Contents lists available at ScienceDirect

Journal of Psychosomatic Research

Validation of the Occupational Depression Inventory in Brazil: A study of 1612 civil servants

Renzo Bianchi [a,*], Danísio Calixto Cavalcante [b,c], Cristina Queirós [b], Blezi Daiana Menezes Santos [d], Jay Verkuilen [e], Irvin Sam Schonfeld [f]

[a] Department of Psychology, Norwegian University of Science and Technology (NTNU), Trondheim, Norway
[b] Faculty of Psychology and Education Sciences, University of Porto, Porto, Portugal
[c] National Institute of Social Security, Fortaleza, Ceará, Brazil
[d] Department of Education and Psychology, University of Aveiro, Aveiro, Portugal
[e] The Graduate Center of the City University of New York, New York City, NY, USA
[f] Department of Psychology, The City College and the Graduate Center of the City University of New York, New York City, NY, USA

ARTICLE INFO

ABSTRACT

Objective: The Occupational Depression Inventory (ODI) assesses work-attributed depressive symptoms. The ODI has demonstrated robust psychometric and structural properties. To date, the instrument has been validated in English, French, and Spanish. This study examined the psychometric and structural properties of the ODI's Brazilian-Portuguese version.
Methods: The study involved 1612 civil servants employed in Brazil ($M_{AGE} = 44$, $SD_{AGE} = 9$; 60% female). The study was conducted online across all Brazilian states.
Results: Exploratory structural equation modeling (ESEM) bifactor analysis indicated that the ODI meets the requirements for essential unidimensionality. The general factor accounted for 91% of the common variance extracted. We found measurement invariance to hold across sexes and age groups. Consistent with these findings, the ODI showed strong scalability ($H = 0.67$). The instrument's total score accurately ranked respondents on the latent dimension underlying the measure. Furthermore, the ODI exhibited excellent total-score reliability (e.g., McDonald's $\omega = 0.93$). Occupational depression correlated negatively with work engagement and each of its components (vigor, dedication, and absorption), speaking to the ODI's criterion validity. Finally, the ODI helped clarify the issue of burnout-depression overlap. Relying on ESEM confirmatory factor analysis (CFA), we found burnout's components to correlate more strongly with occupational depression than with each other. Using a higher-order ESEM-within-CFA framework, we found a correlation of 0.95 between burnout and occupational depression.
Conclusion: The ODI displays robust psychometric and structural properties within the Brazilian context. The ODI constitutes a valuable resource for occupational health specialists and may help advance research on job-related distress.

1. Introduction

With its health- and life-threatening effects, job-related distress is an object of focal concern in occupational health science [1–6]. However, traditional assessments of job-related distress have been problematic [7–9]. The Occupational Depression Inventory (ODI) was recently developed to help overcome limitations in how job-related distress has been conceptualized and measured [10–12].

The ODI assesses depressive symptoms that individuals specifically attribute to their work. The instrument was designed with reference to the nine core diagnostic symptoms for major depression found in the *Diagnostic and statistical manual of mental disorders*, fifth edition (DSM-5)

---

* Corresponding author at: Norwegian University of Science and Technology (NTNU), Department of Psychology, Dragvoll, Building 12, Level 5, 7491 Trondheim, Norway.
E-mail address: renzo.bianchi@ntnu.no (R. Bianchi).

[13].[1] In contrast to the items populating classical depression scales (e. g., the Beck Depression Inventory), the ODI's items incorporate causal attributions to work (e.g., "My experience at work made me feel like a failure"). The use of causal attributions has been commonplace in psychological and medical sciences to investigate etiological pathways [14–16] and establish diagnoses of stress-related disorders (e.g., post-traumatic stress disorder) [13]. In addition, causal attributions have been central to the measurement of various constructs, including work motivation [17,18].

To date, the ODI has been validated in English, French, and Spanish (e.g., [10,19–21]). The instrument has been employed in various countries, including the USA, Australia, New Zealand, South Africa, France, Spain, and Switzerland. The ODI has demonstrated robust psychometric and structural properties across languages, geographic areas, and occupations. Research involving advanced statistical techniques (e. g., exploratory structural equation modeling [ESEM] bifactor analysis) has found the ODI to (a) meet the requirements for essential unidimensionality and (b) be usable based on the scale's total score. The measure has exhibited high reliability as well as measurement invariance across sexes and age groups (e.g., [21]). Regarding its criterion validity, the ODI has shown associations with multiple work and nonwork variables, including workplace incivility, work overload, job meaningfulness, general health status, and objective cognitive performance [10,19,21–23]. A recent ODI-based study, which examined over 350,000 employee reviews of over 100 US companies, found occupational depression to be (a) negatively linked to companies' stock growth and (b) positively linked to states' economic deprivation [24].

The present study examined the psychometric and structural properties of the ODI in Brazil, using the instrument's Brazilian-Portuguese version. Over 250 million people speak Portuguese worldwide, with most speakers located in Brazil [25]. We relied on advanced statistical techniques to inquire into the instrument's validity and reliability. Stringent scrutiny of recently developed measures, though essential, is undertaken too rarely in psychological science [26]. A major concern attached to this *laisser-aller* is the circulation, sometimes for decades, of flawed measures undermining investigators' ability to elucidate phenomena of interest [27]. An objective of our study was to ascertain whether researchers and practitioners are justified in employing the Brazilian-Portuguese version of the ODI as a unidimensional measure of work-attributed depressive symptoms based on the scale's total score. Additionally, we investigated the ODI's criterion validity focusing on the association of occupational depression with work engagement [28]. Because work engagement signals a positive relationship to one's job, we expected work engagement to be negatively associated with occupational depression.

Finally, we used the ODI to address the widely debated issue of burnout-depression overlap [12,29–31]. The debate has revolved around the question of whether burnout reflects a depressive condition or a distinct entity—with implications for assessment, prevention, and treatment strategies. Research calling into question the distinctiveness of burnout has accumulated over the last few years. As an illustration, a recent study involving 14 different samples (representing over 12,000 participants) and relying on both ESEM bifactor analysis and meta-analysis indicated that burnout qualifies as a depressive condition [29]. In light of the state of science [29,31], we hypothesized that burnout would *not* emerge as a distinct entity.

2. Methods

2.1. Study sample and recruitment procedure

This study involved 1612 Brazilian civil servants (60% female) working at the National Institute of Social Security (INSS). The mean age in the sample was 44 ($SD = 9$; range = 24–70). The mean length of employment at the INSS was 14 years ($SD = 8$). INSS employees were contacted by email between December 2021 and February 2022. They were invited to participate in the study on a voluntary basis. Individual consent to participate was obtained. The research project was approved by the Ethics Committee of the Faculty of Psychology and Education Sciences of the University of Porto, Portugal (reference: 2021/10-03b). The study was conducted online using the SOMSII Innovation and Research Flexsaúde research platform. Online studies are as valid and reliable as traditional studies [32].

2.2. Measures of interest

2.2.1. ODI

Developed with reference to the nine core diagnostic symptoms for major depression found in the DSM-5 [13], the ODI assesses anhedonia, depressed mood, sleep alterations, fatigue/loss of energy, appetite alterations, feelings of worthlessness, cognitive impairment, psychomotor alterations, and suicidal ideation within a two-week time window [10]. Each symptom item is rated on a 4-point scale, from 0 for "never or almost never" to 3 for "nearly every day." The ODI includes a subsidiary question related to turnover intention. This subsidiary question is associated with three response options: "yes," "no," and "I don't know." The ODI is accompanied by instructions to respondents describing how the scale should be completed. Respondents are invited to consider various sources for their symptoms, including work-*un*related and unknown sources. They are cautioned to respond with a "0" if they attribute a symptom to a nonwork cause or if they cannot identify any cause for a symptom. These instructions aim to discourage hasty attributions of symptoms to work [10,19].

The ODI approaches occupational depression both *dimensionally*, as a continuum from virtually absent symptoms to extremely severe symptoms, and *categorically*, using an algorithm providing provisional diagnoses [10].[2] This double lens is consistent with current developments in psychopathological science, which seek to coordinate dimensional and categorical approaches instead of pitting them against each other [33,34]. Using the ODI, investigators can quantify work-attributed depressive symptoms and identify likely cases of occupational depression.

We translated the ODI into Brazilian-Portuguese using a back-translation method [35]. First, the English version of the instrument was translated into Portuguese by three native Portuguese speakers fluent in English and translated back from Portuguese into English by a native English speaker fluent in Portuguese. Second, the ODI's Portuguese version was slightly edited to maximize its fit to the Brazilian context. Only small changes in wording were required (e.g., "*Eu me senti* deprimido(a) por causa do meu trabalho" in the Brazilian-Portuguese version, instead of "*Senti-me* deprimido(a) por causa do meu trabalho" in the original Portuguese version). Third, the Brazilian-Portuguese version of the ODI was administered in a small sample, using spoken reflection to address possible divergences due to linguistic regionalisms. No significant discrepancies were identified. The items of the ODI translated into Brazilian-Portuguese are displayed in Table 1.

About 10% of the participants ($n = 161$) met the criteria for a provisional diagnosis of occupational depression. About 57% of the participants ($n = 919$) declared that they were considering leaving their

---

[1] The DSM-5's diagnostic criteria for major depression are similar to those found in the latest edition of the International Classification of Diseases (http s://icd.who.int/browse11/l-m/en#/http%3a%2f%2fid.who.int%2ficd%2fentit y%2f1563440232).

---

[2] We use the term "provisional diagnosis" because a clinical interview conducted by a trained clinician is required for making a standard diagnosis.

Table 1

Brazilian-Portuguese version of the Occupational Depression Inventory (ODI).

Symptoms	Items
Anhedonia	O meu trabalho foi tão estressante que não consegui usufruir das coisas que normalmente gosto de fazer. *My work was so stressful that I could not enjoy the things that I usually like doing.*
Depressed mood	Eu me senti deprimido(a) por causa do meu trabalho. *I felt depressed because of my job.*
Sleep alterations	O stress do meu trabalho me causou problemas de sono (tive dificuldades em adormecer ou em dormir a noite toda, ou dormi muito mais do que o habitual). *The stress of my job caused me to have sleep problems (I had difficulties falling asleep or staying asleep, or I slept much more than usual).*
Fatigue/loss of energy	Eu me senti exausto(a) por causa do meu trabalho. *I felt exhausted because of my work.*
Appetite alterations	Senti que o meu apetite foi afetado por causa do stress no meu trabalho (perdi o apetite ou comi em demasia). *I felt my appetite was disturbed because of the stress of my job (I lost my appetite, or the opposite, I ate too much).*
Feelings of worthlessness	A minha experiência no trabalho me fez sentir um fracasso. *My experience at work made me feel like a failure.*
Cognitive impairment	O meu trabalho me stressou tanto que tive dificuldade em focar no que estava fazendo (ex.: ler uma notícia) ou em pensar com clareza (ex.: tomar decisões). *My job stressed me so much that I had trouble focusing on what I was doing (e.g., reading a newspaper article) or thinking clearly (e.g., to make decisions).*
Psychomotor alterations	Devido ao stress no meu trabalho eu me senti agitado(a) ou lento/desacelerado(a) na forma como me movimentava ou falava. *As a result of job stress, I felt restless, or the opposite, noticeably slowed down—for example, in the way I moved or spoke.*
Suicidal ideation	Pensei que preferiria morrer a continuar neste trabalho. *I thought that I'd rather be dead than continue in this job.*
Turnover intention (SQ)	Se sentiu pelo menos um dos problemas referidos, isso já o(a) levou a considerar deixar o seu atual trabalho ou função? *If you have encountered at least some of the problems mentioned above, do these problems lead you to consider leaving your current job or position?*

Notes. The full ODI form (including the instructions to respondents) is available in Brazilian-Portuguese in Supplementary Material 1, together with an SPSS syntax implementing the provisional diagnosis algorithm of the ODI. SQ: subsidiary question.

current job or position because of their occupational depression symptoms. Welch's robust test of equality of means and Dunnett's T3 indicated that these participants had higher ODI scores ($M = 1.38, SD = 0.72$) than (a) their counterparts expressing no turnover intention ($M = 0.55, SD = 0.55$), $p < 0.001, d = 1.27$, and (b) undecided participants ($M = 1.10, SD = 0.72$), $p < 0.001, d = 0.39$. The full Brazilian-Portuguese version of the ODI, including the instructions to respondents, is available in Supplementary Material 1. In addition, Supplementary Material 1 contains an SPSS syntax implementing the ODI's provisional diagnosis algorithm. Descriptive statistics for the ODI are displayed in Table 2.

2.2.2. Utrecht work engagement scale

We relied on the 9-item version of the Utrecht Work Engagement Scale (UWES-9) to assess work engagement [36]. Work engagement includes three components, namely, vigor (McDonald's ω and Cronbach's α = 0.93), dedication (McDonald's ω and Cronbach's α = 0.91), and absorption (McDonald's ω = 0.82; Cronbach's α = 0.81). A sample item is: "I feel happy when I am working intensely." The items of the UWES-9 were rated on a scale from 0 for "never" to 6 for "always." Both McDonald's ω and Cronbach's α had a value of 0.95 for the UWES-9. Of the 1612 participants, only 30% ($n = 479$) exhibited UWES-9 mean scores above 3 (i.e., mean scores above the central point of the scale), reflective of relatively high levels of work engagement.

2.2.3. Burnout Assessment Tool

We relied on the 12-item, work-related version of the Burnout Assessment Tool (BAT-12) to assess burnout symptoms [37,38]. The BAT-12 comprises four subscales—exhaustion (McDonald's ω and Cronbach's α = 0.88), mental distance (McDonald's ω = 0.83; Cronbach's α = 0.82), cognitive impairment (McDonald's ω = 0.89; Cronbach's α = 0.85), and emotional impairment (McDonald's ω and Cronbach's α = 0.88)—consisting of three items each (e.g., "I struggle to find any enthusiasm for my work"). All items were rated from 1 for "never" to 5 for "always." McDonald's ω for the BAT-12 was 0.92; Cronbach's α had the same value.

2.3. Data analyses

We examined the ODI's factorial validity with Mplus 8.7 [39]. We relied on ESEM bifactor analysis. We treated the ODI items as ordinal and used the weighted least squares—mean and variance adjusted—(WLSMV) estimator. We employed a target rotation, thus rendering our analysis confirmatory [40]. The use of a target rotation within an ESEM framework allows for a confirmatory approach that is not bound to the somewhat unrealistic assumptions underlying common-practice confirmatory factor analysis (CFA)—such as zero cross-loadings. Consistent with Bianchi and Schonfeld's (2020) characterization of the ODI's structure [10], we considered two specific factors (or bifactors) in addition to the general factor—Occupational Depression. Two bifactors were extracted on account of the ODI's "anhedonic-somatic" items (Items 1, 3, 4, 5, 7, and 8) and "dysphoric" items (Items 2, 6, and 9). ESEM bifactor analysis includes a set of indicators allowing investigators to determine whether a scale assumed to involve a degree of multidimensionality is nevertheless "unidimensional enough" for the scale to be used based on its total score. This property has been referred to as *essential unidimensionality* [41]. One key indicator in estimating essential unidimensionality is the explained common variance (ECV) statistic. The ECV statistic estimates the proportion of common variance extracted that can be attributed to the general factor. An ECV value exceeding 0.80 is suggestive of essential unidimensionality [10,41]. In addition, we computed the $\omega_{\text{Hierarchical}}$ (ω_H) coefficient and, based on its square root, the correlation between the general factor and the observed total scores. We ran ESEM bifactor analyses in the entire sample as well as in

Table 2

Descriptive statistics for the Occupational Depression Inventory.

Indicators	ODI1	ODI2	ODI3	ODI4	ODI5	ODI6	ODI7	ODI8	ODI9	Total score
Mean	1.27	1.09	1.18	1.59	1.03	0.91	1.08	1.14	0.25	1.06
Median	1.00	1.00	1.00	1.50	1.00	1.00	1.00	1.00	0.00	0.89
Mode	1	1	1	1	0	0	1	1	0	0.33
Standard deviation	1.01	0.98	1.03	0.97	1.05	1.01	0.97	1.00	0.62	0.77
Skewness ($SE = 0.06$)	0.31	0.49	0.45	0.04	0.60	0.82	0.56	0.44	2.80	0.51
Kurtosis ($SE = 0.12$)	−0.99	−0.80	−0.95	−1.03	−0.89	−0.49	−0.68	−0.91	7.86	−0.70
Minimum	0	0	0	0	0	0	0	0	0	0.00
Maximum	3	3	3	3	3	3	3	3	3	3.00

Notes. $N = 1612$. SE = standard error; ODI1: anhedonia; ODI2: depressed mood; ODI3: sleep alterations; ODI4: fatigue/loss of energy; ODI5: appetite alterations; ODI6: feelings of worthlessness; ODI7: cognitive impairment; ODI8: psychomotor alterations; ODI9: suicidal ideation.

subsamples. The subsamples included (a) male and female participants and (b) younger and older participants, based on a median split (median$_{AGE}$ = 42).

We then investigated the ODI's scalability using the Mokken package version 3.0.6 [42] in R version 4.2.0 [43]. Scalability refers to the extent to which a scale's items hierarchically align on a single dimension. The hierarchy concerns *item difficulty*, which refers to the likelihood that an item will be endorsed by respondents. Scalability is indexed by H co-efficients. As per commonly applied standards [44], scalability is considered weak if $0.30 \leq H < 0.40$, moderate if $0.40 \leq H < 0.50$, and strong if $H \geq 0.50$; a scale-level H coefficient below 0.30 suggests that the scale of interest cannot be considered unidimensional. Pairwise H coefficients should be >0; item-level H coefficients should be >0.30. In addition to computing H coefficients, we relied on the automated item selection procedure (AISP), a method for evaluating scale formation. The AISP detects subscales and deviating or unscalable items within an item set [42,44]. We used the AISP in increments of 0.05, starting at a threshold of 0.30—a commonly used default value [44].

We computed McDonald's ω, Cronbach's α, Guttman's λ-2, and the Molenaar-Sijtsma statistic to estimate the ODI's total-score reliability. We inspected the ODI's criterion validity in relation to work engagement relying on Pearson correlations. We estimated burnout-depression overlap based on (a) Pearson correlations and (b) an ESEM-within-CFA framework [45,46]. We examined two models (Model 1 and Model 2) using ESEM within CFA. The two models are described in Fig. 1. The first model allowed us to compare the average correlation between burnout's components to the average correlation of burnout's components with occupational depression. Such a comparison is important for evaluating the syndromal unity of burnout vis-à-vis occupational depression [29]. The second model, which involved a higher-order feature, allowed us to inspect the magnitude of the correlation between Burnout and Occupational Depression factors. Such a correlation provides a straightforward index of the overlap between burnout and occupational depression. The factor loadings that emerged in Model 1 were used as starting values in Model 2. We again relied on the WLSMV estimator in Mplus 8.7.

3. Results

3.1. Factorial validity and dimensionality

The bifactor model that we tested using ESEM showed a satisfactory fit: RMSEA = 0.046; CFI = 0.999; TLI = 0.997; SRMR = 0.008; χ^2 (12) = 52.696. All ODI items loaded strongly on the general factor ($M = 0.83$; $SD = 0.06$), and more strongly on the general factor than on any of the two specific factors (Fig. 2). While the Dysphoric bifactor was well-delineated and involved nonnegligible factor loadings (ranging from 0.30 to 0.49), the Anhedonic-Somatic bifactor was very weak. With a value of 0.91, the scale-level ECV index indicated that 91% of the common variance extracted was accounted for by the general factor. ω$_H$ was 0.92, leading to a correlation between the general factor and the observed total scores of 0.96. The ODI thus met the requirements for essential unidimensionality.

Our model showed a satisfactory fit among both men ($n = 653$; RMSEA = 0.043; CFI = 0.999; TLI = 0.997; SRMR = 0.009; χ^2 [12] = 26.817) and women ($n = 959$; RMSEA = 0.036; CFI = 0.999; TLI = 0.998; SRMR = 0.008; χ^2 [12] = 27.272), with the general factor playing a crucial role in each group (ECV = 0.89 for men; ECV = 0.90 for women). In an additional check of whether the ODI behaved similarly among men and women, we tested the measurement invariance of a unidimensional model. We focused on configural invariance (equivalence of the overall factor structure), metric invariance (equivalence of factor loadings), and scalar invariance (equivalence of item thresholds). As we added constraints from configural to metric invariance, and from metric to scalar invariance, RMSEA never increased, CFI and TLI never decreased, and SRMR never increased by >0.001. These findings are

consistent with the notion that the ODI behaves similarly in men and women.

Our model showed a satisfactory fit among both younger ($n = 786$; RMSEA = 0.038; CFI = 0.999; TLI = 0.997; SRMR = 0.010; χ^2 [12] = 25.343) and older ($n = 826$; RMSEA = 0.042; CFI = 0.999; TLI = 0.997; SRMR = 0.007; χ^2 [12] = 29.867) participants. Again, the general factor played a crucial role in each group (ECV = 0.88 for younger participants; ECV = 0.91 for older participants). Measurement invariance for a uni-dimensional model held across age groups. RMSEA never increased, CFI and TLI never decreased, and SRMR remained virtually identical as we added constraints from configural to metric invariance, and from metric to scalar invariance. In conclusion, the ODI behaved similarly in younger and older participants.

3.2. Scalability

The ODI exhibited strong scalability (Table 3). The scale-level H coefficient was as high as 0.67 (95% confidence interval: 0.65, 0.69), with a standard error of only 0.01. The pairwise H coefficients largely exceeded the zero threshold (Supplementary Material 2). The item-level H coefficients were well above the 0.30 threshold. The AISP signaled a single scale involving all ODI items up to a (very high) threshold of 0.60. The least difficult item was fatigue/loss of energy (Item 4). The most difficult item was suicidal ideation (Item 9).

3.3. Total-score reliability

The ODI exhibited excellent total-score reliability. McDonald's ω, Cronbach's α, Guttman's λ-2, and the Molenaar-Sijtsma statistic all had a value of 0.93.

3.4. Criterion validity

As anticipated, occupational depression correlated substantially, and negatively, with work engagement ($r = -0.60$, $p < 0.001$) and each of its components. Occupational depression correlated most largely with the vigor component ($r = -0.64$, $p < 0.001$), followed by the dedication ($r = -0.58$, $p < 0.001$) and absorption ($r = -0.46$, $p < 0.001$) components.

3.5. Occupational depression and burnout

The correlations involving occupational depression and burnout('s components) are displayed in Table 4. The raw correlation between the BAT-12 and the ODI was 0.82. When corrected for measurement error using Nunnally and Bernstein's (1994) formula [47], the correlation reached 0.89. The four components of burnout correlated on average 0.57 with each other, and 0.68 with occupational depression. Exhaustion, the central symptom of burnout [48,49], correlated more strongly with occupational depression than with any of the three other putative components of burnout—mental distance, cognitive impairment, and emotional impairment.

Digging into burnout-depression overlap using an ESEM-within-CFA framework, we found that the factors related to burnout's components correlated on average 0.45 with each other. This correlation was sub-stantially smaller than the average correlation between the factors linked to burnout's components and the Occupational Depression factor, which reached 0.65. The *maximum* correlation among the factors based on burnout's components was 0.55 (between the Cognitive Impairment and Emotional Impairment factors). This correlation was smaller than the *minimum* correlation between the factors based on burnout's components and occupational depression—0.59 (this correlation was found between the Occupational Depression and Mental Distance factors). The fit indices for the first model were: RMSEA = 0.037; CFI = 0.997; TLI = 0.994; SRMR = 0.010; χ^2 [115] = 364.256. Our second model, which involved a higher-order Burnout factor, revealed a correlation of 0.95 between the Burnout and Occupational Depression factors. The fit
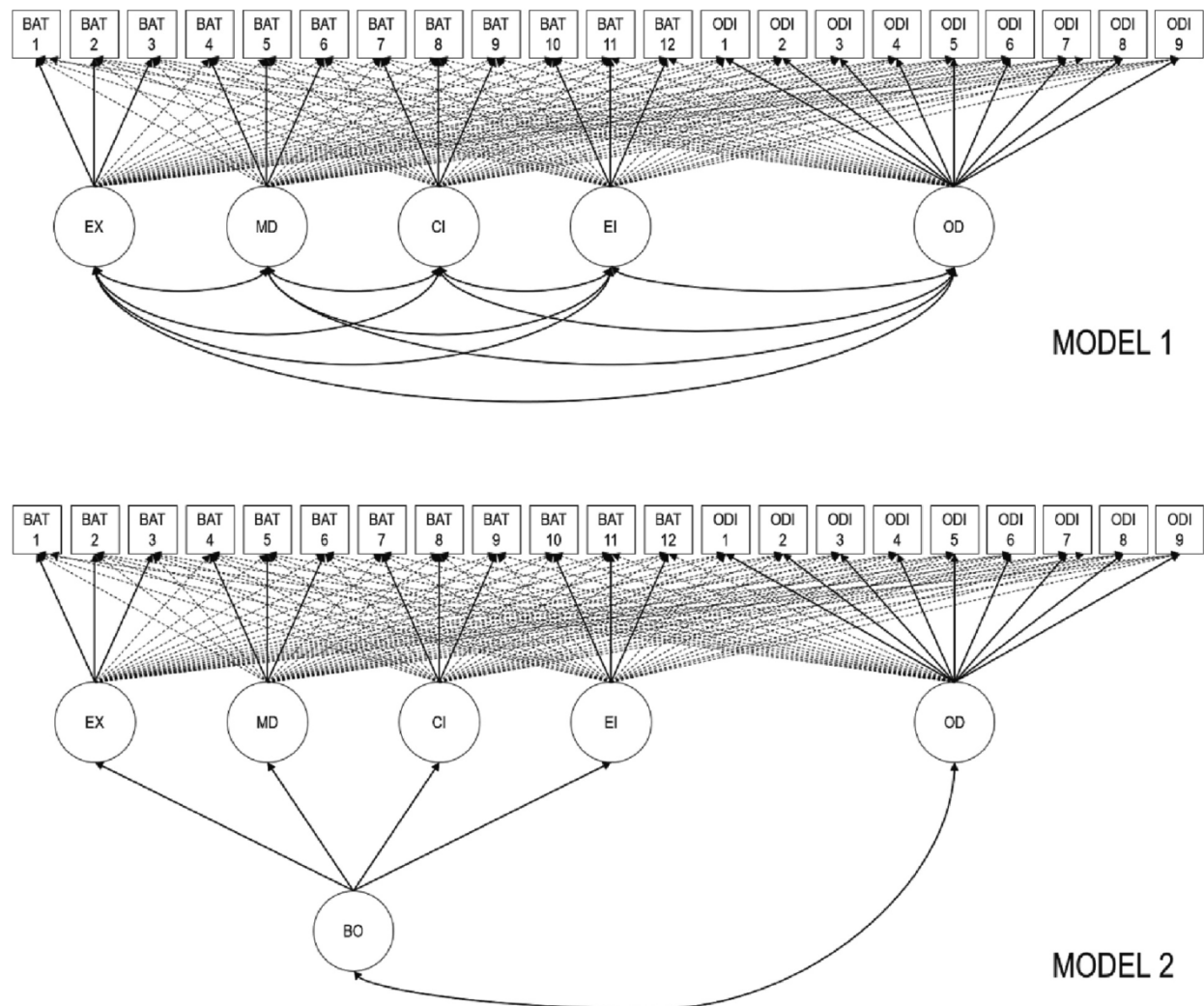
Fig. 1. ESEM-within-CFA framework. BO: Burnout factor; EX: Exhaustion factor; MD: Mental Distance factor; CI: Cognitive Impairment factor; EI: Emotional Impairment factor; OD: Occupational Depression factor. BAT1 to BAT12: items of the 12-item, work-related version of the Burnout Assessment Tool; ODI1 to ODI9: items of the Occupational Depression Inventory; ESEM: exploratory structural equation modeling; CFA: confirmatory factor analysis. $N = 1612$.

indices for the second model were: RMSEA = 0.046; CFI = 0.995; TLI = 0.991; SRMR = 0.013; χ^2 [120] = 522.198.[3] The factors loadings and correlations related to the two models are available in Supplementary Material 3.

4. Discussion

This study ($N = 1612$) inquired into the psychometric and structural properties of the Brazilian-Portuguese version of the ODI. The ODI reflects a new approach to job-related distress centered on work-attributed depressive symptoms.

4.1. Main findings

The ODI's Brazilian-Portuguese version exhibited high factorial validity and essential unidimensionality, consistent with the results obtained in other geographic areas and linguistic contexts (e.g., [10,19–21]). It is notable that the ODI meets the criteria for essential unidimensionality while covering nine different symptoms. The ODI

behaved similarly among males and females and younger and older respondents, supporting the applicability of the measure in those groups. The ODI showed strong scalability ($H = 0.67$), meaning that the instrument's total score accurately ranked respondents on the latent dimension underlying the measure. Similar results were obtained in previous ODI studies (e.g., [19–21]). Our finding that the fatigue/loss of energy item was the most commonly endorsed ODI item and the suicidal ideation item was the least commonly endorsed ODI item replicates a result systematically observed in ODI research thus far (e.g., [10]).

We found the ODI's total-score reliability to exceed 0.90, regardless of the reliability index employed. Although it has been commonplace to claim that a threshold of 0.70 is acceptable for reliability indices such as Cronbach's α, this view distorts the recommendations outlined by psychometricians [45,50]. A threshold of 0.80 has, in fact, been recommended in the context of basic research. Regarding applied research, the recommended thresholds have been even higher (≥ 0.90) given the potentially tragic consequences of measurement error in such settings [47]. That the ODI displays strong total-score reliability is promising for the instrument's use in medical and public health contexts. We note that the ODI's reliability is unlikely to be sustained by the repetition of items having redundant content [20,31,51]. Indeed, each ODI item assesses a specific symptom of major depression.

Regarding the ODI's criterion validity, we found occupational

---

[3] For the reader's information, we note that the correlation between the Burnout and Occupational Depression factors was similar when examined within a classical confirmatory factor analytic framework.
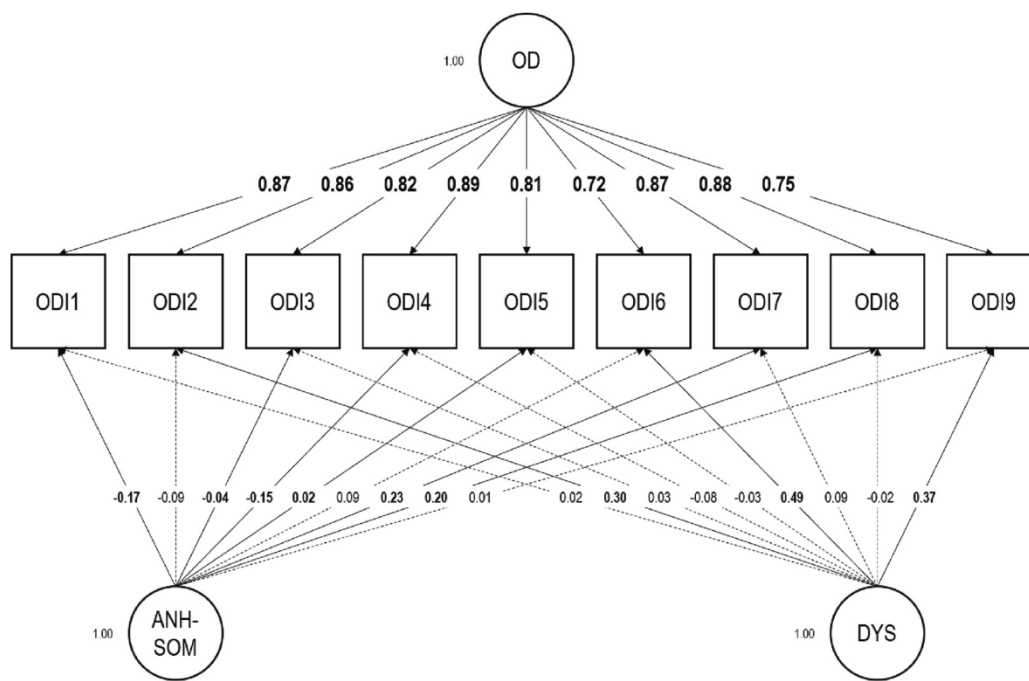
Fig. 2. Exploratory structural equation modeling bifactor analysis of the Occupational Depression Inventory—factor loadings. Target loadings are bolded. OD: general Occupational Depression factor; ANH-SOM: Anhedonic-Somatic bifactor; DYS: Dysphoric bifactor. ODI1: anhedonia; ODI2: depressed mood; ODI3: sleep alterations; ODI4: fatigue/loss of energy; ODI5: appetite alterations; ODI6: feelings of worthlessness; ODI7: cognitive impairment; ODI8: psychomotor alterations; ODI9: suicidal ideation. $N = 1612$.

Table 3
Scalability analysis of the Occupational Depression Inventory.

Items	H_i	SE	95% CI
ODI1 (anhedonia)	0.69	0.01	[0.67, 0.72]
ODI2 (depressed mood)	0.70	0.01	[0.68, 0.72]
ODI3 (sleep alterations)	0.65	0.01	[0.62, 0.67]
ODI4 (fatigue/loss of energy)	0.72	0.01	[0.70, 0.74]
ODI5 (appetite alterations)	0.63	0.01	[0.61, 0.66]
ODI6 (feelings of worthlessness)	0.61	0.02	[0.58, 0.63]
ODI7 (cognitive impairment)	0.69	0.01	[0.67, 0.71]
ODI8 (psychomotor alterations)	0.68	0.01	[0.66, 0.70]
ODI9 (suicidal ideation)	0.65	0.02	[0.61, 0.68]
H	0.67	0.01	[0.65, 0.69]

Notes. $N = 1612$. H: scale-level H; H_i: item-level H; SE: standard error; 95% CI: 95% confidence interval.

depression to be negatively associated with work engagement and each of its components. Occupational depression was associated with less vigor at work, less dedication to work, and less absorption into work. Our results are consistent with findings from previous ODI studies conducted in countries such as France, New Zealand, and South Africa [10,21].

We found burnout to overlap with occupational depression. Burnout's components were more strongly associated with occupational depression than with each other, undermining the view that burnout constitutes a separate or stand-alone syndrome. Moreover, ESEM within CFA revealed an almost perfect correlation between the Burnout and Occupational Depression factors under consideration. To our

knowledge, this study is the third to examine burnout-depression overlap using the ODI. Schonfeld and Bianchi (2022) found evidence for burnout-depression overlap using the ODI together with the Maslach Burnout Inventory (MBI) and Copenhagen Burnout Inventory [52]; Sowden et al. (2022) found evidence for burnout-depression overlap using the ODI in relation to the Shirom-Melamed Burnout Measure and Oldenburg Burnout Inventory [53]. These authors concluded that burnout constitutes an ill-composed, unnecessary variation on the theme of depression.

The ODI has several advantages for occupational health research and practice [20]. First, the ODI is rooted in depression research (e.g., clinical research on depression), thus benefiting from the knowledge accumulated in this long-established area of investigation. Depressive symptoms have long been identified as basic responses to unresolvable stress [54,55]. Work-related adversity has been related to elevated depressive symptoms and higher risks of depressive disorders [56,57]. Burnout measures do not have nearly as strong a clinical foundation [11,29]. In fact, the researcher and practitioner communities are far from a consensus on (a) what might constitute a case of burnout and (b) how such a case could be (differentially) diagnosed [8,9,58,59]. Second, unlike burnout measures, the ODI assesses work-related suicidal ideation, a risk factor for suicide itself [3,60,61]. Assessing work-related suicidality is of crucial importance. Third, although brief and easy to use, the ODI can identify individuals who are likely suffering from a work-related depressive disorder and, by implication, depressogenic organizations [10,62]. As previously mentioned, there is no established basis for screening for, or diagnosing, burnout. The nosological blur surrounding burnout hampers prevalence estimation [8,11,58,59,62].

Table 4
Correlations involving occupational depression and burnout('s components).

	M	SD	Exhaustion	Mental distance	Cognitive impairment	Emotional impairment	Burnout
Occupational depression	1.06	0.77	0.77	0.69	0.59	0.66	0.82
Exhaustion*	3.39	0.88	–	0.62	0.55	0.54	0.82
Mental distance*	2.71	1.02		–	0.61	0.56	0.86
Cognitive impairment*	2.75	0.82			–	0.56	0.82
Emotional impairment*	2.30	0.86				–	0.80
Burnout*	2.79	0.74					–

Notes. $N = 1612$. All correlations are statistically significant at $p < 0.001$. *: assessed with the 12-item, work-related version of the Burnout Assessment Tool.

The non-diagnosability of burnout has hindered both medical and public health decision-making. Finally, in contrast to the most popular measure of burnout, the MBI, the ODI exhibits high validity and strong reliability—as documented again by the present study—and is available free of charge [20].

Focusing on occupational depression should not lead investigators to overlook organizational factors when conducting etiological inquiries. Organizational factors can play a prominent role in breaking the spirit of working individuals and generating experiences of helplessness and hopelessness [63,64]. Because the etiology of (occupational) depression is best understood through the interplay between internal and external factors [34,54,55,65], a joint investigation of individual and organizational factors is warranted [62].

4.2. Study limitations

Several limitations to this study can be noted. First, the representativeness of our sample vis-à-vis its reference population is unclear. Second, we focused only on the Brazilian-Portuguese version of the ODI. Future research should focus on the European- and African-Portuguese versions of the instrument. Third, our use of a cross-sectional design prevented us from examining features such as temporal measurement invariance.

4.3. Conclusions

The Brazilian-Portuguese version of the ODI underwent close scrutiny in this study. Our findings indicate that the instrument has excellent psychometric and structural properties. This study's results are consistent with a growing body of findings demonstrating that occupational health specialists can advantageously use the ODI to investigate job-related distress [11,66].

Depression generates work impairment, reduces work-life expectancy, and predicts attempted and completed suicides [67–71]. The ODI appears as a valuable resource for helping occupational health specialists tackle the issue of depression in the workplace.

Funding sources

Declaration of Competing Interest

None.

Acknowledgments

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jpsychores.2023.111194.

References

[1] E. Gonzalez-Mulé, B.S. Cockburn, This job is (literally) killing me: a moderated-mediated model linking work characteristics to mortality, J. Appl. Psychol. 106 (1) (2021) 140–151, https://doi.org/10.1037/apl0000501.

[2] J. Hassard, K.R.H. Teoh, G. Visockaite, P. Dewe, T. Cox, The cost of work-related stress to society: a systematic review, J. Occup. Health Psychol. 23 (1) (2018) 1–17, https://doi.org/10.1037/ocp0000069.

[3] M.C. Howard, K.B. Follmer, M.B. Smith, R.P. Tucker, E.C. Van Zandt, Work and suicide: an interdisciplinary systematic literature review, J. Organ. Behav. (2021), https://doi.org/10.1002/job.2519. Advance online publication.

[4] T.A. Matthews, W. Robbins, M. Preisig, R. von Känel, J. Li, Associations of job strain and family strain with risk of major depressive episode: a prospective cohort study in U.S. working men and women, J. Psychosom. Res. 147 (2021), 110541, https://doi.org/10.1016/j.jpsychores.2021.110541.

[5] M. Melchior, A. Caspi, B.J. Milne, A. Danese, R. Poulton, T.E. Moffitt, Work stress precipitates depression and anxiety in young, working women and men, Psychol. Med. 37 (8) (2007) 1119–1129, https://doi.org/10.1017/S0033291707000414.

[6] H.M. Tiesman, S. Konda, D. Hartley, C. Chaumont Menéndez, M. Ridenour, S. Hendricks, Suicide in U.S. Workplaces, 2003-2010: A comparison with non-workplace suicides, Am. J. Prev. Med. 48 (6) (2015) 674–682, https://doi.org/10.1016/j.amepre.2014.12.011.

[7] R. Bianchi, I.S. Schonfeld, E. Laurent, Burnout: moving beyond the status quo, Int. J. Stress. Manag. 26 (1) (2019) 36–45, https://doi.org/10.1037/str0000088.

[8] L.S. Rotenstein, M. Torre, M.A. Ramos, R.C. Rosales, C. Guille, S. Sen, D.A. Mata, Prevalence of burnout among physicians: a systematic review, JAMA 320 (11) (2018) 1131–1150, https://doi.org/10.1001/jama.2018.12777.

[9] T.L. Schwenk, K.J. Gold, Physician burnout—a serious symptom, but of what? JAMA 320 (11) (2018) 1109–1110, https://doi.org/10.1001/jama.2018.11703.

[10] R. Bianchi, I.S. Schonfeld, The Occupational Depression Inventory: a new tool for clinicians and epidemiologists, J. Psychosom. Res. 138 (2020), 110249, https://doi.org/10.1016/j.jpsychores.2020.110249.

[11] R. Bianchi, J.F. Sowden, A paradigm shift from burnout to occupational depression, J. Affect. Disord. 303 (2022) 230–232, https://doi.org/10.1016/j.jad.2022.02.049.

[12] S.T. Meier, The persistent burnout/depression problem, J. Psychosom. Res. 157 (2022), 110913, https://doi.org/10.1016/j.jpsychores.2022.110913.

[13] American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders, 5th ed., American Psychiatric Publishing, 2013.

[14] American Psychological Association, Stress in America™: Paying with Our Health, American Psychological Association, 2015.

[15] W. Baldwin, Information no one else knows: The value of self-report, in: A. A. Stone, J.S. Turkkan, C.A. Bachrach, J.B. Jobe, H.S. Kurtzman, V.S. Cain (Eds.), The Science of Self-Report: Implications for Research and Practice, Lawrence Erlbaum Associates Publishers, 2000, pp. 3–7.

[16] D. Roe, M. Slade, N. Jones, The utility of patient-reported outcome measures in mental health, World Psychiatry 21 (1) (2022) 56–57, https://doi.org/10.1002/wps.20924.

[17] M. Gagné, J. Forest, M. Vansteenkiste, L. Crevier-Braud, A. van den Broeck, A. K. Aspeli, J. Bellerose, C. Benabou, E. Chemolli, S.T. Güntert, H. Halvari, D. L. Indiyastuti, P.A. Johnson, M.H. Molstad, M. Naudin, A. Ndao, A.H. Olafsen, P. Roussel, Z. Wang, C. Westbye, The Multidimensional Work Motivation Scale: validation evidence in seven languages and nine countries, European Journal of Work and Organizational Psychology 24 (2) (2015) 178–196, https://doi.org/10.1080/1359432X.2013.877892.

[18] M.A. Tremblay, C.M. Blanchard, S. Taylor, L.G. Pelletier, M. Villeneuve, Work Extrinsic and Intrinsic Motivation Scale: its value for organizational psychology research, Can. J. Behav. Sci. 41 (2009) 213–226, https://doi.org/10.1037/a0015167.

[19] R. Bianchi, G. Manzano-García, P. Montañés-Muro, E.A. Schonfeld, I.S. Schonfeld, Occupational depression in a Spanish-speaking sample: associations with cognitive performance and work-life characteristics, J. Work Organ. Psychol. 38 (1) (2022) 59–74, https://doi.org/10.5093/jwop2022a5.

[20] R. Bianchi, J. Verkuilen, J.F. Sowden, I.S. Schonfeld, Toward a new approach to job-related distress: a three-sample study of the Occupational Depression Inventory, Stress. Health (2022), https://doi.org/10.1002/smi.3177. Advance online publication.

[21] C. Hill, L.T. de Beer, R. Bianchi, Validation and measurement invariance of the Occupational Depression Inventory in South Africa, PLoS One 16 (12) (2021), e0261271, https://doi.org/10.1371/journal.pone.0261271.

[22] R. Bianchi, I.S. Schonfeld, Occupational depression, cognitive performance, and task appreciation: a study based on Raven's Advanced Progressive Matrices, Front. Psychol. 12 (2021), 695539, https://doi.org/10.3389/fpsyg.2021.695539.

[23] R. Bianchi, I.S. Schonfeld, Is the Occupational Depression Inventory predictive of cognitive performance? A focus on inhibitory control and effortful reasoning, Personal. Individ. Differ. 184 (2022), 111213, https://doi.org/10.1016/j.paid.2021.111213.

[24] I. Sen, D. Quercia, M. Constantinides, M. Montecchi, L. Capra, S. Scepanovic, R. Bianchi, Depression at work: exploring depression in major US companies from online reviews, Proc. ACM Human Comp. Interact. 6 (CSCW2) (2022) 438, https://doi.org/10.1145/3555539.

[25] SIL International, Ethnologue: Languages of the World. https://www.ethnologue.com/, 2021.

[26] J.M. Cortina, Z. Sheng, S.K. Keener, K.R. Keeler, L.K. Grubb, N. Schmitt, S. Tonidandel, K.M. Summerville, E.D. Heggestad, G.C. Banks, From alpha to omega and beyond! A look at the past, present, and (possible) future of psychometric soundness in the Journal of Applied Psychology, J. Appl. Psychol. 105 (12) (2020) 1351–1381, https://doi.org/10.1037/apl0000815.

[27] I. Hussey, S. Hughes, Hidden invalidity among 15 commonly used measures in social and personality psychology, Adv. Methods Pract. Psychol. Sci. 3 (2) (2020) 166–184, https://doi.org/10.1177/2515245919882903.

[28] A.B. Bakker, W.B. Schaufeli, M.P. Leiter, T.W. Taris, Work engagement: an emerging concept in occupational health psychology, Work Stress. 22 (3) (2008) 187–200, https://doi.org/10.1080/02678370802393649.

[29] R. Bianchi, J. Verkuilen, I.S. Schonfeld, J.J. Hakanen, M. Jansson-Fröjmark, G. Manzano-García, E. Laurent, L.L. Meier, Is burnout a depressive condition? A 14-sample meta-analytic and bifactor analytic study, Clin. Psychol. Sci. 9 (4) (2021) 579–597, https://doi.org/10.1177/2167702620979597.

[30] D. Saul, K. Nikolitch, The syndrome of burnout: a new spin or reinventing the wheel? J. Psychosom. Res. 157 (2022), 110914 https://doi.org/10.1016/j.jpsychores.2022.110914.

[31] I.S. Schonfeld, R. Bianchi, From burnout to occupational depression: recent developments in research on job-related distress and occupational health, Front. Public Health 9 (2021), 796401, https://doi.org/10.3389/fpubh.2021.796401.

[32] S.D. Gosling, W. Mason, Internet research in psychology, Annu. Rev. Psychol. 66 (1) (2015) 877–902, https://doi.org/10.1146/annurev-psych-010814-015321.

[33] A. Pickles, A. Angold, Natural categories or fundamental dimensions: on carving nature at the joints and the rearticulation of psychopathology, Dev. Psychopathol. 15 (3) (2003) 529–551, https://doi.org/10.1017/S0954579403000282.

[34] M. Wichers, The dynamic nature of depression: a new micro-level perspective of mental disorder that meets current challenges, Psychol. Med. 44 (7) (2014) 1349–1360, https://doi.org/10.1017/S0033291713001979.

[35] D.L. Streiner, G.R. Norman, J. Cairney, Health Measurement Scales: A Practical Guide to their Development and Use, 5th ed., Oxford University Press, 2015.

[36] W.B. Schaufeli, A.B. Bakker, M. Salanova, The measurement of work engagement with a short questionnaire: a cross-national study, Educ. Psychol. Meas. 66 (4) (2006) 701–716, https://doi.org/10.1177/0013164405282471.

[37] E. Hadžibajramović, W. Schaufeli, H. De Witte, Shortening of the Burnout Assessment Tool (BAT)—from 23 to 12 items using content and Rasch analysis, BMC Public Health 22 (1) (2022) 560, https://doi.org/10.1186/s12889-022-12946-y.

[38] J. Sinval, A. Vazquez, C.S. Hutz, W.B. Schaufeli, S. Silva, Burnout Assessment Tool (BAT): validity evidence from Brazil and Portugal, Int. J. Environ. Res. Public Health 19 (3) (2022) 1344, https://doi.org/10.3390/ijerph19031344.

[39] L.K. Muthén, B.O. Muthén, Mplus user's guide, 8th ed., Muthén & Muthén, 1998-2017.

[40] H.W. Marsh, A.J. Morin, P.D. Parker, G. Kaur, Exploratory structural equation modeling: an integration of the best features of exploratory and confirmatory factor analysis, Annu. Rev. Clin. Psychol. 10 (2014) 85–110, https://doi.org/10.1146/annurev-clinpsy-032813-153700.

[41] A. Rodriguez, S.P. Reise, M.G. Haviland, Evaluating bifactor models: calculating and interpreting statistical indices, Psychol. Methods 21 (2) (2016) 137–150, https://doi.org/10.1037/met0000045.

[42] L.A. van der Ark, New developments in Mokken scale analysis in R, J. Stat. Softw. 48 (5) (2012) 1–27, https://doi.org/10.18637/jss.v048.i05.

[43] R Core Team, R: A Language and Environment for Statistical Computing, R Foundation for Statistical Computing, 2022. https://www.R-project.org/.

[44] P.J. Palmgren, U. Brodin, G.H. Nilsson, R. Watson, T. Stenfors, Investigating psychometric properties and dimensional structure of an educational environment measure (DREEM) using Mokken scale analysis – a pragmatic approach, BMC Med. Educ. 18 (1) (2018) 235, https://doi.org/10.1186/s12909-018-1334-8.

[45] H.W. Marsh, J. Guo, T. Dicke, P.D. Parker, R.G. Craven, Confirmatory factor analysis (CFA), exploratory structural equation modeling (ESEM), and Set-ESEM: optimal balance between goodness of fit and parsimony, Multivar. Behav. Res. 55 (1) (2020) 102–119, https://doi.org/10.1080/00273171.2019.1602503.

[46] A.J.S. Morin, A.K. Arens, H.W. Marsh, A bifactor exploratory structural equation modeling framework for the identification of distinct sources of construct-relevant psychometric multidimensionality, Struct. Equ. Model. 23 (1) (2016) 116–139, https://doi.org/10.1080/10705511.2014.961800.

[47] J.C. Nunnally, I.H. Bernstein, Psychometric Theory, 3rd ed., McGraw-Hill, 1994.

[48] T.S. Kristensen, M. Borritz, E. Villadsen, K.B. Christensen, The Copenhagen Burnout Inventory: a new tool for the assessment of burnout, Work Stress. 19 (3) (2005) 192–207, https://doi.org/10.1080/02678370500297720.

[49] C. Maslach, W.B. Schaufeli, M.P. Leiter, Job burnout, Annu. Rev. Psychol. 52 (2001) 397–422, https://doi.org/10.1146/annurev.psych.52.1.397.

[50] C.E. Lance, M.M. Butts, L.C. Michels, The sources of four commonly reported cutoff criteria: what did they really say? Organ. Res. Methods 9 (2) (2006) 202–220, https://doi.org/10.1177/1094428105284919.

[51] E. Cho, S. Kim, Cronbach's coefficient alpha: well known but poorly understood, Organ. Res. Methods 18 (2) (2015) 207–230, https://doi.org/10.1177/1094428114555994.

[52] I.S. Schonfeld, R. Bianchi, Distress in the workplace: characterizing the relationship of burnout measures to the Occupational Depression Inventory, Int. J. Stress. Manag. (2022), https://doi.org/10.1037/str0000261. Advance online publication.

[53] J.F. Sowden, I.S. Schonfeld, R. Bianchi, Are Australian teachers burned-out or depressed? A confirmatory factor analytic study involving the Occupational Depression Inventory, J. Psychosom. Res. 157 (2022), 110783, https://doi.org/10.1016/j.jpsychores.2022.110783.

[54] C.R. Pryce, D. Azzinnari, S. Spinelli, E. Seifritz, M. Tegethoff, G. Meinlschmidt, Helplessness: a systematic translational review of theory and evidence for its relevance to understanding and treating depression, Pharmacol. Ther. 132 (3) (2011) 242–267, https://doi.org/10.1016/j.pharmthera.2011.06.006.

[55] P. Willner, J. Scheel-Krüger, C. Belzung, The neurobiology of depression and antidepressant action, Neurosci. Biobehav. Rev. 37 (10) (2013) 2331–2371, https://doi.org/10.1016/j.neubiorev.2012.12.007.

[56] I.E. Madsen, J.K. Sørensen, J.E. Bruun, E. Framke, H. Burr, M. Melchior, B. Sivertsen, S. Stansfeld, M. Kivimäki, R. Rugulies, Emotional demands at work and risk of hospital-treated depressive disorder in up to 1.6 million Danish employees: a prospective nationwide register-based cohort study, Scand. J. Work Environ. Health 48 (4) (2022) 302–311, https://doi.org/10.5271/sjweh.4020.

[57] I.S. Schonfeld, C.-H. Chang, Occupational Health Psychology: Work, Stress, and Health, Springer Publishing Company, 2017, https://doi.org/10.1891/9780826199683.

[58] R. Bianchi, I.S. Schonfeld, E. Laurent, 'Burnout syndrome' – from nosological indeterminacy to epidemiological nonsense, BJPsych Bulletin 41 (6) (2017) 367–368, https://doi.org/10.1192/pb.41.6.367.

[59] R. Bianchi, I.S. Schonfeld, E. Laurent, Can we trust burnout research? Ann. Oncol. 28 (9) (2017) 2320–2321, https://doi.org/10.1093/annonc/mdx267.

[60] M.A. Just, L. Pan, V.L. Cherkassky, D.L. McMakin, C. Cha, M.K. Nock, D. Brent, Machine learning of neural representations of suicide and emotion concepts identifies suicidal youth, Nat. Hum. Behav. 1 (2017) 911–919, https://doi.org/10.1038/s41562-017-0234-y.

[61] G.E. Simon, C.M. Rutter, D. Peterson, M. Oliver, U. Whiteside, B. Operskalski, E. J. Ludman, Does response on the PHQ-9 Depression Questionnaire predict subsequent suicide attempt or suicide death? Psychiatr. Serv. 64 (12) (2013) 1195–1202, https://doi.org/10.1176/appi.ps.201200587.

[62] R. Bianchi, I.S. Schonfeld, Who needs to be "burned-out"? Time for a new approach to job-related distress, Eur. Psychiatry 64 (1) (2021), e65, https://doi.org/10.1192/j.eurpsy.2021.2240.

[63] Q. Durand-Moreau, G. Lasfargues, Entre management et santé au travail, un dialogue impossible ? Éditions Érès, 2022.

[64] A. Valeyre, Les conditions de travail des salariés dans l'Union européenne à quinze selon les formes d'organisation [Working conditions of EU-15 workers according to the forms of work organisation], Travail et Emploi 112 (2007) 35–47, https://doi.org/10.4000/travailemploi.2185.

[65] R. Bianchi, I.S. Schonfeld, E. Laurent, Burnout or depression: both individual and social issue, Lancet 390 (10091) (2017) 230, https://doi.org/10.1016/S0140-6736(17)31606-9.

[66] R. Bianchi, K. Wac, J.F. Sowden, I.S. Schonfeld, Burned-out with burnout? Insights from historical analysis, Front. Psychol. 13 (2022) 993208. https://www.frontiersin.org/articles/10.3389/fpsyg.2022.993208/full.

[67] T. Amagasa, T. Nakayama, Y. Takahashi, *Karojisatsu* in Japan: characteristics of 22 cases of work-related suicide, J. Occup. Health 47 (2) (2005) 157–164, https://doi.org/10.1539/joh.47.157.

[68] G.K. Brown, A.T. Beck, R.A. Steer, J.R. Grisham, Risk factors for suicide in psychiatric outpatients: a 20-year prospective study, J. Consult. Clin. Psychol. 68 (3) (2000) 371–377, https://doi.org/10.1037/0022-006x.68.3.371.

[69] E. Chesney, G.M. Goodwin, S. Fazel, Risks of all-cause and suicide mortality in mental disorders: a meta-review, World Psychiatry 13 (2) (2014) 153–160, https://doi.org/10.1002/wps.20128.

[70] J. Pedersen, S.V. Thorsen, M.F. Andersen, T.N. Hanvold, V. Schlünssen, U. Bültmann, Impact of depressive symptoms on worklife expectancy: a longitudinal study on Danish employees, Occup. Environ. Med. 76 (11) (2019) 838–844, https://doi.org/10.1136/oemed-2019-105961.

[71] S. Probert-Lindström, J. Berge, Å. Westrin, A. Öjehagen, K. Skogman Pavulans, Long-term risk factors for suicide in suicide attempters examined at a medical emergency in patient unit: results from a 32-year follow-up study, BMJ Open 10 (10) (2020), e038794, https://doi.org/10.1136/bmjopen-2020-038794.