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Evidence of validity and reliability of the Maslach Burnout Inventory-Student Survey (MBI-SS)

Evidencia de validez y fiabilidad del Maslach Burnout Inventory-Student Survey (MBI-SS)

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Recibido: 17/07/2025
Evaluado: 2/12/2025
Aprobado: 11/12/2025

1 CRedit: Conceptualization, curación de datos, investigación, redacción borrador original.
2 CRedit: Metodología, análisis, investigación, escritura, revisión y edición.
3 CRedit: Investigación, supervisión, escritura, revisión y edición.
4 CRedit: Investigación, recolección de información, curación de datos.
5 CRedit: Investigación, recolección de información, escritura, revisión y edición.

* Para citar este artículo: Sierra-Barón, W., Gómez-Acosta, A., Calceto-Garavito, L. N., Romero-Reyes, H. D. y Salazar-Salamanca, J. D. (2025). Evidence of validity and reliability of the Maslach Burnout Inventory-Student Survey (MBI-SS). *Revista Informes Psicológicos, 25*(2), 237-251. https://doi.org/10.18566/infpsic.v25n2a14

Abstract

Burnout is a state of chronic stress that affects mental health. Although research has focused on work contexts, it is also recognized in the university setting. In Colombia, research has been conducted mainly in the northern region, and no instruments have been validated to measure burnout in the southern regions, where cultural and historical particularities converge. This study aimed to determine the psychometric properties of the MBI-SS using a sample of 282 university students (X = 20.7, SD = 4.03 years). Participants completed a sociodemographic questionnaire, the MBI-SS, and the UWES-S to assess their concurrent and discriminant validity. Factor analysis confirmed three dimensions that explain 74.76 % of the variance, with invariance by gender and adequate internal consistency of ω = .83. It is concluded that this inventory is a valid and reliable tool for assessing academic burnout in university students.

Keywords:
burnout; Maslach Burnout Inventory MBI; psychometrics; university students; Colombia.

Resumen

El agotamiento corresponde a un estado de estrés crónico que afecta la salud mental. Aunque su análisis se ha centrado en contextos laborales, también se reconoce en el ámbito universitario. En Colombia, las investigaciones se han desarrollado principalmente en la región norte, no se han validado instrumentos para medir el agotamiento en las regiones del sSur, donde convergen particularidades culturales e históricas. Este estudio tuvo como objetivo determinar las propiedades psicométricas del MBI-SS utilizando una muestra de 282 estudiantes universitarios (X = 20.7, SD = 4.03 años). Los participantes completaron un cuestionario sociodemográfico, el MBI-SS y el UWES-S para evaluar su validez concurrente y discriminante. El análisis factorial confirmó tres dimensiones que explican el 74,76 % de la varianza, con invarianza por sexo y consistencia interna adecuada de ω = .83. Se concluye que este inventario es una herramienta válida y fiable para medir el agotamiento en estudiantes universitarios.

Palabras clave:
burnout; Maslach Burnout Inventory MBI; psicometría; estudiantes universitarios; Colombia

Introduction

The World Health Organization (WHO) defines burnout syndrome as a phenomenon resulting from chronic stress not adequately managed in the workplace (WHO, 2019). Since its introduction in the 1970s, this concept has generated significant interest due to its impact on mental health (Demerouti et al., 2021). Initially, it was considered exclusive to human services, especially in professionals with high social interaction and significant emotional demand (Maslach & Jackson, 1981). However, the most recent research (Schaufeli et al., 2002) has shown that burnout extends to other professional fields, including university students, based on the idea that students, like other professionals, face overloads derived from academic demands (Khosravi, 2023).

University life involves a heavy workload, particularly in health-related degrees such as medicine, psychology, or nursing, where, in addition to theoretical academic challenges, students must acquire clinical training that involves complex patient care situations. This double challenge can increase the development of academic burnout, characterized by emotional exhaustion, depersonalization, and reduced personal fulfillment. These symptoms can undermine students' mental health and negatively affect both the educational process and the quality of care (Liu et al., 2023; Maslach & Leiter, 2016).

The impact of mental health on university students is alarming. Auerbach et al. (2016) reported that approximately 20% of university students worldwide develop mental health disorders during their first year of study, including depression and anxiety; this phenomenon is not exclusive to certain regions or institutions, as the prevalence of these disorders remains high globally (WHO, 2022). International mental health surveys conducted between 2014 and 2017 revealed concerning results. About 32.7% of university students reported suicidal thoughts, and 4.3% had attempted suicide (Mortier et al., 2018). More recent studies estimate that suicide is the second leading cause of death among people of university age worldwide (Xiao et al., 2021). Current data show that 15% of students have had suicidal thoughts and between 2% and 3% have attempted suicide, with a significant increase in these cases during the COVID-19 pandemic (Galán-Muros et al., 2024).

In Colombia, for the first quarter of 2024, 712 cases of suicide were reported, of which 205 involved young people between the ages of 18 and 28 (Congress of the Republic of Colombia, 2024). From the educational context, three universities in the center of the country (Bogotá) have reported alarming figures related to the mental health of their students. At the Universidad Distrital Francisco José de Caldas, 1,568 consultations for mental health disorders, with the most common diagnoses being specific anxiety, depression, generalized anxiety, and stress. Meanwhile, the Universidad Nacional de Colombia reported 32 cases of suicidal ideation in the same year, while the Universidad Pedagógica Nacional has registered four cases of student suicide and 13 suicide attempts, exceeding the ten attempts registered in all of 2023. Psychosocial consultations at the latter institution were mainly related to mixed anxiety and depression disorders, adjustment disorders, and dysthymia (Concejo de Bogotá, 2024).

In the southern region of Colombia, rates of mental disorders have shown a considerable increase in recent years. In 2023, departments such as Tolima, Nariño, Huila, and Putumayo

reported rates of suicide attempts above the national average. Psychiatric disorders being the main risk factor, with a prevalence of 45.3 %, and depression was the most common condition, at 40.8 % (Ministry of Health and Social Protection, 2024; National Institute of Health, 2024). Specifically, for the departments of Huila and Caquetá, 117 cases of suicide attempts were recorded during 2025 (Sistema Nacional de Vigilancia en Salud Pública, 2025). Thus, the objective evaluation of its presence in people is necessary. This evaluation should distinguish the specific types and contexts in which characteristics such as depersonalization, emotional exhaustion and lack of personal fulfillment are manifested, providing a basis for the design and implementation of timely interventions.

Specifically, various tools have been developed for the evaluation of burnout syndrome, including the Oldenburg Burnout Inventory (OLBI) (Demerouti et al., 2003), the Copenhagen Burnout Inventory (CBI) (Kristensen et al., 2005), and the Maslach Burnout Inventory (MBI), the latter being the most well-known instrument in the academic field. Initially, the MBI was developed in its MBI-Human Services Survey (MBI-HSS) version, designed for human services professionals. It was later adapted for teachers with the MBI-Educators Survey (MBI-ES). Subsequently, the MBI-General Survey (MBI-GS) emerged as a broader version, not restricted to caregiving professions, and has become the reference model for measuring burnout in diverse contexts (De Beer et al., 2024).

Based on this latest adaptation, the Maslach Burnout Inventory-Student Survey (MBI-SS) was developed, the most widely used tool for assessing academic burnout in university students. On this scale, Burnout Syndrome refers to exhaustion due to the demands of studying, a cynical and distant attitude towards studies, and a perception of incompetence in the role of student. The MBI-SS has been adapted and validated in various countries such as Thailand (López-Gómez et al., 2025), México (Banda et al., 2021), Ecuador (Zumárraga-Espinosa & Cevallos-Pozo, 2023), Perú (Correa-López et al., 2019), Irán (Rostami et al., 2013), Brazil and Portugal (Campos & Maroco, 2012) (see Table 1). In the case of Colombia, studies have been carried out to verify its psychometric properties in Barranquilla (Hederich-Martínez & Caballero-Domínguez, 2016), Cartagena (Simancas-Pallares et al., 2017) and Monteria (Figueroa et al., 2019).

Table 1
Adaptations and validations of the MBI-SS in different countries

Study	Country	Programs evaluated	Consistency of the instrument
López-Gómez et al. (2025)	Thailand	No report	$\alpha > .70$
Banda et al. (2021)	Mexico	Digital arts, engineering and business management	$\alpha = .717$
Zumárraga-Espinosa and Cevallos-Pozo (2023)	Ecuador	Psychology	$\alpha =$ Between .83–.90 Adaptation to the Ecuadorian university context

Study	Country	Programs evaluated	Consistency of the instrument
Correa-López et al. (2019)	Peru	Medicine	α= .794 Adaptation to Peruvian university students
Rostami et al. (2013)	Iran	No report	α= Between .84–.90
Campos and Maroco (2012)	Brazil and Portugal	No report	α = .83; .88 Contextualization Brazil and Portugal

However, although the instrument has been adapted and validated in other countries, its applicability is not universal, as there are cultural, socioeconomic, and academic differences that can influence the way in which students experience and report burnout (Banda et al., 2021). Furthermore, the studies carried out in Colombia have focused on Caribbean regions (Figueroa et al., 2019; Hederich-Martínez & Caballero-Domínguez, 2016; Simancas-Pallares et al., 2017). In contrast, Huila and Caquetá are departments located in the Andean region, with extensive rural areas that are difficult to access. These conditions have favored the activity of illegal armed groups, especially in the region that borders the Amazon, generating challenging living conditions in the reality for university students (Departamento Nacional de Planeación, 2023; Fundación Ideas para la paz, 2015).

Consequently, the social characteristics and particular environment of this region affect university students' life development, family and social context, and academic performance. These factors create difficult life situations in different spheres, particularly in their professional training process. Although the psychometric properties of the Maslach Burnout Inventory-Student Survey have been studied in some areas of Colombia, it remains important to advance the analysis of its validity and reliability to expand its empirical scope. Strengthening the psychometric evidence will support the use of the instrument in the assessment of burnout in university students in this region of the country, as well as in the processes of intervention and monitoring of the behavior of this phenomenon in this population.

In this context, the present study aims to provide evidence of the validity and reliability of the Maslach Burnout Inventory-Student Survey (MBI-SS) in university students from two higher education institutions in the region.

Method Design

This study, which presents the psychometric properties of the Maslach Burnout Inventory for Students (MBI-SS) (Schaufeli et al., 2002), is an instrumental research study (Ato et al., 2013), characterized by the analysis and adaptation of psychological measurement instruments.

Participants

The sample consisted of 282 undergraduate psychology students (M = 20.7, SD = 4.03 years) from two public universities located in Colombia's Andean and Amazonian regions. Participants were selected through purposive or convenience sampling. The majority were women (80.1 %) and single (91.5 %). Most students (67%) belonged to the Faculty of Social and Human Sciences. About half (49.6%) were from the low-middle socioeconomic level, and 43.6% were in the first three semesters of the program (see Table 2). Inclusion criteria were: (a) enrollment in psychology programs at both universities, (b) being over 18 years of age, (c) active enrollment in any semester of the degree program, and (d) voluntary participation with signed informed consent.

Table 2
Description of the sample

Gender	Frequency	%
Male	56	19.9
Female	226	80.1
Faculty		
Social and Human Sciences	189	67.0
Health Sciences	92	32.6
Other	1	0.4
Period of study		
Beginning (first three semesters)	123	43.6
Intermediate (semesters 4 - 6)	69	27.0
Final (semester 7 and beyond)	73	29.4
Socioeconomic level		
Low	107	37.9
Low-middle	140	49.6
Middle	129	10.3
Middle-high	4	1.4
High	2	0.7
Marital status		
Married	2	0.7
Single	258	91.5
Common-law	22	7.8

Instruments

Socio-demographic questionnaire. Gathered socio-demographic data relevant to the study objectives.

Maslach Burnout Inventory for students (MBI-SS) (Schaufeli et al., 2002): This inventory consists of consists of 15 items assessing exhaustion (5 items), cynicism (4 items), and academic self-efficacy (6 items). Exhaustion refers to the feeling of being unable to give more physically or psychologically; cynicism reflects a negative, devaluing attitude and lack of interest in studying; academic self-efficacy captures doubts about one's ability to fulfill academic duties. Uses a 7-point Likert scale, ranging from 0 ("never") to 6 ("always"). In the Colombian population, this questionnaire has shown adequate internal consistency in each of its subscales (exhaustion, α=.77; cynicism, α=.72; academic self-efficacy, α=.82) (Hederich-Martínez & Caballero-Domínguez, 2016)

Utrecht Work Engagement Scale–Student Version (UWES-S) (Schaufeli & Bakker, 2003): This survey assesses positive and satisfying mental states related to academic work, including vigor (6 items), dedication (5 items), and absorption (6 items). Uses a 6-point Likert scale, ranging from 0 ("never") to 3 ("always"). In the Colombian population, this questionnaire has shown acceptable internal consistency overall (α=.74) and across subscales (vigor, α=.75; dedication, α=.73; absorption, α=.73) (Caballero et al., 2015).

Procedure

First, the research project was presented to the directors of the psychology programs at two public universities in Colombia's Andean and Amazonian regions. Once the project was accepted, the program directors distributed the data collection instruments, which were administered through a Google Forms® form to students who voluntarily agreed to participate in the study after being informed of the research objectives and signing the respective consent form. This study fully complies with the requirements established by the American Psychological Association's ethical code and standards (2017) (sections 4, 8, and 9), and in article 2 (sections 5, 6, and 8) of Law 1090 of 2006, which refers to the professional practice of psychologists. It also adheres to the data protection principles established by Law 1581, since 2012, guaranteeing privacy, anonymity, and total transparency regarding the study objectives for all participants. The study posed no risk to the participants, in accordance with Resolution 8430 of the Ministry of Health. Participants did not receive financial compensation, but individual results were provided to those who explicitly requested them.

Data analysis

A Kaiser-Meyer-Olkin (KMO) analysis yielded a coefficient of .855, and Bartlett's test of sphericity was significant ($p < .001$), indicating that the sample was adequate for factor analysis using Varimax rotation. Item variance contributions and item–test correlations were examined.

Subsequently, for the confirmatory analysis, a structural equation model was evaluated using fit indices, with acceptable values defined as Tucker–Lewis's Index (TLI) and Comparative Fit Index (CFI) >.90 (Schermelleh-Engel et al., 2003). Additionally, RMSEA < .010, SRMR close to zero, and $\chi^2/df \approx 3.0$ were considered acceptable criteria. To determine that the test

does not vary its factorial structure according to the sex of the population, Chen's (2007) criteria were applied, requiring a non-significant $\Delta\chi^2$, $\Delta CFI < .10$, and $\Delta RMSEA < .015$, when comparing the resulting metric, configurational, and strict invariance models. Spearman's Rho was calculated, given the non-parametric distribution of the data, to evaluate the correlation between dimensions of the Maslach Burnout Inventory MBI academic version test, as well as the concurrent-divergent validity of the test in contrast with the academic UWES. Finally, Cronbach's α and McDonald's ω statistics were used to evaluate internal consistency of the factors obtained, as well as of the total test, assuming values $>.70$ as adequate. Analyses were conducted using SPSS version 26® and Jamovi 2.3 (R Project interface).

Results

Initial psychometric properties were analyzed, followed by factor invariance testing using structural equation modeling. Initially, items were grouped according to the structure proposed by Hederich-Martínez and Caballero-Domínguez (2016). Factor loadings above .70, communalities above .60, and item–test correlations above .20 were considered acceptable indicators, except for item 15. For its part, it is determined that the test (excluding item 15) presents a 74.76 % cumulative variance of the measured construct (39.31 % factor 1, 24.14 % factor 2, and 11.33 % factor 3) (see Table 3). This pattern suggests that item 15 did not share sufficient variance with the other items, introducing noise and reducing internal consistency. Recent studies have noted that some items in the academic efficacy dimension show conceptual instability across cultural contexts, which can translate into differential item functioning and discrepancies in the association with the underlying theoretical factor (Valdés Castro et al., 2023; López-Gómez et al., 2025).

This analysis corroborates that the test items are organized into three factors, consistent with both the original test and the adaptation by Hederich-Martínez and Caballero-Domínguez (2016).

Table 3
Characteristics of the items and subscales

Item	Factor			Extraction	Item-test correlation	If the element is deleted	
	Academic Efficacy	Exhaustion	Cynicism			α of Cronbach	ω of McDonald
MBI1	.863			.746	.273	.797	.825
MBI2	.832			.704	.200	.803	.827
MBI3	.888			.811	.239	.801	.825
MBI4	.880			.775	.229	.801	.826
MBI5	.776			.616	.209	.802	.827

Item	Factor			Extraction	Item-test correlation	If the element is deleted	
	Academic Efficacy	Exhaustion	Cynicism			α of Cronbach	ω of McDonald
MBI6		.816		.681	.510	.780	.813
MBI7		.886		.789	.648	.768	.804
MBI8		.850		.769	.610	.771	.803
MBI9		.802		.705	.594	.772	.804
MBI10		.742		.678	.552	.776	.804
MBI11			.843	.755	.490	.782	.806
MBI12			.904	.857	.528	.779	.802
MBI13			.862	.744	.391	.790	.814
MBI14			.856	.736	.386	.790	.815
MBI15	.373	.376	-.324	.384	.175	.803	.831

For the confirmatory analysis, two models were tested (with 15 items and 14 items). Both models demonstrated acceptable goodnessoffit indicators for χ^2/df, RMSEA, SRMR, CFI, and TLI. However, the model excluding item 15 showed a slightly better fit (see Table 4).

Table 4
Confirmatory factor analysis

	X2 (df)	ΔX² (p > .05)	CMIN/ df	CFI (> .90)	Δ CFI (< .010)	RMSEA (< .100)	Δ RMSEA (< .015)	Invariance (Trends)
Across gender								
Multigroup analysis								
Configural model	379.953 (148)		.61	.920	---	.075		Invariant
Metric model	386.624 (159)	**.825**	.89	.922	**.002**	.072	**.003**	Invariant
Scalar model	411.392 (173)	**.037**	.98	.918	**.004**	.070	**.002**	Invariant
Strict model	506.413 (193)	**.000**	1.36	.892	**.026**	.076	**.006**	Variant

Multigroup factor analysis was then conducted to test the invariance of the MBISS scale across gender. The unrestricted (configural) and restricted models (metric and scalar invariance) met all invariance assumptions. However, strict invariance was not supported, indicating that while the factorial structure is stable across gender, residual variances differ (see Table 5).

Table 5
Configural Invariance Model of the MBI – SS

Model	X2	gl	X2/gl	CFI	TLI	SRMR	RMSEA (I.C. 95%)
Achieved (All items)	342	87	3.93	.91	.89	.08	.10 (.09–.11)
Achieved (Without item 15)	271	74	3.66	.93	.91	.05	.09 (.08–.11)
Desired	---	---	< 3.0	>.90	>.90	Close to 0	<.10

Similarly, the dimensions of the MBI version for university students showed statistically significant correlations with the factors of the academic UWES. These results provide evidence of divergent validity for the "burnout" and "cynicism" dimensions, and convergent validity for the "academic efficacy" dimension (see Table 6).

Table 6
Indicators of Convergent and Divergent Validity of the MBI-SS test

Convergent validity Vigor		UWES - academic		
		Dedication	Absorption	
MBI - SS	Efficacy	.684**	.579**	.662**
	Exhaustion	-.231**	-.163**	-.139**
	Cynicism	-.496**	-.564*	-.434**

**Note. *p < .001, p < .05.

Finally, reliability estimates using Cronbach's α and McDonald's ω indicated adequate internal consistency for the total scale (ω = .83) and for each dimension (academic efficacy, ω = .90; exhaustion, ω = .89; cynicism, ω = .91). These results confirm that the MBI-SS provides reliable measurements in this sample.

Discussion

The present study confirmed that the MBI-SS maintains a three-dimensional factor structure, exhaustion, cynicism and academic efficacy, consistent with the original proposal of Schaufeli et al. (2002). The psychometric analyses revealed adequate indices of model fit and reliability, similar to those reported in previous studies in Colombia (Hederich-Martínez & Caballero-Domínguez, 2016; Simancas-Pallares et al., 2017) and in other countries such as Mexico (Banda et al., 2021) and Ecuador (Zumárraga-Espinosa & Cevallos-Pozo, 2023). These findings reinforce the robustness of the MBI-SS as a valid tool for assessing burnout in university students in the southern region of Colombia.

In terms of the dimensions evaluated, burnout showed high reliability $\alpha = .896$, which is consistent with the findings of Correa-López et al. (2019), who found an $\alpha = .855$ for burnout, and Banda et al. (2021), with an $\alpha = .856$. However, in the Peruvian study (Correa-López et al., 2019), the sample was mostly made up of students born in Lima (71.7%), while the remaining 28.3% came from other regions or countries, which suggests that the geographical context could influence the experience of burnout. Furthermore, the study used an adapted version of the MBI-SS, specifically designed for medical students (MBI-URPMSS), with 14 items adjusted to this population, which may explain differences in the scores obtained, in comparison with those of our study, in which the standard version of the MBI-SS was used.

In relation to cynicism, the present study reported an $\alpha = .907$. In comparison, Campos and Maroco (2012) found a Cronbach's $\alpha = .868$ in their adaptation for Brazil and Portugal, while Zumárraga-Espinosa and Cevallos-Pozo (2023) reported $\alpha = .880$; this suggests that the reliability of the cynicism subscale in the present study is slightly higher than that reported in other validations. It is important to highlight that the Portuguese version used in the study by Campos and Maroco (2012) was originally developed by Carlotto and Câmara (2006) and later adjusted to align with the Orthographic Agreement of the Portuguese Language. Although its psychometric properties were adequate in the context of its validation, its applicability in other populations may be limited because the questionnaire was specifically adapted to the linguistic and cultural characteristics of Brazil and Portugal.

Regarding the academic efficacy dimension showed $\alpha = .868$, indicating high internal consistency. This value is comparable to that reported in Ecuador ($\alpha = .83$) by Zumárraga-Espinosa and Cevallos-Pozo (2023). In contrast, a study carried out in Mexico by Banda et al. (2021) reported an $\alpha = .717$ for the academic efficacy subscale, which suggests moderate internal consistency; furthermore, the sample for the structural validation of the study was made up of students of engineering, digital arts and business management, which implies that the findings are more easily generalizable to this population.

When comparing our findings with previous studies, it is important to consider the differences in the socioeconomic context and the type of educational institution. In our study, a significant percentage of participants came from a low-middle socioeconomic stratum, representing 49.6% of the total, which reflects a different socioeconomic reality to that of other studies, such as that of Simancas-Pallares et al. (2017), where the majority of participants belonged to stratum 3. On the other hand, research such as that of Hederich-Martínez and Caballero-Domínguez (2016) and Simancas-Pallares et al. (2017) was carried out in private universities located on the Colombian Caribbean coast, which could have influenced the characteristics and profiles of the participants, since these institutions have a different academic and sociocultural context to that of public schools. Finally, the reliability indices obtained in this study (Cronbach's $\alpha = .80$, McDonald's $\omega > .83$ for the total test) support the internal consistency of the MBI-SS in this sample, in line with the values reported in previous studies in Colombia and other countries.

The results of this study, by confirming the three-dimensional structure of the MBI-SS and its good internal consistency indices in a markedly rural Andean region of southern Colombia, reinforce the idea that academic burnout is a robust psychologically phenomenon, though

culturally situated. Recent literature emphasizes that exhaustion, cynicism, and academic efficacy are expressed differently depending on socio-educational contexts, trajectories of inequality, and experiences of violence or instability, so theoretical models must engage with the specific conditions of students (Chong et al., 2025). In this sense, the study contributes to an understanding that broadens the scope of burnout in students who are educated in areas affected by rurality, armed conflict, and socioeconomic precariousness, showing that the measurement of the syndrome cannot be separated from psychosocial resources such as resilience, gender, or age, already identified as key modulators in other Latin American populations (Posso-Yépez et al., 2025).

From an educational perspective, having an instrument with evidence of validity and reliability in this specific context has direct implications for the design of university wellness policies and for the transformation of institutional culture. Recent reviews show that academic burnout is consistently associated with poor performance, dropout, psychological distress, and inefficient use of available support services. Therefore, early detection must be linked to structural interventions in the learning environment and not limited to individual approaches (Chong et al., 2025). In practice, the results of this study make it possible to identify risk profiles among students in public institutions located in these territories and guide the implementation of curricular strategies, tutoring, and mental health services that are sensitive to territorial conditions, as well as highlight the need to systematically monitor burnout as an indicator of educational quality and equity.

In conclusion, the findings provide evidence of the validity and reliability of the MBI-SS among university students in southern Colombia, highlighting that these psychometric properties support its use in research and screening for planning of preventive actions against burnout and promoting mental health in these contexts.

Financing: This article is part of the project “Effects of Burnout Syndrome on the Mental Health of University Students”, funded by the Universidad Surcolombiana.

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