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ORIGINAL RESEARCH

Psychometric Properties of the Utrecht Work Engagement Scale (UWES-9) in a Sample of Active Health Care Professionals in Spain

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Purpose: The impact of the COVID-19 pandemic on the working, personal and health conditions of health professionals has been highlighted, although it is necessary to verify whether certain instruments used in research on this topic have sufficient psychometric support for their use. This need was the main motivation for undertaking the present study. We aimed to analyse the psychometric properties of the Utrecht Work Engagement Scale (UWES-9) in a sample of active health care workers during the pandemic.

Patients and Methods: A cross-sectional study was conducted from March to August 2020 with 2326 active health care workers (78.7% women). The instruments that were applied included the UWES-9 scale, the Sense of Coherence scale (SOC-13), the Goldberg General Health Questionnaire (GHQ-12) and an item on self-perceived health.

Results: The three-factor structure related to the correlation of pairs of errors presented the best fit. The reliability of the UWES-9 was highlighted by the adequate internal consistency of the items, the existence of invariance according to gender, and its convergent and discriminant validity.

Conclusion: The findings of this work support the use of the UWES-9 to assess the work engagement of health personnel during the COVID-19 pandemic and identify it as an adequate measure of this psychological variable and the constructs that comprise it.

Keywords: gender invariance, UWES-9, engagement, health care professionals, COVID-19, psychometric

Introduction

The global labour market has suffered a considerable shock since the declaration of the COVID-19 pandemic in March 2020, and the impacts have varied among economic sectors, geographical areas, and labour sectors.[1]

The pandemic has affected other work aspects and organizations. Thus, among the workers that experienced the most significant impact of the pandemic on their working, personal and health conditions, health personnel undoubtedly stand out. They were positioned in the front line against COVID-19 and faced a high risk of infection due to intense and long work hours, psychological discomfort, exhaustion, and fatigue, among other factors.[2] Research conducted throughout the pandemic showed the impact on the mental health of health professionals, especially female health workers, providing evidence of the anxiety, depression, worry, sleep disorders and stress that they experienced.[3,4]

A variable that has been related to the state of mental health in the work environment during the COVID-19 crisis is work engagement (WE).[5] This construct refers to "a positive, fulfilling, affective-motivational state of work-related well-being that can be seen as the antipode of job burnout".[6] It is conceived as a persistent affective-cognitive state that is related to three concepts: Vigour, or high levels of energy, will and mental resistance; Dedication, or feeling enthusiastic about and challenged at work; and Absorption, that is, full and exclusive concentration on the tasks to be performed.[7]

To measure this construct, a self-report questionnaire was designed: the Utrecht Work Engagement Scale (UWES). The UWES initially consisted of 24 items (UWES-24) answered with a seven-point response scale. However, after a psychometric evaluation with two types of samples (university students and Spanish workers), items were reduced to 17 (UWES-17).[7,8] The authors concluded that the three-factor structure adequately fit the data of both samples, although a high correlation was detected between the latent factors, especially between vigour and absorption.[7] Since the publication of this scale, which is available in 21 languages, proposals for shorter versions have emerged, including that of a nine-item version, the UWES-9.[9–11]

The UWES-9 scale has been widely used in the scientific literature with samples from several countries worldwide: Europe, Asia, Africa, the Americas and Oceania.[11–15] Among other issues, the psychometric properties of this instrument were studied, providing different models of its internal structure. A one-factor model has been proposed that shows a single dimension of WE that has been applied in various labour and geographical contexts, including Serbian workers, community health workers in Sierra Leone, teachers in the Dominican Republic, and other Spanish-speaking areas of the Caribbean, and working women in Sweden.[16–19] Similarly, studies have provided evidence of a better fit of the three-factor model[10,13,20,21] based on the original proposal of 17 items.[7] Later, this same author conducted a psychometric study with workers in different industries from Finland, Japan, the Netherlands, Spain and Belgium.[13] Analyses of other structures have also been carried out, such as a model of two correlated factors (dedication and vigour forming one factor and absorption forming a second factor) and a model with a second-order latent factor.[10,20]

Thus, the present study arises from the lack of consensus in the scientific literature regarding the factorial structure of the UWES-9 and the need to extract evidence of its validity when used in a particular historical moment, such as during a health crisis. Therefore, we aim to study the UWES-9 in health workers, as there is special concern about this situation during the pandemic for being working close to patients and living potentially distressing and hazardous situations. Thus, the objective of this work was to analyse the psychometric properties of the UWES-9 in a sample of health care professionals who were active during the COVID-19 pandemic in Spain. For this purpose, this study was intended to cover the following four aims: to examine the factorial structure of the scale; to determine the model with the best fit; to analyse the reliability; to study the factorial invariance (FI) and the differential functioning of the items as a function of gender and analyse the relationship of WE with the sense of coherence, psychological distress, and perceived health for trying to provide evidence of convergent validity.

Materials and Methods
Participants
The sample was taken from a research project conducted in Spain which aimed to assess the impact of the COVID-19 pandemic on the emotional well-being and psychological adjustment of the general population and health professionals.[22,23] The inclusion criteria were: (i) being an active health care professional at the time of their participation in the study; (ii) being of legal age; and (iii) having a 100% response rate for the total questionnaire. The sample of the present study consisted of 2326 participants (78.7% women). The mean age was 42.8 years (SD = 11.5). The majority marital status was married or living with a partner (67.2%) and most of the sample (60.2%) had university studies. The sample comprised nurses (59.1%), physicians (23.8%) and other health professionals (17.1%) with more than 10 years of experience in their work environment (68.8%).

Instruments
Sociodemographic variables; Questions about gender, age, marital status, educational level, professional profile, and years of experience in the sector were included.

Utrecht Work Engagement Scale (UWES-9)[11] in its Spanish version;[24] a self-administered scale composed of nine items that evaluate WE. Items are answered with a Likert-scale from 0 (never) to 6 (always/every day). The instrument provides three partial scores and a total score. The partial scores are obtained by adding the items corresponding to each subscale (vigour: Items 1, 2, 5; dedication: Items 3, 4, 7; absorption: Items 6, 8, 9) and dividing the result by the number of items that compose it. The total score ranges from 0 to 6 points. A higher score indicates greater WE.

Sense of Coherence Scale (SOC-13)[25,26] in its Spanish version;[27] a self-administered scale composed of 13 items with semantic differences. A response scale ranging from 1 (least frequent) to 7 (most frequent) is used to evaluate the frequency with which participants encounter certain experiences. The items are grouped into three dimensions (mean-ingfulness, comprehensibility, and manageability). A higher score indicates a higher level of coherence. Cronbach's alpha obtained in this study was 0.83 (0.58 for meaningfulness, 0.70 for comprehensibility and 0.62 for manageability).

General Health Questionnaire (GHQ-12)[28] in its Spanish version;[29] a self-administered scale composed of 12 items that evaluate psychological distress through a Likert-type scale with 4 response options. The first two options receive a score of 0, while the remaining two are scored as 1. A higher score is related to a higher level of psychological distress. The internal consistency obtained in this study was $\alpha = 0.83$.

Self-perceived health; An item with five response options evaluated the participants' self-perceived health (very bad, bad, not so good, good, very good). This indicator[30] has been used in different studies related to the COVID-19 and other pandemics.[31–33]

Procedure

Thirteen days after the start of the lockdown in Spain, data collection began with an online questionnaire administered through the Qualtrics® XM survey platform. Snowball sampling was employed to disseminate the study through the social networks and email lists of professional groups that were invited to participate (eg, the General Council of Physicians, Nursing and the Beturia Andalusian Foundation for Health Research, among others). When participants accessed the survey link, they were presented with the study information and an informed consent form, which they had to accept to access the questionnaire. The anonymous and voluntary nature of participation was indicated, as was the possibility of leaving the study at any time. The confidentiality and protection of the collected data were guaranteed. Data collection took place from March 26 to August 27, 2020. This study received approval from the Research Ethics Committee of Huelva, belonging to the Regional Ministry of Health of Andalusia, Spain (PI 036/20).

Data Analysis

Analyses were carried out with SPSS 26.0 and AMOS 25.0 software. Exploratory univariate and multivariate analyses of the data were carried out to detect extreme values and to study normality using the Kolmogorov–Smirnov test and the Mardia test. The asymmetry and kurtosis indicators of the UWES-9 items were also explored, as was the existence of a ceiling and floor effect for each of them. To study the evidence of validity based on the internal structure of the scale, confirmatory factor analysis (CFA) was performed to test the fit of the following models: (i) a global factor, (ii) two correlated factors, (iii) three correlated factors and (iv) three first-order factors and a second-order factor (WE). Given the non-normal nature of the data, the robust Maximum Likelihood method was used providing the following fit indices: Satorra-Bentler goodness-of-fit χ^2 statistic (χ^2S-B), Comparative Fit Index (CFI), Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Non-Normalized Fit Index (NNFI), Akaike's Information Criterion (AIC), Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Square Residual (SRMR). CFI, GFI and NNFI values above 0.90 are indicative of acceptable fit.[34] However, Hu and Bentler[35] recommend values ≥ 0.95. RMSEA values lower than 0.06 are also indicative of a good fit.

Considering the model with the best fit, internal consistency was studied by providing item-test correlations and Cronbach's alpha coefficient. Additionally, we examined the FI by gender using multigroup analysis. Given the difference in the number of men (n = 495) and women (n = 1831) in the sample, a random sample of 495 women was drawn to match both subsamples for the factorial equivalence analysis. FI was progressively tested at different levels: configural, weak, strong, and strict. To accept the equivalence of the factors and compare nested models, a change in CFI ≥ 0.01 was considered to adopt the least limited model and reject the most restrictive model.[36] Furthermore, to provide more validity evidence based on the internal structure, differential item functioning (DIF) was analysed using EASY-DIF[37] to improve the validity of scale interpretations. Mantel–Haenszel statistical test was performed as a comparative criterion for the groups[38] as well as the p-value and its standard deviation (SPD). Significant p-values (< 0.05) were considered evidence of the existence of a DIF. In addition, the SPD indicator was interpreted to compare the expected mean scores between groups on each item in relation to the total score of the scale. In this case, a negative value indicated that the mean score would be lower in women (focal group) than in men (reference group). Furthermore, for those

items that showed DIF, we compared the mean scores of the two independent groups (men and women) by calculating the Student's *t*. Finally, to provide evidence of convergent validity through the relationship with other relative variables, the associations between scores on the UWES-9 scale and the SOC-13, the GHQ-12 and the self-perceived health were studied.

Results
Item Analysis
Table 1 shows the means, standard deviations, asymmetry, and kurtosis values obtained for each item on the UWES-9 scale. As shown in Table 1, Item 7 had the highest score (M = 4.8; SD = 1.3), while the lowest score was obtained for Item 5 (M = 3.4; SD = 1.7). The asymmetry values of the distribution of the scores ranged from −1.2 to −0.3, and the kurtosis values were between −1.0 and 0.9. Although none of the items presented a floor effect (percentages less than 15% in all cases), a ceiling effect was observed for Items 7, 8, 9.

Confirmatory Factor Analysis
The fit indices for each of them are provided in Table 2. The model with three correlated factors showed the best fit [χ^2S-B = 981.04; CFI = 0.92; RMSEA = 0.13]. Considering the modification indices obtained in this structure, we

Table 1 Descriptive Statistics of the UWES-9

Item	Min-Max	Mean	SD	Skewness	Kurtosis	% of Responses with a Score of 0	% of Responses with a Score of 6
1. At my work, I feel bursting with energy	0–6	3.6	1.5	−0.4	−0.8	1.5	4.9
2. At my job, I feel strong and vigorous	0–6	4.0	1.3	−0.6	−0.5	0.5	8.4
3. I am enthusiastic about my job	0–6	3.9	1.6	−0.4	−0.8	1.2	13.6
4. My job inspires me	0–6	4.0	1.5	−0.5	−0.6	1.1	14.3
5. When I get up in the morning, I feel like going to work	0–6	3.4	1.7	−0.3	−1.0	5.2	9.2
6. I feel happy when I am working intensely	0–6	3.9	1.6	−0.5	−0.6	2.1	13.4
7. I am proud of the work that I do	0–6	4.8	1.3	−1.2	0.9	0.4	37.6
8. I am immersed in my work	0–6	4.3	1.3	−0.7	0.1	0.6	16.9
9. I get carried away when I'm working	0–6	4.2	1.4	−0.7	−0.1	0.9	15.2

Abbreviations: Min-Max, minimum and maximum value; SD, standard deviation.

Table 2 Fit Indices for the Confirmatory Analysis of the UWES-9

Model	χ^2S-B	df	p	CFI	GFI	AGFI	NNFI	AIC	RMSEA [95% CI]	SRMR
One global factor solution	1239.38	27	<0.001	0.90	0.86	0.76	0.86	1185.38	0.14 [0.13, 0.15]	0.07
Two correlated factors solution	1104.28	26	<0.001	0.91	0.87	0.78	0.87	1052.28	0.13 [0.13, 0.14]	0.09
Three correlated factors solution	981.04	24	<0.001	0.92	0.88	0.78	0.88	933.04	0.13 [0.12, 0.14]	0.06
Three correlated factors solution ($\delta_{1,2}$; $\delta_{8,9}$)	331.02	22	<0.001	0.97	0.96	0.91	0.96	287.02	0.08 [0.07, 0.09]	0.03
Second-order factor with three first-order factors solution	1104.09	26	<0.001	0.91	0.87	0.78	0.87	1052.09	0.13 [0.18, 0.14]	0.09

Abbreviations: χ^2S-B, Satorra-Bentler goodness-of-fit χ^2 statistic; df, degrees of freedom; p, p-value; CFI, Comparative Fit Index; GFI, Goodness-of-Fit Index; AGFI, Adjusted Goodness-of-Fit Index; NNFI, Non-Normalized Fit Index; AIC, Akaike's Information Criterion; RMSEA [95% CI], Root Mean Square Error of Approximation [95% Confidence Interval]; SRMR, Standardized Root Mean Square Residual.

proceeded to correlate errors 1–2 and 8–9 to improve the fit of the model [χ^2S-B = 331.02; CFI = 0.97; RMSEA = 0.08]. The studied factorial models and the estimated parameters are depicted in Figures 1–4.

Reliability

In the analysis of the reliability of the scale scores, which were estimated with Cronbach's alpha coefficient, a value of 0.93 was obtained for the total scale (α for men = 0.92; α for women = 0.93). The values obtained for the different dimensions were 0.79 for absorption, 0.87 for dedication and 0.85 for vigour. The item-test correlations (Table 3) ranged between 0.58 (Item 9) and 0.85 (Item 3); in addition, Cronbach's alpha values showed that the reliability of the scale would not increase significantly if some items were eliminated.

Factorial Invariance Across Gender

The CFI allowed the factorial invariance across gender in the three correlated factor solutions with and without the modification index to be accepted (Table 4). In both cases, the factorial structure of the UWES showed strict invariance by gender [RMSEA = 0.10 (0.09–0.10); CFI = 0.90] and [RMSEA = 0.06 (0.05–0.06); CFI = 0.97].

Differential Item Functioning

Five of the 9 items on the UWES showed DIF when comparing men and women (Table 5). According to the SPD, scores from Items 1 and 6 were slightly higher in men in relation to the total score of the scale; scores from Items 7, 8, and 9 were higher in women. No indication of DIF was found when comparing genders in Items 2, 3, 4 and 5. Apart from suggesting the existence of DIF, we also found differences by gender in the mean scores of Items 1 (t = 5.171; p < 0.001),
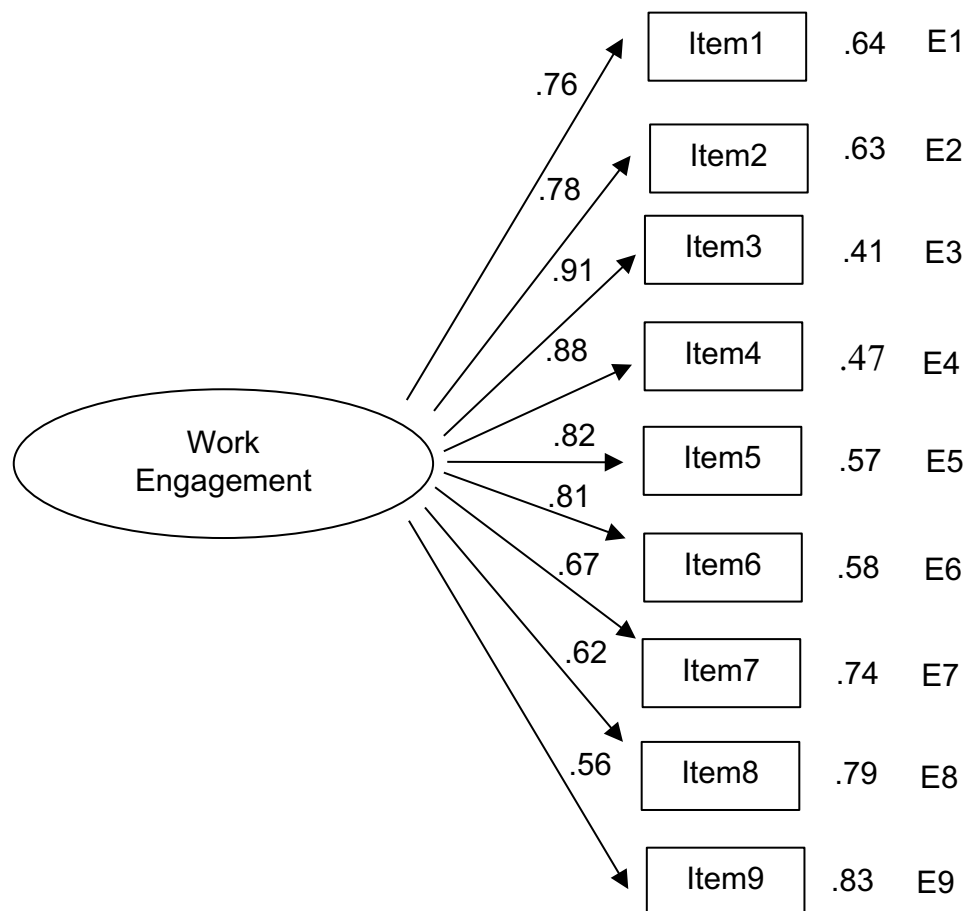

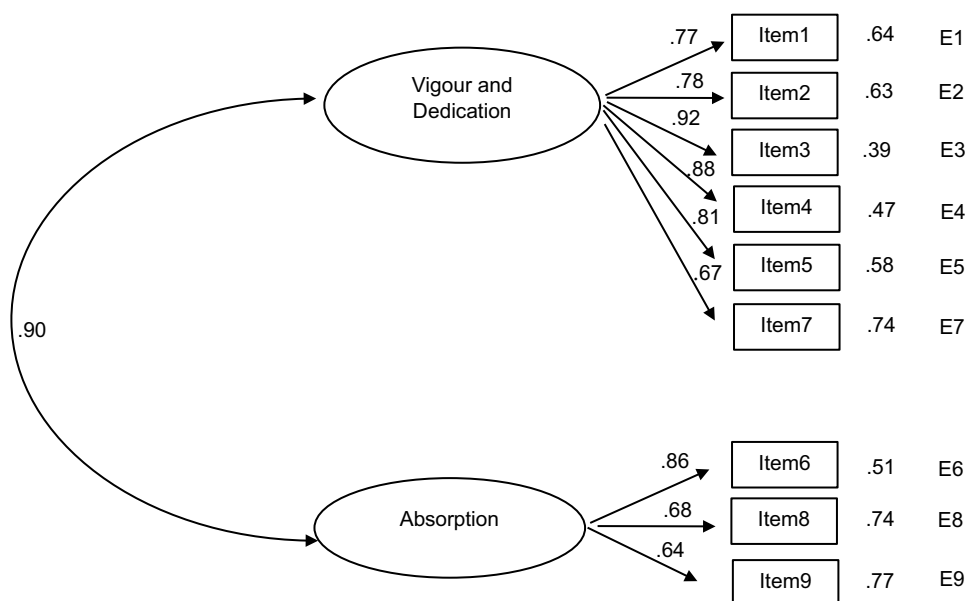**Figure 1** Illustration of the confirmatory factor analysis of the one-factor solution, UWES-9.

.77 Item1 .64 E1
.78 Item2 .63 E2
Vigour and
Dedication .92 Item3 .39 E3
.88 Item4 .47 E4
.81 Item5 .58 E5
.67 Item7 .74 E7

.90

.86 Item6 .51 E6
Absorption .68 Item8 .74 E8
.64 Item9 .77 E9

Figure 2 Illustration of the confirmatory factor analysis of the two correlated factors solution, UWES-9.

.82 Item1 .57 E1
Vigour .82 Item2 .57 E2
.82 Item5 .57 E5

.93

Item3 .37 E3
.93 Item4 .44 E4
Dedication .90 Item7 .74 E7
.68

.88

.89

.86 Item6 .51 E6
Absorption .68 Item8 .74 E8
.64 Item9 .77 E9
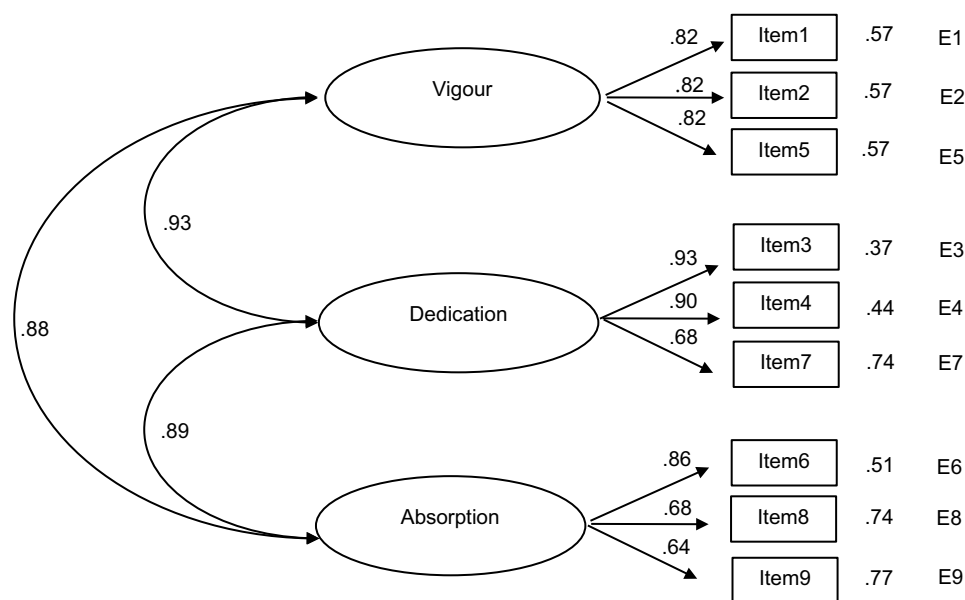
Figure 3 Illustration of the confirmatory factor analysis of the three correlated factors solution, UWES-9.

6 ($t = 4.662$; $p < 0.001$), and 8 ($t = 2.128$; $p < 0.05$). However, although they showed DIF, there were no significant differences in the mean scores of Items 7 ($t = 1.445$; $p = 0.074$) and 9 ($t = -0.304$; $p = 0.381$).

Evidence of Construct Validity

In terms of validity in relation to other variables (Table 6), a greater sense of coherence ($r = 0.42$, $p < 0.001$) and higher dimension scores (meaningfulness $r = 0.45$, $p < 0.001$; comprehensibility $r = 0.31$, $p < 0.001$; and manageability $r = 0.33$, $p < 0.001$) were related to greater WE. Conversely, higher levels of psychological distress (on GHQ-12) were significantly related to lower WE ($r = -0.38$; $p < 0.001$). Finally, significant positive correlations were also obtained between WE and better self-perceived health ($r = 0.26$; $p < 0.001$).
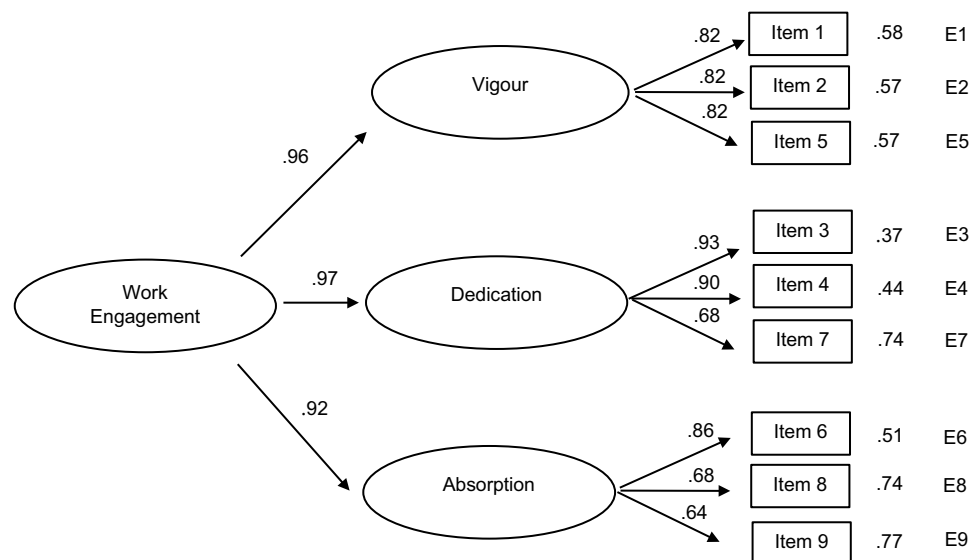
Figure 4 Illustration of the confirmatory factor analysis of the second order factor with three first order factors solution, UWES-9.

Discussion

The main objective of the present study was to analyse the factorial structure of the UWES-9 scale for use with Spanish health professionals during the COVID-19 pandemic. In addition, we tried to extract data to support the invariance of the instrument according to the gender of the participants and provide evidence of convergent validity.

First, the analysis of the factorial structure of the instrument revealed that the model with the best fit indices among the five models studied was the model with three factors related to the correlation of pairs of errors 1–2 and 8–9, for which we observed CFI, GFI and NNFI values higher than 0.95, as recommended by Hu & Bentler.[35] Previous studies also suggest that the minimum number of dimensions presented by the UWES-9 scale with the capacity to explain the maximum amount of information collected by its items is equal to three.[10,20,21,39]

Although the initial model with three correlated factors showed an adequate CFI value (greater than 0.90), this was not achieved by the rest of the analysed parameters, which had higher results when pairs of errors were correlated following the indications of the modification indices. Other studies also applied this strategy with item pairs 1–2 and 8–9, such as the study by Lovakov et al[21] and the study by Schaufeli et al,[13] which is conceptually justified, according to Byrne.[40] Thus, Item 1 ("At my work, I feel bursting with energy") would present a certain conceptual overlap with Item 2

Table 3 Item-Test Correlations and Cronbach's Alpha Coefficients

Item	Corrected Item-Total Correlation	α When Item Was Deleted
1	0.72	0.92
2	0.74	0.92
3	0.85	0.91
4	0.83	0.91
5	0.78	0.92
6	0.79	0.91
7	0.65	0.92
8	0.64	0.92
9	0.58	0.93

Table 4 Test of Factorial Invariance by Gender

Model	TLI	CFI	RMSEA [90% CI]	CMIN/DF	Decision
Three correlated factors solution					
1. Configural	0.86	0.91	0.11 [0.11, 0.12]	13.59	Invariance accepted
2. Weak	0.87	0.91	0.12 [0.10, 0.11]	12.21	Invariance accepted
3. Strong	0.89	0.91	0.10 [0.09, 0.11]	11.09	Invariance accepted
4. Strict	0.90	0.90	0.10 [0.09, 0.10]	9.96	Invariance accepted
Three correlated factors solution ($\delta_{1,2}$; $\delta_{8,9}$)					
1. Configural	0.95	0.97	0.07 [0.06, 0.07]	5.27	Invariance accepted
2. Weak	0.96	0.97	0.06 [0.05, 0.07]	4.73	Invariance accepted
3. Strong	0.96	0.97	0.06 [0.05, 0.07]	4.37	Invariance accepted
4. Strict	0.97	0.97	0.06 [0.05, 0.06]	4.10	Invariance accepted

Abbreviations: TLI, Tucker-Lewis Index; CFI, Comparative Fit Index; RMSEA [90% CI], Root Mean Square Error of Approximation [90% Confidence Interval]; CMIN/DF, Chi-squared statistic/degrees of freedom.

Table 5 Differential Functioning of the Items Across Gender

Items	Mantel-Haenszel (χ^2)	p	SPD
1	**6.94**	**0.008**	**−0.20**
2	0.00	0.991	−0.07
3	0.30	0.584	−0.02
4	0.87	0.350	0.08
5	2.49	0.114	−0.13
6	**4.23**	**0.039**	**−0.21**
7	**15.45**	**<0.001**	**−0.25**
8	**5.59**	**0.018**	**0.04**
9	**15.92**	**<0.001**	**0.26**

Notes: Items with Differential Item Functioning (DIF) are in bold. N = 990 (495 men and 495 women).
Abbreviations: p, p value; SPD, p standardized difference.

("At my job, I feel strong and vigorous"), and Item 8 ("I am immersed in my work") would overlap with Item 9 ("I get carried away when I'm working"). Therefore, this work, in addition to providing evidence regarding the most appropriate factorial structure of the UWES-9, was interested in delving into other psychometric properties of the scale when the three-factor model is assumed.

Thus, the analyses that were performed indicated an adequate internal consistency of the UWES-9 instrument in terms of the three dimensions separately and the total scale, for both men and women. These results are similar to those of Sinval et al[10] in Portugal, or Schaufeli et al[13] in workers from five countries, including Spain. The items in each factor showed a high correlation among one another, indicating that the items in the dimensions of vigour, dedication and absorption measured the same construct.

Table 6 Correlations Between the UWES-9 and Related Constructs

	1	2	3	4	5	6	7	8	9	10
1. UWES-9	–									
2. Vigour	0.92**	–								
3. Dedication	0.93**	0.80**	–							
4. Absorption	0.88**	0.69**	0.74**	–						
5. SOC-13	0.42**	0.43**	0.39**	0.31**	–					
6. Meaningfulness	0.45**	0.41**	0.45**	0.37**	0.75**	–				
7. Comprehensibility	0.31**	0.35**	0.27**	0.22**	0.90**	0.49**	–			
8. Manageability	0.33**	0.35**	0.31**	0.23**	0.87**	0.54**	0.67**	–		
9. GHQ-12	−0.38**	−0.45**	−0.34**	−0.24**	−0.53**	−0.36**	−0.53**	−0.42**	–	
10. Self-perceived health	0.26**	0.30**	0.22**	0.19**	0.29**	0.21**	0.27**	0.24**	−0.35**	–

Note: **$p < 0.001$.
Abbreviations: UWES-9, Utrecht Work Engagement Scale; SOC-13, Sense of Coherence Scale; GHQ-12, General Health Questionnaire.

Regarding the invariance according to the gender of the participants, the dimensions identified in the three-factor model did not show significant differences between men and women, indicating that the psychometric properties of this instrument are independent of the gender of the evaluated person. The invariance according to gender was also pointed out by Lovakov et al[21] in Russian workers and by Carmona-Halty et al[41] in Chilean university students, although there is a limitation in terms of studies that have explored this objective in health personnel with the model of three related factors. Greater consensus exists regarding the invariance of the scale according to other sample characteristics, such as its transcultural invariance.[10,13,42]

DIF analyses should be an integral part of validity arguments.[43] In the present study, DIF was examined to explain the conditional differences in performance for two groups of participants (ie, man and woman) who were matched on the trait measured by the item.[44] After the functioning of the items of the UWES was analysed, five items showed different functioning in men and women. Some of these items also showed differences in mean scores according to gender. Following Arcos-Romero & Sierra,[45] the differences found in this study could be attributed to the following: (a) men and women truly differ regarding the variable; (b) items work differently across gender; and (c) there are real differences across gender, and the items do not work similarly for both. Thus, DIF analyses promote the validity and fairness in the interpretations of test scores that are planned as part of a larger validation effort.[43]

Additionally, the results of this study showed evidence of convergent validity of the UWES-9 scale when applied to health personnel during the COVID-19 pandemic. Thus, the data indicated a statistically significant positive correlation between the UWES-9 and its factors concerning to the sense of coherence and perceived health. In contrast, a statistically significant negative relationship was observed between scores on this instrument and psychological distress. Before the COVID-19 pandemic, the literature already indicated that better self-perceived health status was related to greater WE among nursing personnel[46] and to present a greater sense of coherence[47–49] and a better ability to face the challenges of life adaptively.[25] Mitonga-Monga and Hlongwane explained this relationship by arguing that workers with a high sense of coherence achieve their work objectives by perceiving the world as predictable, organized, and orderly.[50] A worse state of mental health, as occurs during psychological distress, is associated with a lower WE, as was observed in the study by García-Iglesias et al[51] with Spanish nurses and in papers such as Gorter and Freeman[52] and Holmberg et al[53] with health workers.

Between the possible limitations of the study, our data had a cross-sectional nature that could not happened with another design, such as longitudinal study. Another limitation lies in the sampling procedure which, although it is quite

commonly used in research in this discipline and area of knowledge, does cannot guarantee that sample is representative of the health workers in this country, although the high sample number obtained might mitigate this effect.

A strong point of this study can be the inclusion of a significant number of workers from a sector that was vital in coping with a health crisis as complicated as was the first wave of the COVID-19 pandemic, which was marked by lockdown in Spain. With this regard, our study complements the existing literature analysing the psychometric properties of the UWES-9 instrument, providing results in favour of the use of this scale in the field of research to measure the WE of female and male Spanish health professionals based on three interrelated factors: vigour, dedication, and absorption by work.

Conclusion

The findings of this work support the use of the UWES-9 to assess the work engagement of health personnel during the COVID-19 pandemic and identify it as an adequate measure of this psychological variable and the constructs that comprise it.

Understanding the relationships between WE and sense of coherence, psychological distress, and perceived health among health care professionals may allow organizations to offer strategies to enhance those factors that improve the mental health of health care professionals in the performance of their duties. This, in turn, could improve the quality of life at work for these professions with the consequent improvement in quality of care and reduced accidents at work.

Implications

The UWE-9 questionnaire version validated in the population of health care professionals offers a new tool adapted to this group, which allows reporting on work engagement. In this sense, the data provided could be useful for health managers as they allow identifying areas of improvement which are specific to this population. This way, improvements in the work climate and, therefore, in the quality of health care could be achieved.

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethics Approval and Informed Consent

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. The study was approved by the Research Ethics Committee of Huelva, belonging to the Regional Ministry of Health of Andalusia, Spain (PI 036/20). Also, informed consent was obtained from all individual participants included in the study.

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