

Original article**Assessment of factors associated with academic engagement and student burnout in the Moroccan context.**Younes Rami¹, Zakaria Abidli², Joumana Elturk³, Bouabid Badaoui⁴.**Abstract:**

Introduction: Student burnout syndrome is a major concern in higher education, associated with high prevalence rates. Its consequences include dropping out of school and adverse effects on mental and physical health. Despite this, the importance of academic engagement, a positive attitude towards learning, is often overlooked in the Moroccan context. **Methods:** This is a cross-sectional study conducted over a period of one month in 2023, and relies on semi-structured interviews to collect data. The measurement instruments used in this study include a self-questionnaire and two well-established scales: the Copenhagen Burnout Inventory (CBI) and the Utrecht Work Engagement Scale (UWES-9). **Results:** The study reveals complex links between socio-economic factors, academic failure and burnout, with p values < 0.05 . No significant relationship was revealed between engagement and burnout ($p > 0.05$). Female students showed a higher level of burnout than male students ($p < 0.05$). Age appears to be a determining factor, with younger students showing higher levels of burnout. Housing had an influence on burnout ($p < 0.05$) and differences between faculties showed a significant effect on burnout ($p < 0.05$). The internal consistency of the burnout and engagement scales are satisfactory. **Conclusion:** This study highlights the need for a holistic approach to addressing burnout in students. Targeted interventions are essential to support students in diverse academic contexts, taking into account a variety of socio-economic factors.

Keywords: burnout; academic engagement; students; associated factors; Morocco

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Introduction :

Based on the literature review, the field of education has increasingly shown interest in exploring the various aspects of academic engagement and its intricate connection with student well-being. In fact, the quality of an educational system is assessed based on both academic success and student well-being¹, as these two elements are intertwined. As highlighted by the Organisation for Economic Co-operation and Development, educational institutions aim to achieve both goals. However, it's worth noting that "well-

being" doesn't feature in global university rankings, unlike academic performance and its impact on student well-being²⁻³. This discrepancy often results in an emphasis on success and productivity at the expense of student well-being and health. Awareness of student health has recently gained prominence, particularly due to health concerns arising from the European Bologna reform process and its effects on students⁴⁻⁵. Furthermore, students find themselves in a unique phase of their lives marked by various changes in their social environment and lifestyle,

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especially in developing countries⁵. This phase often includes moving away from their family homes, establishing new social connections, and transitioning into the professional world alongside their academic responsibilities.

Drawing from the work of Bakker AB, two contrasting factors in the professional sphere concerning well-being or its absence stand out: work engagement and burnout^{5,6}. Although these factors were initially explored in a professional context, they have also found relevance in educational systems, including schools and universities⁷⁻⁸. This expansion has spurred scientific research into their impact on student health and well-being.

In Morocco, there is a notable gap in scientific studies examining the connections between students' academic engagement and academic burnout, as indicated by the existing literature. It's important to note that Morocco's specific socio-cultural and academic context provides an intriguing framework for understanding how various elements come together to shape students' academic experiences and emotional well-being. By meticulously assessing these factors, our research aims to offer valuable insights that can inform educational policies and practices.

Within this context, our study's ultimate objective is to advocate for a comprehensive approach to education that takes into account the intricate interplay between academic engagement and student burnout within the Moroccan context. To achieve this goal, we first set out to evaluate the psychometric properties of each measurement instrument. Subsequently, we aim to identify the factors associated with academic engagement and burnout within the Moroccan university setting.

Materials and methods

Type and population of study

It is a cross-sectional study conducted over one month in 2023. The sample was solicited through semi-structured interviews. We excluded students with psychiatric or neurocognitive problems. The sample under observation comprised students from various faculties in the Rabat-Sale-Kenitra region.

Psychometric tests:

Auto questionnaire

This form collects data to segment the sample. It includes socio-demographic variables such as gender, age and number of siblings. Socio-economic

factors such as housing, means of transport, family social class and source of funding are also taken into account. Origin (urban, rural) is the only socio-cultural factor. Academic factors include baccalaureate grade, post-baccalaureate orientation, satisfaction with this orientation, course pace, exam preparation and preparation method.

Copenhagen Burn out Inventory (CBI)

The CBI includes 24 items assessing different types of burnout: Personal burnout (9 items), school-related burnout (3 items), colleague-related burnout (6 items), and teacher-related burnout (6 items). For example, Personal burnout concerns physical and psychological fatigue accumulated over the day, while Colleague related burnout refers to fatigue due to working with colleagues⁹.

Utrecht Work Engagement Scale (UWES-9)

The UWES instrument measures work engagement along three dimensions: vigor (VI), dedication (DE), and absorption (AB). The UWES-9 consists of 3 items for each dimension, measuring a positive and fulfilling work-related state of mind¹⁰. A high score indicates a strong commitment to studies. These measurement instruments have been translated and re-translated according to international standards¹¹.

Analyse de données:

The analysis begins by identifying questionnaire items with low variability and response rates. Descriptive statistics examine the distribution of sample characteristics and responses for each item. Items with a response rate below 85% are considered, while highly correlated items (coefficient > 0.75) are removed. The prevalence of burnout in the study population is estimated from the frequencies. For analytical tests, we used chi-square test, analysis of variance (ANOVA), Kruskal-Wallis test and Mann-Whitney test. The internal reliability of scales is assessed by Cronbach's alpha coefficient and inter-item correlations. Good internal reliability exceeds an alpha of 0.6. Factor analysis (principal component analysis) tests the structure of the scales. The KMO value and Bartlett's test evaluate sample representation.

Résultats:

Sixty-five of the participants were aged between 22 and 25 (57.5%), 43 between 17 and 21 (38.1%), and the remaining five between 24 and 28 (4.4%). There were twenty-seven male students (23.9%) and ninety-eight female students (76.1%). Most

participants were from urban areas (69%), while the remainder were from rural areas (31%). The first group was from the Faculty of Science (68.1%), the second group was from the Faculty of Economics (15%), followed by groups from the Faculty of Medicine (14.2%) and the Faculty of Humanities (2.7%). The percentages of participants by university level (bachelor's, master's, doctorate) were 82.2%, 7.1%, and 9.8%, respectively.

a) Psychometric properties of the CBI scale :

The overall reliability of the burnout scale is entirely

satisfactory, with an alpha of 0.87 (Table 2). This scale comprises four subscales (PB, SRB, CRB, and TRB). For the PB subscale, the internal consistency coefficient was expressed with an alpha of 0.776. For the SRB subscale, the coefficient was 0.795. The CRB and TRB subscales expressed alpha coefficients of 0.800 and 0.834, respectively. The results of the first exploratory factor analysis were not satisfactory. After eliminating item 10, the analysis proposed four factors (kaiser Mayer; KMO = 0.77 and Bartlett Test: $\chi^2(276) = 1147.46, p < .0001$).

Table 1. Factor analysis of the burnout scale (CBI)

	M	SD	ITC	Alpha	F1	F2	F3	F4
CBI				0.87				
PB				0.776				
C1	67,26	20,343	0,528	0,863				0,681
C2	58,19	22,271	0,437	0,865				0,819
C3	55,09	23,895	0,289	0,869				0,56
C4	47,79	26,423	0,494	0,863				0,452
C5	50,22	23,265	0,342	0,868				0,762
C6	51,77	27,491	0,393	0,866				0,549
SRB				0.795				
C7	64,82	25,363	0,48	0,864		0,498		
C8	50,66	25,543	0,424	0,865		0,648		
C9	43,58	23,333	0,327	0,868		0,803		
C11	55,53	28,097	0,448	0,865		0,618		
C12	51,33	28,707	0,517	0,862		0,724		
C13	58,19	26,609	0,52	0,862		0,606		
CRB				0.8				
C14	38,5	27,353	0,447	0,865			0,74	
C15	38,27	26,107	0,412	0,866			0,82	
C16	35,18	25,363	0,485	0,864			0,804	
C17	50,66	27,642	0,271	0,87			0,47	
C18	35,84	28,519	0,525	0,862			0,713	
C19	43,81	27,453	0,398	0,866			0,536	
TRB				0.834				
C20	41,15	24,531	0,473	0,864	0,766			
C21	36,5	24,329	0,492	0,863	0,783			
C22	36,95	25,682	0,583	0,861	0,751			
C23	36,73	28,557	0,291	0,87	0,627			
C24	37,83	26,541	0,432	0,865	0,737			
C25	40,04	26,419	0,467	0,864	0,558			
KMO=0.77, Bartlett Test: $\chi^2(276) = 1147.46, p < .0001$								

a) Descriptive statistics and prevalence of burn-out :

For the gender factor, the results show that 40.7% of women suffer from moderate burnout, while 59.3% have low/No burnout. For men, 33.3% have moderate burnout, and 66.7% have low/No burnout. For the age factor, the results show that in the 17 to 21 group, 51.2% suffer from moderate burnout, and 48.8% have low/No burnout. In the 22 to 25 group, 32.3% suffer from moderate burnout, and the rest have low or no burnout. And in the 25 to 28 group, 20% experience moderate burnout, and the remaining 80% have low/No burnout. Among current students, 37% suffer from moderate burnout, and the remaining 63% have Low/No burnout. For students living in university halls of residence, 34.4% suffer from moderate burnout, and 65.6% have low/no burnout. Of the 12 students living in shared accommodation, 16.7% have moderate burnout, and 83.3% have No/low burnout. Whereas for those living alone, 23.3% have moderate burnout, and 72.7% have low/No burnout. For the transport variable, we report that 55.6% of students who use the bus suffer from moderate burnout, while the rest (44.4%) have low/no burnout. Of the ten who walk to university, 21.2% suffer moderate burnout and 78.8% low/no burnout. Of those who drive to university, 71.4% have moderate burnout, and the remaining 28.6% have no/low burnout. Of the 28 students who use other means of transport, 25% have moderate burnout, and the remaining 75% have no/low burnout. About funding problems 59 of the 113 students stated having funding problems. Of the 59 who answered “yes”, 45.8% suffer from moderate burnout, and 54.2% have low/no burnout. Of the 54 who answered “no”, 31.5% have moderate burnout, and 68.5% have no or low burnout. On the other hand, 98 of these students come from middle-income families, of whom 39.8% have moderate burnout and 60.2% have low/no burnout. Regarding the social category, ten students come from well-off families, with 30% suffering from moderate burnout and 70% from low or no burnout. Of the 5 in difficulty, 40% have moderate burnout, and the remaining 60% have low or none. As far as the faculty is concerned, 17 students are from the Faculty of Economics. Of these, 35.3% have moderate burnout, and 64.7% have low/no burnout. For students from the Faculty of Medicine, 25% suffer moderate burnout, and 75% have low/no burnout. Of the 77 students in the Faculty of Science, 42.9% have moderate burnout, and the remaining 57.1% have No/low burnout. Finally, for the Faculty of Human Sciences, 33.3%

suffer moderate burnout, and 66.7% have low/No burnout.

Table 2. Prevalence of burnout

Facteurs	Burnout (CBI)		
	Moderate	No/Low	
Sexe	Female	35(40,70%)	51(59,30%)
	Male	9(33,30%)	18(66,70%)
Age	17-21 years	22(51,20%)	21(48,80%)
	22-25 years	21(32,30%)	44(67,70%)
	25-28 years	1(20,00%)	4(80,00%)
Habitat	Cite	11(34,40%)	21(65,60%)
	Collocation	2(16,70%)	10(83,30%)
	Famille	28(48,30%)	30(51,70%)
	Seul	3(27,30%)	8(72,70%)
Transport	Other	7(25,00%)	21(75,00%)
	Bus	25(55,60%)	20(44,40%)
	Pedestrian	7(21,20%)	26(78,80%)
	Car	5(71,40%)	2(28,60%)
Financing problem	No	17(31,50%)	37(68,50%)
	Yes	27(45,80%)	32(54,20%)
Classe sociale	Comfortable	3(30,00%)	7(70,00%)
	In difficulty	2(40,00%)	3(60,00%)
	Moderate	39(39,80%)	59(60,20%)

a) Relationship between burn-out and certain environmental factors :

For the gender factor, an analysis using the Student t-test highlighted a significant effect of gender on Burnout scores. Female students reflected higher scores (M=48.42; SD=12.5) than male students (M=42.0; SD=13.4). Similarly, the Student’s t-test highlighted a gender effect on the PB dimension (p<0.05). Descriptive analyses showed that female suffered a higher PB (M=57.6; SD=14.9) than male (M=46.9; SD=18.9). On the other hand, no significant difference was revealed between women and men in the CRB (U=1279; p=0.07) and SRB (U=1586; p=0.96) dimensions. For the age factor, one-way analysis of variance (ANOVA) showed an effect of age on burnout (F(2,110)=4.48, p<0.05). Analyses showed that the effect of age was significant only on the dimensions PB (F(2,110)=5.99, p<0.05) and TRB (F(2,110)=3.42, p<0.05). No effect was observed on the dimensions SRB (H (2) =1.428; p=0.49) and CRB (H (2) =0.546, p=0.7). Post hoc Tukey comparisons

showed that the 17-21 age group (M=6.21; SD=2.47) had a higher burnout than the 22-25 age group (M=6.21; SD=2.47) and the 25-28 age group (M=13.14; SD= 5.94). For the social class factor, one-way analysis of variance (ANOVA) showed that social class did not affect burnout ($F(2,110)=0.08, p>0.05$). For the housing factor, the one-way analysis of variance (ANOVA) showed an effect of housing on burnout ($F(3,109)=5.06, p<0.05$), and only on the dimensions PB ($F(3,109)=2.87, p<0.05$) and TRB ($F(3,109)=3.06, p<0.05$). For the CBI, Tukey post hoc analysis shows a significant difference between those living in a shared apartment and those living with a family ($p<0.05$) and also a significant difference between housing estates and shared apartments ($p<0.05$). Similarly, for the PB dimension, the analysis reveals a difference between collocation and PB family ($p<0.05$). For the transport factor, the one-way analysis of variance (ANOVA) showed an effect of transport on burnout ($F(3,109)=3.58, p<0.05$). Analyses showed that the transport factor did not affect the dimensions PB ($F(3,109)=1.78, p>0.05$) and TRB ($F(3,109)=2.67, p>0.05$). Similarly, a Kruskal-Wallis test showed that the transport factor did not affect the dimensions SRB ($H(3) = 3.14, p=0.37$) and CRB ($H(3) = 6.175, p>0.10$). For the financing problem factor, an analysis using the Student test showed that the financing problem did not affect burnout ($t(111)=3.08; p>0.05$). For the faculty factor, ANOVA showed an effect of faculty on the PB dimension ($F(3, 109) = 3.54, p<0.05$) and no effect on the CBI dimension ($F(989.1; 17847.5) = 2.014, p>0.05$) and TRB ($F(3, 109) = 0.7, p>0.05$). Post hoc analysis showed a significant difference between science and medicine faculties ($p<0.05$). About the CRB and SRB dimensions, analyses conducted using the Kruskal-Wallis test showed no effect of faculty on these SRB ($H(3) = 1.04, p=0.791$) and CRB ($H(3) = 5.067, p=0.167$) dimensions.

a) Psychometric properties of the UWES-9 scale:

A first analysis based on the three-factor structure was unsatisfactory, as items 3, 4, and 8 did not saturate their factors. Similarly, a second analysis proposed a two-factor structure, with item 7 saturated on the first factor. The deletion of item 7 enabled a two-factor structure to emerge, with the first factor (VI/DE) and a second (AB). This structure showed good internal reliability $\alpha = 0.814$.

Table 3. Factor analysis of the Engagement scale (UWES-S)

	Facteurs			Alpha
	F1	F2	F3	
UWES				0.814
VI/DE				0.827
Item1	0.699			
Item2	0.732			
Item3	0.829			
Item4	0.754			
Item5	0.769			
Absorp				0.677
Item6		0.764		
Item8		0.631		
Item9		0.836		
KMO=0.815				
Bartlett Test: $\chi^2(28) = 315,115; p<.0001$				

b) Relationship between Burnout and engagement:

The table below shows that correlations between the dimensions of the CBI burnout scale range from 0.20 to 0.41. Correlations between CBI dimensions and the total scale score range from 0.68 to 0.73. For the Engagement scale, correlational analysis between the two dimensions (VI/DE and AB) was expressed by a Spearman coefficient of 0.419. The correlation between the total scores of the two scales and the total score of the UWES reflected strong correlations (0.89 and 0.75). Given the relationships between the two constructs (CBI and UWES), the analyses showed low negative correlations between -0.30 and 0.21 between the VI/DE dimension and the four dimensions SRB, CRB, and TRB. On the other hand, for the Absorption dimension, the analysis revealed a weak correlation with the TRB dimension ($\rho=0.207$) and an absence of a relationship with the PB, CRB, and SRB dimensions. The correlations between the total score of the Engagement scale and the four burnout subscales suggest an absence of a relationship between engagement and the three dimensions PB, CRB, and SRB. Interestingly, the correlational analysis suggests that the score on the Study Burnout (SRB) dimension was significantly related to the UWES total score and the new VI/DE dimension.

Table 4. Pearson and Spearman correlations between UWES and CBI dimensions

Dimensions		1	2	3	4	5	6	7
1	VIG DED	1						
2	ABSORPTION	,419**	1					
3	UWES_Total	,898**	,755**	1				
4	PB	-0.038	-0.003	-0.031	1			
5	CRB	-,212*	0.180	-0.071	,330**	1		
6	TRB	-,223*	,207*	-0.077	,189*	,370**	1	
7	SRB	-,307**	-0.026	-,252**	,497**	,237*	,371**	1
8	CBI_Total	-,283**	0.133	-0.155	,688**	,696**	,700**	,740**

1. Discussion :

As mentioned above, the present study can be segmented into two main axes. The first is to adapt the instruments used to measure burnout and engagement to the Moroccan university context. The second is investigating the relationships between environmental factors, burnout, and engagement in Moroccan students.

It is worth mentioning that it is the first study to assess the reliability of the CBI-S instrument among Moroccan students. Our results suggest that the psychometric properties of the CBI-S were satisfactory. Regarding internal consistency, the high values found in the CBI-S subscales align with data presented in previously published reports¹²⁻¹⁵. These results confirm those proposed by Kristensen et al. (2005) and corroborate those of Compos (2013)¹². In light of this, the CBI can be used in the Moroccan context to assess student burnout levels. After the elimination of item 10, the factor analysis results showed the same factor structure proposed by previous work¹²⁻¹⁶ (e.g., Kristensen et al., 2005; Compos (2013)). Indeed, item 10 showed low negative loading. It is possible that a stereotype could have been created because all items had the same response direction. In other words, our participants did not account for the inversion of the response scale for item 10. As a good match, the same behavior was similarly revealed in the study by Yeh et al. (2007)¹² when evaluating the psychometric properties of the Chinese version of the CBI and in the study by Compos (2013)¹⁶ when conducting an exploratory factor analysis on Brazilian and Portuguese samples of the CBI. It is also worth mentioning that only items 3 and 17 reflected factor loadings lower than those of the item set. In support of the four-factor structure,

four factors emerged with acceptable correlations. In good alignment with the proportions of previous studies¹²⁻¹⁶, good correlations were observed between “personal burnout” and “burnout-related studies”.

Reliability and internal consistency analyses of the UWES-S scale were satisfactory. In terms of factor structure, an initial analysis based on the three-factor structure¹⁷ showed an unsatisfactory structure. Items 3, 4, and 8 did not saturate their factors¹⁷. In this vein, the study by Willmer et al.¹⁸ indicates that the factor analysis revealed an overlap in item loadings between the three factors. In a second analysis, the results suggested two factors with saturation of item 7 on the first factor (VI). A third analysis, based on the deletion of item 7, revealed a factor structure with two distinct factors. The first factor groups the clean items (VI/DE) and the second (AB). This structure showed good internal reliability $\alpha = 0.814$. As mentioned earlier, a recent review of the UWES factor structure showed inconclusive results, with some studies suggesting a better fit to a one-factor structure, others proposing an excellent fit to a three-factor structure, and others indicating a fit for a two-factor structure¹⁹. For example, one of the studies found poor fits for the one-factor and three-factor structures of the UWES-9²⁰.

In good alignment, Kulikowski's¹⁹ study proposed a two-factor structure, merging dedication and vigor into a single factor, and absorption constituted the second factor. In line with Kulikowski's results¹⁹, this was only possible after the elimination of item 7. The results of the correlational analyses indicated an absence of a relationship between the total scores of two scales, CBI and UWES. On the other hand, some negative correlations were also highlighted between the engagement and burnout subscales. Indeed,

the literature has widely discussed the relationship between engagement and burnout. A first conception of such a relationship was proposed by Maslach and Leiter (1997)²¹. According to these authors, burnout is characterized by exhaustion, depersonalization/cynicism, and lack of a sense of personal accomplishment, whereas engagement refers to energy (as opposed to exhaustion), involvement (as opposed to depersonalization/cynicism), and a sense of autonomy, and effectiveness (as opposed to lack of a sense of personal accomplishment). As a result, these authors considered low burnout rates indicative of a relatively high level of commitment. On the other hand, other research has shown that the two concepts are separate²². This latter proposal is in line with the study by Schaufeli and Bakker¹⁷, which suggests two negatively associated independent dimensions. Thus, Schaufeli and Bakker argued that the notion of burnout and engagement being opposed is erroneous and that they are two distinct constructs that need to be measured separately. Similarly, Crawford, LePine, and Rick's²³ meta-analysis indicates that the two constructs are not antagonistic. Although our correlational analyses support good negative relationships between the "VI/DE" subscale and the burnout subscales, the correlation results between the UWES-S and CBI scales suggest a clear separation between the two constructs. The present study showed that 38.9% of students had symptoms of burnout.

The burnout prevalence appears to be much higher than that found in previous studies²⁴⁻²⁷ and slightly higher than that proposed by a study conducted among medical students in Pakistan (30.6%)²⁴. On the other hand, the prevalence of burnout seems to be lower than that found among students in several countries (between 45 and 70%)²⁸. Indeed, the differences observed in burnout prevalence's across studies may be due to cultural and socio-economic differences in the study population. In good agreement with previous studies²⁶, the present results suggest that burnout was significantly affected by gender, years of study, housing, means of transport and academic orientation. Because of the consequences of burnout syndrome on students' physical and psychological well-being, properly calibrated measurement and

diagnostic devices for the target population becomes necessary. Our research contributes to examining the psychometric qualities of the CBI-S for a population of Moroccan university students and determining the prevalence of burnout in the university environment. The results show that the CBI for students is a good instrument for assessing the occurrence of the syndrome and, consequently, a valuable tool for specialists in health assessment and psychology at the university.

Conclusion

This study investigated burnout and engagement in Moroccan students. The preliminary results of the psychometric analyses confirm the validity of the instruments used in this specific context. The findings on burnout prevalence and associated factors are valuable information for mental health and education professionals. This initial work in the Moroccan university context encourages the opening of a path for further investigations to better apprehend the complex relationships between these concepts and their determinants.

Conclusion:

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