP in medical students while not finding a significant relationship between emotional stability and EE [67]. Interestingly, however, the same sample previously described a similar role for openness [67]. Therefore, a diverging role for openness seems to interest unwaged help professionals, as openness has consistently been shown as a protective personality trait for BOS in waged workers [68].

Personality factors were also significantly correlated to general risks of mental distress. The working hypothesis that consciousness would be correlated with presentations of mental distress was confirmed by results, which found a negative correlation between agreeableness, conscientiousness, and emotional stability with the risk for depression, anxiety, and PTSD. These three risks of mental distress were positively correlated with EE and DP and negatively with PA.

Occupational and personal identities: Perspectives, and implications

The development of a comprehensive model, through structural equation modeling and path analysis, facilitated an investigation of the relationship between these constructs, selecting predictors explaining most of the variance and removing potential collinearity between them [63]. This comprehensive model was then interpreted using a perspectival representation of science [69]. In other words, rather than representing an overarching "truth," these models can be better understood as perspectives and descriptions of specific phenomena from a particular angle or "vantage point" [70]. Therefore, the offered model is as "comprehensive" as the specific psychological constructs evaluated. The authors, then, refrain from suggesting it may explain the wide heterogeneous lived experiences of individuals in general or of volunteers specifically.

Nonetheless, the present model can help us better understand the intricacy of burnout in volunteers, offering novel evidence for a divergent construct in this population in contrast to waged workers. It does so despite its perspectival nature, which does not hinder a claim of appropriateness in scientific representations [71]. Indeed, these models can accurately portray phenomena by basing their prediction on the hypothesis they advance [71].

Expanding the previous literature on BOS in unwaged occupations, current results suggest a risk for those individuals with a high degree of fusion between personal and occupational identities. Although all five personality traits were originally positively correlated with PA, a model correcting for variable inflation based on Bayes' information criterion conservatively preserved only conscientiousness and emotional stability as reliable and indirect predictors of BOS dimensions. Moreover, it confirmed the protective role of emotional stability for the risks of anxiety and depression and the positive effect of emotional stability and conscientiousness on PA. Conscientiousness itself has been described as a preliminary characteristic for the development of vocational identities [72] while also predisposing to higher occupational performance, as well as for

an experience of "flow" during job activities [73]. This evidence can be better understood when "flow" is interpreted as an autotelic experience [74,75] with antecedent situations, concurrent factors, and subsequent consequences [76]. Experiencing entrainment while performing an occupation can reinforce a sense of self-efficacy and engagement with one's activity or, in other words, PA, especially when the task demands are perceived as appropriate but challenging for personal resources [76].

Significantly, conscientiousness was predictive only of PA, not general mental distress, in contrast to emotional stability. In turn, emotional stability, or neuroticism, has been previously described as exerting an effect on EE and DP [77-79]. In summary, waged and unwaged personnel do not seem to exhibit a divergence in the predisposing personality factors for BOS or the role of general mental distress in predicting BOS dimensions.

For mental disorders, a higher degree of identification with one's distress has been consistently associated with worse outcomes, lower rates of recovery, and longer duration of illness [80,81]. BOS has not been described as about psychiatric diagnosis [82,83]. Still, a comprehensive theory that addresses personal identity is timely for the field, especially concerning occupational identification and identity definition processes. The current study described an indirect effect of personality on burnout through general mental distress and PA. Interestingly, a previous study showed similar evidence among college students, where consciousness indirectly affected BOS through academic motivation.

Further support thus seems to emerge for the hypothesis that BOS can be described as a conflict between occupational factors and personal resources [84]. However, including personal and vocational identities and their overlap among these resources seems a promising prospect for burnout research. Indeed, in both waged and unwaged personnel, perceived self-efficacy is protective against burnout [85].

Volunteerism and occupational identity

Higher self-efficacy is associated with higher PA [84], but this association seems even stronger when the occupation entails the nonprofit sector [85]. This finding can be interpreted through previous evidence, which found that a stronger commitment and engagement can be found on average in the nonprofit sector, partially explained by the stronger congruence between individual values and company objectives [86].

Among waged workers, PA is protective against BOS, as a sense of self-efficacy and self-worth protects against DP and EE [6,30]. As previously mentioned, this effect can be exerted through promoting self-care and self-guiding processes [87,88], for which an employee can seek a different company in the same role or through the redefinition of one's occupational identity [89-92]. The opposite is found in volunteers because of a higher correspondence between personal identity and company values. In contrast to waged workers, nonprofit and volunteer employees may experience a higher difficulty separating personal values from organizational missions and objectives. For these reasons, the authors propose considering volunteers among the same spectrum as waged workers but at the opposite end of profit sector employees, passing through nonprofit operators and other forms of unwaged work. The defining variable, therefore, would not be whether the worker receives a salary but the degree of convergence between personal values and occupational demands, between one's image of oneself and how effective one's actions are perceived to achieve a goal. To this image of oneself, it is crucial both to understand the role of "present" factors, such as peer support or group identities [93], and also how the individual perceives their occupation to fulfill a higher purpose [94]. In other words, how does the specific occupation respond to an overarching narrative of oneself? This characteristic could be described as whether one's profession is perceived as autotelic in nature. Typically, this is seen in the healthcare sector, where the occupational demand and value is to provide comfort in illness. Volunteers promoting action against global warming, or advocating for social justice, social equity, or social inclusion, may nonetheless experience a similar phenomenon when a threat is perceived not only to their goal, as volunteering is already experienced as a "response" to an issue, but ultimately to their own identity [95,96].

In summary, PA seems to be both a risk factor and a protective resource. Whether it exerts one influence or the other can depend on whether the individual has an opportunity to act upon the sources of distress or not. When the occupational demands address crucial components of one's identity, as in autotelic tasks, the risk of experiencing concurrent PA and EE - or DP - can be observed.

This consideration is particularly interesting for the present sample, as it was composed of first responders for the COVID-19 pandemic. Among the Red Cross, personnel answered a call to provide basic support during uncertainty. While healthcare personnel may have already identified with one's vocational role, logistic and administrative volunteers were challenged by unprecedented demands. Additionally, while prosocial behavior can be protective against mental distress, strengthening one's social resources [89], a cost to be paid in terms of mental distress can also be observed for these volunteers. Significantly, emotional stability was associated with a longer duration of service and a higher PA, signaling potential self-selection of volunteers for this occupation.

In conclusion, while most scientific literature has focused on waged healthcare workers, the authors argue that further attention could be extended to volunteers and non-traditional operators to promote prosocial behavior and volunteerism.

Study limitations

As the appropriateness of a psychometric model can only be proven by replication and possibly by longitudinal designs, the authors warrant caution in the generalization of current results. Moreover, caution is also warranted in over-extending current results beyond volunteers and high-stress occupational situations such as first-line healthcare responders during the COVID-19 pandemic. Moreover, the current methodology assessed depression and anxiety non-specifically through screening questionnaires. Caution is then warranted in inflating these scores, indicating a higher likelihood of diagnosis with the diagnosis per se.

CONCLUSION

In volunteers, personality factors were significantly associated with PA, EE, and DP. In particular, emotional stability was negatively correlated with the risks for depression or anxiety and positively with PA. Consciousness was also positively correlated with PA. In turn, the risks for depression, anxiety, and PA were positively correlated with EE and DP. A diverging role for personal accomplishment was then observed among volunteers. A tentative theoretical framework was offered to interpret results, according to which the defining characteristic predisposing for BOS was not whether operators were waged or not, but rather their degree of involvement with the occupational demands. Evidence was reviewed from the previous literature on nonprofit workers, and the notion of a spectrum of action for PA was advanced.

In conclusion, PA could be protective when the degree of engagement and motivation for the occupation is amenable to choice (in the profit sector). In contrast, the opposite is found in autotelic professions (nonprofit, unwaged personnel, parents, volunteers). Therefore, the authors advocate for a better representation of unwaged occupations in burnout research.

Supplementary Materials

Table S1 - Spearman Correlation Coefficients.

	Age	**Service Duration**	**GAD**	**PHQ**	**SIPS-B**	**Emotional Exhaustion**	**Depersonalization**	**Personal Accomplishment**	**Agreeableness**	**Conscientiousness**	**Emotional Stability**	**Extroversion**
Age	—											
Service Duration	0.048	—										
GAD	-0.113**	-0.066	—									
PHQ	-0.160***	-0.030	0.736**	—								
SIPS-B	-0.075*	-0.092**	0.398***	0.426***	—							
Emotional Exhaustion	-0.133***	-0.061	0.390***	0.420***	0.190***	—						
Depersonalization	-0.158***	-0.008	0.285***	0.299***	0.159***	0.575***	—					
Personal Accomplishment	-0.057	0.045	-0.124***	-0.124***	-0.180***	0.243***	0.342***	—				
Agreeableness	-0.021	0.069*	-0.192***	-0.209***	-0.170***	-0.044	0.006	0.309***	—			
Conscientiousness	-0.058	0.069*	-0.171***	-0.211***	-0.209***	-0.015	0.100**	0.370***	0.404***	—		
Emotional Stability	-0.057	0.093**	-0.333***	-0.302***	-0.277***	-0.090**	0.076*	0.359***	0.412***	0.489***	—	
Extroversion	-0.076*	0.036	0.01	0.01	-0.029	0.067	0.085*	0.173***	0.176***	0.178***	0.162***	—
Openness	-0.075*	0.048	0.047	0.043	-0.075	0.142***	0.188***	0.207***	0.149***	0.187***	0.161***	0.130***

Note: in bold statistically significant results for $p < 0.05$. Mann Whitney U test for continuous variables. Chi-squared for categoricals.
* $p < .05$, ** $p < .01$, *** $p < .001$

Table S2. Model Performance.

Parameter	Value
χ^2	12.738
p (χ^2)	0.121
Baseline	1947.452
p (baseline)	<0.001
R^2	0.994
Adjusted R^2	0.980
TLI	0.993
CFI	0.998
RMSEA	0.26
p (RMSEA)	0.931
RMR	0.261
SRMR	0.017
RFI	0.984
IFI	0.998
Log Likelihood	-12333.6
AIC	24701.12
BIC	24781.83
Adjusted BIC	24727.84

Table S3. Specificity of occupational stressors.

	COVID activities outside auxiliary corps	Personal infection	Personal infection during service	Family member infected	Family member dead of COVID
Risk of Depression, PHQ	**g -0.215* (p 0.015)**	g -0.110 (p 0.105)	g -0.058 (p 0.456)	g -0.095 (p 0.220)	**g -0.479* (p 0.007)**
Risk of Anxiety, GAD	g -0.094 (p 0.625)	g 0.096 (p 0.635)	g 0.040 (p 0.841)	g -0.045 (p 0.336)	g -0.203 (p 0.216)
Emotional Exhaustion	**g -0.390* (p <0.001)**	g -0.225 (p 0.122)	g -0.095 (p 0.517)	g -0.090 (p 0.342)	g -0.330 (p 0.449)
Depersonalization	**g -0.395* (p <0.001)**	g -0.060 (p 0.590)	g 0.079 (p 0.861)	g -0.028 (p 0.681)	**g -0.411* (p 0.034)**
Personal Accomplishment	g -0.061 (p 0.530)	g -0.093 (p 0.643)	g 0.082 (p 0.871)	g -0.040 (p 0.908)	g -0.059 (p 0.618)
Risk of PTSD, SIPS-B	**g -0.221* (p 0.029)**	g -0.010 (p 0.964)	g -0.251 (p 0.429)	g -0.083 (p 0.778)	**g -0.565* (p 0.004)**

Note: p values calculated by Mann Whitney U Test
g = Hedges'g

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