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Artículos científicos

Validación del Maslach Burnout Inventory en estudiantes universitarios de El Bajío mexicano

Validation of the Maslach Burnout Inventory in Mexican University Students

*Validação do Inventário de Burnout de Maslach em estudantes
universitários do Bajío mexicano*

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Resumen

El objetivo del presente trabajo fue validar la estructura dimensional del Maslach Burnout Inventory-Student Survey (MBI-SS). Asimismo, analizar si la puntuación de las tres subescalas del *burnout* académico es adecuada en comparación con las interpretaciones de la nota técnica NTP-73 del Instituto Nacional de Seguridad e Higiene en el Trabajo de España. Para detectar y monitorear el *burnout* es necesario contar con instrumentos de medición válidos, en este caso específicos para el área educativa. Para contribuir a este propósito, se aplicó el instrumento en 84 estudiantes de licenciatura de una universidad de El Bajío mexicano (N = 84; 52 % hombres, 48 % mujeres). Para el análisis de confiabilidad se utilizó el alfa de Cronbach y para la validez factorial se utilizó el índice Kaiser-Meyer-Olkin (KMO) y la prueba de esfericidad de Barlett. Se obtuvieron alfas de Cronbach de 0.856 para Agotamiento Emocional, 0.851 para Cinismo y 0.717 para Eficacia Académica y 58 % de varianza explicada. Los análisis factoriales confirmatorios de un solo grupo probaron el modelo de tres factores para la muestra compuesta, así como para tres muestras independientes. El análisis factorial posterior confirmó las tres dimensiones de Eficacia, Agotamiento Emocional y Cinismo. En conclusión, el análisis factorial apoya la validez en el uso del MBI-SS, y por lo tanto, un instrumento válido para evaluar el agotamiento estudiantil de la región de El Bajío mexicano.

Palabras clave: *burnout* académico, estudiantes universitarios, validez estructural.

Abstract

The objective of this work was to validate the dimensional structure of the Maslach Burnout Inventory-Student Survey (MBI-SS). Likewise, to analyze whether the score of the three subscales of academic burnout is adequate in comparison with the interpretations of the technical note NTP-73 of the National Institute of Safety and Hygiene at Work of Spain. To detect and monitor burnout, it is necessary to have valid measurement instruments, in this case specific for the educational area. To contribute to this purpose, the instrument was applied to 84 undergraduate students from a university in El Bajío, México (N = 84; 52 % men, 48 % women). Cronbach's alpha was used for the reliability analysis, and the Kaiser-Meyer-Olkin (KMO) index and Barlett's sphericity test were used for factor validity. Cronbach's alphas of 0.856 were obtained for Emotional Exhaustion, 0.851 for Cynicism and 0.717 for Academic Efficiency and 58% of explained variance. Single-group confirmatory

factor analysis tested the three-factor model for the composite sample as well as for three independent samples. The subsequent factor analysis confirmed the three dimensions of Efficacy, Emotional Exhaustion and Cynicism. In conclusion, the factor analysis supports the validity in the use of the MBI-SS, and therefore, a valid instrument to evaluate student exhaustion in the Mexican Bajío region.

Keywords: academic burnout, university students, structural validity.

Resumo

O objetivo deste trabalho foi validar a estrutura dimensional do Maslach Burnout Inventory-Student Survey (MBI-SS). Da mesma forma, analisar se a pontuação das três subescalas de burnout acadêmico é adequada em comparação com as interpretações da nota técnica NTP-73 do Instituto Nacional de Segurança e Higiene no Trabalho da Espanha. Para detectar e monitorar o burnout, é necessário ter instrumentos de medição válidos, neste caso específicos para a área educacional. Para contribuir com este propósito, o instrumento foi aplicado a 84 alunos de graduação de uma universidade em El Bajío, México (N = 84; 52% homens, 48% mulheres). O alfa de Cronbach foi usado para a análise de confiabilidade, e o índice de Kaiser-Meyer-Olkin (KMO) e o teste de esfericidade de Barlett foram usados para a validade fatorial. Alfas de Cronbach de 0,856 foram obtidos para Exaustão Emocional, 0,851 para Cinismo e 0,717 para Eficiência Acadêmica e 58% de variância explicada. As análises fatoriais confirmatórias de grupo único testaram o modelo de três fatores para a amostra composta, bem como para três amostras independentes. A análise fatorial subsequente confirmou as três dimensões de eficácia, exaustão emocional e cinismo. Em conclusão, a análise fatorial apóia a validade no uso do MBI-SS e, portanto, um instrumento válido para avaliar a exaustão dos alunos na região mexicana de Bajío.

Palavras-chave: esgotamento acadêmico, estudantes universitários, validade estrutural.

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Introduction

Young university students currently suffer alterations in the management of their emotions, decreased energy, insomnia, memory problems, anxiety and depression (Carlin and Garcés de los Fayos, 2010; Martín and Martínez, 2016), situations that lead them to a loss of interest in their daily activities and to altering their academic performance (Mosquera et al., 2012; Quiliano and Quiliano, 2020).

Prolonged student stress caused by school-related activities is recognized as academic burnout. Because it can affect academic performance, as well as other aspects of life, it is important to have valid instruments to diagnose this type of exhaustion in particular school populations, in this case in university students from the Mexican Bajío. Thus, with a timely diagnosis, further complications can be prevented, such as avoidance, violence and abuse of prohibited addictive substances in university students (Barreto and Salazar, 2020).

Many times the excessive study load to which the students are exposed, from the completion of tasks and projects to the preparation of simultaneous exams, leads them to physical, mental and emotional exhaustion (Toribio and Franco, 2016). It is a state that induces them to experience threatening moments, to exceed their own limits, begin to feel moments of stress throughout the semester and an ups and downs in their emotions (Quiliano and Quiliano, 2020). Likewise, they experience different levels of exhaustion, emotional, somatoform, behavioral and psychotic disorders (depression, anxiety and somatization the most associated), all of which have a gradual negative effect on mental health, leading the individual to this phenomenon known as burnout (Pepe, Míguez y Arce, 2014).

College students with burnout syndrome are constantly overwhelmed and lose interest in academic activities. Those who suffer from this disorder face different situations of intense stress in different ways. Some resort to the use of social networks as emotional support, they seek new solutions or support; others, to less healthy strategies such as avoiding the problem, escaping reality and substance use (Barreto and Salazar, 2020). Unfortunately, students do not have strategies to help them cope with these situations, to keep them in a state of high efficiency and emotional balance.

Maslach (cited in Olivares, 2017) defines burnout in the workplace as a manifestation of long-term stress resulting from the feeling of conflict between the job and the worker. Maslach shed conceptual clarity on this syndrome, and in doing so, gave it the importance it truly demands. The worker feels so emotionally exhausted by the strong pressures and

tensions that he begins to doubt himself and his ability to work in a functional way and adopts a negative attitude towards others (Olivares, 2017).

Although burnout has been studied especially in work areas (Maricuțoiu, Sava and Butta, 2014), especially in professionals who work with people, for example, in the medical area, but also in those who are part of the sports and professional field. In those who hold middle and high business managers (Maslach and Schaufeli, 1993), it has also been examined outside of there, as in the academic sphere (Motta, Oliveira, Rodrigues y Figueiredo, 2020).

In this regard, Caballero, Hederich and Palacio (2010) and Cruz and Puentes (2017) provide a further definition of academic burnout, quite similar to the one already mentioned above: mental disorder caused by prolonged stress and characterized by both physical and mental exhaustion. Mental and emotional that can lead those who suffer to drop out of their studies. University students are under constant pressure to comply not only with the academic load, but also with the responsibility of carrying out projects, procedures and complementary activities in their area, all this added to their other obligations in their personal and family life (Caballero et al., 2010).

Burnout affects more those who cannot adapt to the demands of institutions. This situation occurs in those universities that maintain an excessive and constant demand on students and do not provide strategies to cope with the different stressors (Barreto and Salazar, 2020; Osorio, Parello and Prado, 2020).

When the student cannot adapt to stressors, negative attitudes may manifest: lack of interest in studying and emotional changes that negatively impact academic performance: their ability to focus begins to be affected to the point of not being able to be assertive in the conflict resolution and decision-making (Palacio, Caballero, González, Gravini & Contreras, 2012), which leads him to feel incapable of carrying out his activities by himself.

Along the same lines, Maslach and Jackson (1981) characterized burnout from three dimensions: emotional exhaustion (emotional exhaustion), depersonalization (indifference and insensitivity towards others) and lack of personal fulfillment at work (feeling unable to carry out their activities successfully).

Emotional exhaustion is the feeling of fatigue, boredom, physical and emotional fatigue that the worker experiences when he feels overloaded with work or there is an over-demand from his superiors and does not have the emotional intelligence to allow him to manage stressful situations. (Maslach and Jackson, 1981). The lack of energy and boredom

make them more insensitive, unadaptable, moody, a situation that leads them to work without interest and motivation (Tello, 2010).

On the other hand, depersonalization is a negative reaction of the employee towards his superiors. It is manifested by lack of sensitivity, discouragement and indifference. People not only withdraw from their employers, but also from their co-workers, because they attribute their lack of interest and productivity. In short, they act negatively towards their source of work and what surrounds it (Tello, 2010).

The third dimension, the lack of personal efficacy at work, is related to the feeling of lack of competence and achievement at work, of not being able to meet expected expectations (Maslach & Jackson, 1981).

For the analysis of burnout in the academic field, the Maslach Burnout Inventory-General Survey (MBI-GS) has been adapted, which has given rise to the Maslach Burnout Inventory-Students Survey (MBI-SS). The results of the latter have shown that students can also suffer from burnout, a disorder characterized by the feeling of not being able to advance and transcend, a negative attitude towards themselves, lack of self-worth, interest and transcendence, loss of credibility in studies and you doubt that you are capable of carrying them out. The MBI-SS measures three dimensions: Exhaustion, Academic Efficiency and Cynicism, the latter instead of depersonalization, which is related to the lack of interest in studying (Schaufeli, Martínez, Marques, Salanova & Bakker, 2002).

The burnout syndrome has been declared by the World Health Organization (WHO) in 2000 as an occupational risk factor (Gutiérrez, Celis, Moreno, Farias and Suárez, 2006), so it is important to have a reliable instrument for the workplace, yes, but also a specific one for academics: to measure the magnitude of the problem, seek solutions and implement therapeutic techniques in universities that help improve both the physical, mental and emotional health of students.

As we have already said, most studies of burnout have focused on the area of medicine, although there are more and more focused on academics. For example, Rosales and Rosales (2013) found in their research that law students are those who predominantly suffer from stress (34%), followed by psychology and administration (13%), business (10%), public accounting (9%), international relations (8%), information systems (6%) and, finally, tourism and communication (3% and 2%, respectively).

Although the MBI-SS, the instrument that has been used most frequently in the academic field, has been translated and adapted to various languages, however, these translations have usually been carried out by the same researchers, who usually go through possible semantic changes, which can make your application less valid. Some studies even omit reagents or perform them in a two-dimensional way to adapt it to the conditions of their research (Martín and Martínez, 2016).

Regarding the academic burnout scales and the normative data for the MBI-SS, there are no studies or an interpretation reference for this instrument. Often, for the interpretation of the degree of burnout in students, the normative data of the technical note NTP-732 of the National Institute of Safety and Hygiene at Work of Spain are used, only that this note was designed for the interpretation of the MBI- GS. This interpretation has been convenient for Spanish employees, but may not be adapted to the student context, not to mention cultural differences between countries. In sum, studies are required to analyze whether the interpretation of technical note NTP-732 is adequate for the MBI-SS.

Studies that examine the validity of the MBI-SS warn that the results of their work are limited to the population studied. Consequently, a positive result of the present study in the factorial validation of the MBI-SS will provide a reliable instrument in the evaluation of academic burnout in its three dimensions for the Mexican university community of El Bajío.

Therefore, the objective of this research is to examine the factorial validity of the MBI-SS in university students from El Bajío through a diagnosis of academic exhaustion in undergraduate students from that area. The structural validation of an academic burnout scale is important because it represents a reliable measurement instrument for academic institutions and the scientific community. Likewise, analyze whether the score of the three subscales is adequate, taking as a reference the interpretations of the technical note. Carrying out these diagnoses will allow identifying and preventing high levels of academic burnout, as well as warning the university administration of the need for therapeutic and creative tools to improve the well-being and academic productivity of students, as stated Corporán, Pérez y Ortega (2014).

Method

Research design

The present study carried out a factorial analysis of the MBI-SS on the academic attrition of a university in the Mexican Bajío.

Participants

Undergraduate students from a public university in the El Bajío region of the Mexican Republic who were between the fifth and ninth enrollment of their career were invited to participate voluntarily for the application of the instrument. From the student population of just over 5000 students (5504), a sample of 84 participants (52% men, 48% women) was obtained, with a confidence level of 95% and a margin of error of 10% with a mean age 22 (standard deviation = 1.71), from digital arts, engineering, and business management programs.

Instrument

Before the intervention, a sociodemographic questionnaire was used to collect relevant information: age, sex, coexistence (alone or with family), bachelor's degree and current semester, if he also works, perception of health status (very bad, bad, good, excellent), psychiatric history, weekly average hours dedicated to physical exercise and academic training. The sample included men (52%) and women (48%). The age of the participants included between 20 and 25 years, 22 years as mean and 1.71 standard deviation.

The burnout assessment instrument used was the MBI-SS, which was adapted from the MBI-GS, and this in turn from the original Maslach Burnout Inventory-Human Services Survey (MBI-HSS). The MBI-SS is the most accepted questionnaire as an instrument to assess academic burnout; It consists of 15 items for the dimensions of Emotional Exhaustion (five items), Cynicism (depersonalization) (four items) and Academic Effectiveness (six items). The items of the three dimensions were rated on a frequency scale ranging from zero (never) to six (always). The MBI-SS has been examined in terms of scalability, structural validity and reliability, with significant results in different instruments (Pérez and Brown, 2019).

For the evaluation of the results, the technical note NTP-732 of the National Institute of Safety and Hygiene at Work of Spain was used, which contains the normative data for the interpretation of the MBI-SS, which indicates the levels of burnout for each subscale between zero and six, for which means were determined for each subscale and compared with each of the values of the norm in order to identify burnout levels (table 1).

Tabla 1. Niveles de burnout de acuerdo con la nota técnica NTP-732

| | | Agotamiento | Cinismo | Eficacia |
|-------------------|---------|-------------|-----------|-----------|
| Muy bajo | > 5 % | < 0.4 | < 0.2 | < 2.83 |
| Bajo | 5-25 % | 0.5-1.2 | 0.3-0.5 | 2.83-3.83 |
| Medio (bajo) | 25-50 % | 1.3-2.0 | 0.6-1.24 | 3.84-4.5 |
| Medio (alto) | 50-75 % | 2.1-2.8 | 1.25-2.25 | 4.51-5.16 |
| Alto | 75-95 % | 2.9-4.5 | 2.26 4 | 5.17-5.83 |
| Muy alto | > 95 % | > 4.5 | > 4 | > 5.83 |
| Media aritmética | | 2.12 | 1.50 | 4.45 |
| Desviación típica | | 1.23 | 1.30 | 0.9 |

Fuente: Nota técnica NTP-732 del Instituto Nacional de Seguridad e Higiene en el Trabajo de España

Procedure

Before the application process, the students received basic information about the research project and signed an informed consent. Subsequently, the students completed the questionnaire in a face-to-face session they attended.

Analysis of data

SPSS version 23 software was used for data processing. Once the debugging was finished, Cronbach's alpha was used for the reliability analysis and to determine the significance of the internal consistency of each scale. For factor validity, the Kaiser-Meyer-Olkin (KMO) index, greater than 0.7, and the Bartlett test of sphericity were used. The means obtained in each dimension were analyzed to be compared with each of the values of the means indicated in the technical note NTP-732.

In order to analyze the coherence between the structure proposed for the instrument and the empirical results of the 15 items of the MBI-SS scale of Schaufeli et al. (2002), an exploratory factor analysis was performed using the oblique rotation method (Oblimin).

Ethical considerations

The present investigation was carried out in accordance with the ethical standards of the Institutional Research Committee and the Declaration of Helsinki of 1964 and its subsequent comparable amendments.

Results

Factor analysis of the MBI-SS questionnaire

For the factorial analysis, it was necessary to comply with the multicollinearity requirements of the data. This was done through two procedures: the KMO sample adequacy measure, which yielded an index of 0.772, and the Barlett test with a significance value lower than 0.05, therefore, the factor analysis could be performed. Three factors explained more than 58% (58.469%) of the variance (see table 2).

In a first analysis of the multicollinearity of the 15 items, they were higher than 0.349, however, the Efi4 efficacy item shows a negative level of commonality (0.315). Due to the above, item Efi4 was deleted, given its difficulty, and the factor analysis was recalculated. The same factors were obtained as in the analysis carried out previously, the explained variance slightly increased, as well as a slight increase in factor loadings. Likewise, the communalities of the 14 items were higher than 0.341 (see table 2).

The rotated component matrix yielded three factors: Emotional Exhaustion, Cynicism, and Academic Efficiency. Eliminating Efi4, three factors were obtained: five items of Exhaustion, four of Cynicism and five of Efficacy (see table 2).

Tabla 2. Matriz de componentes rotativos

| | Ítems | Componentes 15 ítems | | | Componentes 14 ítems | | |
|------|--|-------------------------|-------|--------|-------------------------|-------|---|
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| Ago1 | Las actividades académicas de mi carrera me tienen emocionalmente agotado. | 0.830 | | | 0.833 | | |
| Ago2 | Me encuentro agotado físicamente al final de un día en la universidad. | 0.824 | | | 0.824 | | |
| Ago3 | Estoy exhausto de tanto estudiar. | 0.799 | | | 0.799 | | |
| Ago4 | Me siento cansado cuando me levanto por la mañana y tengo que afrontar otro día en la universidad. | 0.713 | | | 0.703 | | |
| Ago5 | Estudiar o ir a clases todo el día es una tensión para mí. | 0.694 | | | 0.688 | | |
| Cin1 | He perdido interés en la carrera desde que empecé la universidad. | | 0.823 | | | 0.811 | |
| Cin2 | He perdido entusiasmo por mi carrera. | | 0.807 | | | 0.802 | |
| Cin3 | Me he distanciado de mis estudios porque pienso que no serían realmente útiles. | | 0.752 | | | 0.761 | |
| Cin4 | Dudo de la importancia y valor de mis estudios. | | 0.764 | | | 0.792 | |
| Efi4 | He aprendido muchas cosas interesantes durante el curso de mis estudios. | | | -0.315 | | | |

| | | | | | | | |
|------|--|--|--|-------|--|--|-------|
| Efi1 | Puedo resolver eficazmente los problemas que surgen en mis estudios. | | | 0.726 | | | 0.731 |
| Efi2 | Creo que hago una contribución efectiva a las clases a las que asisto. | | | 0.764 | | | 0.772 |
| Efi3 | En mi opinión, soy un buen estudiante. | | | 0.702 | | | 0.696 |
| Efi5 | Me estimula conseguir objetivos en mis estudios. | | | 0.349 | | | 0.341 |
| Efi6 | Durante la clase, me siento seguro de que soy eficaz para hacer las cosas. | | | 0.754 | | | 0.762 |

Método de extracción. Análisis de componentes principales. Método de rotación.

Normalización Oblimin con Kaiser

Fuente: Elaboración propia

This analysis supports the validity of the instrument once item four has been eliminated. The results obtained from the 14 items of the instrument are presented below.

Descriptive analysis of the scales

The reliability analysis, according to Nunnally and Bernstein (1994), yielded values greater than 0.7 for the three subscales, which means that Cronbach's alphas had a good level of reliability (see table 3).

Tabla 3. Estadísticas descriptivas de las subescalas y del MBI-SS

| | Agotamiento | Cinismo | Eficacia |
|-------------------------------------|-------------|---------|----------|
| Media | 3.8142 | 1.9017 | 4.2777 |
| Desviación típica | 1.22 | 1.41 | 0.81 |
| Alfa de Cronbach | 0.856 | 0.851 | 0.717 |
| Alfa basada en ítems estandarizados | 0.859 | 0.851 | 0.713 |
| Núm. de ítems | 5 | 4 | 5 |

Fuente: Elaboración propia

As can be seen in table 4, 40.5% of the sample presents high levels of exhaustion and 33.3% very high. Only 8.3% of the sample has a very high level of cynicism and 22.6% high. Finally, 8.3% of the sample presents high levels of efficacy and 6% very high.

Tabla 4. Niveles de *burnout* de los estudiantes

| | | Agotamiento | | Cinismo | | Eficacia | |
|-------------------|----------------------|-------------|--------|---------|--------|----------|--------|
| Rangos de puntaje | Muy bajo (>5 %) | 0 | 0.0 % | 8 | 9.5 % | 3 | 3.6 % |
| | Bajo (5-25 %) | 0 | 0.0 % | 10 | 11.9 % | 16 | 19.0 % |
| | Medio-bajo (25-50 %) | 7 | 8.3 % | 11 | 13.1 % | 35 | 41.7 % |
| | Medio-alto (50-75 %) | 15 | 17.9 % | 29 | 34.5 % | 18 | 21.4 % |
| | Alto (75-90 %) | 34 | 40.5 % | 19 | 22.6 % | 7 | 8.3 % |
| | Muy alto (> 95 %) | 28 | 33.3 % | 7 | 8.3 % | 5 | 6 % |

Fuente: Elaboración propia

Finally, it is possible to determine the percentage of participants who suffer from burnout in its three dimensions, that is, high or very high levels of emotional exhaustion and cynicism, as well as low or very low levels of efficacy. Thus, 9 out of 84 students, representing 10% of the total sample, suffer from this syndrome with low or very low levels of efficiency, or very high or high levels of exhaustion and cynicism.

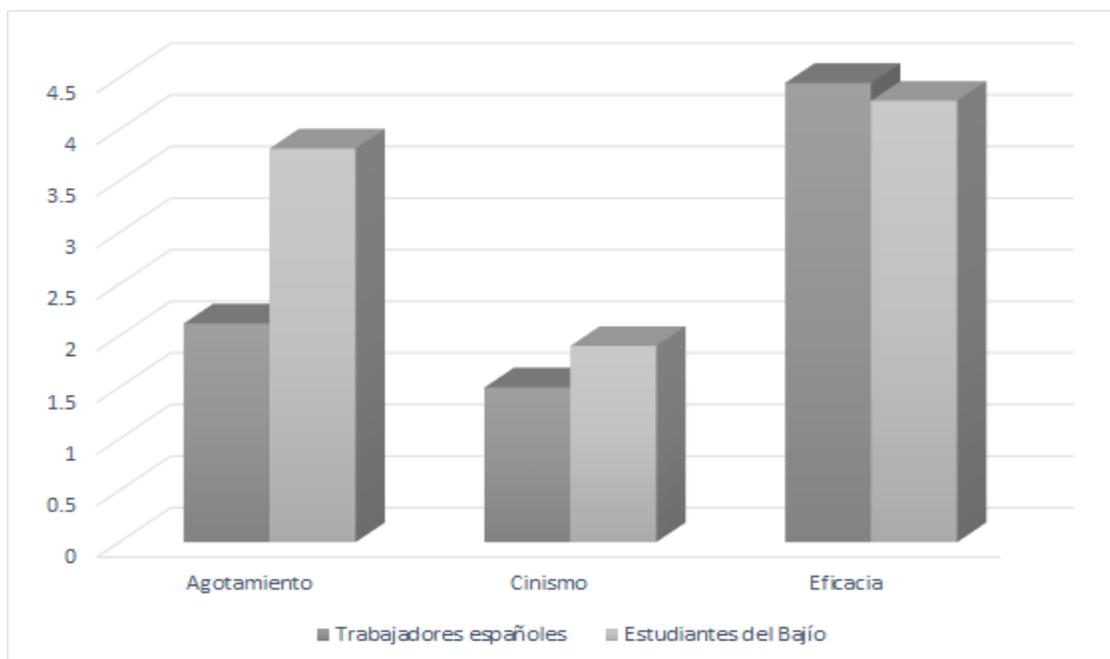
Comparison of the results against those of the standard of the Spanish norm

Comparisons were made between the results of the sample of students from El Bajío and the data from the NTP-732 prepared from the application of the MBI-GS to Spanish workers (Figure 1). In the Exhaustion dimension, the scores of the students from El Bajío ($M = 3.81$, $DT = 1.22$) were notably higher than those presented in the NTP-732 ($M = 2.12$, $DT = 1.23$). The t-test for a sample checks the significance of this difference, where $t(83) = 12.70$, $p < 0.001$, $d = 1.38$, 95% CI.

The Cynicism data for the sample of the present investigation ($M = 1.90$, $DT = 1.41$) were found above those reported in the Spanish technical note ($M = 1.50$, $DT = 1.30$). Such difference was significant when applying the t-test of a sample with values $t(83) = 2.61$, $p = 0.0107$, $d = 0.28$, 95% CI.

The comparison made with the t-test for a sample did not reveal a significant difference in the Efficacy dimension between the data of the Bajío students ($M = 4.27$, $DT = 0.81$) and of the Spanish workers ($M = 4.45$, $DT = 0.9$). The test results were $t(83) = -1.94$, $p = 0.0547$, $d = 0.21$, 95% CI.

Figura 1. Medias obtenidas en las dimensiones del MBI por trabajadores españoles y estudiantes de El Bajío



Fuente: Elaboración propia con datos de la nota técnica NTP-732

Discussion

The objective of this work was to validate the MBI-SS instrument in its three subscales in university students from the El Bajío region and to analyze whether the score of the three subscales of academic burnout is adequate in comparison with the interpretations of the technical note NTP- 732 Spanish.

For the first objective, the findings of this study indicated that the analysis of the items helped to identify a lack of coherence in the subscale of academic effectiveness, in which it was necessary to omit the item Efi 4 “I have learned many interesting things during the course of my studies”, to increase the consistency of the scale.

The MBI-SS, structural validity, and reliability scales have significant levels of 0.733 full-scale Cronbach's alpha, 0.717 for Efficacy, 0.856 for Exhaustion, and 0.851 for Cynicism. Factor analysis confirmed the three dimensions of Efficacy, Emotional Exhaustion and Cynicism (depersonalization). Confirmed factor validity, the MBI-SS questionnaire in its three dimensions can be used to assess burnout in university students from El Bajío.

The results of the present investigation were consistent with those reported in other studies (Schaufeli et al. 2002; Hu and Schaufeli, 2009; Hederich and Caballero, 2016; Pérez and Brown, 2019) when corroborating the factorial validity of the MBI-SS.

Previous studies that examine the validity of the MBI-SS indicate that a limitation of these studies is that the results of their work are limited to the population studied. Here, the positive result in the factorial validation of the MBI-SS provides a reliable instrument in the evaluation of burnout in its three dimensions for the university community of El Bajío.

Our second objective was to analyze whether the score of the three academic burnout subscales is adequate in comparison with the interpretations of the Spanish technical note NTP-732. An important finding found in this study is the differences in the results found in the students of the El Bajío region and that found in the samples of Spanish employees used for the interpretation of the MBI-GS, which in turn served as the basis for interpreting the MB-SS.

The results of the present study in Mexican students with respect to the aforementioned Spanish sample were very interesting, especially in the Exhaustion and Cynicism factors. Students from the Mexican shoal show much higher levels of exhaustion and cynicism than Spanish employees; in the levels of Academic Effectiveness, there is a minimal difference.

The main cause of stress in students is due to university work (Corporán et al., 2014), or to issues arising from them. The difference between the two samples may be due to cultural reasons; Another reason is that, although both activities, both academic and work, require mental effort, at the end of the day work has a break, even one day a week, and academic work, in the majority of the occasions, they suffer from wear and tear at any time of the day, including weekends, a situation that is increased during exam periods or at the end of the school period (Toribio and Franco, 2016).

In the case of cynicism, something similar happens: the worker, by his nature, is forced to fulfill his obligations, because his own survival or that of someone else is involved, a situation that does not happen with students, then, In most cases, they depend economically on someone else, so, as it is not a question of survival, some of them carry out their studies with low performance or even drop out (Palacio et al., 2012). However, the index of cynicism in the Mexican El Bajío sample differs from that found by Hederich and Caballero (2016) in a sample of Colombian students, who obtained lower values in this section than the Spanish sample. In the same sense, the depletion index is much higher in the Mexican Bajío region than the Colombian sample, this may be due to the confinement that occurred due to the pandemic, not only because of it, but also because of the uncertainty of not knowing if there would be a return to face-to-face classes, a situation where few online sessions were held for weeks, and when they were resumed, workloads increased.

Faced with this scenario, it is recommended that teachers and the university administration provide support and provide resources aimed at reducing stress, such as therapies, techniques, recreational activities or sessions and courses that address issues about its management and treatment.

The limitations of the study include that the sample size can be a determining factor in structural validation, so increasing the number of subjects could bring more representative results. The non-face-to-face study conditions can cause a mismatch in the interpretation of the items of the MBI-SS. The sample for the structural validation of this study is made up of students from El Bajío from areas of engineering, digital arts and business management, therefore, the correct application of the findings found is limited to this population.

Conclusions

The MBI-SS instrument, and its three dimensions, was validated. This through a reliability and factor validity analysis. The MBI-SS, structural validity and reliability scales have significant levels of 0.733 Cronbach's alpha; 0.717 for Efficacy, 0.856 for Exhaustion and 0.851 for Cynicism. Factor analysis confirmed the three dimensions of Efficacy, Emotional Exhaustion and Cynicism (depersonalization).

The results of this study indicated that the MBI-SS instrument can be used to evaluate and diagnose burnout syndrome in students of the public university studied, and thus prevent, through coping techniques, burnout in students, improve their performance and avoid school dropouts; contribute, in short, to a better quality of university life.

Likewise, the application of the instrument to students from the Mexican public university of El Bajío presented medium and high levels of exhaustion and cynicism, two of the dimensions of burnout. The main factor was the load of university projects.

Furthermore, it was found that the rates of exhaustion and cynicism are much higher in students from the El Bajío region than those found in Spanish populations. For this reason, it is strictly important that academic institutions become aware of the role of stress in the mental health and general well-being of their student community, and promote activities that contribute to their integral development. Diagnosis is the essential predecessor for such purposes.

Future lines of research

In future lines of research, it is recommended to expand the size of the sample and include other countries in it, as well as the longitudinal study of some technique to reduce academic stress and how this technique can help burnout during the exam period, when the load academic increases. Likewise, it is recommended to carry out a post-pandemic study to validate if the high rates of exhaustion and cynicism were the result of confinement or if the parameters obtained from the MBI-GS for the interpretation of the results of the MBI-SS are not suitable for the academic environment.

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