Quaderns de Psicologia | 2023, Vol. 25, Nro. 1, e1729 | ISNN: 0211-3481

https://doi.org/10.5565/rev/qpsicologia.1729

Well-being at work scale (WBWS): Gathering empirical evidence from different interpretation strategies

Escala de bienestar en el trabajo (EBET): compilación de evidencia empírica de diferentes estrategias de interpretación

Laila Leite Carneiro
Antônio Virgílio Bittencourt Bastos
Universidade Federal da Bahia (UFBA)

Abstract
Well-being at work scale (WBWS) is a measure widely used in Brazil, composed of three dimensions (positive affects, negative affects and expressiveness/fulfillment) aligned with the field's recent movement of junction of the two classical theoretical bases (hedonic and eudaimonic) that explain this phenomenon. Based on a cross-sectional survey involving 360 Brazilian workers, this study aimed to compare different models of interpreting the WBWS (including three one-dimensional proposals - composed by a single factor or second-order factor for WBW assessment - and one multidimensional proposal - composed by the three WBW factors singly). Each model was tested through exploratory and confirmatory factor analyzes, and then correlation analyzes between the models were run to allow their comparison. We concluded that the interpretation of WBWS from a single indicator is viable and more theoretically appropriate when it is intended to have a more integrated view about well-being at work.

Keywords: **Well-being; Work; Interpretation strategies; Measure**

Resumen
La Escala de Bienestar en el Trabajo (EBET) es una medida ampliamente utilizada en Brasil, compuesta por tres dimensiones (afecto positivo, afecto negativo y expresividad/realización) alineadas con el movimiento reciente del campo de unión de las dos bases teóricas clásicas (hedónica y eudaimónica) que explican este fenómeno. Basado en una encuesta transversal que involucró a 360 trabajadores brasileños, este estudio tuvo como objetivo comparar diferentes modelos de interpretación de la EBET (incluidas tres propuestas unidimensionales, compuestas por un factor único o factor de segundo orden para la evaluación del BET; y una propuesta multidimensional compuesta por los tres factores BET individualmente). Cada modelo se probó a través de análisis factoriales exploratorios y confirmatorios, y luego se realizaron análisis de correlación entre los modelos para permitir su comparación. Concluimos que la interpretación de la EBET a partir de un solo indicador es viable y teóricamente más adecuada cuando se pretende tener una visión más integrada sobre el bienestar en el trabajo.

Palabras clave: ***Bienestar; Trabajo; Estrategias de interpretación; Medida***

INTRODUCTION

Well-being in the workplace is a positive subjective experience that has been gaining more and more attention, but it is characterized by multiple controversial conceptual and empirical references. The breadth of research in this topic is partly influenced by movements such as Positive Psychology, which extols the need to engage in efforts to understand and foster positive human experiences, rather than merely investigating problems to repair damage (Carneiro et al., 2022). Interest in the subject also grows outside the context of science, following a change in society's paradigms regarding what is health, what makes life worthwhile, and how central is the role played by work and organizations in it.

Advancements in research and intervention scenarios necessarily depend on carefully line up what is measured (information measured by the instrument) and what is said to be measured (theoretical construct) (Carneiro and Bastos, 2020). Thus, it is important that further research be conducted to prove how useful the existing measures of well-being in the work context are, by allowing us to faithfully access the phenomenon, not confusing it with others (Carneiro and Bastos, 2020). However, to move forward the possibilities of using the measure it is necessary to start by problematizing the theoretical foundations that support the conceptions that exist today about well-being (Tiberious, 2014).

There is a clear division between the two main theoretical and philosophical currents which base our understanding of well-being, both in the general and in the specific context of work. On the one hand is hedonism, which explains well-being as experiences of pleasure and other positive affective states (Diener, 1984; Huta and Waterman, 2014; Ryan and Deci, 2001). Grounded in this tradition, some authors consider that these affective experiences should be associated with the cognitive assessment that individuals make about their experiences, namely satisfaction (e.g., Diener, 1984; Siqueira et al., 2014). On the other hand is eudaimonism, claiming that well-being is the expression of an optimal level of individuals' psychosocial functioning, in which they are moving toward their growth and their personal achievement and fulfillment (e.g., Huta and Waterman, 2014; Ryan and Deci, 2001; Ryff and Keyes, 1995; Waterman, 1993, 2007).

This dichotomy has contributed to the plurality of concepts developed in the field. Nonetheless, researchers have questioned whether these different bases of understanding of well-being must really be treated apart from each other (e.g., Disabato et al., 2016; Longo et al., 2016). If on the one side, some authors argue that these theoretical perspectives describe associated but inde-

pendent phenomena (e.g., Huta and Ryan, 2010; Keyes et al., 2002; Meyer and Maltin, 2010; Ryan and Huta, 2009; Turban and Yan, 2016; Waterman, 1993), other authors move in the direction of their union, recognizing their complementarity (e.g., Gallagher et al., 2009; Henderson et al., 2014; Paschoal and Tamayo, 2008; Simone, 2014; Warr, 2007).

Peter Warr (2007), one of the most referenced authors in the field of well-being specific to the work context, is one of the leaders of this union movement. The author defines well-being at work as a positive subjective experience, which occurs when the positive affects experienced at work stand out against the negative ones (as supported by hedonic tradition) and when the work provides individuals with opportunities so that they can succeed and express their potential, achieving personal development (as supported by eudaimonic tradition). Congruent with this definition, Tatiane Paschoal (2008) argues that well-being at work results from the prevalence of positive emotions and individuals' perceptions that in their work they express and develop their potential and advance in achieving their goals in life. Therefore, it is based on this definition that Tatiane Paschoal and Álvaro Tamayo (2008) present a concrete proposal for joining the two perspectives, hedonic and eudaimonic, in the conception and measurement of well-being at work (WBW).

The measure proposed by the authors, called the Well-Being at Work Scale (WBWS) is operationally composed of three factors, distributed over 30 items, as follows: "positive affect - PA" (9 items, $\alpha = 0.93$), "negative affect - NA" (12 items, $\alpha = 0.91$), and "expressiveness/fullfilment at work - EF" (9 items, $\alpha = 0.88$) (Paschoal and Tamayo, 2008). The items contained in the affect scales (PA and NA) were derived from another scale already validated in the Brazilian context — Subjective Well-Being Scale by Anelise Albuquerque and Bartholomeu Tróccoli (2004), while the items of the eudaimonic dimension (EF) were developed based both on Alan Waterman's (1993) proposal and on interviews that qualitatively investigated what workers understood about feeling successful at work. All the WBWS items were organized using a 5-level Likert scale.

Since its launch, the WBWS has had a high rate of acceptance in Brazil, being the measure chosen for comprehending the well-being phenomenon in various studies in this field. In addition, the scale was also validated outside the country, in the United States (Demo and Paschoal, 2016). Still, there is no uniformity concerning how to measure the results proposed by the scale.

In most of the studies, the three WBWS factors (PA, NA, EF) are independently analyzed in relation to other variables (e.g., Amorim-Ribeiro et al., 2022; Couto and Paschoal, 2012; Paschoal et al., 2010; Sant'anna et al., 2012; Santana

and Fernandes, 2017; Silva, 2016; Sobrinho and Porto, 2012; Soraggi and Paschoal, 2011; Sousa and Dela Coleta, 2015; Souza et al., 2014; Traldi and Demo, 2012). Thus, it can be said that WBWS is most investigated from a fragmented/multidimensional perspective, which, while bringing relevant contributions, at the same time limits the possibility of understanding this phenomenon in a unified way.

Just few studies adopt the unifying perspective, either using a second order model or a single factor model (e.g., Alberton, 2016; Ceballos and Santos, 2015; Demo et al., 2022; Demo and Paschoal; 2016; Silva, 2016). Although they exist, such studies do not offer information that details the methodological procedures used to construct this single well-being factor. Even in the validation study of this scale for the United States (Demo and Paschoal, 2016), the measurement model was carefully described, but at the point when analyses were conducted to verify the nomological validity of the construct, a structural model was used that included a second-order factor whose construction process is not exposed with the same wealth of information. The same happens to another measure widely used in Brazilian research, which is subjective well-being (SWB), with which no studies mentioning the combination of the three factors into a single indicator were found.

In the international literature, in contrast, one can readily find initiatives that advance towards proposing more robust assessment models of well-being measures (e.g., Busseri, 2014; Busseri and Sadava, 2011). In an empirical study based on SWB construct, which is composed of three dimensions (positive affects - PA, negative affects - NA, and satisfaction with life - SL), all with a hedonic basis, Michael Busseri (2014) analyzes 4 (four) different proposals emerging in the literature to assess and interpret their measurements: a model with 3 independent factors; a causal model (in which affects predict satisfaction with life); a second-order latent factor model based on the 3 factors; and a single-factor composite model based on the 3 factors. In analyzing the incidence of these models in the literature, Busseri (2014) also highlights that, despite the frequent use of a single weighted composite resulting from the combination of the three SWB factors (PA, NA, and SL), there are no studies that focus on investigating what, in fact, would be the appropriate strategy to include each of these factors (in terms of weight) into the final SWB score, which may generate uncertainty regarding the reliability of the measurement interpretation process.

Although they hold PA and NA as common factors, SWB and WBW represent different constructs, not only in terms of their level of coverage (life x work), but also for the philosophical tradition supporting the third factor of the con-

structs: SL in SWB can be stated from the hedonic perspective, while EF in WBW is based on the eudaimonic perspective. However, the similarities allow for the discussion proposed by Busseri (2014) about SWB interpretation models to be taken as a reference for testing WBW interpretation models, except for the causal model, since there is no theoretical support in the work context for the hypothesis that the affects experienced by individuals (hedonic basis of WBW) can predict their level of expressiveness/fulfillment (eudaimonic basis of WBW).

Given this scenario, the present study aimed to compare, through a quantitative and transversal study, different models of interpreting the measure of WBW based on the WBWS, pursuing data that indicate which strategies are suitable for research on the construct. Thus, the intent is to identify whether there is empirical evidence that supports the proposition of a single factor or second-order factor for WBW assessment (one-dimensional proposals) or, in fact, one should proceed to assess the phenomenon based on its three factors in a more independent manner (multidimensional proposal), as it is being done ever more frequently in the literature. In other words, we seek to verify whether the proposed models present empirical adequacy or not, discussing the implications of the choice of each assessment strategy by the researcher.

METHOD

Participants

The sample was non-probabilistic, with 360 Brazilian workers in various segments/occupations who volunteered to participate. The only eligibility criterion was the fact that the employee had at least 3 months employment with the organization.

In terms of participant age, the range was 19 to 66 years (M = 35.80; SD = 10.64). Most of the participants were female (69.6%). 50.3% were single, 43.8% were married and 5.9% were separated or divorced. Most had already completed some postgraduate studies (51.7%) and lots of them were studying or had completed higher education (39.1%), although workers with a lower level of education (such as elementary and secondary) also participated (9.2%). Regarding professional data, most of the workers performed activities related to the services area (41.2%), being mainly concentrated in private organizations (57.8%), but also in public organizations (32.7%), and from the third sector (9.5%). Just 20.5% of the participants held senior positions at the time they answered the survey, so the majority (79.5%) were not leaders. Concerning wages, 58.6% of the sample received up to 4 times the minimum wage, 32.9% re-

ceived between 4 and 10 times the minimum wage and only 8.7% received more than 10 times the minimum wage.

Basis	Dimension	Original item (Portuguese)	English translation
Eudaimonic	Expressiveness / Fulfillment (EF)	Desenvolvo habilidades que considero importantes.	I develop abilities that I consider important.
		Consigo recompensas importantes para mim.	I get important rewards for myself.
		Realizo o meu potencial.	I achieve my potential.
		Expresso o que há de melhor em mim.	I express what is best in me.
		Atinjo resultados que valorizo.	I achieve results that I regard as valuable.
		Realizo atividades que expressam minhas capacidades.	I engage in activities that express my skills.
		Faço o que realmente gosto de fazer.	I do what I really like doing.
		Avanço nas metas que estabeleci para minha vida.	I advance in the goals I set for my life.
		Supero desafios.	I overcome challenges.
Hedonic	Positive affects (PA)	Feliz	Happy
		Empolgado	Excited
		Alegre	Cheerful
		Entusiasmado	Enthusiastic
		Orgulhoso	Proud
		Contente	Contente
		Disposto	Willing
		Tranquilo	Calm
		Animado	Active
	Negative affects (NA)	Tenso	Distressed
		Chateado	Upset
		Deprimido	Depressed
		Irritado	Jittery
		Com raiva	Angry
		Nervoso	Nervous
		Frustrado	Frustrated
		Impaciente	Impatient
		Incomodado	Annoyed
		Preocupado	Worried
		Ansioso	Ansious
		Entediado	Bored

Table 1. Items from WBWS organized by dimensions

Data collection instrument

The instrument used in this research was an extract from a larger study, from which two parts were taken: (1) sociodemographic and occupational information; and (2) WBWS validated by Paschoal and Tamayo (2008), composed of the factors PA, NA and EF. The items had to be evaluated based on 5-level response options, with an intensity scale for the first two factors cited (1- Not at all; 2- Not much; 3- Moderately; 4- Quite a lot; 5- Extremely) and an agreement scale for the last factor (1- Totally disagree; 2- Partially disagree; 3- Do not agree or disagree; 4- Partially agree; 5- Totally agree). Examples of items are: "happy" for PA, "angry" for NA, and "I achieve my potential" for EF. Table 1 shows all the items from the scale.

Data collection procedures

Data were tabulated using the SPSS (Statistical Package for Social Sciences) 17.0 software. First, exploratory statistical analyses were done to identify and correct typing errors, missing data, and outliers. Subsequent evaluations using skewness, kurtosis, and Kolmogorov-Smirnov tests demonstrated adequacy of the sample in terms of univariate and multivariate normality.

In the preliminary factor analyses, the principal components analysis (PCA) method with oblique rotation (promax) was adopted. According to Andy Field (2009), this method is more appropriate for assessment in the social sciences, since PCA assumes that a correlation exists between the factors studied. For factor retention, both the screeplot layout and the eigenvalue greater than 1.0 criterion were considered, and for item retention, a minimum factor loading of 0.3 (as indicated by O'Leary-Kelly and Vokurka, 1998) was considered. To find a solution that best fit the construct, in theoretical and psychometric terms, the items that presented factor loadings in factors not theoretically consistent or that simultaneously loaded on more than one factor were excluded.

Also, AMOS 18 software was used to do structural equation modeling, using the maximum likelihood estimation method, as advised by Barbara Byrne (2010), which allowed us to verify the fit of the measurement models proposed for the WBWS.

In total, four models were compared (Figure 1). Model 1 refers to a simple composite, resulting from the arithmetic mean of the three factors that make up the WBWS ({PA+NA(inverted)+EF}/3). Model 2 represents a theoretical composite. In order to build it, first the prevalence of PA over NA (PREV_PANA) is calculated. Since a simple subtraction (PA-NA) would yield negative values, the value 6 is added to this formula (to allow the inversion of the NA values on the scale ranging from 1 to 5), and then the mean of this operation is extracted,

according to the formula (PREV_PANA={PA-NA+6}/2). The second step, then, in model 2, is to calculate the mean of the value resulting from the prevalence plus the EA factor (WBW={PREV_PANA+EF}/2). Model 3 corresponds to the most recurrent evaluation in the literature, which conceives of WBW through its three factors independently (PA, NA, and EF). Finally, model 4 represents WBW through a second-order latent factor formed by joining the three first-order factors (PA, NA, and EF).

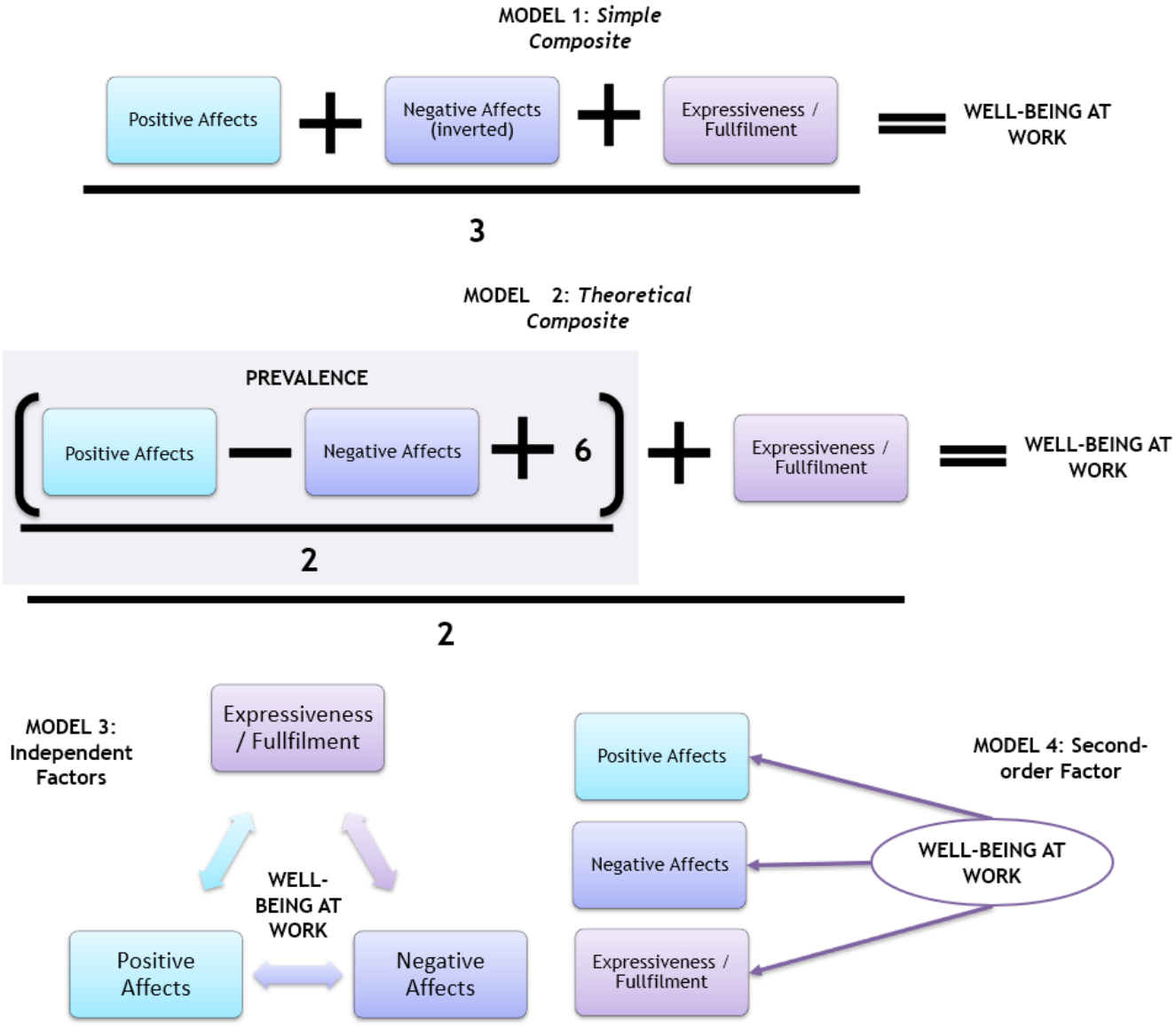

Figure 1. WBW measurement and interpretation models to be compared

The ideal parameters for the fit indices considered for assessing the tested models were established according to the indications from Juliane Silva (2006) and Byrne (2010) and are summarized in Table 2.

Index	Descriptor	Ideal parameter
X2/df (CMIN/DF)	x2 / degrees of freedom ratio	≤ 5
GFI	Goodness-of-Fit Index	>0.9; close to 1.0
CFI	Comparative Fit Index	>0.9; close to 1.0
TLI	Tucker-Lewis Index	>0.95; close to 1.0
RMSEA	Root Mean Square Error of Approximation	Ideal ≤ 5; acceptable ≤ 8
BIC	Bayes Information Criterion	The lower, the better

Source**:** Developed by the author based on indications from Silva (2006) and Byrne (2010).

Table 2. Model fit indices considered in the AMOS testing

Additional descriptive and Pearson correlation analyses were also conducted to compare the behavior of the different models tested.

RESULTS AND DISCUSSION

Initially, we sought to verify the adequacy of the structure of the instrument in relation to the present study's sample through exploratory factor analysis (PCA method), considering this is an essential step for the construction of the models to be tested in this study. Indications were observed for the withdrawal of two items, both of which should have loaded on the NA factor. In the case of item "bored", there was cross-loading with factor EF, in which the item reached a factor loading of -.328 (versus .339 of its original factor NA). This result can be theoretically justified, since fulfillment at work depends on the opportunities that the individual has to be challenged, to leave their comfort zone, in order to thus express their best potential. In an environment where exist few stimuli directed at this action, workers may feel bored more often. In the case of the other item (frustrated), there was cross-loading between the original factor NA (.509) and the PA factor (-.433). Although it was not possible to identify a theoretical explanation for this configuration, the factor loading of an item with values so close in two distinct factors may interfere with the quality of the measurement. Given the above, it was decided to exclude both items before conducting the subsequent analyses.

After removing the items, the PCA was run another time, finding a configuration that, once again, indicated the need to remove an item (quiet), which originally should have loaded only on the PA factor (.480), but ended up sharing

the factor loading with the NA factor (-.380). Of all the items representing PA, only this item indicates a lower activation/energy level, so although this is a positive state, it may have been the reason for factor cross-loading with factor NA. Once this item was duly excluded, the most adequate final solution found through PCA was that of 3 factors distributed over 27 items that together explained 61.28% of the construct's variance, with a KMO of 0.945. The results extracted from these preliminary analyses served as the basis for testing the four models proposed in this study.

Then, still in SPSS, the construction of model 1 was carried out based on a simple composite that freely joined the three dimensions of WBW, through the formula ({PA+NA(inverted)+EF}/3), whose structure provides for an equitable weight for the input from each of the factors into the overall WBW indicator.

The construction of model 2 was conducted in the same manner, also through a composite that joined the three dimensions of WBW, but this time, following the logic of its theoretical definition. And so, first the prevalence of positive affects over negative affects (PREV_PANA) was calculated using the formula ({PA-NA+6}/2). This new dimension can also be called "affective balance", "hedonic balance" or simply "affective well-being", following the trend of international studies (Busseri, 2014). Subsequently, the mean was calculated between the prevalence dimension (PREV_PANA) and the EF dimension using the formula ({PREV_PANA+EF}/2), finalizing the composition of model 2.

We then proceeded to the confirmatory testing of model 3 (which considers the dimensions PA, NA, and EF independently) in AMOS, through the analysis of covariance of the three dimensions of WBW (Table 3).

Model	X^2/DF (≤ 5)	GFI (>.0.9)	CFI (>.0.9)	TLI (>0.95)	BIC (Lower)	RMSEA (90% CI) (≤ 0.08)
3A	2.753	.834	.911	.903	1219.171	.070
3B	2.507	.850	.924	.916	1143.692	.065
3C	2.394	.858	.930	.923	1110.979	.062
3D	2.312	.866	.934	.927	1088.485	.060

Table 3. Model 3 fit indices (WBW as three independent factors) before and after model re-specifications

In the first attempt (model 3A), the model presented satisfactory fit indices, except in the case of the GFI. It was important to analyze the possibilities of parameter fitting in the model re-specification process, following the guidance of authors in this area (Byrne, 2010; Perry et al., 2015), introducing only one

parameter at a time and subsequently re-evaluating the model, if necessary. Thus, a parameter was first inserted between the items PA1 (happy) ←→ PA4 (content) (model 3B). As the fit indices could still be improved, another parameter was inserted between items PA11 (enthusiastic) ←→ PA17 (excited) (model 3C), and then between items PA12 (anxious) ←→ PA18 (tense) (model 3D), at which point the insertion of new parameters indicated by the analysis was considered not theoretically justified and would not significantly increase the fit indices of the model.

Finally, in favor of parsimony, we settled on the final model (3D) (Figure 2).

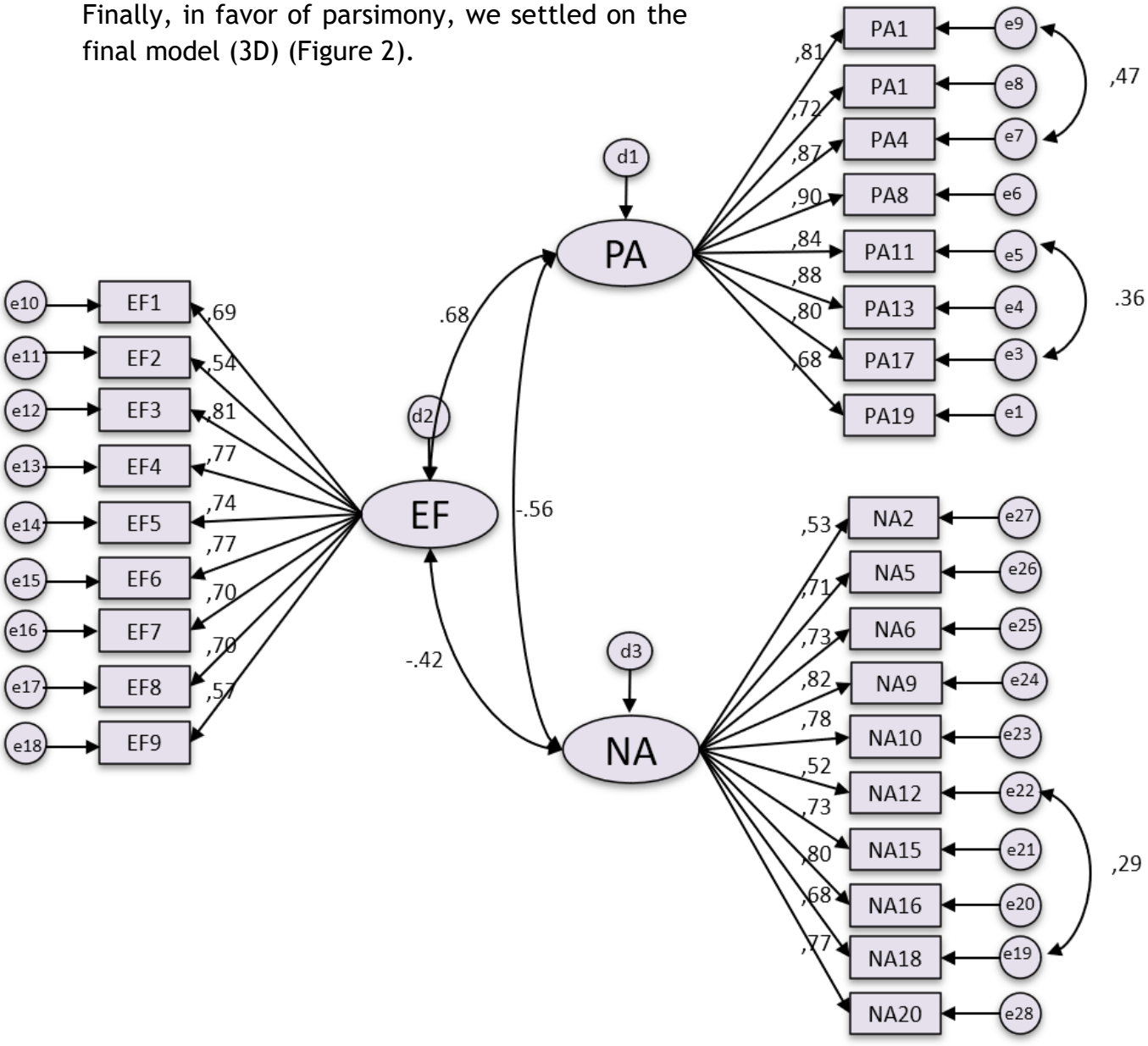

Figure 2. WBW CFA with three independent factors (model 3)

This model exhibited indices that demonstrate its fit (X^2/df = 2.312; GFI = 0.866; CFI = 0.934; TLI = 0.927; RMSEA = 0.060), except for the GFI index, which presented a passable result, lower than expected according to Silva (2006) and Byrne (2010), but that does not invalidate its proposition (Browne and Cudeck, 1993). It is noteworthy, however, that in previous studies involving the WBW scale, this indicator was either not published (Demo and Paschoal, 2016) or presented a suboptimal value as well (Silva, 2016). Thus, taken together with the other indices, it is considered that model 3 is statistically acceptable for the verification of WBW, provided that the associations between the 3 dimensions are maintained at the moment of interpretation of the phenomenon.

Despite the statistical adequacy of model 3, the relative independence that exists between PA, NA, and EF is something that can be questioned from the theoretical point of view when the WBW is being analyzed in combination with other constructs. In these cases, as each dimension of the phenomenon needs to be evaluated separately, it cannot be said with certainty that WBW is being accessed, but rather the dimensions that compose it.

Moreover, the fact that one of these dimensions (NA) is characterized as negative in nature may lead to misinterpretation of the phenomenon when it is said, for example, that a certain variable can reduce the frequency of NA and that this would imply in an increase in the well-being experienced by the individual at work. According to the theoretical definition of the construct, the interpretation of increased WBW associated with the frequency of the affects could only be accessed through the prevalence of PA over NA. Consequently, the independent assessment of the association of NA with other variables would not be appropriate for explaining the occurrence of this phenomenon.

Disregarding the NA factor in the composition of the construct to protect its positive nature does not seem to be the best option either. Such comparisons have already been made in earlier studies of SWB construct, which is also partly understood through the affective balance resulting from the combination of high levels of PA and low levels of NA. As reported by Matthew Gallagher et al. (2009), although there are authors who advocate the exclusion of NA from the construct, it is precisely this prevalence of PA over NA that best reflects the hedonic base of the construct. Thus, verification of a high frequency level of PA experience would also not be sufficient to explain an increase in the general level of well-being, since it may also be accompanied by a high frequency level of NA, which would represent a low prevalence. We consider these theoretical aspects need to be taken into account when using model 3 to access WBW, even if statistically it shows evidence of adequacy.

Knowing that the confirmation of good fit in the measurement model (CFA) is a prerequisite for the evaluation of structural models (SEM) such as the hierarchical second-order factor model (Byrne, 2010), once the fit indices of model 3 were confirmed, we proceeded to the construction and testing of model 4 in order to check whether it would indeed prove to be adequate as well.

Byrne (2010) warns of the required caution when intending to test models with second-order factors. According to the author, it is necessary to add a constraint in one of the existing paths between the first-order factors and the second-order factor to ensure greater stability of the model. This would preferably be the insertion made in relation to the dimension of greatest statistical weight in the factor model. In the case of this model, the constraint was inserted in the WBW ▫ PA path.

Another strategy is also suggested by the author, especially for the representation of second-order hierarchical models that are formed by only three dimensions (Byrne, 2010). In such cases, it is necessary to ensure that the model is overidentified (i.e., that it can have at least one degree of freedom, allowing the number of parameters to be estimated to be less than the number of points existing in the model — such as variances and covariances) through an additional constraint (Byrne, 2010; Kline, 2011; Silva, 2006). Therefore, according to Byrne (2010), one can insert estimation equivalence constraints between parameters that produce estimate values that are close. Thus, following this guidance, an estimation constraint was inserted between the terms for disturbance, of the PA factor (d1) and of the EF factor (d3). After all the criteria for construction of the hierarchical model were met, the analysis was run.

Since the fit indices of the model originally tested for WBW representation through a second-order factor offered the possibility of improvement, the same model re-specification procedures were conducted by evaluating the modification index done in the evaluation of model 3. Through this analysis, the need was observed for parameter fitting in relation to the same items from model 3. The results of the indices of the model before the insertion of parameters (4A), after the insertion of the first parameter (PA1 ←→ PA4) (4B), the second (PA11 ←→ PA17) (4C), and the last one (NA12 ←→ NA18) (4D) are found in Table 4.

When the theoretical and statistical possibilities of parameter fitting were exhausted, the result of fitting model 4D (Figure 3) was slightly higher than that for model 3D ($X^2/df = 2.308 < X^2/df = 2.312$; TLI = 0.928 > TLI = 0.927; other indices equivalent), demonstrating, in a general manner, support for its acceptance.

Model	X^2/DF (≤ 5)	GFI (>.0.9)	CFI (>.0.9)	TLI (>0.95)	BIC (Lower)	RMSEA (90% CI) (≤ 0.08)
4A	2.747	.834	.911	.903	1214.016	.070
4B	2.501	.850	.924	.917	1138.258	.065
4C	2.389	.858	.930	.923	1105.932	.062
4D	2.308	.866	.934	.928	1083.483	.060

Table 4. Model 4 fit indices (WBW as a second-order factor) before and after model re-specifications

According to Martin Brunner et al. (2012), in testing theoretical-empirical models expressed through a higher order factor, the first aspect to be assessed is whether the model fits the data properly. If so, models of this nature allow us to explain the intercorrelations (such as common variance) between lower-order factors, while allowing the phenomenon to be assessed from a general and specific perspective (Brunner et al., 2012). Thus, based on the assumption that theoretically WBW should be explained by the combination of its three factors (PA, NA, and EF) and that statistically the model represented by the second-order factor proved to be appropriate, it is considered that model 4 offers more complete and complex possibilities for evaluation of the phenomenon in relation to model 3.

Upon verifying from the CFA performed in AMOS that model 4 — which comprehends well-being at work as a second-order factor derived from three main bases (PA, NA, and EF) — presented satisfactory fit indices, we proceed with the extraction of the second-order factor in SPSS. Therefore, the PCA was rotated over the three variables created from the mean of the items allocated to each factor (PA, NA, and EF), giving rise to a single-factor solution. It is observed that the PCA result in SPSS for model 4 indicated an explanatory capacity of 66.67% of the variance of the construct, higher than the 61.28% found in the PCA run with the scale items independently. A new composite (model 4) was then formed using the regression method of the PCA and was used as a basis of comparison for the adequacy of the other models.

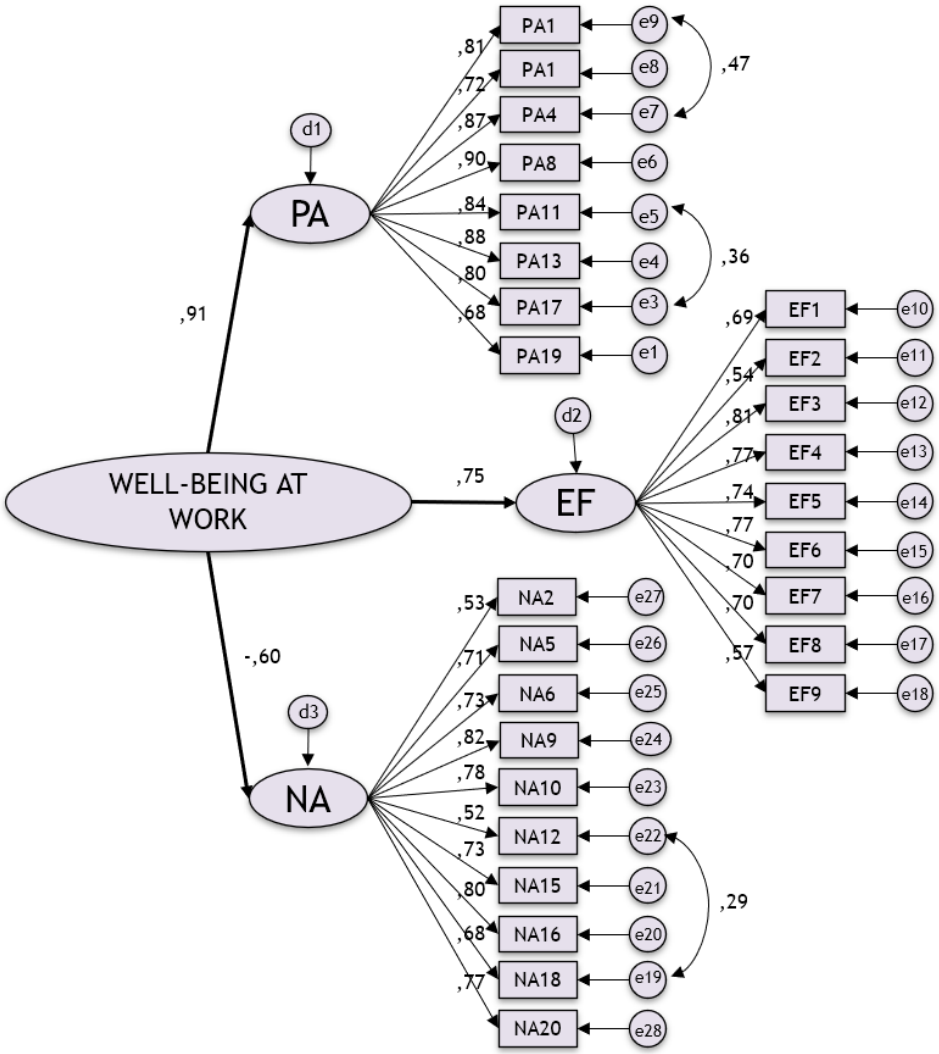

Figure 3. CFA for WBW second-order factor (model 4)

Finally, correlation analyses were done between the WBW scores derived from the four previously tested models (Table 5), including, therefore: the unified indicators (composites) representing the simple composite (model 1), the theoretical compositive (model 2), and the representation of the second-order factor (model 4) of WBW, as well as the three independent dimensions of WBW (PA, NA, and EF) (representing model 3). Additionally, we tested the correlations between these different models and the prevalence of positive affects over negative affects (PREV_PANA) indicator — used in the composition of model 2, because the creation of this indicator is an important step in the scale assessment process that allows WBW to be understood from an eminently positive perspective.

Variables	M	SD	1	2	3	4	5	6
1. Model 4	-	1.00	-					
2. Model 2	3.58	0.65	.995**	-				
3. Model 1	3.09	0.43	.954**	.957**	-			
4. PREV_PANA	3.33	0.75	.937**	.899**	.834**	-		
5. NA	2.38	0.85	-.717**	-.682**	-.493**	-.850**	-	
6. PA	3.06	0.90	.889**	.858**	.927**	.868**	-477**	-
7. EF	3.84	0.71	.835**	.885**	.876**	.592**	-.352**	.656**

** p < 0.01.

Note: Model 4 is represented here as the result of a composition generated through the regression of the factor analysis of the already condensed PA, NA, and EF (i.e., represented by the mean of the items that compose them). Therefore, this measure is not amenable to analysis of simple descriptive statistics (mean), having a predefined standard deviation of 1.00.

Table 5. Mean, standard deviation, and intercorrelations between WBW dimensions and measurement models

The correlation table shows that model 2 (theoretical composite) and model 4 (second-order factor) of well-being measurement presented a correlation level of almost 1.0 (r = 0.995, p < 0.01), which demonstrates that, in fact, there is an overlap. In other words, these two paths lead to the same result. As model 4 had already shown empirical support based on the model fit indices presented in the structural equation analysis, it can thus be taken as a reference to conclude that model 2 is also acceptable, since both revealed they have a highly similar behavior. Thus, data suggest that using a second-order factor or a theoretical composite are both legitimate strategies for measuring and interpreting well-being at work.

By contrast, the generation of a simple arithmetic mean (model 1) indicated that it is a slightly less adequate representative of WBW than the other three models tested. Despite having presented very high correlations as well, both with model 2 (r = 0.957, p < 0.01) and with model 4 (r = 0.954, p < 0.01), these were slightly weaker than the association that models 2 and 4 established with each other. Moreover, the simple composite (model 1), when compared to models 2 and 4, presented the lowest level of association with the hedonic basis of WBW (PREV_PANA) (from r = 0.834, p < 0.01, while the others were close to or above 0.9). In analyzing the correlations established between model 1 and the independent factors of WBW, it appears that the difference may be due to the imbalance of PA and NA input into the model, since the correlation with PA (r = 0.927, p < 0.01) was higher than that established by models 2 and 4 with

this factor, while the correlation with NA was much lower (r = -0.493, p < 0.01).

Therefore, it can be interpreted that there is evidence of convergent validity between models 1, 2, and 4, since the correlations reached a level strong enough (Joshanloo et al., 2017; Souza et al., 2017) (r>0.800) to indicate that the measurements were evaluating the same phenomenon. However, close analysis of the strength of the associations reinforces that the formula used to generate the theoretical composite in model 2 was more adequate than that used for the simple composite of model 1, since model 2 formula took into account the weights of each factor in the theoretical definition of the phenomenon, especially with regard to the joining of the two affective components (PREV_PANA). As pointed out by Busseri (2014), in relation to the subjective well-being composites, the composition of PA and NA into a single score, although found in the literature, still needed to be further investigated, and the results presented here contribute toward the indication of which paths are more or less appropriate at the time of this calculation in relation to WBW.

FINAL REMARKS

This study provides empirical data about methodological alternatives for measuring the phenomenon of well-being at work based on the instrument proposed by Paschoal and Tamayo (2008), the WBWS. Nevertheless, there are limitations to be considered. Although the number of participants met the minimum requirements for the statistical analyses, the generalization power of the study could be increased if the sample were larger and more representative, especially in terms of education, since that most participants had a very high level of education, which does not correspond to the reality of most Brazilian workers.

Despite this, results allow us to raise relevant reflections and guide decision-making regarding the use of the WBWS interpretation model in future research. From the analyses conducted, it could be seen that the four WBW measurement models are statistically viable, but theoretically they have significant differences that should be considered when choosing the interpretation strategy for the phenomenon.

In model 1 (simple composite) a theoretical fragility was identified, because the three dimensions of WBW (PA, NA, and EF) are indiscriminately joined in it, without considering the composition of the hedonic bases (which is translated as the prevalence of PA over NA) and of the eudaimonic base as foreseen in the original definition of the construct (Paschoal and Tamayo, 2008; Warr, 2007).

Such fragility was reflected, through the correlations, in the way this model behaved in relation to the other unifying proposals and, also, in relation to the representativeness of the independent factors of WBW. Therefore, it is recommended that this model not be adopted in future research.

In the same direction, model 3 presents important restrictions that must be considered. It is understood that the assessment of WBW through its three factors, individually, is important, however, it is advised that this configuration be used only when the researcher's interest is truly directed to a more micro level of manifestation of the phenomenon, limited to the behavior of its bases. This caveat is important because this mode of assessment requires constant simultaneous comparisons on the behavior of these three dimensions, especially since one of these factors has a negative nature, which misrepresents what is conceptually understood as a state of well-being, if it is assessed in isolation.

On the other hand, assuming that well-being is essentially a construct of a positive nature, having the possibility to safely assess it through a psychometric indicator that correctly translates this nature broadens the options for understanding the phenomenon from a higher-level theoretical perspective. Here, evidence of validity was presented for two models with single indicators derived from the WBWS: one formed through a theoretical composite (model 2) and another formed through a second-order factor (model 4), with both demonstrating theoretical and empirical adequacy. These two models presented elements of convergent validity that demonstrate they are distinct measurement strategies, but result in similar behaviors, and can be adopted according to which is more suitable for the methodological design proposed for the study.

In this connection, collecting evidence of validity for the theoretical composite model (model 2) is ºsting because, often, in exploratory studies that use, for example, regression analysis in SPSS, the use of WBW as a dependent variable is not feasible, leaving only the use of structural equation modeling programs as an alternative for fully understanding the variables that influence the level of well-being, either by using the representation of the second-order latent factor (model 4) or by using the WBW representation through its three dimensions independently (model 3). As model 4 proved feasible, the use of model 3 in the case of structural equation modeling would not be necessary because the hierarchical model (model 4) is constructed based on the measurement model (model 3) and should be preferred because it allows us to evaluate the phenomenon from a global viewpoint as well as from that of the specific behavior of its bases (Brunner et al., 2012).

Taking these data together, it is proposed that models 2 and 4 be prioritized in studies that adopt the WBWS, and that model 3 only be used in more specific research situations, whose design requires a detailed look at the behavior of each of the dimensions of well-being. It is also suggested these models continue to be tested and compared in longitudinal and correlational studies, in which the stability and coherence levels of these proposals can be better verified.

Although the results have revealed high congruence between models 2 and 4, the construction of the theoretical composite of the WBW model can be further refined. This could occur if the formula used took into consideration the analysis of variance of each of the WBW bases, so their weights could be proportioned according to their explanatory capacity about the phenomenon all together. Such a resource was not used in this study, considering that there is still little empirical data for advancing in determining the impact of each base on WBW as a whole. In any case, it is believed these comparisons can be very useful, especially in helping to clarify in theoretical terms the role of the hedonic and eudaimonic aspects in the worker's experience of well-being.

REFERENCES

Alberton, Gisele D. (2016). *Inteligência emocional, regulação das emoções e bem-estar no trabalho* (Master thesis). Universidade Federal da Bahia-BA

Albuquerque, Anelise S. & Tróccoli, Bartholomeu T. (2004). Desenvolvimento de uma escala de bem-estar subjetivo. *Psicologia: Teoria e Pesquisa*, *20*(2), 153-164. https://doi.org/10.1590/s0102-37722004000200008

Amorim-Ribeiro, Elisa M. B.; Neiva, Elaine R.; Macambira, Magno O. & Martins, Leonardo F. (2022). Well-being at work in processes of organizational change: The role of informal social networks. *Revista de Administração Mackenzie*, *23*(1), 1-26. https://doi.org/10.1590/1678-6971/eRAMG220125

Browne, Michael W. & Cudeck, Robert (1993). Alternative ways of assessing model fit. In: Kenneth A. Bollen & J. Scott Long (Eds.), *Testing structural equation models* (pp. 136-162). Sage.

Brunner, Martin; Nagy, Gabriel & Wilhelm, Oliver (2012). A Tutorial on Hierarchically Structured Constructs. *Journal of Personality*, *80*(4), 796-846. https://doi.org/10.1111/j.1467-6494.2011.00749.x

Busseri, Michael A. (2014). Toward a Resolution of the Tripartite Structure of Subjective Well-Being. *Journal of Personality*, *84*(4), 413-428. https://doi.org/10.1111/jopy.12116

Busseri, Michael A. & Sadava, Stan W. (2011). A review of the tripartite structure of subjective well-being: Implications for conceptualization, operationalization, analysis, and synthesis. *Personality and Social Psychology Review*, *15*(3), 290-314. https://doi.org/10.1177/1088868310391271

Byrne, Barbara M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed.). Routledge, Taylor & Francis

Carneiro, Laila Leite & Bastos, Antonio Virgílio Bittencourt (2020). Bem-estar relacionado ao trabalho: análise de conceitos e medidas. *Arquivos brasileiros de psicologia*. 72(2), 121-140. https://doi.org/10.36482/1809-5267.ARBP2020v72i1p.121-140

Carneiro, Laila Leite; Mendonça, Helenides; Ferreira, Maria Cristina; Pereira, Michelle Morelo; Chinelato, Renata Silva de Carvalho & Amorim, Silvia Miranda (2022). Bem-estar no trabalho: contribuições da Psicologia Positiva. In: Maria N. Carvalho-Freitas, Daiane R. C. Bentivi, Elisa M. B. Amorim-Ribeiro, Melissa M. Moraes, Raphael H. C. Di Lascio & Sabrina C. Barros (Orgs.), *Psicologia Organizacional e do Trabalho: Perspectivas Teórico-Práticas* (pp. 275-313). Vetor Editora.

Ceballos, Albanita G. C. & Santos, Gustavo B. (2015). Fatores associados à dor musculoesquelética em professores: Aspectos sociodemográficos, saúde geral e bem-estar no trabalho. *Revista Brasileira de Epidemiologia*, *18*(3), 702-715. https://doi.org/10.1590/1980-5497201500030015

Couto, Priscila R. & Paschoal, Tatiane (2012). Relação entre ações de qualidade de vida no trabalho e bem-estar laboral. *Psicologia Argumento*, *30*(70), 585-593. https://doi.org/10.7213/psicolargum.v30i70.20563

Demo, Gisela; Neiva, Elaine Rabelo; Coura, Karina Veloso; Gomide Júnior, Sinésio & Costa, Ana Carolina Rezende (2022). Do Organizational Virtues Enhance Work Well-being? The Mediator Role of HRM Practices. *Revista de Administração Contemporânea*, *26*(6), 1-16. https://doi.org/10.1590/1982-7849rac2022200144.en

Demo, Gisela & Paschoal, Tatiane (2016). Well-Being at Work Scale: Exploratory and confirmatory validation in the USA. *Paidéia (Ribeirão Preto), 26*(63), 35-43. https://doi.org/10.1590/1982-43272663201605

Diener, Ed (1984). Subjective well-being. *Psychological Bulletin*, *95*(3), 542-575. https://doi.org/10.1037//0033-2909.95.3.542

Disabato, David J.; Goodman, Fallon R.; Kashdan, Todd B.; Short, Jerome L. & Jarden, Aaron (2016). Different Types of Well-Being? A Cross-Cultural Examination of Hedonic and Eudaimonic Well-Being. *Psychological Assessment*, *27*(5), 1-12. https://doi.org/10.1037/pas0000209

Field, Andy (2009). *Descobrindo a estatística usando o SPSS*. Artmed.

Gallagher, Matthew W.; Lopez, Shane J. & Preacher, Kristopher J. (2009). The Hierarchical Structure of Well-Being. *Journal of Personality*, *77*(4), 1025-1050. https://doi.org/10.1111/j.1467-6494.2009.00573.x.The

Henderson, Luke W.; Knight, Tess & Richardson, Ben (2014). The Hedonic and Eudaimonic Validity of the Orientations to Happiness Scale. *Social Indicators Research*, *115*(3), 1087-1099. https://doi.org/10.1007/s11205-013-0264-4

Huta, Veronika & Ryan, Richard M. (2010). Pursuing Pleasure or Virtue: The Differential and Overlapping Well-Being Benefits of Hedonic and Eudaimonic Motives. *Journal of Happiness Studies*, *11*(6), 735-762. https://doi.org/10.1007/s10902-009-9171-4

Huta, Veronika & Waterman, Alan S. (2014). Eudaimonia and Its Distinction from Hedonia: Developing a Classification and Terminology for Understanding Conceptual

and Operational Definitions. *Journal of Happiness Studies*, *15*, 1425-1456. https://doi.org/10.1007/s10902-013-9485-0

Joshanloo, Mohsen; Capone, Vincenza; Petrillo, Giovanna & Caso, Daniela (2017). Discriminant validity of hedonic, social, and psychological well-being in two Italian samples. *Personality and Individual Differences*, *109*, 23-27. https://doi.org/10.1016/j.paid.2016.12.036

Keyes, Corey L. M.; Shmotkin, Dov & Ryff, Carol D. (2002). Optimizing well-being: the empirical encounter of two traditions. *Journal of Personality and Social Psychology*, *82*(6), 1007-1022. https://doi.org/10.1037/0022-3514.82.6.1007

Kline, Rex B. (2011). *Principles and practice of structural equation modeling*. *Structural Equation Modeling*. The Guilford Press. https://doi.org/10.1038/156278a0

Longo, Ylenio; Coyne, Iain; Joseph, Stephen & Gustavsson, Petter (2016). Support for a general factor of well-being. *Personality and Individual Differences*, *100*, 68-72. https://doi.org/10.1016/j.paid.2016.03.082

Meyer, John P. & Maltin, Elyse R. (2010). Employee commitment and well-being: A critical review, theoretical framework and research agenda. *Journal of Vocational Behavior*, *77*(2), 323-337. https://doi.org/10.1016/j.jvb.2010.04.007

O'Leary-Kelly, Scott W. & Vokurka, Robert J. (1998). The empirical assessment of construct validity. *Journal of Operations Management*, *16*(4), 387-405. https://doi.org/10.1016/S0272-6963(98)00020-5

Paschoal, Tatiane (2008). *Bem-estar no trabalho: relações com suporte organizacional, prioridades axiológicas e oportunidades de alcance de valores pessoais no trabalho* (Unpublished Doctoral dissertation), Universidade de Brasília.

Paschoal, Tatiane & Tamayo, Álvaro (2008). Construção e validação da escala de bem-estar no trabalho. *Avaliação Psicológica*, *7*(1), 11-22.

Paschoal, Tatiane; Torres, Claudio V. & Porto, Juliana B. (2010). Felicidade no trabalho: Relações com suporte organizacional e suporte social. *RAC Curitiba*, *14*(6), 1054-1072. https://doi.org/10.1590/s1415-65552010000700005

Perry, John L.; Nicholls, Adam R.; Clough, Peter J., & Crust, Lee (2015). Assessing model fit: Caveats and recommendations for confirmatory factor analysis and exploratory structural equation modeling. *Measurement in Physical Education and Exercise Science*, *19*(1), 12-21. https://doi.org/10.1080/1091367X.2014.952370

Ryan, Richard M., & Deci, Edward L. (2001). On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well-being. *Annual Review Psychology*, *52*, 141-166. https://doi.org/0066-4308/01/0201-0141

Ryan, Richard M., & Huta, Veronika (2009). Wellness as healthy functioning or wellness as happiness: the importance of eudaimonic thinking. *The Journal of Positive Psychology*, *4*(3), 202-204. https://doi.org/10.1080/17439760902844285

Ryff, Carol D. & Keyes, Corey L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, *69*, 719-727. https://doi.org/10.1037//0022-3514.69.4.719

Sant'anna, Liliane L.; Paschoal, Tatiane & Gosendo, Eliana E. M. (2012). Bem-estar no trabalho: relações com estilos de liderança e suporte para ascensão, promoção e

salários. *Revista de Administração Contemporânea*, *16*(5), 744-764. https://doi.org/10.1590/S1415-65552012000500007

Santana, Lhaís A. S. P., & Fernandes, Sônia R. P. (2017). Estratégias de coping e suas relações com o bem-estar no trabalho: um estudo com bombeiros militares. *Revista Brasileira de Psicologia*, *3*(2), 65-76.

Simone, Stefania De (2014). Conceptualizing wellbeing in the workplace. *International Journal of Business and Social Science*, *5*(12), 118-122.

Silva, Juliane S. F. (2006). *Modelagem de equações estruturais: apresentação de uma metodologia* (Unpublished Master thesis). Universidade Federal do Rio Grande do Sul.

Silva, Lília B. (2016). *Trabalho emocional, engajamento no trabalho e bem-estar no trabalho de artistas de espetáculo*. (Unpublished Master thesis). Universidade Federal da Bahia.

Siqueira, Mirlene M. M.; Orengo, Virgínia & Peiró, José M. (2014). Bem-estar no trabalho. In: Mirlene M. M. Siqueira (Org.), *Novas medidas do comportamento organizacional* (pp. 39-51). Artmed

Sobrinho, Fábio R., & Porto, Juliana B. (2012). Bem-estar no trabalho: um estudo sobre suas relações com clima social, coping e variáveis demográficas. *Revista de Administração Contemporânea*, *16*(2), 253-270. https://doi.org/10.1590/S1415-65552012000200006

Soraggi, Fernanda & Paschoal, Tatiane (2011). Relação entre bem-estar no trabalho, valores pessoais e oportunidades de alcance de valores pessoais no trabalho. *Estudos e Pesquisas em Psicologia*, *11*(2), 614-632. https://doi.org/10.12957/epp.2011.8397

Sousa, Alline A. & Dela Coleta, Marilia F. (2015). Perfil profissional, bem-estar e satisfação no trabalho de psicólogos que atuam em serviços de saúde pública. *Estudos de Psicologia (Campinas)*, *32*(2), 249-258. https://doi.org/10.1590/0103-166X2015000200009

Souza, Ana C.; Alexandre, Neusa M. C. & Guirardello, Edinêis B. (2017). Propriedades psicométricas na avaliação de instrumentos: avaliação da confiabilidade e da validade. *Epidemiologia e Serviços de Saúde*, *26*(3), 649-659. https://doi.org/10.5123/S1679-49742017000300022

Souza, Jessyca; Bertolini, Geysler R. F. & Ribeiro, Ivano (2014). Bem-estar no trabalho e políticas de gestão de pessoas em uma organização sem fins lucrativos. *Revista Eletrônica de Estratégia & Negócios*, *7*(2), 3-22, https://doi.org/10.19177/reen.v7e220143-22

Tiberious, Valerie (2014). Philosophical Methods in Happiness Research. In: David Boniwell & ConleyA. C. Ayres. (Orgs.), *The Oxford Handbook of Happiness* (pp. 315-325). Oxford University Press

Traldi, Maria T. F., & Demo, Gisela (2012). Comprometimento, bem-estar e satisfação dos professores de administração de uma universidade federal. *Revista Eletrônica de Administração*, *72*(2), 290-316. https://doi.org/10.1007/s13398-014-0173-7.2

Turban, Daniel B., & Yan, Wan (2016). Relationship of eudaimonia and hedonia with work outcomes. *Journal of Managerial Psychology*, *31*(6), 1006-1020. https://doi.org/10.1108/JMP-07-2015-0271

Warr, Peter (2007). Learning about employee happiness. *Revista Psicologia Organizações e Trabalho*, *7*(2), 133-140.

Waterman, Alan S. (1993). Two conceptions of happiness: Contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment. *Journal of Personality and Social Psychology*, *64*(4), 678-691. https://doi.org/10.1037//0022-3514.64.4.678

Waterman, Alan S. (2007). On the importance of distinguishing hedonia and eudaimonia when contemplating the hedonic treadmill. *The American Psychologist*, *62*(6), 612-3. https://doi.org/10.1037/0003-066X62.6.612

LAILA LEITE CARNEIRO

Psychologist, PhD in Organizational and Work Psychology, Associate Professor at Federal University of Bahia
laila_carneiro@hotmail.com
https://orcid.org/0000-0001-7183-0501

ANTÔNIO VIRGÍLIO BITTENCOURT BASTOS

Psychologist, PhD in Organizational and Work Psychology, Full Professor at Federal University of Bahia
antoniovirgiliobastos@gmail.com
https://orcid.org/0000-0002-1322-5749

FUNDING

Fundação de Amparo à Pesquisa da Bahia (FAPESB)

FORMATO DE CITACIÓN

Carneiro, Laila Leite & Bastos, Antônio Virgílio Bittencourt (2023). Well-being at work scale (WBWS): Gathering empirical evidence from different interpretation strategies. *Quaderns de Psicologia, 25*(1), e1729.
https://doi.org/10.5565/rev/qpsicologia.1729

HISTORIA EDITORIAL

Recibido: 09-12-2020
1ª revisión: 25-06-2022
2ª revisión: 02-12-2022
Aceptado: 11-01-2023
Publicado: 06-03-2023