

The burnout assessment tool (BAT): Validation in the Spanish population

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Aida Soriano¹ , Hiacynta Warsicka¹  and Jose M Peiró^{1,2} 

Abstract

Background: Burnout has traditionally been viewed as a syndrome consisting of exhaustion, cynicism, and inefficacy, mainly assessed with the Maslach Burnout Inventory. Deep changes at work and workers' experience during the last decades have risen, and conceptual and methodological difficulties within the MBI have become apparent. The Burnout Assessment Tool (BAT) has been recently developed to overcome these flaws.

Objective: The present study aims to validate the BAT, in the Spanish population.

Methods: We used two samples (131 and 455 Spanish workers). Its psychometric properties were analyzed by testing its reliability, factorial validity, and convergent validity.

Results: Results showed excellent reliability. CFA results supported the internal structure of the BAT. Finally, convergent validity was obtained as BAT total score significantly correlated with health, anxiety, work ability, and turnover intention.

Conclusions: The present research shows evidence that the BAT can be considered as an adequate tool to measure burnout in Spanish workers.

Keywords

burnout, health psychology, emotional exhaustion, cognitive impairment, psychosomatic aspects, mental health

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Background

Recent research has recently proposed a new definition of burnout and examined the psychometric properties of a novel measurement scale.¹ Burnout, traditionally understood as a condition of profound fatigue characterized by skepticism regarding the significance of one's profession and uncertainty about one's ability to fulfill responsibilities. However, this contrasts with the classical conceptualization of burnout, which has traditionally been defined as a condition of profound fatigue characterized by skepticism regarding the significance of one's profession and uncertainty about one's ability to fulfill responsibilities.² Burnout has been one of the main issues in work and organizational psychology field for decades.³ It used to be associated with human services workers⁴; however, in the last few decades, it has become a phenomenon to be considered in most occupations.⁵ Currently, the World Health Organization⁶ has recognized burnout as a global phenomenon that in the organizational context influences workers' health and well-being.

A large amount of literature supports the idea that burnout influences workers' physical and psychological health and well-being.⁷ First, regarding physical health, burnout has been associated with cardiovascular diseases⁸ or

musculoskeletal complaints,⁹ among other health problems. Second, with regard to mental health, recent meta-analyses or systematic reviews have related burnout to psychological problems such as depression or anxiety.¹⁰ Additionally, longitudinal studies have reported a relationship between burnout and psychological well-being.¹¹ Burnout has also been related to organizational variables such as sickness absence,¹² work-family conflict¹³ or performance.¹⁴ In fact, recent meta-analyses highlight the importance of effective burnout interventions for healthcare providers,¹⁵ and emphasize that burnout plays a crucial role in forecasting teachers' likelihood to quit.¹⁶

Traditionally, burnout was defined as a syndrome encompassing exhaustion, cynicism, and inefficacy, indicative of occupational stress that has not been effectively addressed by employees, their workplaces, or both.¹⁷ This conceptualization aligns with burnout as measured by

¹IDOCAL, Universitat de València, Valencia, Spain

²IVIE, Valencia, Spain

Corresponding author:

Aida Soriano, IDOCAL, Universitat de València, Valencia, Spain.

Email: aida.soriano@uv.es

Maslach and Jackson¹⁸ Maslach Burnout Inventory (MBI), used by 88% of all the publications on burnout to assess this phenomenon.¹ Nevertheless, different views have understood burnout in distinct ways. For instance, the Burnout Measure¹⁹ depicts burnout as equivalent to exhaustion, arguing that burnout is just a contemporary term to refer to exhaustion at work and, thus, ignoring its multi-faceted nature. Another perspective equates burnout with depression,²⁰ paving the way for an ongoing debate about the relationship between these constructs. Therefore, it was noted that there was a need to work on reconceptualizing burnout in order to establish a solid conceptual framework for it.^{1,21}

The MBI was initially developed by focusing on workers from the human service, educators, and medical personnel separately; nevertheless, an extended version of this questionnaire was published a few years ago that included all the occupations (i.e., MBI-GS). The MBI-GS considered burnout as a concept that comprises three different dimensions:²² (1) emotional exhaustion, defined as a pervasive sense of profound and persistent fatigue resulting from ongoing exposure to work demands and diminishing resources; (2) depersonalization or cynicism, understood as a cold, distant, and cynical demeanor directed towards the organization, the work, or colleagues; and (3) a deficiency in personal accomplishment, characterized by diminished feelings of competence and achievement in the workplace.

Despite the popularity of the MBI, in recent decades, conceptual and methodological difficulties have arisen.^{5,23} First, regarding its conceptual problems, research has consistently associated this phenomenon with individuals reduced cognitive performance,²⁴ leaving out other important distress symptoms (such as sleeping problems or headaches derived from tension) that also seem to happen in burned out workers.¹ The MBI does not include these symptoms, thus offering an incomplete view of the phenomenon.

Second, with regard to the MBI's methodological issues, a few psychometric problems have been found: (1) The strong wording of some of the MBI items (e.g., "I feel that I am treated as if I were an impersonal object") leads participants to respond "sporadically" or "never", instead of "very often" or "always", reducing the reliability of the questionnaire²⁵; (2) Items falling under the personal accomplishment factor are expressed in a positive manner, while the other two factors (i.e., depersonalization and exhaustion) are phrased in a negative manner. Consequently, the association between these last two factors tend to be higher than the correlation with the first one²⁶; (3) Recent studies have suggested a two-factor model (in place of the initial three-factor model) by combining the depersonalization and exhaustion scales. Additionally, the MBI has a poor practical application because it does not provide an overall burnout score²⁷; therefore, it is ineffective for distinguishing between workers experiencing burnout and those who are not.²⁸ This poses a significant issue, for example,

in the case of accessing services that require a formal diagnosis. In fact, while the WHO has incorporated burnout into the International Classification of Diseases (ICD-11), it is designated not as a diagnosable disease but rather as an "occupational phenomenon".

With all these issues in mind, there is a necessity to reevaluate the conceptualization and evaluation of burnout to prevent the trivialization of the job stress phenomenon.²⁹ Thus, the BAT¹ was recently developed to overcome the MBI's flaws by proposing an alternative and comprehensive conceptualization of burnout and offering a questionnaire that is both psychometrically sound and practically valuable for its assessment.

To do so, Schaufeli et al.¹ interviewed general practitioners, psychologists, and occupational physicians. Next, they analyzed the content using Nvivo program. Seven dimensions emerged that were clustered into two main general dimensions. The core dimensions represented a form of either "inability" or "unwillingness" (i.e., exhaustion, mental distance, emotional impairment, and cognitive impairment), and the secondary dimensions comprised the reasons employees seek help (i.e., psychological, or psychosomatic complaints). Nevertheless, the authors chose not to include the depressed mood dimension in the BAT because they stated that other brief and well-validated depression questionnaires are accessible for use in an occupational health context, such as the depression subscale of the four-Dimensional Symptom Questionnaire (4-DSQ). Therefore, the BAT questionnaire consists of six dimensions that belong to two different second-order factors. The first second-order factor, core dimensions, includes: (1) exhaustion, understood as the loss of mental and physical energy; (2) emotional distance, referring to a reluctance to engage in work stemming from psychological detachment from one's professional responsibilities; (3) cognitive impairment, understood as a robust cognitive response accompanied by a feeling of being inundated when trying to remember information or focus one's attention; and (4) emotional impairment, which refers to a powerful emotional response coupled with a feeling of being inundated by one's emotions. The second-order factor, secondary symptoms, includes: (1) psychological complaints, encompassing the non-physical repercussions of psychological issues; and (2) psychosomatic complaints, which are the physical problems produced by psychological issues. This broad view of burnout, represented in a measurement tool, allows both researchers and practitioners to assess the burnout experience from a comprehensive point of view, with burnout understood as a state of work-related exhaustion experienced by employees, marked by profound fatigue, diminished capacity to regulate cognitive and emotional processes, and mental detachment accompanied by a depressed mood, along with non-specific psychological and psychosomatic complaints.¹

Table 1. Original and Spanish version items of the scale.

English item	Spanish item
1. At work, I feel mentally exhausted	1. *En mi trabajo, me siento agotado/a mentalmente
2. Everything I do at work requires a great deal of effort	2. Todo lo que hago en mi trabajo requiere mucho esfuerzo
3. After a day at work, I find it hard to recover my energy	3. *Al final del día de trabajo, me resulta difícil recuperar mi energía
4. At work, I feel physically exhausted	4. *Me siento físicamente agotado/a en mi trabajo
5. When I get up in the morning, I lack the energy to start a new day at work	5. Cuando me levanto por la mañana, me falta energía para empezar un nuevo día de trabajo
6. I want to be active at work, but somehow, I am unable to manage	6. Quiero estar activo en mi trabajo pero, por alguna razón, no soy capaz de lograrlo
7. When I exert myself at work, I quickly get tired	7. Cuando me esfuerzo en mi trabajo, rápidamente me canso
8. At the end of my working day, I feel mentally exhausted and drained	8. Al final de mi jornada laboral, me siento exhausto mentalmente y agotado
9. I struggle to find any enthusiasm for my work	9. *Me esfuerzo por encontrar entusiasmo en mi trabajo
10. At work, I do not think much about what I am doing and I function on autopilot	10. En mi trabajo no pienso mucho en lo que estoy haciendo y funciono en piloto automático
11. I feel a strong aversion towards my job	11. *Siento una fuerte aversión hacia mi trabajo
12. I feel indifferent about my job	12. Me siento indiferente con respecto a mi trabajo
13. I'm cynical about what my work means to others	13. *Soy cínico sobre lo que mi trabajo significa para los demás
14. At work, I have trouble staying focused	14. *Tengo problemas para mantenerme enfocado en mi trabajo
15. At work I struggle to think clearly	15. En mi trabajo lucho por pensar con claridad
16. I'm forgetful and distracted at work	16. Soy olvidadizo y distraído en mi trabajo
17. When I'm working, I have trouble concentrating	17. *Cuando estoy trabajando, tengo dificultades para concentrarme
18. I make mistakes in my work because I have my mind on other things	18. *Cometo errores en mi trabajo, porque tengo mi mente en otras cosas
19. At work, I feel unable to control my emotions	19. *En mi trabajo, me siento incapaz de controlar mis emociones
20. I do not recognize myself in the way I react emotionally at work	20. *No me reconozco en la forma en que reacciono en el trabajo.
21. During my work I become irritable when things don't go my way	21. Durante mi trabajo me pongo irritable cuando las cosas no salen como quiero
22. I get upset or sad at work without knowing why	22. Me enojo o entristezco en mi trabajo sin saber por qué
23. At work I may overreact unintentionally	23. *En mi trabajo puedo reaccionar exageradamente sin querer
24. I have trouble falling or staying asleep	24. Tengo problemas para conciliar el sueño o permanecer dormido
25. I tend to worry	25. Tiendo a preocuparme
26. I feel tense and stressed	26. Me siento tenso y estresado
27. I feel anxious and/or suffer from panic attacks	27. Me siento ansioso y/o sufro ataques de pánico.
28. Noise and crowds disturb me	28. El ruido y las multitudes me perturban
29. I suffer from palpitations or chest pain	29. Sufro de palpitaciones o dolor en el pecho.
30. I suffer from stomach and/or intestinal complaints	30. Sufro de molestias estomacales y/o intestinales.
31. I suffer from headaches	31. Sufro de dolores de cabeza
32. I suffer from muscle pain, for example in the neck, shoulder or back	32. Sufro de dolores musculares, por ejemplo en el cuello, el hombro o la espalda
33. I often get sick	33. A menudo me enfermo

The items marked with an asterisk () represent those included in the reduced Spanish version of the scale (BAT-12).

Objective

A growing body of research has employed the BAT to analyze workers' burnout. In this vein, de Beer et al.³⁰ tested the measurement invariance of this tool across different cross-national samples (i.e., Belgium, Netherlands, Austria, Germany, Finland, Ireland, and Japan). Accordingly, different national versions of the BAT have recently been published, such as the Japanese,³¹ Italian,²⁸ and Equatorian³² versions, offering validation for identical factorial structure and psychometric characteristics. The present study aims to validate the BAT, developed by Schaufeli et al.,¹ in the Spanish population.

Methods

Sample and procedure

The data gathering for the present research study was conducted in two steps in Spain. The first one took place between September and December 2021, using convenience sampling (sample 1) and the second one was conducted in July 2023, through an external professional corporation to guarantee data trustworthiness (sample 2). On both occasions, data were collected using an online gathering method. Participants were briefed on the research objectives and provided informed consent for data collection and

Table 2. Sample 2 characteristics.

	n (%)
Age	
18–34 years old	116 (25.5%)
35–54 years old	169 (37.1%)
Over 55 years old	170 (37.4%)
Sex	
Female	218 (47.9%)
Male	237 (52.1%)
Educational level	
No studies	0 (0%)
School certificate, EGB 1st stage, up to 10 years	17 (3.7%)
School graduate, EGB 2nd stage, up to 14 years	25 (12.0%)
Occupational training or High School	165 (36.3%)
University degree	180 (39.6%)
Master	83 (18.2%)
Doctorate	9 (2.0%)
Type of contract	
Full-time	415 (91.2%)
Part-time	40 (8.8%)
Nielsen areas (Spain)	
Northeast/Catalonia and Balearic Islands	55 (12.1%)
Levante region	61 (13.4%)
South/Andalusia	87 (19.1%)
Center	41 (9.0%)
Northwest	43 (9.5%)
North Center	41 (9.0%)
Canary Islands	22 (4.8%)
Barcelona Metropolitan Area	45 (9.9%)
Madrid Metropolitan Area	60 (13.2%)
Professional category	
Unskilled manual labor	51 (11.2%)
Administrative or auxiliary work	109 (24.0%)
Medium technician or equivalent level	93 (20.4%)
Highly qualified professional	122 (26.8%)
Supervision or middle management	53 (11.6%)
Management	27 (5.9%)
Sector	
Primary (agriculture, livestock)	12 (2.6%)
Secondary (industry, production)	101 (22.2%)
Tertiary (services)	342 (75.2%)

processing procedures prior to their involvement in the study. They were also guaranteed that participation was voluntary, and their responses would be kept confidential and anonymous. The research project was approved by the Ethics Committee of Universitat de Valencia.

The original English version of the tool was translated into Spanish by the authors of the present study, based on the previous Spanish short version of the BAT [BAT-12³³]. Just a small modification was made to the original Spanish shortened version in the item “puedo reaccionar exageradamente sin querer/I can react excessively without intending to” which was changed to “en mi trabajo, puedo reaccionar exageradamente sin querer/In my work, I can react excessively without intending to” for better clarity, and according to the original English

version. After that, a bilingual (English and Spanish) speaker, unfamiliar with the original items, performed a back-translation into English. Subsequently, a comparison between the original English version and the back-translated version was conducted, and minor changes were made to reconcile them. Table 1 presents the original items of the scale in English alongside their corresponding items in the Spanish version. Additionally, the 12 items that constitute the reduced Spanish version of the scale are marked with an asterisk.

Therefore, two different samples were used for the present research. On one hand, sample 1 (used to carry out Exploratory Factor Analysis) involved 131 Spanish workers aged between 18 to 66 years ($M = 32.05$, $SD = 11.01$), of whom 32.1% were men and 67.9% women. The study inclusion criteria were that the participants had to have work experience and voluntarily agree to participate. On the other hand, sample 2 (used to test Confirmatory Factor Analysis, reliability and convergent validity) was composed by 455 Spanish workers aged between 21 to 81 years ($M = 46.22$, $SD = 12.23$), of whom 47.9% were men and 52.1% women. The inclusion criteria were stricter for this sample, since the participants had to be active (with a contract of 20 or more hours per week), have previous work experience of at least 2 months before survey data collection, and have answered the control questions correctly (e.g., check the “never” option). If any of these conditions were not met, the participants were not considered in the research. Additionally, sample 2 was asked to answer again the questionnaire two months later. Three hundred eleven participants fulfilled it, which allowed us to calculate correlation coefficients across all BAT dimensions to assess the test-retest reliability of scores at Time 1 and Time 2. Finally, it should be noted that there were no lost data given the configuration of the online questionnaire. Sample 2 characteristics are shown in Table 2.

Measures

Sample 1 participants fulfilled the BAT questionnaire and some sociodemographic data (i.e., sex and age). Sample 2 provided information regarding other burnout-related variables (i.e., general health, anxiety, work ability, and turnover intention) and a more descriptive information of their sociodemographic data (i.e., educational level, type of contract, Nielsen areas, professional category, and sector).

Burnout was assessed through the BAT,¹ comprising the BAT-C and BAT-S. The BAT-C comprises 23 items gauging the fundamental dimensions of burnout: exhaustion (eight items), mental distance (five items), emotional impairment (five items), and cognitive impairment (five items). Meanwhile, the BAT-S encompasses ten items appraising secondary symptoms, specifically: psychological (five items) and psychosomatic complaints (five items). Responses for all items

were recorded on a five-point Likert scale, ranging from “never” (1) to “always” (5).

Other variables of interest. Salvagioni and colleagues,³⁴ in their systematic review on the consequences of job burnout, stated that it is a significant predictor of physical, psychological, and occupational consequences. For example, studies have shown that all the general health questionnaire factors are associated to teachers³⁵ and healthcare workers’ job burnout.³⁶ Additionally, Koutsimani and colleagues¹⁰ carried out a systematic review and a meta-analysis that yielded support for the association between burnout and anxiety. Finally, in the case of occupational outcomes, burnout has been found to reduce work ability³⁷ and increase turnover intention,³⁸ thus emphasizing the importance of interventions to diminish burnout levels. Therefore, considering the effect that burnout has been found to have on different outcomes, we also measured burnout-related variables (i.e., *general health*, *anxiety*, *work ability*, and *turnover intention*) to analyze the discriminant validity of the BAT in the Spanish context.

General health was assessed through the General Health Questionnaire.³⁹ From a total of 12 items, rated on a Likert response scale from 1 (Much less than usual) to 4 (Much more than usual), six items were used to measure the successful coping dimension (Sample item: “Have you recently been able to cope with your problems?”; $\alpha = .84$), three items were used to measure self-esteem problems (Sample item: “Have you recently thought that you are a worthless person?”; $\alpha = .86$), and three items were used to measure the stress factor (Sample item: “Have you recently felt constantly overwhelmed and tense?”; $\alpha = .81$).

State anxiety was assessed through the short form of the State Anxiety Inventory.⁴⁰ The scale was composed of four items rated on a Likert response scale ranging from 1 (Not at all) to 4 (Very much) (Sample item: “Right now, I feel worried about possible misfortunes”; $\alpha = .73$).

Work ability was assessed through the general question from the Spanish version of the Work Ability Index.⁴¹ (1-item scale: “Consider that your best work ability or optimal work ability has a value of 10 points. How many points (from 0 to 10) would you give to your current work capacity?”).

Turnover intention was assessed through the Rotation Intention Scale.⁴² It has six items that are rated on a five-point Likert scale whose descriptions are specific to each question. For example, “How often have you considered the option of getting another job that is more suited to your needs and interests?” (Response scale from 1 -never- to 5 -several times a week-) or “How likely is it that you would accept a different job for the same pay? (Response scale from 1 -not likely- to 5 -very likely-). $\alpha = .92$.

Data analysis

Firstly, we computed descriptive statistics using SPSS v.26 software. Kurtosis and skewness values ranged between -1

and $+1$, thus, we assumed normality and, accordingly, we use parametric test for the subsequent analyses.⁴³ Secondly, we calculated reliability with the Cronbach’s alpha value and McDonald’s coefficient omega. These both values are the most widely used measures of composite reliability.⁴⁴ Additionally, we asked sample 2 participants to answer the questionnaire again after 2 months, enabling the calculation of correlation coefficients across all BAT dimensions allowing us to assess the test-retest reliability of scores at Time 1 and Time 2. Correlations exceeding 0.40 indicate the stability of the measure over time.⁴⁵ Subsequently, using sample 1, we performed exploratory factor analysis with SPSS. Considering the characteristics of the present sample, the unweighted least squares method and PROMAX oblique rotation⁴⁶ were used. Furthermore, based on these results and on the factorial structure proposed by Schaufeli et al.¹ in the original version of the questionnaire in English, a CFA was also carried out using sample 2 and MPLUS software.⁴⁷ For evaluating model fit, we scrutinized the goodness-of-fit statistics, including RMSEA, CFI, TLI, and SRMR. We deemed a model to have an acceptable fit if it fulfilled the following criteria: $RMSEA \leq 0.10$, $CFI \geq 0.90$, $TLI \geq 0.90$, and $SRMR \leq 0.10$.⁴⁸ Finally, convergent validity was examined using Pearson correlations between the total burnout score and the variables of interest.

Results

Internal consistency

Reliability. Means, standard deviations, correlations, Cronbach’s alphas and omega’s values for each factor of the BAT scale are shown in Table 3. Cronbach’s alphas and omega’s scores ranged between .788 and .862 (sample 1) and between .712 and .873 (sample 2), yielding support to an excellent reliability of the dimensions.⁴⁹

Additionally, we computed the intercorrelations among BAT dimensions at both time points to assess test-retest reliability (see Table 4). All correlations surpassed the threshold of 0.40,⁴⁵ indicating satisfactory test-retest reliability.

Factorial structure. An exploratory factor analysis was carried out using sample 1 and SPSS software. According to Kaiser’s eigenvalues higher than 1 criterion, eight factors were obtained. Nevertheless, one of these factors did not have items with the highest factor loading. Factor loadings, after oblique rotation, are shown in Table 5. It should be highlighted that some items present loadings on different factors: item 6 “I want to be active at work, but somehow, I am unable to manage”, presents loadings on exhaustion and cognitive impairment factors, item 15 “At work I struggle to think clearly” loads on “cognitive impairment” and on a mono-item factor in which only this item is

Table 3. Means, standard deviations, correlations (Pearson), Cronbach's alphas and omega's values.

Sample 1 (N = 131)								
	M (SD)	α	Ω	1	2	3	4	5
1. Exhaustion	2.61 (0.64)	.859	.862	–				
2. Mental distance	2.17 (0.79)	.788	.789	.451*	–			
3. Cognitive impairment	2.11 (0.66)	.808	.812	.537*	.518*	–		
4. Emotional impairment	1.84 (0.65)	.809	.813	.462*	.340*	.522*	–	
5. Psychological symptoms	2.55 (0.83)	.808	.808	.591*	.383*	.476*	.505*	–
6. Psychosomatic complaints	2.09 (0.76)	.803	.811	.506*	.240*	.347*	.381*	.651*
Sample 2 (N = 455)								
	M (SD)	α	Ω	1	2	3	4	5
1. Exhaustion	2.28 (0.67)	.867	.873	–				
2. Mental distance	1.96 (0.64)	.722	.729	.58*	–			
3. Cognitive impairment	2.01 (0.59)	.721	.727	.55*	.51*	–		
4. Emotional impairment	1.85 (0.59)	.790	.792	.62*	.56*	.53*	–	
5. Psychological symptoms	2.46 (0.73)	.772	.775	.71*	.47*	.44*	.59*	–
6. Psychosomatic complaints	2.03 (0.63)	.712	.724	.55*	.29*	.30*	.42*	.66*

Note. * $p < .05$.

Table 4. Correlations (Pearson) between the BAT dimensions considering sample 2 participants that answered twice (T1 and T2) the questionnaire.

Sample 2 (N = 311)	E T2	MD T2	CI T2	EI T2	PS T2	PC T2
1. Exhaustion (E) T1	.79*					
2. Mental distance (MD) T1		.76*				
3. Cognitive impairment (CI) T1			.67*			
4. Emotional impairment (EI) T1				.75*		
5. Psychological symptoms (PS) T1					.80*	
6. Psychosomatic complaints (PC) T1						.77*

Note. * $p < .05$.

present, and item 29 “I suffer from palpitations or chest pain” and 30 “I suffer from stomach and/or intestinal complaints” present loadings on both psychological and psychosomatic complaints factors. As all loadings are higher than .40,⁵⁰ and considering previous evidence that include item 6 as part of the exhaustion factor, item 15 as a part of cognitive impairment factor, and item 29 and 39 as part of psychosomatic symptoms,¹ we have also considered them as indicators of these dimensions. This leaves us with the expected 6 factors of the original English version of the BAT: (1) Exhaustion, (2) Mental distance, (3) Cognitive impairment, (4) Emotional impairment, (5) Psychological symptoms, and (6) Psychosomatic complaints.

Additionally, we performed a confirmatory factor analysis with sample 2 to analyze the fit of the model using MPLUS software. Results showed that the internal structure suggested by our previous analyses (six-factor model) had an acceptable fit: RMSEA = 0.050, CFI = 0.908, TLI = 0.898 and SRMR = 0.053.

Given the large correlations among the six dimensions of the model (Table 2), a one-factor model might be more suitable to represent burnout. To explore this potential, we contrasted the six-factor model with a single-factor model, where all indicators were specified to load onto one overarching factor. The findings revealed that the six-factor model exhibited superior fit compared to the alternative one-factor solution (RMSEA = 0.079, CFI = 0.759, TLI = 0.743 and SRMR = 0.070).

Additionally, following Schaufeli et al.'s¹ original internal structure, we tested a second-order CFA differentiating exhaustion, mental distance, cognitive impairment, and emotional impairment as core dimensions of burnout (i.e., BAT-C) and psychological and psychosomatic complaints as secondary symptoms (i.e., BAT-S). The model also obtained an acceptable fit (RMSEA = 0.052, CFI = 0.898, TLI = 0.890 and SRMR = 0.057).

Furthermore, after examining the parameter estimates, fit indexes, and residuals, we conducted model modifications to obtain a better-fitting or more parsimonious model. The MPLUS software calculation of modification indexes suggested correlating the residuals of some items (within the same factor). After correlating residuals of items 1 and 8 (factor exhaustion), items 6 and 8 (factor exhaustion), items 14 and 17 (factor cognitive impairment) and items 18 and 16 (factor cognitive impairment), the model showed an excellent fit: RMSEA = 0.049, CFI = 0.908, TLI = 0.900 and SRMR = 0.056.

Table 5. BAT scale.

		Factor loadings							
		I	II	III	IV	V	VI	VII	VIII
Core dimensions									
Exhaustion	Item 1	.687							
	Item 2	.531							
	Item 3	.679							
	Item 4	.728							
	Item 5	.690							
	Item 6	.560		.703					
	Item 7	.634							
	Item 8	.754							
Mental distance	Item 9		.601						
	Item 10		.637						
	Item 11		.728						
	Item 12		.783						
	Item 13		.600						
Cognitive impairment	Item 14			.880					
	Item 15			.419				.581	
	Item 16			.698					
	Item 17			.821					
	Item 18			.720					
Emotional impairment	Item 19				.629				
	Item 20				.674				
	Item 21				.574				
	Item 22				.528				
	Item 23				.786				
Secondary symptoms									
Psychological symptoms	Item 24					.536			
	Item 25					.623			
	Item 26					.840			
	Item 27					.804			
	Item 28					.612			
	Item 29					.699	.512		
Psychosomatic complaints	Item 30					.676	.595		
	Item 31						.707		
	Item 32						.632		
	Item 33						.669		

Table 6. Correlations between burnout and variables of interest.

		Burnout (Total BAT score)
General health	Successful coping	-.55*
	Self-esteem problems	.60*
	Stress	.66*
State anxiety		.68*
Work ability		-.42*
Turnover intention		.44*

Note. * $p < .05$.

Convergent validity

The BAT total score was analyzed considering its relationship with variables of interest (i.e., general health, anxiety, work ability, and turnover intention). Bivariate Pearson correlations were tested (Table 6), showing a positive

significant association between burnout and self-esteem problems ($r = .60$; $p < .05$), stress ($r = .66$; $p < .05$), anxiety ($r = .68$; $p < .05$), and turnover intention ($r = .44$; $p < .05$), and a negative relationship between burnout and successful coping ($r = -.55$; $p < .05$) and work ability ($r = -.42$; $p < .05$). Therefore, these results suggest that the BAT scale is convergent with previous burnout measures such as the MBI and with large amount of empirical research evidence.

Discussion

The objective of the present study was to contribute to the validation of the Spanish version of the BAT.¹ Its psychometric properties were analyzed by assessing its reliability, factorial validity, and convergent validity. First, in the case of reliability, both Cronbach's alpha and McDonald's

omega values indicated an excellent reliability, considering George & Mallery's⁴⁹ cut-off values. Second, regarding factorial validity, CFA analyses were carried out. As in the original version of the BAT, six factors were obtained: (1) Exhaustion, (2) Mental distance, (3) Cognitive impairment, (4) Emotional impairment, (5) Psychological complaints, and (6) Psychosomatic complaints. However, considering the large correlations among the six dimensions of the model, we also evaluated the possibility that a one-factor model might better represent burnout. Results supported the idea that the six-factor model fits the data better than the alternative one-factor solution. Additionally, following Schaufeli et al.'s¹ original internal structure, we tested a second-order CFA, differentiating its core dimensions and secondary symptoms. After conducting some suggested model modifications to obtain a more parsimonious model, the model obtained even a better fit than the previous six-factor first-order model. Third, to verify the convergent validity, the total score of the BAT was correlated with related variables such as health, anxiety, work ability, and turnover intention. Regarding the association between burnout and state anxiety, self-esteem problems and stress, and turnover intention, Pearson correlations showed that, as in previous literature,^{10,35,36,38} they were all significantly and positively related. Additionally, the relationships between burnout and work ability and successful coping were found to be negative and significant. In line with previous findings,³⁷ these results confirm previous results, given that all these variables have been associated with other measures of burnout.¹⁸

In conclusion, this study contributes evidence regarding the reliability, factorial validity, and convergent validity of the BAT in the Spanish context. These findings align with Schaufeli and colleagues'¹ results, underscoring the robustness of the BAT and its consistent measurement across seven diverse countries. It should be noted that Spain was not one of these countries, and so there were no available data on Spanish workers using the BAT until the current study. Therefore, the present research contributes to supporting the validity of the BAT, suggesting that it can be considered a good alternative tool for measuring burnout in Spanish workers (overcoming the identified limitations of the MBI tool). Additionally, the results of our study are consistent with previous research conducted in various countries. Researchers in Ecuador³² have tested the validity of the four core dimensions of the BAT scale and found it to be effective. Similarly, studies from Italy²⁸ and Japan³¹ have examined the factorial structure of the BAT, considering both the core and secondary dimensions, and have found support for its structure in their respective contexts. Building on this existing evidence, our study highlights that the BAT scale, in its most comprehensive version, is applicable to the Spanish context, further reinforcing its cross-cultural relevance and applicability.

Many years have passed since the study of the construct of burnout began. The initial approach was based on the MBI and has been accepted for decades. For over 40 years, burnout has been understood as emotional exhaustion, depersonalization or cynicism, and lack of personal accomplishment. However, the world of work has undergone significant changes: work activities and work organization have deeply evolved, the profile of workers has changed, the reality of organizations has evolved, and we have experienced a pandemic that has shifted us towards new forms of work (e.g., telework). Therefore, there was a need to reformulate the conceptualization of burnout because, for example, it has been suggested that a lack of personal accomplishment is not as central to burnout as emotional exhaustion and cynicism while other components are becoming more salient as the ones included in the BAT. Although the MBI has been very useful all this time, as the nature of work changes, the conceptualization of burnout may also change and evolve and research needs to identify the configuration of the construct that fits better nowadays workers' experience. Consequently, new tools are needed to measure the burnout phenomenon more accurately in the third decade of the twenty-first century. The BAT fills this gap by providing, for example, an opportunity to distinguish between cognitive and emotional impairment. Its Spanish version shows suitable psychometric characteristics.

This study has some limitations. First, one limitation is the cross-sectional nature of the design. Having different time points would make it possible to perform causal analyses of the relationships between burnout and related variables. First, we lack more specific sociodemographic data from sample 1 (e.g. occupational category, type of contract). However, the second data collection was more informative and allows the results to be generalized, since it covers the entire Spanish territory, different professional categories, study levels, and other relevant demographic variables, showing similar results to sample 1 with regard to factor structure and internal consistency.

In terms of practical implications, it should be noted that the present results show that the BAT provides a more complex insight into the burnout phenomenon and is an appropriate tool for measuring burnout and its different factors in the context of Spanish workers well-being. This comprehensive way of assessing burnout also makes it possible to apply more focused interventions that target specific issues of the syndrome that may be particularly damaged at any given moment. Additionally, because the BAT defines different levels of severity depending on the scores on the different dimensions, it may serve as a warning that could prevent possible cases of burnout from getting worse.

Conclusion

In conclusion, given the important negative impact burnout may have on workers and their organizations, preventing it


continues being a central issue. Considering this need, the current research made advances in offering a validated version of the BAT in the Spanish context. The BAT was shown to be a useful tool that overcomes previous limitations of other assessment tools (i.e., MBI), and the present research confirms its applicability in Spanish workers.


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ORCID iDs

Aida Soriano  <https://orcid.org/0000-0002-9565-1599>

Hiacynta Warsicka  <https://orcid.org/0009-0005-8073-6548>

Jose M. Peiró  <https://orcid.org/0000-0001-5293-0355>

Statements and declarations

Ethical approval

The research project was approved by the Ethics Committee of Research in Humans of the Ethics Commission in Experimental Research of University of Valencia.

Informed consent

Informed consent was obtained from all participants included in this study.

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