Journal of Positive School Psychology http://journalppw.com
2022, Vol. 6, No. 10, 1023-1039

Linguistic Adaptation And Analysis Of The Psychometric Properties Of The Psychological Affect Scales (PAS-12), Work Engagement (COLA-11) And Post-Covid-19 Work Satisfaction And Well-Being (BSL-12C) In Ecuadorian Population

Juan Martin Cordero-Matovelle[1], Andrés Alexis Ramírez-Coronel[2,4,3,4,5,6,7,8], Gloria Alexandra Latacela[4,5,6], Edwin Alberto Maxi-Maxi[2,3,5], Cristina Carrasco-Carrillo[1], Viviana Calderón-Neira[1], Pedro Carlos Martínez-Suárez[2,3,5]

[1] Externa Talent Hunters (ETH), Cuenca, Ecuador.
[2] Laboratory of Psychometry and Ethology, Catholic University of Cuenca, Cuenca, Ecuador.
[3] Center for Research, Innovation and Technology Transfer (CIITT), Catholic University of Cuenca, Cuenca, Ecuador.
[4] Nursing career, Azogues campus, Catholic University of Cuenca, Ecuador.
[5] Health and Behavior Research Group (HBR), Catholic University of Cuenca, Cuenca, Ecuador.
[6]Azogues Campus Nursing Career Research Group, Catholic University of Cuenca, Cuenca, Ecuador.
[7] Research Group on Early Childhood Care, Development and Education, Ecuador.
[8] Epidemiology and Biostatistics Research Group, Universidad CES, Medellin, Colombia.

Correspondencia: Ramírez-Coronel, AA. Email: arc04878@gmail.com

Abstract

The main objective was to linguistically adapt and analyze the psychometric properties of the Psychological Affect Scales (PAS-12), Job Commitment (COLA-11) and Post-Covid-19 Job Satisfaction and Well-Being (BSL-12C) in the Ecuadorian population. Instrumental research was carried out by means of linguistic and cultural adaptation to the Ecuadorian context, analysis of the psychometric properties through reliability analysis (Cronbach's alpha and McDonald's), exploratory and confirmatory factor analysis of the three scales. The results in the three scales had Cronbach's alpha (α) and McDonald's alpha (ω) higher than .80 and the adjustment indexes in the Comparative Fix Index (CFI) were higher than .90, Root Mean Square Error of Approximation (RMSEA) lower than .07 and Standardized Root Mean Square Residual (SRMR) lower than .07. In conclusion, three scales are available to measure psychological affects, satisfaction, well-being and work commitment in adults who work in Ecuadorian companies or in the general population.

Keywords Psychometric properties, work engagement, well-being, anxiety, depression and stress.

Introduction

One of the emerging global challenges in the management of infectious diseases is dealing with the new 2019 coronavirus (1). The most common symptoms within 2-14 days include fever, fatigue, dry cough, myalgia, and dyspnea (2,3). As of March 1, 2020, the mortality rate was 3.6% in China and 1.5% outside China (4), and as of March 14, 2020, 135 countries/territories had confirmed cases, reports the World Health Organization (5).

With the extremely high infection rate and relatively high mortality, individuals naturally began to worry about COVID-19 (6). In fact, fear of contacting individuals possibly infected with COVID-19 has been reported (7,8). Unfortunately, fear can amplify the harm of the disease itself. The emergence of COVID-19 (9,10) and its pandemic nature has exacerbated fears worldwide, resulting in stigma in some cases (11). A characteristic nature of infectious diseases compared with other conditions is fear (12).

In late 2019 and early 2020 in the city of Wuhan, China, the outbreak of severe acute respiratory syndrome coronavirus type 2 disease or SARS-Cov-2 was first reported. Since then, international agencies such as the World Health Organization (WHO) declared Covid-19 a public health problem and a pandemic that needed to be addressed rapidly to expand scientific knowledge, track its spread and virulence, and advise countries and their populations on measures to protect health (13).

In this context and after the spread of the virus worldwide, countries adopted measures such as confinement to avoid massive contagion. The number of infections and deaths due to Covid-19 increased exponentially in Italy and Spain. All kinds of news and speculations about the new coronavirus circulated in the media and social networks, generating "coronaphobia" (14). Thus, changes in lifestyle (due to confinement) and social distancing have caused fear to grow silently and permanently in the entire population, with health personnel (physicians and nurses) being the most vulnerable, who express a spectrum of feelings through their lived experience, ranging from fear of contracting and spreading the virus to anger, conflict, frustration and anxiety (15,16).

In addition, the population in general and specifically public and private employees presented psychological disorders such as stress, anxiety and depression. Psychological affectations are a defense and preparation mechanism to respond to potentially threatening events; however, when they are chronic or irrational, they become a key component for the appearance of several psychiatric disorders (17). In order to facilitate public health initiatives to calm fears and psychological affectations in the population, a brief instrument to measure psychological affectations (anxiety, depression and stress) has been linguistically adapted and validated. On the other hand, in public and private employees, post-Covid-19 well-being and job satisfaction and job commitment are of utmost importance, therefore, two instruments are validated: the first, the General Scale of Job Commitment (COLA-11) and the second, the Post-Covid-19 Well-being and Job Satisfaction Questionnaire (BSL-12C) in Ecuadorian population.

In addition, studies show that social measures reduce COVID-19 anxiety (18). In addition to this, other research shows a relatively high prevalence of mental health problems, but these mental health problems do not correlate with quarantine control measures, but correlate with effects on casual life. In contrast, dissatisfaction with control measures significantly predicts their negative psychological outcomes (19).

In light of the results of these studies, it can be said that the measures taken differ according to the psychological conditions of individuals and their effect on daily life (19). Social isolation norms have consequences such as stressors resulting from the pandemic and difficult living conditions due to loss of employment and decreased income (20). Norms have reduced the likelihood of

coronavirus anxiety despite these negative consequences. The idea of reducing the risk of contamination by contributing to the measures seems to be formed. The measures create a sense of control in the pandemic process. Therefore, mental health professionals recommending social isolation measures will be seen as a way to alleviate coronavirus anxiety (19).

The virus affected the majority of the population psychologically, socially, economically and politically (20). Some of the psychological effects are traumatic stress, anxiety and depression (21). Moreover, fear of coronavirus is a new psychological syndrome (18). In determining possible risk factors for diseases, attention is focused on the etiological role of biological, social, and environmental factors. However, less attention is paid to the etiological role of psychological characteristics such as stress, cognition, and personality. A high level of psychological distress (depression and anxiety) is thought to impair various aspects of not only innate but also adaptive immunity (22). Experiencing stress for a long time due to blocking measures could also lead to increased psychological distress by decreasing sources of support (e.g., family), which increases the importance of personal resources such as relational variables and self-efficacy (23).

The main objective was to linguistically adapt and analyze the psychometric properties of the Psychological Affect Scales (PAS-12), Job Engagement (COLA-11) and Post-Covid-19 Job Satisfaction and Well-Being (BSL-12C) in Ecuadorian population.

Methodology

Research design

This research is of an instrumental type (24) and was conducted in three phases; in the first phase 94 items were elaborated and linguistically and culturally adapted to the Ecuadorian context and evaluated by six judges. As a result of the first phase (pilot application), three scales were obtained: 1) Psychological Affect Scale (PAS-12), 2) General Work Engagement Scale (COLA-11) and 3) Post-Covid-19 Work Satisfaction and Well-being Questionnaire (BSL-12C) whose psychometric properties were studied in the second phase. Finally, in the third phase (final application) the final version of the scales was studied. Prior to validation, descriptive analysis of the responses and psychometric refinement of the items was carried out by exploratory and confirmatory factor analysis (25-28).

Participants

The sample was composed of 580 participants from the Ecuadorian companies Graiman, vías del austro, servicable, MC comercializadora, proyectate and much better Ecuador (63% men and 37 women), with ages ranging from 18 to 59 years, the average age was 33 years (SD= 7.52). Twenty-three percent were 18 to 23 years old, 46% were 24 to 40 years old and 31% were 41 to 59 years old. Sampling was non-probabilistic by convenience. Inclusion criteria were participants who wished to participate voluntarily in the study, who had been working for the company for more than one year, and exclusion criteria were that the employees had a diagnosis of intellectual disability or cognitive impairment.

Instruments

Psychological Affect Scale (PAS-12). It consists of 12 items with dichotomous responses (yes/no), it is made up of three factors (stress, depression and anxiety). It was constructed and validated by Cordero Matovelle et al. (in press), reliability of α=.91 and ω=.91. After panel examination and total correlation tests of corrected items, twelve

items were retained with an acceptable total correlation of corrected items (.57 to .73). The CFI was .97 and the TLI was .94. The prevalence in Ecuadorian workers (n=230) was 37% stress (n=85), 31% depression (n=71) and 25% anxiety (n=58).

General Work Engagement Scale (COLA-11). It has 11 items with dichotomous responses (yes/no), and is made up of two factors (affective and normative). It was constructed and validated by Cordero Matovelle et al. (in press), reliability of α=.90 and ω=.91. After panel examination and total correlation tests of corrected items, eleven items were retained with an acceptable total correlation of corrected items (.39 to .76). The CFI was .94 and the TLI was .92.

Post-Covid-19 Well-Being and Job Satisfaction Questionnaire (BSL-12C). It consists of 12 items with dichotomous responses (yes/no), it is made up of four factors (management, team relationships, work organization and information) It was constructed and validated by Cordero Matovelle et al. (in press), reliability of α=.82 and ω=.82. After panel examination and total correlation tests of corrected items, twelve items were retained with an acceptable total correlation of corrected items (.25 to .59). The CFI was .91 and the TLI was .90.

Procedure

First, the items of the PAS-12, COLA-11 and BSL-12C scales were constructed, with three dimensions (Stress, Depression and Anxiety) for the PAS-12, with two dimensions (affective and normative) for the COLA-11 and with four dimensions (management, team relations, work organization and information) for the BSL-12C, then an analysis of the items was carried out with six experts with the questions of the scales. Each item was read, identifying the words used and their meaning within the Spanish language and Ecuadorian culture. In the next step, three professionals (two psychologists and a literary expert) were asked to evaluate the wording and comprehension of the statements, who concluded that the neutral wording of each statement makes them understandable for the adult population selected. Then a pilot study was applied, to observe how the items of the scales are answered and to identify inconveniences and each item, verifying the comprehension of the statement and the possible answer alternatives, in this way it was also verified that each person answered the totality of the items. Then, the sample was applied for analysis through the company Externa Talent Hunters (ETH), from the city of Cuenca, Ecuador. During the administration process, the participants will be accompanied by the researchers to answer doubts and solve any situation that may arise by telephone or video call. As ethical considerations, the Helsinki declarations were taken into account. The research was conducted in accordance with the international ethical guidelines for health-related research involving human subjects, developed by the Council for International Organizations of Medical Sciences (CIOMS). The ethical justification for conducting this type of health-related research on human subjects lies in its social and scientific value: the prospect of generating the knowledge and means necessary to protect and promote people's health. Patients, health professionals, researchers, public health officials and others rely on research results to carry out activities and make decisions that will have an impact on individual physical and psychological health, as well as on social welfare and the use of limited resources. Researchers, therefore, are obliged to ensure that proposed studies are scientifically sound,

have adequate background knowledge, and can generate valuable information. Although social and scientific value is the fundamental justification for conducting this research, researchers have a moral obligation to ensure that all research is conducted in a manner that preserves human rights and respects, protects, and is fair to study participants and the communities in which the research is conducted. Social and scientific value cannot legitimize that study participants or host communities be subjected to mistreatment or injustice.

Statistical analysis

The database was previously checked to detect incomplete data and univariate and multivariate atypical cases (29). Likewise, the distributions were analyzed in order to verify whether they conformed to the normality parameters; the distributions analyzed were intended to meet the normality criterion. Reliability calculations were executed using Cronbach's alpha (α) and McDonald's alpha (ω) to evaluate internal consistency. Subsequently, an exploratory and confirmatory factor analysis (CFA) will be carried out on the data from the Ecuadorian sample of the PAS-12 to determine the validity of the factor structure that defines each of the dimensions postulated in the test. The statistical analyses were carried out with the R statistical program. Three indexes were used to evaluate the fit of the model to the data: CFI (Comparative Fix Index), RMSEA (Root Mean Square Error of Approximation) and SRMR (Standardized Root Mean Square Residual). Current standards were followed to accept the indices: values near or above 0.95 were considered adequate for the CFI, those near or below 0.08 for the SRMR index and those below 0.07 for the RMSEA.

Results

Item analysis

First, we selected participants with the highest 26% of total scores as the high score group and participants with the lowest 26% as the low score group (30), and then performed a t-test to examine the differences between the high and low score groups for each item. They showed that each item differed significantly between the high and low score groups. In addition, item-total correlations were calculated, the results of which indicated that all items exceeded the acceptable criterion of 0.30. In other words, the results of the item analysis demonstrated the adequate quality of each item of each of the three scales.

Table 1. Reliability of the Psychological Affect Scale (PAS-12).

	mean	sd	item-rest correlation	α	ω
1	0.2348	0.425	0.619	0.909	0.915
2	0.2043	0.404	0.682	0.906	0.913
3	0.0913	0.289	0.695	0.907	0.911
4	0.2783	0.449	0.697	0.906	0.912
5	0.2304	0.422	0.586	0.911	0.916
6	0.1174	0.323	0.699	0.906	0.911
7	0.1739	0.380	0.574	0.911	0.917
8	0.1000	0.301	0.696	0.906	0.911
9	0.1261	0.333	0.686	0.906	0.912
10	0.1304	0.338	0.658	0.907	0.913

11	0.0913	0.289	0.646	0.908	0.913
12	0.1957	0.398	0.731	0.904	0.911
Scale	0.164	0.263		0.906	0,913

The total item statistics show that the Psychological Affect Scale (PAS-12) has a Cronbach's Alpha of 0.906, considered excellent. The scale items exceed a Cronbach's Alpha >0.80 with items seven, five and one being most significant by minimal differences. The total correlations of the items are >0.300, so the instrument has good correlations among all the items.

Table 2. Reliability of the General Work Engagement Scale (COLA-11).

	mean	**sd**	**item-rest correlation**	**α**	**ω**
a1	0.678	0.468	0.715	0.889	0.896
a2	0.783	0.413	0.764	0.887	0.892
a3	0.683	0.466	0.617	0.895	0.901
a4	0.674	0.470	0.550	0.898	0.905
a5	0.809	0.394	0.775	0.887	0.892
n6	0.322	0.468	0.387	0.907	0.912
n7	0.587	0.493	0.662	0.892	0.900
n8	0.530	0.500	0.635	0.894	0.901
n9	0.609	0.489	0.612	0.895	0.902
n10	0.730	0.445	0.767	0.886	0.893
n11	0.535	0.500	0.612	0.895	0.902
scale	0.631	0.331		0.902	0.908

The total item statistics show that the General Work Engagement Scale (COLA-11) has a Cronbach's Alpha of 0.902 considered excellent. The items of the scale exceed a Cronbach's Alpha >0.80 being most significant item n6 followed by a4 and items a3, n9, n11 with the same coefficients. The total correlations of the items are >0.300, however the item that correlates the least with the scale is item n6, thus maintaining a mostly good correlation between all the items.

Table 3. Post-Covid-19 Well-Being and Job Satisfaction Questionnaire (BSL-12C).

	mean	**sd**	**item-rest correlation**	**α**	**ω**
d1	0.835	0.372	0.377	0.814	0.819
d2	0.870	0.338	0.428	0.810	0.816
d3	0.804	0.398	0.340	0.818	0.821
r4	0.878	0.328	0.425	0.811	0.815
r5	0.913	0.282	0.248	0.822	0.827
r6	0.857	0.351	0.613	0.796	0.796
o7	0.787	0.410	0.551	0.799	0.802
o8	0.752	0.433	0.537	0.801	0.804

o9	0.813	0.391	0.552	0.800	0.803
in10	0.535	0.500	0.496	0.806	0.809
in11	0.826	0.380	0.506	0.804	0.807
in12	0.783	0.413	0.586	0.796	0.800
scale	0.804	0.224		0.820	0.823

The total item statistics show that the Post-Covid-19 Well-Being and Job Satisfaction Questionnaire (BSL-12C). has an overall Cronbach's Alpha of 0.820 considered as good. The scale items considered as good that exceed a Cronbach's Alpha >0.80 are d1, d2, d3, r4, r5, o8, o9, in10, in11; while items r6, o7 and in12 possessing a coefficient >0.70 and <0.80 are considered as acceptable. Most of the total item correlations are >0.300 however the item that does not correlate favorably is r5 with a correlation value of 0.248. The items that correlate most favorably with the scale and with a value >0.80 are d1, d2, d3, r4, r6, o7, o8, o9, in10, in11, in12.

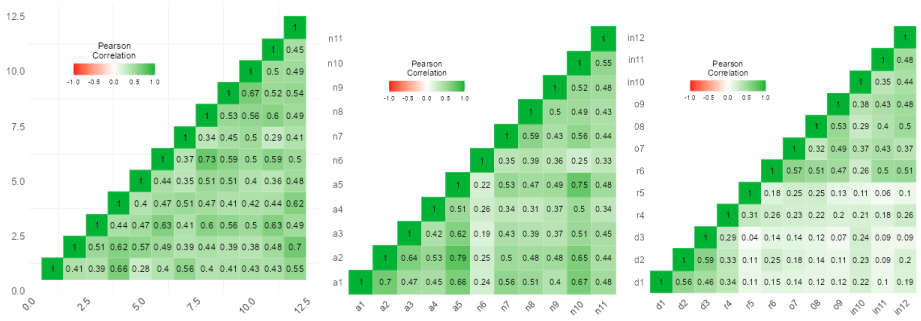

Figure 1. Pearson correlations between the items of the scales..

The three scales (PAS-12; COLA-11 and BSL-12C) have correlations greater than zero with a tendency to +1, which shows that the values are directly correlated. The scale with the highest correlation indicators is the PAS-12 with its items 6 and 8, which are the values with the highest correlation strength, followed by items 2 and 12. The COLA-11 scale has a higher correlation strength in its items a5 and a2, followed by a5 and n10. The items with the highest correlation in the BSL-12C questionnaire are d3 and d2 followed by o7 and r6.

Exploratory factor analysis

In this section we performed an EFA (exploratory factor analysis) using the principal components method with oblique rotation. The Kaiser-Meyer-Olkin (KMO) value was >0.90 for all three scales, while Bartlett's test of sphericity showed adequate values, indicating that this sample was suitable for performing the EFA. Subsequently, we used parallel analysis to examine the factor structure, which is one of the most accurate methods for determining a number of factors (30). The results of the parallel analysis showed that this sample supported a two-factor solution. Finally, three factors were extracted for the PAS-12 scale, two factors for the COLA-11 scale and four factors for the BSL-12C questionnaire by the principal components method with oblique rotation. The PAS-12 scale loaded four items for each

factor. And seven items loaded on factor 1 and
five items loaded on factor 2.

Table 4. Factor loadings of the Psychological Affect Scales (PAS-12), Work Engagement (COLA-11) and Post-Covid-19 Well-being and Job Satisfaction (BSL-12C) in Ecuadorian population.

	Factor	Indicator	Estimate	SE	Z
PAS-12	Estrés	1	0.337	0.0256	13.17
		4	0.337	0.0263	12.81
		7	0.257	0.0235	10.97
		10	0.212	0.0212	10.00
	Depresión	2	0.261	0.0254	10.27
		5	0.247	0.0260	9.49
		8	0.199	0.0184	10.84
		11	0.200	0.0175	11.42
	Ansiedad	3	0.224	0.0164	13.62
		6	0.243	0.0187	13.00
		9	0.234	0.0193	12.13
		12	0.274	0.0237	11.59
COLA-11	Afectivo	a1	0.362	0.0266	13.65
		a2	0.363	0.0219	16.61
		a3	0.322	0.0276	11.65
		a4	0.279	0.0290	9.63
		a5	0.348	0.0208	16.75
	Normativo	n6	0.186	0.0316	5.89
		n7	0.348	0.0297	11.71
		n8	0.333	0.0308	10.79
		n9	0.317	0.0302	10.53
		n10	0.371	0.0249	14.90
		n11	0.325	0.0307	10.58
BSL-12C	Dirección	d1	0.2435	0.0249	9.80
		d2	0.2896	0.0222	13.06
		d3	0.2715	0.0262	10.36
	Relaciones entre equipo	r4	0.1286	0.0233	5.53
		r5	0.0782	0.0202	3.87
		r6	0.2572	0.0251	10.24
	Organización del trabajo	o7	0.2694	0.0259	10.42
		o8	0.2859	0.0274	10.45
		o9	0.2666	0.0257	10.39
	Información	in10	0.2781	0.0340	8.19
		in11	0.2512	0.0247	10.18
		in12	0.3055	0.0264	11.55

The exploratory factor analysis (EFA) for the PAS-12 scale demonstrates the existence of three latent variables each grouping four items: Factor 1 (Stress) = items 1, 4, 7, 10;

Factor 2 (Depression) = items 2, 5, 8, 11; Factor 3 (Anxiety) = items 3, 6, 9, 12; the highest factor loadings for this scale are found in items 1 and 4 which are >0.3.

The PFA of the COLA-11 scale presents the existence of a latent variable grouped in five items: Factor 1 (Affective) = items a1, a2, a3, a4, a5 and another latent variable composed of six items grouped as: Factor 2 (Normative) = items n6, n7, n8, n9, n10, n1; the most representative factor loadings of the items of this scale are for n7, n8, n9, n10 and n11 which are >0.3. Finally, the AFE of the BSL-12C questionnaire organizes the existence of four latent variables organized as follows: Factor 1 (Management) = items d1, d2, d3; Factor 2 (Team relationships) = items r4, r5, r6; Factor 3 (Work organization) = items o7, o8, o9; Factor 4 (Information) = items in10, in11, in12; the highest factor loading on this scale is maintained by item in12 >0.3.

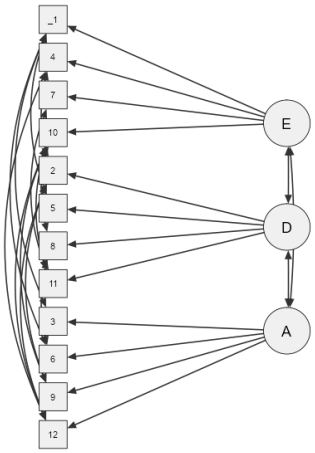

Figure 2. Model of the Psychological Affect Scale (PAS-12).
Note: E=Stress, D=Depression and A=Anxiety.

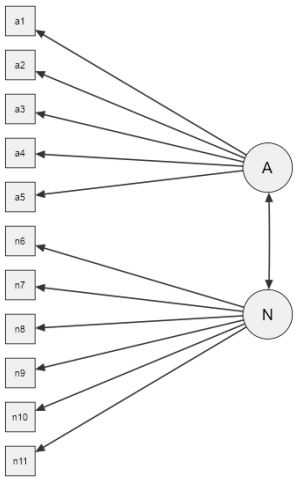

Figure 3. Model of the General Work Engagement Scale (COLA-11).
Note: A=Affective (a1, a2, a3, a4, a5) and N=Normative (n6, n7, n8, n9, n10, n11).

Figure 2 shows the distribution obtained from the factor loadings analysis, which shows that for the Psychological Affect Scale (PAS-12) there are three factors, each grouped by four items. Figure 3 shows the distribution obtained from the factor loadings analysis, which shows that for the General Work Engagement Scale (COLA-11) there are two factors, each grouped by six items. Figure 4 shows the distribution obtained from the factor loadings analysis, which shows that for the Post-Covid-19 Job Satisfaction and Well-Being Questionnaire (BSL-12C) there are four factors grouped by three items each.

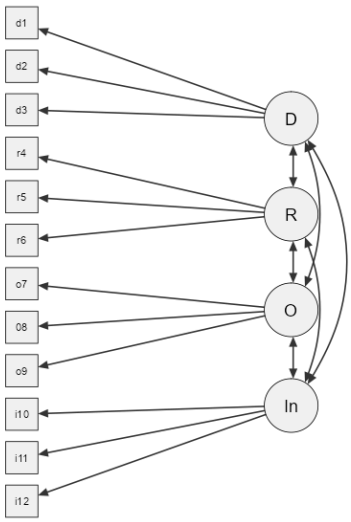

Figure 4. Model of the Post-Covid-19 Well-being and Job Satisfaction Questionnaire (BSL-12C).

Notes: D=Management (d1, d2, d3), R=Team relationships (r4, r5, r6), O=Organization of work (o7, o8, o9) and In=Information (In10, In11, In12).

Three indices were used to evaluate the fit of the model to the data: Comparative Fix Index (CFI), Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR). Values near or above .90 were considered a for CFI; those near or below .08, for SRMR; and those below .07 for RMSEA, with the upper limit of their confidence interval below .08 as indicators of an adequate fit of the model to the data, the results on all three scales fitted on all fit indices.

Table 5. Fit indices of the Psychological Affect scales (PAS-12), General Work Engagement Scale (COLA-11) and the Post-Covid-19 Well-Being and Job Satisfaction Questionnaire (BSL-12C).

	CFI	TLI	SRMR	RMSEA	AIC	BIC
PAS-12	.968	.940	.040	.053	692	881
COLA-11	.940	.923	.044	.055	2095	2212
BSL-12C	.912	.901	.060	.060	1785	1929

Discussion

The main objective was to linguistically adapt and analyze the psychometric properties of the Psychological Affect Scale (PAS-12), the Work Engagement Scale (COLA-11) and the Post-Covid-19 Work Satisfaction and Well-Being Scale (BSL-12C) in the Ecuadorian population. The results of the psychometric properties fit in the Comparative Reliability Index (CFI), Mean Error of Approximation (RMSEA) and Standardized Mean Residual (SRMR) and Cronbach's alpha (α) and McDonald reliability (ω) were greater than .8 in the three scales.

Commitment is a construct that has been closely studied, being understood through dimensions such as participation, effectiveness, energy, among others, and contrasted with burnout, lack of effectiveness and cynicism (32). In the work environment, committed employees show greater effectiveness in their work activities and are able to cope with significant work demands; commitment, being antagonistic to the presence of burnout, is observed as an experience of positive stress developed in favorable working conditions that increase with self-efficacy, autonomy, among others, and decreases when there are disproportionate demands (33). Since commitment is expressed as the opposite of burnout, these two dimensions are generally observed to be negatively related.

The attention given to the dimensions opposed to burnout has not been given significant consideration; however, commitment has been studied empirically, and currently there are instruments for measuring commitment at work, such as the Utrecht Work Engagement Scale (UWES-3) in its latest ultra-short validation, showing evidence of validity in a sample of 200 Peruvian workers; In relation to its dimensionality, it showed a satisfactory Mokken score in each of its items and in its totality 0.85 (0.02); in reliability it obtained a rhoMS coefficient = 0.94; with a 95% confidence interval between 0.92 and 0.95; sampled and population-wise, its reliability magnitude is high; the instrument's validity evidence is satisfactory in its ultra-short version (34). This version of the UWES-3 stems from its original 17-item version, the UWES-17 scale, to later develop shorter versions such as the nine-item UWES-9, preserving the three dimensions of the original version (35).

Job stress and anxiety are important indicators of people's health, as well as for performance and satisfaction in general (36), and these indicators are crucial predictors in explaining negative or positive outcomes in work environments, with high levels of stress and anxiety being negatively related to low levels of job satisfaction and commitment (37).

The role that a workplace plays in preventing disruptions in its functioning and promoting wellness is important for organizations, through the interest in wellness their beneficiaries acquire remarkable gains from the launching of wellness programs in their employees, among labor improvements are the reduction of absenteeism of their employees, injuries in jobs with degrees of risk and workers' compensation claims (38).

Employers should understand the importance of the role of well-being in their employees in order to continue improving the profitability of their business and in turn is used as a competitive advantage when recruiting and keeping employees in their jobs (8). Anxiety as an occupational factor associated with work activity expresses in employees symptoms such as tremors, palpitations when they are at work or think about it, one of the ways to estimate the anxiety index is through the JAS with 106 items, this version contained criteria for anxiety related to ICD-10, DSM-IV and information provided by the patient (39), For the evaluation of work-related anxiety, subscales, dimensions and global value, can be analyzed in terms of the 70 items of JAS in its current version. The psychometric properties of the JAS show a Cronbach's Alpha ($\alpha = .98$). To estimate work-related anxiety in a timely manner, a Workplace Phobia Scale (WPS), a questionnaire constructed from 13 items of the 70 items, is found. A study developed a new short version of the JAS evaluating its psychometric properties, the scale focuses on stimulus-related panic symptoms and avoidance behaviors, the two as typical aspects of phobias; this new reduced scale consists of 15 items with a reliability ($\omega = 0.95$) and reliability of 0.95 (40).

Unlike other organizational science constructs, well-being at work is very well related to the daily work and life experiences of the members of an organization (41). Thus, there are scales such as the EMPWELL work well-being scale created in India, an instrument tested in two samples of 202 and 536 participants with which its factors and the confirmatory factor analysis were determined, the scale has four factors PIL (Life Purpose), WLB (Work Life Balance), PW (Physical Well-being) and JW (Work Well-being), in the validity analysis it has as a result a path coefficient of 0.724, which is above the ideal threshold of 0.70 (42).

Acknowledgments

We thank the General Manager of Externa Talent Hunters (ETH) Dr. Juan Martín Cordero and his team, and the Corporación Ecuatoriana para el Desarrollo de la Investigación y la Academia (CEDIA). This article is a product of the project on the validation of a post-COVID-19 psychological factors assessment instrument in work environments, within the framework of the EI-CONECTA program (JLE-CN-2021-0045).

Conflict of interest

The authors declare that there is no conflict of interest.

References

1. Riou J, Althaus CL. Pattern of early human-to-human transmission of Wuhan 2019 novel coronavirus (2019-nCoV), December 2019 to January 2020. Eurosurveillance, 2020;25(4):2000058.
2. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, Yu T. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. The Lancet. 2020;395(10223):507-513.
3. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, Du B. Clinical characteristics of coronavirus disease 2019 in China. New England journal of medicine. 2020;382(18):1708-1720.
4. Baud D, Qi X, Nielsen-Saines K, Musso D, Pomar L, Favre G. Real estimates of mortality following COVID-19 infection. The Lancet Infectious Diseases. 2020.
5. World Health Organization Coronavirus disease (COVID-2019): Situation report-54. Retrieved March 16, 2020, from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200314sitrep-54-covid-19.pdf?sfvrsn=dcd46351_2
6. Du RH, Liang LR, Yang CQ, Wang W, Cao TZ, Li M, Hu M. Predictors of mortality for patients with COVID-19 pneumonia caused by SARS-CoV-2: a prospective cohort study. European Respiratory Journal. 2020;55(5).
7. Lin CY. Social reaction toward the 2019 novel coronavirus (COVID-19). Social Health and Behavior.2020;3(1):1–2.
8. Pinchak C. Pandemia por coronavirus (COVID-19); sorpresa, miedo y el buen manejo de la incertidumbre en la familia. Archivos de Pediatría del Uruguay. 2020;91(2):76-77.
9. Zhao S, Lin Q, Ran J, Musa SS, Yang G, Wang W, Wang MH. Preliminary estimation of the basic reproduction number of novel coronavirus (2019-nCoV) in China, from 2019 to 2020: A data-driven analysis in the early phase of the outbreak. International journal of infectious diseases. 2020;92(1): 214-217.
10. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. The Lancet. 2020;395(10223):497–506.
11. Centersfor Disease Control and Prevention Coronavirus Disease 2019 (COVID-19): Manageanxiety & stress. Retrieved March 16, 2020. from: https://www.cdc.gov/coronavirus/2019-ncov/prepare/managingstress-anxiety.html
12. Ornell F, Schuch JB, Sordi AO, Kessler FH. Pandemic fear and

COVID-19: mental health burden and strategies. Brazilian Journal of Psychiatry. 2020;42(3): 232-235.
13. Wang J, Zhou M, Liu F. Reasons for healthcare workers becoming infected with novel coronavirus disease 2019 (COVID-19) in China. J Hosp Infect, 2020.
14. Amin S. The psychology of coronavirus fear: Are healthcare professionals suffering from corona-phobia?. International Journal of Healthcare Management. 2020:1-8.
15. Fawaz M, Samaha A. The psychosocial effects of being quarantined following exposure to COVID-19: A qualitative study of Lebanese health care workers. International Journal of Social Psychiatry. 2020.
16. Greenberg N, Docherty M, Gnanapragasam S, Wessely S. Managing mental health challenges faced by healthcare workers during covid-19 pandemic. BMJ. 2020:368.
17. Lu W, Wang H, Lin Y, Li L. Psychological status of medical workforce during the COVID-19 pandemic: A cross-sectional study. Psychiatry research. 2020: 112936.
18. Ahorsu DK, Lin CY, Imani V, Saffari M, Griffiths MD, Pakpour AH. The Fear of COVID-19 Scale: Development and Initial Validation. International Journal of Mental Health and Addiction. 2020. https://doi.org/10.1007/s11469-020-00270-8
19. Milman E, Lee SA, Neimeyer RA. Social isolation as a means of reducing dysfunctional coronavirus anxiety and increasing psychoneuroimmunity. Brain, Behavior, and Immunity. 2020, 87: 38–139. https://doi.org/10.1016/j.bbi.2020.05.007
20. Zhu S, Wu Y, Zhu CY, Hong WC, Yu ZX, Chen ZK, Chen ZL, Jiang DG, Wang YG. The immediate mental health impacts of the COVID-19 pandemic among people with or without quarantine managements. Brain, Behavior, and Immunity. 2020, 87:56–58. https://doi.org/10.1016/j.bbi.2020.04.045
21. Arpaci I, Karatas K, Baloglu M. The development and initial tests for the psychometric properties of the COVID-19 Phobia Scale (C19P-S). Personality and Individual Differences. 2020, 164: 110108–110106. https://doi.org/10.1016/j.paid.2020.110108
22. Zandifar A, Badrfam R. Iranian mental health during the COVID-19 epidemic. Asian Journal of Psychiatry. 2020, 51:101990. https://doi.org/10.1016/j.ajp.2020
23. Losada-Baltar A, Jiménez-Gonzalo L, Gallego-Alberto L, Pedroso-Chaparro MD, Fernandes-Pires J, Márquez-González M. "We're staying at home". Association of self-perceptions of aging, personal and family resources and loneliness with psychological dis- tress during the lock-down period of COVID-19. The Journals of Gerontology: Series B. 2020; 20(20):1–7. https://doi.org/10.1093/geronb/gbaa048
24. Ato M, López-García JJ, Benavente A. Un sistema de clasificación de los diseños de investigación en psicología. Anales de Psicología/Annals of Psychology.

2013; 29(3), 1038- 1059. https://doi.org/10.6018/analesps.29.3.178511

25. Knaak S, Patten S, Stuart H. Measuring stigma towards people with opioid use problems: Exploratory and confirmatory factor analysis of the Opening Minds Provider Attitudes Towards Opioid-Use Scale (OM-PATOS). Int J Ment Health Addict [Internet]. 2022;1–12. http://dx.doi.org/10.1007/s11469-022-00788-z
26. Schmitt TA. Current methodological considerations in exploratory and confirmatory factor analysis. J Psychoeduc Assess [Internet]. 2011;29(4):304–21. Disponible en: http://dx.doi.org/10.1177/0734282911406653
27. Exploratory and confirmatory factor analysis. En: Applied Multivariate Statistics for the Social Sciences. 5th Edition. Londres, Inglaterra: Routledge; 2012. p. 337–406.
28. Fukumori H. Examination of the construct validity of the Focusing Manner Scale 18(FMS-18) with exploratory and confirmatory factor analysis. Pers-centered exp psychother. 2022;21(1):57–72. http://dx.doi.org/10.1080/14779757.2021.1898454
29. Handley G, Kubota J, Cloutier J. Interracial contact differentially shapes brain networks involved in social and non-social judgments from faces: a combination of univariate and multivariate approaches. Soc Cogn Affect Neurosci. 2022;17(2):218–30. https://doi.org/10.1093/scan/nsab090
30. Kelley TL. The selection of upper and lower groups for the validation of test items. J Educ Psychol. 1939;30(1):17–24. https://psycnet.apa.org/fulltext/1939-03313-001.pdf
31. Hayton JC, Allen DG, Scarpello V. Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. Organ Res Methods [Internet]. 2004;7(2):191–205. http://dx.doi.org/10.1177/1094428104263675
32. Schaufeli W, Bakker B, Salanova M. The Measurement of Work Engagement With a Short Questionnaire: A Cross-National Study. Educational and Psychological Measurement. 2006; 66(4): 701-716.
33. Demerouti E, Bakker A, Nachreiner F, Schaufeli W. The Job Demands–Resources Model of Burnout. 2001; 86(3): 499-512.
34. Merino C, Lozano M, Lima S, Calderón G, Juárez A, Toledano F. Ultrashort Version of the Utrecht Work Engagement Scale (UWES-3): A Psychometric Assessment. Int J Environ Res Public Health. 2022; 19(2): 890.
35. Schaufeli W, Salanova M, González V. The Measurement of Engagement and Burnout: A Two Sample Confirmatory Factor Analytic Approach. Journal of Happiness Studies. 2002; 3: 71–92.
36. Borg M, Riding R, Falzon J. Stress in teaching: A study of occupational stress and its determinants, job satisfaction and career commitment among primary schoolteachers. Educational Psychology. 1971; 11(1): 59–75.
37. Warr P. The measurement of well-being and other aspects of mental

health. Journal of Occupational Psychology. 1990; 63(3): 193–210.
38. Omosehin O, Smith A. Nationality, Ethnicity and the Well-Being Process in Occupational Samples. Open Journal of Social Sciences. 2019; 7: 133-142.
39. Khatri P, Gupta P. Development and validation of employee wellbeing scale – a formative measurement model. International Journal of Workplace Health Management. 2019; 12(5): 352-368.
40. Linden M, Muschalla B, Olbrich D. Die Job-Angst-Skala (JAS). Ein Fragebogen zur Erfassung arbeitsplatzbezogener Ängste. Zeitschrift für Arbeits- und Organisationspsychologie. 2008; 52(3): 126-134.
41. Schmalbach B, Kalkbrenner A, Bassler M, Hinz A, Petrowski K. Psychometric properties of a short version of the Job Anxiety Scale. BMC Med Res Methodol. 2020; 20(1):87.
42. Puja K, Pragya G. Development and validation of employee wellbeing scale – a formative measurement model. International Journal of Workplace Health Management. 2019; 12(5): 352-368.

Appendix in Spanish of the scales

Apéndice 1. Escala de Afectaciones psicológicas (PAS-12).

Ítems		Si/No
1	En este último mes, ha experimentado sueños angustiosos recurrentes.	
2	Durante las últimas semanas, ha tenido problemas para dormirse o ha tenido ganas de excesivas de dormir.	
3	En los últimos 6 meses, ha tenido la sensación de estar con los nervios de punta la mayor parte del tiempo.	
4	En los últimos 6 meses, ha tenido la sensación de estar con los nervios de punta la mayor parte del tiempo.	
5	En los últimos 6 meses, ha tenido la sensación de estar con los nervios de punta la mayor parte del tiempo.	
6	En los últimos 6 meses, ha notado que tiene dificultad para concentrar su mente en algo específico.	
7	En este último mes, ha tenido dificultad para experimentar emociones positivas (felicidad, amor, satisfacción).	
8	Durante las últimas semanas, ha sentido dificultad para concentrarse en sus actividades habituales.	
9	En los últimos 6 meses, se ha sentido más irritable de lo normal.	
10	En este último mes, se ha sentido más irritable frente a personas u objetos.	
11	Durante las últimas semanas, ha experimentado sentimientos de culpa o inutilidad.	
12	En los últimos 6 meses, ha tenido dificultad para quedarse dormido/a, se ha despertado entre la noche o ha tenido sueños angustiosos.	

Nota de los ítems: estrés (1,4,7,10), depresión (2,5,8,11) y ansiedad (3,6,9,12).

Apéndice 2. Escala General de Compromiso Laboral (COLA-11).

Ítems		Si/No
1	En la actualidad, se siente más encariñado/a con su Empresa.	
2	En la actualidad, la Empresa representa una parte muy importante en su vida.	
3	Los problemas por los cuales está atravesando la Empresa actualmente, representan una preocupación para usted.	
4	Durante este tiempo, ha resaltado cuestiones positivas de su Empresa frente a otras personas.	
5	le gustaría continuar trabajando en esta Empresa por el cariño que ha desarrollado hacia ella.	
6	Siente una obligación moral de pertenecer a esta Empresa, que le impide buscar nuevas oportunidades en otro lado.	
7	A pesar de tener mayores beneficios en otro lugar, se sentiría incómodo/a dejando su Empresa en esta situación.	
8	Le provoca un sentimiento de culpa el pensar en cambiar de Empresa, actualmente, considerando todos los beneficios y oportunidades que le han brindado en este tiempo.	
9	En esta situación, siente que no puede abandonar su Empresa porque tiene algunas responsabilidades que cumplir.	
10	Cree que ahora más que nunca, su Empresa se ha ganado su fidelidad.	
11	Se siente en deuda con la Empresa y su gente, por todo lo que le han dado.	

Nota de los ítems: Afectivo (1,2,3,4,5) y Normativo (6,7,8,9,10,11)

Apéndice 3. Cuestionario de Bienestar y Satisfacción Laboral Post-Covid-19 (BSL-12C).

Ítems		Si/No
1	En este tiempo, ha trabajado juntamente con su jefe para resolver cualquier inconveniente presentado en el ámbito laboral.	
2	A partir de la crisis producida por el Covid-19, usted ha tenido el apoyo de su jefe cuando lo ha necesitado.	
3	Su jefe ha respaldado sus decisiones durante este tiempo.	
4	Trabajar con su equipo, le brinda estabilidad y tranquilidad para sobrellevar esta crisis.	
5	A partir de la pandemia, se han mantenido buenas relaciones entre los colaboradores de las diferentes áreas.	
6	La mayor parte de personas de su equipo, se apoyan entre sí para salir adelante en este tiempo.	
7	Actualmente, siente que las directrices para cumplir sus funciones son claras.	
8	Durante este tiempo, la Empresa ha organizado sus actividades para que se realicen en la jornada laboral establecida.	
9	Actualmente, las responsabilidades que tiene a su cargo son claras para usted.	
10	Conoce los cambios que se están implementando en su área de trabajo.	
11	A raíz de la pandemia, se han utilizado canales de comunicación adecuados para transmitir la información a todas las personas.	

12	La información que usted ha recibido sobre la situación Empresa, en este tiempo, ha provenido de fuentes confiables.

Nota de los ítems: Dirección (1,2,3), Relaciones entre equipo (4,5,6), Organización del trabajo (7,8,9) e Información (10,11,12).