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Factors affecting academic burnout in secondary school adolescents in Morocco

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Abstract. *Introduction.* Mental health is a crucial determinant of quality of life, well-being, and both social and professional satisfaction. Research indicates that burnout impacts not only academic performance but also the overall lives and future careers of high school students. *Aim.* The present research *aimed* to investigate the prevalence of burnout among senior secondary school students in Morocco and to identify its underlying causes using the Maslach Burnout Inventory-Student Survey (MBI-SS) questionnaire. *Methodology and research methods.* The Maslach Burnout Inventory-Student Survey (MBI-SS) was translated into Arabic while ensuring cultural relevance. The study employed Bartlett's test of sphericity, exploratory factor analysis (EFA), and confirmatory factor analysis (CFA). A total of 1,116 voluntary public secondary school students from the Kénitra region of Morocco participated in the study, with an average age of 17.15 years (SD = 1.328), of which 59.1% were female. *Results.* The findings indicate that 47% of Moroccan students experience academic emotions, with male students tending to develop more cynical attitudes and a lack of confidence in their academic abilities. Third-year students report higher levels of emotional exhaustion compared to first-year students, while second-year students exhibit lower rates ($p < 0.001$). Additionally, students from low-income families and urban areas are more vulnerable to academic burnout. Furthermore, students pursuing scientific studies scored higher on measures of Emotional Exhaustion and Cynicism, with 13% of female students and 20% of male students affected, compared to those in the literary track, where the rates were 5% and 13%, respectively. *Scientific novelty.* The scientific novelty of this study lies in the application of MI-SS. This research reinforces the impact of co-factors such as gender, educational attainment, family income, disease, and learning pathways on the components of burnout in Morocco. *Practical significance.* Education decision-makers in Morocco can leverage the connection between socio-demographic factors and school burnout to mitigate burnout among students, ultimately enhancing academic performance.

***Keywords*:** burnout, secondary school, adolescents, MBI-SS, burnout, sociodemographic factors, Morocco

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Факторы, влияющие на академическое выгорание у подростков средней школы в Марокко

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Аннотация. *Введение.* Психическое здоровье является одним из основных факторов, определяющих качество жизни, благополучие, социальное и профессиональное удовлетворение. Исследования показывают, что выгорание влияет не только на академическую успеваемость, но и на общую жизнь и будущую карьеру учащихся старшей школы. *Цель.* В исследовании изучались уровень выгорания среди старших подростков в Марокко и вызывающие его причины с использованием опросника Maslach Burnout Inventory-Student Survey (MBI-SS). *Методология и методы исследования.* Опросник Maslach Burnout Inventory-Student Survey (MBI-SS) был переведен на арабский язык с сохранением культурной релевантности. В исследовании использован критерий сферичности Бартлета, исследовательский факторный анализ (EFA) и подтверждающий факторный анализ (CFA). В исследовании приняли добровольное участие 1116 учащихся государственных средних школ из региона Кенитра (Марокко) со средним возрастом 17,15 года (SD = 1,328), из них 59,1 % девочек. *Результаты* показывают, что 47 % марокканских студентов проявляют академические эмоции, а студенты мужского пола могут развивать более циничные и неадекватные своим академическим способностям взгляды. Студенты третьего курса испытывают более высокий уровень эмоционального истощения по сравнению со студентами первого курса, в то время как студенты второго курса демонстрируют более низкий показатель ($p < 0{,}001$). Студенты с низким доходом семьи и из городских районов более подвержены академическому выгоранию. Студенты, изучающие технические дисциплины, показали более высокие результаты по эмоциональному истощению и цинизму (13 % – юноши, 20 % – девушки), чем студенты, изучающие литературу (5 % и 13 % соответственно). *Научная новизна* заключается в использовании MI-SS. Текущее исследование усиливает влияние сопутствующих факторов, таких как пол, уровень образования, доход семьи, заболевание и путь обучения, на компоненты выгорания в Марокко. *Практическая значимость.* Лица, принимающие решения в сфере образования в Марокко, могут использовать связь между социально-демографическими факторами и выгоранием в школе для снижения выгорания среди студентов, что приведет к улучшению успеваемости.

Ключевые слова: выгорание, средняя школа, подростки, MBI-SS, выгорание, социально-демографические факторы, Марокко

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Introduction

In the Moroccan educational system, students in the third year of middle school choose their high school curriculum; most choose between the scientific and literary branches. The first one is more stressful and demanding than the second. Students get a high school diploma after three years of study and many exams that may put them under academic pressure, especially in the last year. Moving from middle school to high school is the more critical transition in the life of the Moroccan student, usually accompanied by many difficulties. Burnout can affect some students in this challenging climate [1].

Studying the phenomenon of burnout in a developing country such as Morocco could provide important insight into where socioeconomic factors may affect burnout levels among secondary school students. Many Moroccan policymakers implement programmes to improve the quality of their education system and confront issues related to student engagement and levels of emotional well-being at school. Many decision-makers in the Moroccan education ministry have applied different approaches to solving various issues related to adolescents' mental health in secondary school. Still, there needs to be more data about students in this field [2]. Burnout is the primary factor that affects academic success through negative emotional responses towards school demands [3].

High academic demands, high expectations, and the pressure to perform can lead to significant stress, contributing to burnout [4]. Academic burnout can result in disadvantageous outcomes, including truancy and school dropout [5]. Thus, it is necessary to study factors that affect school burnout.

The current study aims to identify the level of burnout among secondary school adolescents using the Maslach Burnout Inventory-Student Survey (MBI-SS) scale and to examine the effect of its associated factors, such as gender, school level, family income, school area, disease, and study path, on burnout components in Morocco.

Literature Review

Since the implementation of the concept of burnout by A. Pines & D. Katry in 1980 [6], numerous international studies have investigated the various factors influencing burnout [7]. As noted by C. Maslach and S. E. Jackson [8], burnout is always coupled with increasing feelings of emotional exhaustion and cynical attitudes at work. Burnout can occur among professionals and students at school [9]. There is almost a consensus from various studies in the school context that burnout is a three-dimensional disorder characterised by feelings of emotional exhaustion, cynical school attitudes, and the feeling of inadequacy towards school achievement [10]. Exhaustion is the first component of burnout, characterised by constant fatigue towards school demands, and students can feel pressure from school [1]. The second component is cynicism, which is related to a lack of interest. The last component is the inadequacy towards school demands, usually characterised by reducing academic achievement [11]. Various study characteristics, including demographic factors

and academic pressures, influence academic burnout in students. These elements contribute to emotional exhaustion, reduced personal accomplishment, and depersonalisation, critical indicators of burnout. Understanding these characteristics is crucial for developing effective interventions.

Gender differences significantly influence school burnout. From a demographic perspective, C. Maslach and S. E. Jackson suggest a correlation between burnout and gender in a work context [8]. Research on gender differences in experiencing burnout at school presents a contradictory picture. Some studies found that female high school students obtained higher burnout scores than their male counterparts [12]; also burnout affects girls with high levels more than boys at school [13] particularly the exhaustion component [14], despite girls demonstrating tremendous academic success and higher levels of discipline and engagement compared to boys [15], and giving more importance to school success than boys [16, 17]. In addition, a relationship between lower school achievement and high levels of burnout has been established among female students. However, other studies done by R. Aguayo, G. R. Cañadas, L. Assbaa-Kaddouri et al. [18] and S. Bikar, A. Marziyeh, A. Pourghaz [19] have reported the opposite trend, with male students exhibiting higher levels of burnout and depersonalisation. Additionally, D. V. Backović, J. I. Zivojinović, J. Maksimović et al. [20] and F. Galán, A. Sanmartín, J. Polo et al. [21] have suggested that there are no significant differences between genders in terms of academic burnout. A recent research undertaken by D. J. Madigan and T. Curran offered a unifying perspective, showing a consistent negative relationship between all components of burnout and academic achievement, with similar effects observed in both women and men [22]. While no specific relationship between school burnout and gender has been clearly established, thus there is the need for further research in this relationship.

The class level significantly affects burnout scores, suggesting that upper-grade students may experience higher burnout levels than their lower-grade counterparts [23]. Upper-grade students indeed tend to experience higher burnout levels than their lower-grade counterparts. This phenomenon can be attributed to increased academic pressure, social support dynamics, and the cumulative effects of earlier educational experiences. Upper-grade students face heightened academic demands, which can lead to increased stress and burnout. D. Dogan and D. Dogan indicated that academic stress correlates with burnout symptoms, particularly in high school settings [24].

A relative paucity of research examining the impact of family socioeconomic status on academic burnout exists. Given that this factor has been shown to predict students' academic success positively, it is reasonable to hypothesise that it may also contribute to the incidence of school burnout. Various researchers have observed that students from families with elevated socioeconomic status have a higher tendency to fully engage in their academic endeavors and tend to exhibit tremendous enthusiasm. Consequently, students from families with a high socioeconomic status typically report experiencing lower levels of burnout [25]. Furthermore, based

on the Family Investment Model, families possessing more excellent economic resources and higher social and human capital are in an advantageous position to provide remarkable support for their children's holistic development, encouraging their interest in academic pursuits and consequently leading to reduced school burnout. According to B. Elyadini, M. Chakit, A. Elkhatir et al. [26], family income is the leading indicator of the family's socioeconomic status; a decreased value from this index proportionally increases the burnout level. Students from high family incomes had all the conditions for quality education compared to students from low family incomes, who had fewer conditions [27]. A good family atmosphere can reduce many adolescent problems at school [28]. Financial resources benefit student progress at school. Y. Luo, Z. Wang, H. Zhang et al. [29] stated that family income can negatively affect students' burnout directly or through the family cultural environment. The more economic problems within the family, the more burnout among parents and their children because burnout is shared among family members [11, 30].

The relationship between urban-rural areas and academic burnout among students reveals significant disparities influenced by socio-economics factors. Our research indicates that students from urban areas often experience higher academic burnout levels than their rural counterparts, primarily due to differences in resources and support systems. Urban students reported higher learning burnout than rural students, attributed to increased academic pressures and expectations [31]. Among boys, urban-rural areas had no impact on school burnout. In contrast, girls in urban areas had higher burnout levels than girls in rural areas. The urban area tends to be more depressive than the rural ones [32].

The relationship between academic success and student burnout is complex, with significant implications for their mental health. Burnout, characterised by emotional exhaustion and reduced personal accomplishment, often correlates with lower academic performance. This phenomenon is increased by high academic expectations, leading to increased stress and mental health issues such as anxiety and depression [33]. Burnout negatively affects academic success, with total burnout and its symptoms linked to poorer achievement. This relationship suggests that burnout can lead to increased stress, ultimately affecting students' mental health and overall well-being [22].

Methodology, Materials and Methods

Study Location

The study was conducted in Morocco, specifically in the Rabat-Salé-Kénitra, which contains seven regional directorates: Rabat, Salé, Kénitra, Skhirate-Témara, Khémisset, Sidi Slimane, and Sidi Kacem, according to the classification provided by the Ministry of Education.

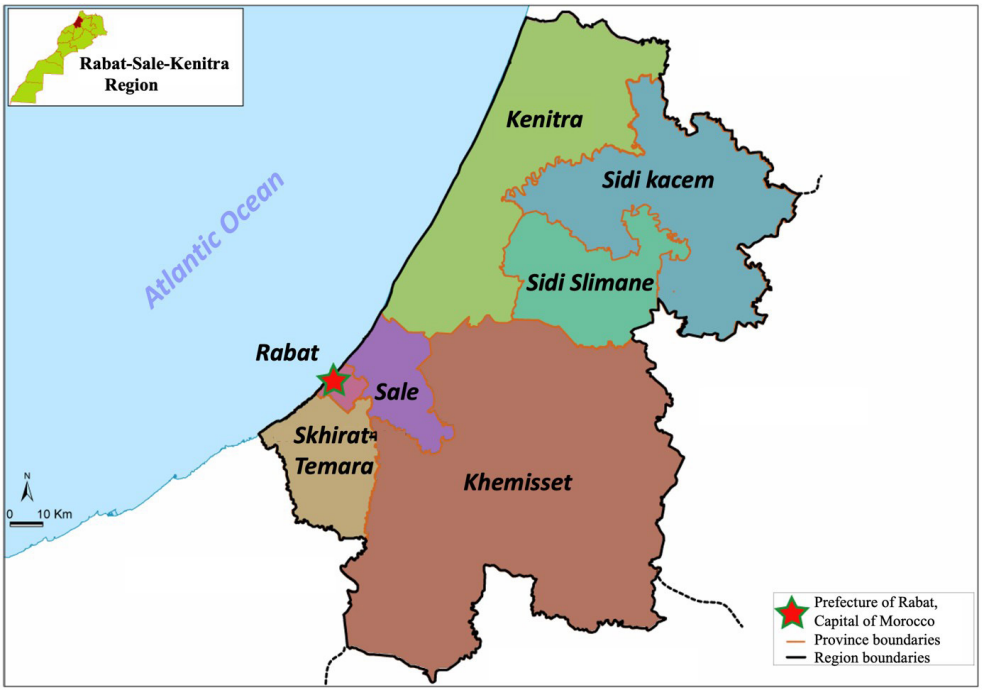

Fig. 1. Region study location

Participants

1116 high school students from the Rabat-Salé-Kénitra, Morocco. 40.9% of boys and 59.1% of girls, with a mean age of 17.15 (SD = 1.174), responded to an MBI-SS questionnaire and standardised sociodemographic questions.

Instrument

An Arabic-translated version of the Maslach Burnout Inventory-Student Survey Questionnaire (MBI-SS) [34] was used to measure school burnout among Moroccan high school adolescents, and standardised sociodemographic questions were included. The MBI-SS consists of 15 items relating to the three subscales: Emotional exhaustion in the face of school demands is assessed by five items (e.g. "I feel emotionally drained by my studies"), four items for the measure of cynicism (e.g. "I have become less interested in my studies since my enrollment at the high school"), and six items for assessing academic efficacy (e.g. "I can effectively solve the problems that arise in my studies"). The MBI-SS items are rated on a 6-point Likert scale (ranging from 0 = never to 6 = every day) and assess academic burnout using a total score and/or scores for exhaustion, cynicism, and inadequacy.

Following the recommendations of the International Test Commission (ITC)[1] on scale translation in cross-cultural research, two bilingual linguists independent-

[1] Hambleton R.K. The next generation of the ITC Test Translation and Adaptation Guidelines. *European Journal of Psychological Assessment.* 2001;17:164–172. doi:10.1027//1015-5759.17.3.164

ly translated the original version of the MBI-SS into Arabic. These two translations were then compared and discussed to reach a consensus. Then, a third person retranslated the Arabic version to compare it to the original. The two versions appeared very similar, and the authors validated the retranslation.

Procedure

After obtaining the necessary authorisations, the data were collected using MBI-SS questionnaires. A representative of each school was contacted to collect the data. The questionnaires were administered in coordination with the corresponding teacher and in the presence of one research team member to guarantee the test's reliability at the beginning of each session; the study objectives and questionnaire items were explained to students while assuring their anonymity and privacy but no information relating to the research topic was provided to the adolescents. Finally, students choose whether to respond to the questionnaire or not. All participants individually completed the test in an average of 15 minutes. Under these conditions, we received no refusals, but 21.06% of the questionnaires were returned with missing values. These were removed from the analysis using the missing values function in SPSS.

Data Analysis

Firstly, the Arabic version of MBI-SS was validated in a sample of Moroccan secondary school students. The data were first analysed by descriptive statistics: Mean, standard deviation, skewness, kurtosis, Kaiser-Meyer-Olkin; Bartlet's test of sphericity then, the Exploratory Factor Analysis (EFA) and confirmatory factor analysis (CFA) with maximum likelihood estimation were used to study the structure of the MBI-SS instrument. To evaluate the goodness of the fit with the hypothesised model of three subscales, the following indexes were used in the Confirmatory Factor Analysis: the ratio Chi-square and degree of freedom $\chi 2$ /DF, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA) [35]. The following criteria were taken into account: $\chi 2$ /DF being below five [36] and less or equal to three for acceptable and good fit respectively, RMSEA less than .05 corresponds to a "good" fit, and an RMSEA less than .08 corresponds to an "acceptable" fit' [37], for TLI were considered acceptable if they were greater than .9, CFI > .95 [38].

The instrument has a Cronbach's alpha greater than .70 for each of the three factors, with values of .73 and .77 for emotional exhaustion and academic efficacy, respectively. According to the Cronbach's alpha criteria, internal consistency is acceptable for the two factors and good for cynicism, with a value of .815. High scores on EE and CY and low scores on AE are indicative of burnout [39]; as long as MBI-SS had no global score, each component was divided into three intervals: Emotional Exhaustion: low (5;13), moderate (14;22), high (23;30); Cynicism: low (4;10), moderate (11;17), high (18;24); Academic Efficacy: low (6;16), moderate (17;26), high (27;36). The IBM SPSS statistics 26.0 was used to analyse the data.

Results and Discussion

Validation of the Assessment Instrument

Preliminary validation. The constructs utilised in the MBI-SS instrument present a normal distribution. According to S. J. Finney and C. DiStefano, the absolute value of skewness is within 2, and the absolute value of kurtosis is within 7 [40]. The current investigation recorded that the maximum absolute values for skewness and kurtosis were .96 and 1.45 for the MBI-SS, respectively. The tool has a Cronbach's alpha greater than .70 for each of the three factors of the MBI-SS, with values of .73 and .77 for Emotional Exhaustion and Academic Efficacy, respectively. According to the Cronbach's alpha criteria, internal consistency is acceptable for the two MBI-SS factors and good for Cynicism, with a value of .815. The Kaiser-Mayer-Olkin coefficient indicates that the data is adequate for factor analysis; and values of KMO = .867 mean that the sampling is middling for the MBI-SS. Moreover, Bartlet's test of sphericity shows a high correlation between items ($\chi 2 = 3853.641$, $p < .000$). Table 1 elucidates further details regarding the descriptive statistics.

Table 1

Descriptive statistics and internal reliability of the questionnaire

MBI-SS Component	Mean	SD	Skewness	Kurtosis	Cronbach's alpha	Kaiser-Meyer-Olkin	Bartlet's sphericity
EE	12.78	2.37	-0.18	-1.45	0.726	0.867	$\chi 2 = 3853.641$ $p <.000$
CY	8.62	2.22	0.96	-0.55	0.815		
AE	24.01	2.25	-0.73	-0.95	0.775		

The confirmatory factor analysis. A confirmatory factor analysis was used to test the suitability of the assessment instrument used in this study. Several fit indices were studied, such as the chi-square, the Root Mean Square Error of Approximation, the Comparative Fit Index, and the Tucker-Lewis Index. With a value of 0.045 for the root mean square error of approximation for the MBI-SS, the Arabic version of the MBI-SS has a fit between good and acceptable (Table 2).

Table 2

Fit indexes of the questionnaire

Model	$\chi 2$	DF	$\chi 2$ /DF	CFI	TLI	RMSEA
MBI-SS	218.7	87	3.26	.955	.938	.045

Note. DF: Degree of Freedom; CFI: Comparative Fit Index; TLI: Tucker-Lewis Index; RMSEA: Root Mean Square Error of Approximation; MBI-SS: Maslach Burnout Inventory-Student Survey.

Burnout Level in the Three Components of the MBI-SS Scale

Emotional Exhaustion. Emotional Exhaustion is the main burnout component in MBI-SS; the score of this factor approach from half of the sample between

moderate and high levels (46.9%) is a sign that students at this rate are overwhelmed and drained by academic demands. This alarming prevalence of emotional exhaustion among students not only obstacles their academic performance but also can affect their long-term mental health. There is a consensus in research indicating that burnout is increasingly recognised in higher education settings. The implications extend beyond immediate academic challenges to potential future professional efficacy and personal well-being [41]. Addressing this issue thus requires a multifaceted approach that includes institutional support systems to foster engagement while considering the broader socio-economic context influencing student experiences (Table 1).

Cynicism. Cynicism is a significant burnout component; it represents around a third of the sample between moderate and high levels, indicating that about 32% of students had a negative or detached attitude towards school. This cynicism reflects a student's emotional detachment and lack of interest and has broader implications for their academic performance and overall well-being. The research conducted by D. Dogan and D. Dogan indicates that students exhibiting higher levels of this component are more vulnerable to experiencing burnout, which can lead to increased absenteeism and even school dropout rates [24]. Furthermore, the interplay between cynicism and external factors such as socioeconomic status reveals significant disparities; for instance, students from lower-income families often report heightened feelings of disillusionment towards educational institutions, exacerbating their risk of burnout [32]. As educators and policymakers strive to foster engagement in schools, addressing the roots of student cynicism becomes crucial, mainly through supportive interventions to correct students' cynical school attitudes.

Table 3

Levels of the burnout components with MBI-SS

Burnout level	Burnout components					
	Emotional Exhaustion		Cynicism		Academic Efficacy	
	n	%	n	%	n	%
Low	593	53.1	752	67.4	287	25.7
Moderate	431	38.6	186	16.7	348	31.2
High	92	8.2	178	15.9	481	43.1

Academic Efficacy. The reverse score of this factor gives us academic inefficacy. Around half of the students (46.9%) had a high score on this component, which indicates feelings of inadequacy and low perceived effectiveness in academic tasks. This sense of academic inefficacy can have a negative effect on students, as it often correlates with decreased engagement and motivation in research. Various studies have shown that noncognitive factors such as emotional intelligence and student engagement play are essential in improving academic achievement; these attributes may reduce feelings of inadequacy and promote resilience among students [42].

Moreover, when educational institutions actively support the development of these competencies, they address issues like high engagement rates and create a more attractive learning environment that empowers students to overcome challenges related to perceived ineffectiveness [43]. As such, interventions aimed at improving emotional awareness and strategic engagement could serve as vital tools in reversing trends of academic inefficacy within students. (Table 3).

Burnout and Sociodemographic Characteristics

Gender differences. School burnout is a significant concern within an educational context, as it can adversely impact students' academic achievement and overall well-being, especially mental health. Our research illuminates the role of gender differences in shaping the experience of academic burnout, mainly through the lenses of cynicism and academic inefficacy. These results indicate that Gender differences affect academic burnout through two components: cynicism and Academic inefficacy, while emotional exhaustion is insignificant, and male students experience higher rates of cynicism, with 20% of boys reporting this component than only 13% of girls. Furthermore, academic inefficacy reveals a stark contrast, with 65% of boys experiencing inadequacy in their academic capabilities, while only 52% of girls report similar sentiments. These statistics suggest that male students may face a greater risk of experiencing school burnout than their female peers, driven by these two critical components. However, it is essential to note that the component of emotional exhaustion does not appear to contribute significantly to this correlation between gender differences and school burnout. It is essential to understand these dynamics to develop effective interventions to reduce academic burnout and provide a more supportive and encouraging educational environment for both male and female students (Table 4).

Table 4

The effect of sociodemographic factors on burnout components

		Burnout components											
		Emotional Exhaustion				Cynicism				Academic Efficacy			
		Low	Moderate	High	p	Low	Moderate	High	p	Low	Moderate	High	p
Sex	Boys	256	163	38	.219	283	81	93	.001	149	147	161	.000
	Girls	336	268	55		468	105	86		138	200	321	
School level	1st	220	156	28	.000	256	74	74	.173	109	118	177	.895
	2nd	140	104	9		175	46	32		64	80	109	
	3rd	229	171	59		316	68	75		116	148	195	
Family income	Low	143	95	18	.039	175	40	41	.843	71	71	114	.573
	High	529	327	69		550	142	132		205	270	349	
School area	Urban	224	196	57	.000	309	81	87	.168	129	146	202	.690
	Rural	368	236	35		442	106	91		158	202	279	

Student disease	**Yes**	112	114	47	.012	148	56	69	.016	77	78	118	.349
	No	438	327	78		557	152	134		212	274	357	
Study path	**Scentific**	294	316	93	.000	405	155	143	.001	167	238	298	.756
	Literary	268	122	23		306	53	54		109	125	179	

School-level and academic burnout. Research shows that the levels of burnout experienced by students are affected by various factors, with academic progression over the study years being a notable determinant. This study correlated the relationship between study level and emotional exhaustion among undergraduate students, revealing distinct variations across different years of study. These findings demonstrate a remarkable disparity in emotional exhaustion rates, with third-year students exhibiting the highest level at 12.85% than the first-year students at 6.93% and a notably lower rate of 3.56% among second-year students. These results underscore the importance of understanding how academic demands and experiences evolve at the study levels, alongside high family expectations influencing students' emotional health and resilience (Table 4).

Family income and school burnout. School burnout has gained increasing attention in educational research, particularly regarding families' socioeconomic status, which may influence student mental health and performance. Our findings suggest a significant disparity in levels of emotional exhaustion among students from differing economic backgrounds. Students from low-income families exhibited a higher incidence of emotional exhaustion, with 23% leading to high levels of school burnout, than only 7% of students from high-income families. This result raises many questions about the underlying causes of school burnout and the potential effect of family income on student mental health. Comprehending the relationship between family income and school burnout is essential for developing interventions that mitigate economically disadvantaged students and their families' unique academic challenges (Table 4).

School area and school burnout. The findings of this study show a significant disparity in emotional exhaustion, the key component of school burnout levels, between urban and rural students, with urban students experiencing notably higher rates of academic burnout. This study results indicate that approximately 12% of urban students report high levels of emotional exhaustion, compared to only 5% of rural counterparts. This suggests that the enhanced levels of emotional exhaustion can be explained by the high pressures and complex challenges urban students face. Thus, it underscored the need for targeted interventions and support systems to address the unique stressors present in urban educational environments. Further research is warranted to explore the underlying factors contributing to this mental disorder and to develop effective strategies to mitigate academic burnout among students in urban settings (Table 4).

Student disease and school burnout. Results of this study illuminate the significant effect of student disease on academic burnout, revealing that students experiencing health challenges exhibit markedly higher levels of Emotional Exhaustion and Cynicism compared to their healthier peers. These findings indicate that students with diseases report Emotional Exhaustion scores of 17% and Cynicism scores of 25%, in contrast to 9% and 15% for those in good health. These statistics underscore the critical need for targeted interventions and support systems within educational institutions in collaboration with the health ministry to address the unique challenges faced by students with health issues, ultimately fostering a more conducive learning environment and mitigating the adverse effects of school burnout on students' health (Table 4).

Study path and school burnout. Results of this study indicate a significant correlation between academic discipline and school burnout, particularly in terms of the two burnout components, emotional exhaustion and cynicism. This research reveals that students engaged in scientific fields experience higher burnout levels than their counterparts in literary studies, with notable differences in emotional exhaustion (13% versus 5%) and cynicism (20% versus 13%). This disparity points to the unique challenges and pressures inherent in scientific education, characterised by high school demands, coursework and elevated expectations, which may exacerbate long-term stress and emotional fatigue. Educational decision-makers should recognise these differences to implement targeted support strategies to mitigate the risk of burnout among students, particularly in high-stress academic environments. Future research should further explore the underlying factors contributing to these disparities and identify accurate interventions to promote student resilience and well-being across various fields of study, especially scientific ones (Table 4).

Burnout is a common disorder with adverse health and psychological outcomes. The burnout index has recently been used in the academic context, especially for the adolescent population. The current study aims to identify the level of burnout among secondary school adolescents using the Maslach Burnout Inventory-Student Survey (MBI-SS) scale and to examine the effect of its associated factors, such as gender, school level, family income, school area, disease, and study path, on burnout components in Morocco.

The findings of this research indicate that gender differences significantly affect the experience of academic burnout among students, mainly through the components of cynicism and academic inefficacy. The results reveal that male students are more susceptible to burnout, with a notably higher rate of cynicism and academic inefficacy than female students. Male students may develop more cynical attitudes and a greater sense of inadequacy in their academic abilities. This could be attributed to the Moroccan culture, which gives males primary responsibility in the family; this can put more pressure and higher academic expectations on male students than on their female counterparts. This result aligns with R. Aguayo, G. R. Cañadas, L. Assbaa-Kaddouri et al. [18] and S. Bikar, A. Marziyeh, A. Pourghaz [19], who found more vulnerability to school burnout among boys than girls. However,

this contradicts another study conducted by J. Herrmann, K. Koeppen, U. Kessels [14], who associated higher levels of academic burnout with female students. Cultural differences between countries could explain this contradiction. These results underscore the necessity for interventions that address the unique challenges male students face in the Moroccan educative system, aiming to mitigate the factors contributing to their enhanced levels of burnout. Further research is needed to explore the underlying causes of these gender differences and to develop strategies that promote well-being and academic success for both male and female students. Understanding the complexities of these disparities can lead to more accurate support systems and resources tailored to the specific needs of male students, ultimately providing a healthier educational environment for all students. This approach benefits male students and contributes to more equity in the educational landscape, where all genders can achieve their full potential. Addressing these challenges requires collaboration among decision-makers in education, mental health professionals, and policymakers to create effective strategies that recognise and respond to male students' unique challenges in their academic journeys. By prioritising open conferences and awareness, schools can cultivate a culture encouraging all students to express their concerns and seek help without taboo, enhancing students' academic performance and personal growth. Creating mentorship and support network opportunities can further empower male students, allowing them to communicate with role models, guiding them through the complexities of academic life. These initiatives foster resilience and promote a sense of belonging, which is crucial for male students in their educational paths. By implementing an educative system focusing on mental health and well-being, educational institutions can guarantee that male students feel supported in high-pressure situations, leading to a more inclusive environment where all students thrive. Such an environment encourages open dialogue about mental health, reducing the barriers often preventing students from seeking help and facilitating a culture of understanding and acceptance from educators towards students. This proactive approach is required to enhance academic performance and cultivate a generation with good mental health to handle life's challenges beyond the classroom.

The study results suggest that third-year students experience higher levels of emotional exhaustion than first-year students, while second-year students show a lower rate; this result deals with studies conducted by L. Nadon, A. J. S. Morin, W. Gilbert et al. [44] and V. Walburg [45]. This can be explained by the transitional stage from middle school to secondary school for the first year and the high school pressure for the final year. Education ministry should consider implementing approaches and interventions tailored to the specific needs of students at different stages of their academic journeys. In addition to these interventions, educational policymakers must recognise the role of peer support and teacher engagement in mitigating emotional exhaustion across different year study levels. The research conducted by C. L. Bagnall, C. L. Fox, Y. Skipper et al. [46] indicates that strong social connections among students can significantly reduce stressors associated with academic pres-

sures, particularly during transitional phases such as moving from middle school to secondary school. Furthermore, teachers who provide autonomy support and a collaborative classroom environment can improve students' coping mechanisms, mitigating feelings of inadequacy and burnout among students [47]. By supporting this healthier relationship alongside structural strategies, schools can create a more holistic approach to student well-being, improving academic achievement and overall mental health.

The findings show that students from low family income backgrounds are more susceptible to academic burnout, particularly emotional exhaustion, highlighting the crucial role of socioeconomic factors in student well-being. In the Chinese context, it was identified that the family cultural environment plays a mediating role in the relationship between family socioeconomic status and learning burnout [29]. Financial difficulties can create stress among students, including housing and food insecurity, limited access to academic resources, and increased pressure to balance work and studies. These challenges can deplete students' emotional resources, leading to higher levels of exhaustion and cynicism. This underscores the need for institutions to address the systemic inequities contributing to this disparity. Providing financial aid, expanding access to mental health services, and creating support programmes tailored to the unique needs of low-income students are essential steps towards creating a more equitable and supportive learning environment. The research completed by Y. Luo, Z. Wang, H. Zhang et al. [29] indicates that students with higher levels of resilience are better equipped to deal with challenges related to low family income, which can buffer against emotional exhaustion and academic inefficacy towards their studies. Moreover, integrating economic family support systems into these initiatives may amplify their impact, as parental involvement has been shown to positively influence educational outcomes and reduce feelings of isolation among students [48]. By prioritising psychological resilience, economic family support, and parental engagement, educational institutions can create a holistic strategy for mitigating school burnout and promoting sustained academic success.

Students from urban schools report higher levels of emotional exhaustion than students from rural ones [49]. At the same time, the study performed by S. Read, L. Hietajärvi, K. Salmela-Aro [32] found that the urban school factor increases the burnout level only among female students. Major studies have shown that urban students exhibit higher burnout levels, especially their emotional exhaustion component, than their rural counterparts. Our research outcomes are in line with the findings reported by V. K. H. Mirzoyan and M. Y. Mikaelyan, showing that approximately 12% of urban students experience high levels of this component of academic burnout, while only 5% of rural students report similar levels [50]. This suggests that the academic context in urban areas may be more demanding and emotionally challenging for students. The implications of these findings extend beyond individual student experiences, highlighting systemic issues within urban educational environments. Teachers in urban settings often face unique challenges that contribute to their own stress and burnout, which can further impact students; for instance,

research indicates that urban teachers report higher levels of stress due to inadequate resources and challenging difficulties in controlling students' behaviours, ultimately affecting classroom dynamics and student engagement. This reciprocal relationship suggests a cycle where heightened teacher burnout exacerbates student emotional exhaustion, creating an environment where both educators and learners struggle to thrive. Consequently, addressing the underlying factors contributing to urban school burnout – such as treating the problem of overcrowding classrooms and support systems for teachers – may be essential for improving the overall educational climate in urban areas.

Health challenges also cause academic burnout. Managing a chronic or acute disease can amplify the pressures of academic life, leading to higher cynical scores and a diminished sense of accomplishment; even an unhealthy lifestyle can lead to academic burnout. Furthermore, potential social isolation and perceived lack of support can strengthen cynical attitudes towards their studies. In addition, WHO (World Health Organisation), recognise a link between health and education. This highlights the necessity for institutions to provide school health services for each establishment to help students facing health challenges. This could reduce school burnout. Moreover, the impact of academic burnout can be exacerbated by health challenges that intersect with socioeconomic status. For instance, students suffering from various diseases may experience additional stressors than their normal counterparts, which can further diminish their resilience against burnout, thereby intensifying feelings of isolation and helplessness among students from families with limited resources and restricting access to necessary health services. Consequently, it becomes imperative for educational decision-makers to implement health services and create comprehensive support networks that address both health and socioeconomic disparities, providing an environment conducive to students' good mental health and academic success [29].

Following on from the study conducted by C. Maslach, W. B. Schaufeli and M. P. Leiter [51], who have linked professional stress to burnout in adults [51], several authors have been interested in the associations between academic stress and burnout in adolescents. On a theoretical level, K. Salmela-Aro, N. Kiuru, E. Leskinen et al. proposed approaching academic burnout as a continuous phenomenon ranging from stress to severe burnout, thus suggesting the link between these two concepts [13]. B. Çapri, G. Y. Sönmez [23] and H. Benchelha, M. Chakit, A. O. T. Ahami et al. [52] have shown that academic stress is a significant and positive predictor of academic burnout, emphasising in particular that a high level of school-related stress is associated with a high level of academic burnout and specify these associations by defining several types of academic stress and their respective effects on academic burnout. In particular, it appears that stress related to academic success and the future is the main predictor of exhaustion and feelings of inadequacy, while cynicism is more influenced by stress related to the amount of schoolwork. It would, therefore, seem that academic stress constitutes an important risk factor for burnout among students.

Scientific orientations exhibit higher levels of emotional exhaustion and cynicism than literary ones, highlighting the influence of study paths on academic burnout. The greater emphasis on quantitative reasoning, competitive pressures, more examinations, and potentially longer study hours in scientific fields could increase stress and emotional depletion among these students. Conversely, focusing on qualitative analysis, fewer exams and potentially greater flexibility in literary programmes might foster a less stressful academic experience, leading to lower burnout levels. However, it is crucial to acknowledge that individual experiences within each study path can vary significantly. This disparity in academic burnout between scientific and literary students may be attributed to the differing demands of their respective academic contexts, where scientific disciplines often require rigorous analytical skills and intensive workloads that can exacerbate stress levels. Furthermore, S. Read, L. Hietajärvi, K. Salmela-Aro stated that environmental factors like study path are critical in tailoring student experiences and resilience against burnout [32]. For instance, students from lower socioeconomic backgrounds might face additional pressures that compound their academic challenges, ultimately leading to heightened emotional exhaustion. As educative institutions strive to mitigate these effects, it becomes primordial to implement targeted support systems that recognise the unique needs of students across various fields of study, particularly those in high-pressure environments like scientific paths. Such support systems could include mentorship programmes, mental health resources, and flexible learning options that prioritise student well-being while encouraging academic success. To gain a more comprehensive understanding of this relationship, further research is needed to explore other potential contributing factors deeply.

Limitations

The significant limitations observed in our research are derived from cross-sectional data. Consequently, minimal conclusions can be drawn regarding the effect of socioeconomic factors on school burnout. Also, our study did not examine the impact of associated factors over time. In addition to acknowledging the elevated risk of school burnout associated with lower family income and urbanisation, it is crucial to focus on supporting families with low incomes with fewer conditions to ensure an accurate education, particularly for boys in secondary school. Despite the enhanced education budget in the previous years, Morocco ranks last globally in terms of quality of education. While local policymakers should confess that educational institutions in Morocco have failed without considering students' well-being, the present study indicates that students' mental health should be considered in future education strategies.

Conclusion

The academic experiences of secondary students are influenced by various factors, leading to an increase in the three components of burnout. The results showed that around half of Moroccan students exhibit academic emotion. Male students

may develop more cynical attitudes and a greater sense of inadequacy in their academic abilities, and third-year students exhibit higher emotional exhaustion than first-year peers. In contrast, second-year students show lower rates of burnout. Additionally, students from low-income backgrounds are more vulnerable to academic burnout, and urban students report greater emotional exhaustion than their rural counterparts. Health challenges further exacerbate these issues, and students in scientific disciplines experience higher levels of emotional exhaustion and cynicism than those in literary fields. In their future approaches, the Moroccan education decision-makers could exploit our research findings to reduce academic burnout among students, leading to better academic achievement.

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