

CONSTRUCTION AND VALIDATION OF THE *AREAS OF ACADEMIC LIFE SCALE* TO MEASURE ORGANIZATIONAL RISK FACTORS FOR STUDENT BURNOUT

TERESA CHIRKOWSKA-SMOLAK¹, MAGDALENA PIORUNEK², and ŻANETA GARBACIK³

Adam Mickiewicz University, Poznań, Poland

¹ Faculty of Psychology and Cognitive Science, Department of Work and Organizational Psychology

² Faculty of Educational Studies, Department of Social Counselling

³ Doctoral School of Social Sciences and Department of Social Counselling

Abstract

Objectives: Academic burnout poses a challenge to the educational process. Higher education institutions have responsibilities similar to the ones of management in business settings. These institutions are responsible for creating conditions conducive to development and, as such, may be interested in verifying the presence of student burnout and pinpointing its causes. The purpose of this study was to answer these needs and develop a scale to measure the effect of organizational factors that may predict student burnout. **Material and Methods:** This paper reports the results of a study conducted on a sample of Polish students (N = 659) to construct and validate a multidimensional measure of organizational factors impacting academic burnout, focusing on students. For background purposes and as a starting point, the authors used the concept of the areas of worklife by Ch. Maslach and M. Leiter, who identified 6 areas of the work environment that affect the relationships people develop with their work, i.e., workload, control, reward, community, fairness, and values. **Results:** The authors assessed the factor structure, reliability, and construct validity and performed confirmatory factor analysis of the new scale to measure 6 areas of academic life. Given the results of this study, the scale can be recommended as an adequate tool to measure organizational (academic) factors of burnout in students. **Conclusions:** The authors have validated the final scale, which can be used to advance the understanding of the academic burnout phenomenon. *Int J Occup Med Environ Health.* 2023;36(6):798–811

Key words:

validation, scale, academic burnout, student stress, areas of academic life, organization and management in tertiary education

INTRODUCTION

The modern academic environment has undergone significant transformation over the past few decades. While it continues to be a platform for intellectual development, there has been growing concern over the prevalence and impact of burnout among university students. The phenomenon of professional burnout, noticed and analyzed by researchers representing various scientific disciplines,

is a problem of an increasing number of people functioning in the labor market and education environment. It also concerns the academic environment, which is the workplace for a large number of scientific, teaching, technical, and administrative staff as well as students. The academic space is a place of intensified activity, which is supposed to lead to the realization of presumed scientific and didactic goals. Subject to formal and legal

Funding: this work was supported by Adam Mickiewicz University.

Received: February 25, 2023. Accepted: October 16, 2023.

Corresponding author: Teresa Chirkowska-Smolak, Adam Mickiewicz University, Faculty of Psychology and Cognitive Sciences, Department of Work and Organizational Psychology, Szamarzewskiego 89/AB, 60-568 Poznań, Poland (e-mail: chirko@amu.edu.pl).

conditions at the national and local levels, academia also undergoes changes generated by globalization, financial requirements, or processes of redefining key values that underlie extensive educational activities. Many aspects of the work environment are changing, as well as the requirements and organization of the student education process. It is, therefore worth considering how these transformations (and their consequences for the structure and climate of the university organization) translate into student well-being.

Traditionally associated with professional work contexts, the concept of burnout has recently found its relevance in academic settings. Although the student group is not strictly an employee group, it is nevertheless subject to all the challenges of prolonged, committed activity and active presence in the organization. As such, it is exposed to the direct and indirect consequences of the difficulties experienced by the larger professional academic community. Paying attention to students seems particularly justified since burnout syndrome affects not only professional groups but also other people who undertake an organized form of activity [1], especially those who are on the “(...) front line, whose adaptability is limited – and who are therefore most at risk for job burnout” [2, p. 58]. Academic burnout, as a phenomenon that “develops in response to prolonged and unmanageable stressors and affects directly or indirectly all groups functioning within it, i.e., faculty, teaching staff, administration, students” [3, p. 81], highlights the role of complexity within the university system and should be considered from the perspective of each group functioning within it. At the same time, the authors can assume that burnout is a process of loss caused by a mismatch between a person’s needs and the demands of the job [4]. This mechanism works on the principle of feedback – the requirements shape the individual, while they influence the place of their activity and those interacting with them. In this sense, burnout is an organization-wide problem, and organizational conditions are at

its core. Changing these conditions can have a feedback effect on staff and students.

Therefore, it seems justified to diagnose the university as an educational and working environment posing a risk of the occurrence and development of academic burnout – a phenomenon unfavorable from both the individual and organizational point of view. At the same time, it should be noted that in the spirit of the concept of the best-known burnout researcher, Ch. Maslach, burnout is an issue of the organization (or, more precisely, the conditions created by it, in a broad sense) and not an individual problem. It is the responsibility of the institution to monitor, prevent or counteract pathological phenomena, which undoubtedly include burnout. The fact that it is neither a binary phenomenon nor simple to eliminate should not discourage management from diagnosing the current state of affairs. However, there might be a certain difficulty in the lack of an adequate tool corresponding to the needs of tertiary education institutions, which would not only indicate the presence of the burnout phenomenon in the university space but, most importantly, precisely pinpoint its causes. Therefore, the authors have aimed to provide tools for diagnosing the university environment for signs of burnout among students, as these may be an important starting point for creating practical recommendations for more effective management of a student-friendly university.

Following the most popular concept of job burnout, proposed and developed by Maslach and Leiter [5], the authors defined burnout as a syndrome that develops in response to chronic stress, which can be described as physical and emotional exhaustion, cynicism (cold attitude towards other people in the work environment; distance from the duties performed) and lack of professional effectiveness [4,6]. Authors of this multidimensional concept [7] are considering the interplay of stressors and an individual’s personal resources as a continuum, at either end of which is work engagement or burnout.

One group of individuals about whom still little is known regarding the extent of the occurrence and severity of burnout are the college students mentioned in the introduction. Despite the growth of research interest in the aforementioned group regarding their mental health and well-being [8–10], it still needs to be determined to identify opportunities for measurement and intergroup comparisons regarding professional burnout syndrome. In the Polish context, the available data address burnout directly or indirectly by verifying stress levels, but these are predominantly results concerning medical students [11–15]. Meanwhile, with the transformation of higher education, compounded by the challenges of the pandemic and the remote learning process, the authors can presume that studying and the student's role are becoming more demanding.

Students, as an integral part of the university system, fit the dimensions described in the multidimensional model of burnout: they may experience overload and exhaustion in terms of the duties imposed on them or the internal pressure to achieve high results, they may defensively distance themselves from the university and their role in it, and they may fail to identify with the mentioned values in the face of the loss of intrinsic motivation and enthusiasm, which initially characterized their attitude toward studying. They may experience themselves as ineffective in the process of coping and even negatively evaluate their efforts and competence. They also experience a deterioration of relations with other university groups: teachers, administration, or each other. Developing negative attitudes, an unwillingness to participate in the process of studying, loss of enthusiasm, decreased activity, deteriorating relationships, exhaustion, and a belief that one's actions are pointless to have been some of the observable emotional and behavioral indicators of student burnout. Six areas of academic lifestyle can be a cause of burnout. To better understand the antecedents and outcomes of student burnout, it is imperative to dissect its underly-

ing factors, notably the organizational factors. These can often mirror those recognized in traditional occupational settings but are experienced differently within the academic sphere. Maslach and Leiter [6], in describing and researching the phenomenon of burnout, stated that burnout is “always more likely to occur when there is a large mismatch between the nature of the work and the nature of the person doing the work” [6, p. 26–27]. It is also important to assume that although burnout is a personal experience (and thus, they have a stake in coping with it), the total responsibility for its course should not be placed on the shoulders of a single individual. Ignoring the organizational context – and thus denying any of its responsibility in contributing to burnout – may account for the ineffectiveness of remediation efforts, such as those directed solely at the employee.

The authors of the concept have identified 6 key areas that may be relevant to the employee-work relationship: workload, control, community, fairness, rewards and values [7]. These 6 areas of work life are also reflected in academic environment. For students, analogous domains emerge: academic load and flexibility, autonomy in learning, academic and social rewards, campus community and peer interactions, fairness of evaluation and grading, and alignment between personal and institutional values. These domains underline the organizational context of student burnout, emphasizing how structural factors, rather than individual deficits, often play a pivotal role in its Genesis.

By adapting and contextualizing this to the student-academic environment relationship, deeper insights into the causes, manifestations, and potential mitigation strategies for student burnout can be gained. With regard to student's burnout, it refers to:

- Demand overload: burden resulting from the multitude of duties, the irrational schedule of classes during the day, week, and semester, and the necessity of permanent skills in self-education, which becomes even

more significant during remote education and when combining the process of studying with paid work and family roles.

- Lack of control: especially when the goals are ambitious and the information on how to achieve them is ambiguous [15]. This factor reflects opportunities or the lack thereof to confer about the shape of the curriculum and its organization, the scope of freedom in the assimilation of knowledge, and its assessment.
- Breakdown of community: which comprises interpersonal interactions occurring in the context of students activity. For example, when those who are involved in the educational process feel separated from each other (also physically), their contact becomes depersonalized, the sense of community disappears, and mutual emotions calm down. Stimulating competition and rivalry negatively affect the bonds formed and thus also potential social support in the face of difficulties. Additionally, the conditions of uncertainty, the temporary nature of degree programs, incomplete or interrupted coursework, or domination of communication by ICT tools do not encourage social involvement and psychological integration with the university community.
- Insufficient reward: in the context of student functioning, the aforementioned remuneration is connected with appreciating their efforts put into the realization of teaching and organizational tasks, noticing student efforts and motivating them to undertake an activity, and a student's sense of his or her fair treatment by the lecturer.
- Absence of fairness is defined by a lack of respect, trust, and openness. Their presence maintains commitment, while their absence contributes to the development of burnout syndrome. The aforementioned values become endangered when organizations focus on the struggle for survival. In such conditions, the well-being of employees and focus on community and values important for the company become less criti-

cal. In the reality of academic functioning, the sense of fairness is directly connected with the evaluation process, i.e., clarity of its criteria and their consistent application, and openness of communication in relations with all groups of university employees.

- Value conflicts, concerning the emotional-motivational sphere make the gratification of an activity go beyond material means. Values influence the whole relationship between the employee (or, in this case, student) and their workplace, especially when they are faced with a choice between the values they consider to be their own and the possibilities of their realization in a given workplace, or even when they have to pursue values that they feel are mutually exclusive. In relation to students, what seems to be particularly important is the clash of students' expectations with reality, or the discrepancy between declarations regarding the assumptions of the process of studying and their actual realization in everyday practice.

The manifestation of burnout among students in relation to these 6 areas is an uncharted territory, necessitating rigorous exploration. Such research holds promise for educational institutions, offering actionable insights to foster environments that are conducive to student well-being and success.

Recognizing the importance of these organizational factors and the absence of a comprehensive tool to measure them in the context of student burnout, this paper introduces a new measurement tool designed specifically for this purpose. Evaluating these factors in a structured, reliable manner is pivotal for universities and academic institutions, paving the way for effective interventions and policies tailored to combat student burnout. The introduction and validation of such a tool is not only timely but also a significant stride towards safeguarding the mental well-being of the student population.

Based on Maslach and Leiter's concept of the 6 areas of working life [7] the authors identified possible areas

of organizational mismatch in the context of student activity. The proposed tool thus reflects the original concept in terms of structure, but relates precisely to the functioning of the group the authors are interested in – students – so the identified areas of fit in terms of meaning and nomenclature correspond to the specificity of the academic environment. This will be further discussed in the presented text.

MATERIAL AND METHODS

Ethics

This study was carried out in accordance with the recommendations of American Psychological Association ethical guidelines and its detailed plan has been accepted on May 5, 2021 by the local ethics committee at the Adam Mickiewicz University, Poznań, Poland. The study included non-clinical surveys, the authors used non-invasive measures (self-ratings). A cover letter was included guaranteeing confidentiality and explaining the purpose of the survey. No treatments or false feedbacks were given, and no potential harmful evaluation methods were used. Participation was completely voluntary, and participants were given an opportunity to drop out at any time without any negative consequences. The study was conducted online using the MS Forms application, so only students could take part in the survey. Written online informed consent to participate in the survey was obtained by clicking on “I accept.” Respondents were informed that they could contact the researchers if they felt uncomfortable, had questions or concerns.

Statistics

Measure

The objective is to present the structure and validation of the *Areas of Academic Life Scale* to measure organizational risk factors for student burnout. The proposed scale is a new diagnostic tool that may be used by researchers interested in examining academic burnout in groups of students.

Therefore, the authors used the 2 tools to conduct the study:

- *Maslach Burnout Inventory – General Scale for Students* (MBI-GSS) was used to measure the result variable – academic burnout [16]. The MBI-SS in Polish adaptation [17] consists of 15 items that constitute 3 scales: *Exhaustion* (5 items; e.g., “I feel tired at the end of a day at university”), *Cynicism* (4 items; e.g., “I doubt the significance of my studies”), and *Personal Accomplishment* (6 items, positively worded; e.g., “During the class I feel confident that I am effective in getting things done”). All the items are assessed using a 7-point Likert scale, from 0 (never) to 6 (always).
- *Areas of Academic Life Scale* – a diagnostic tool proposed by the present authors, which was used to measure the organizational risk of student burnout (defined as a student’s fit to the 6 areas of academic functioning).

Applying them together allowed to assess the factor structure, reliability and structural accuracy of the new scale designed to measure the 6 areas of academic life.

Participants

The participants included 659 students from Adam Mickiewicz University in Poznań, Poland. Students were invited by e-mail to participate in the survey and those who were interested could entirely freely choose to take part in it. The sample consisted of 94% female and 4.7% male students of the following majors: pedagogy, special education, and preschool and primary education. The program in pedagogy has 2 levels (a 3-year bachelor’s degree and a 2-year complementary master’s degree), and the programs of the other mentioned majors last 5 years, being teacher training studies. Among the students of the 2-level programs in the field of pedagogy, there are students of the following specializations: elementary education and pedagogical therapy, care and educational pedagogy, resocialization, counseling and psychologi-

cal assistance, and vocational counseling. Two-thirds of the respondents (68%) studied full-time. They were students from all years of study, and for programs with advanced degrees, the major they took for graduate studies was for most of them (62.4%) a continuation of their undergraduate studies. Within the sample, 41.5% of them worked.

RESULTS

IBM SPSS Statistics 27 was used to perform the analyzes. The confirmatory factor analysis was performed using R Project's Library Iavaan [18].

Item development

First, the authors created a list of items as the initial foundation of the scale. These items were included in the analysis to determine whether they represent 6 areas of academic life. The data collected on the retained items were analyzed to determine the underlying factor structure of the items.

The initial list of items were based on a review of the literature and on personal and anecdotal experience so that each dimension could contain a representative set of items. After consultations with target population judges (students attending the authors' MA seminars), the authors dropped the items that did not correspond to the intended dimensions (areas of academic life) or were redundant in terms of wording. The authors retained 5–7 items for each area of academic life. The scale used in the initial analysis consisted of 41 items. Students rated the degree to which they felt that they experienced the situations mentioned. Responses were given on a Likert-direction scale with the anchors being strongly disagree (1) and strongly agree (5).

A higher score reflects a higher quality of academic life for most items. This means that they are positively worded and consistent with scoring; however, some items are worded inversely. To ensure that higher scores rep-

resent a higher quality of academic life, these inversely formulated items must be recoded (that is, a score of 1 becomes 5, 2 becomes 4, 3 remains 3, 4 becomes 2, and 5 becomes 1). Only for the workload scale a higher score reflects a higher workload.

To produce the most parsimonious scale possible, exploratory factor analysis (EFA) was applied to the 41-item measure to isolate items that performed well across different criteria. To determine which items should be removed, the authors searched for those with a factor loading of <0.30 . Next, the authors inspected all the factor loadings to ensure that an item was not more strongly associated with any factor other than the one for which it was intended (if it was, it was eliminated). When making decisions, the authors also considered the content of the items and their theoretical compatibility with the measured construct. The authors were interested in whether the tool still covers all relevant aspects of a given phenomenon. Applying these criteria resulted in the removal of 16 of the 41 items.

Extraction of factors

The purification process produced a 25-item scale with 3–6 items for each potential dimension. Before the study, the authors initially adopted a model based on the concept of 6 areas of professional life proposed by Maslach and Leiter [7]. This theory pointed to a strictly defined number of factors. However, the authors did not assume that the data structure would be the same for students' academic performance, nor did the authors fix the number of factors to extract and decide if a solution with more or fewer factors would be more appropriate. Therefore, EFA was performed to investigate the factor structure of the questionnaire and reveal the latent factors underlying the academic factors of students' burnout.

The authors first examined model assumptions. The factorability of the data was assessed with the Kaiser–Meyer–

Olkin (KMO) statistic. The total KMO was 0.8, indicating that, based on this test, the authors could probably conduct a factor analysis. Having the result of Bartlett's test of sphericity, which allows rule out the variables in the dataset that were essentially uncorrelated ($p < 0.001$), the authors proceeded with the factor analysis.

The final 25 items appear in Table 1, which presents the results of the exploratory factor analysis. The principal components extraction method was used, in combination with a Varimax rotation (with Kaiser normalization).

The authors adopted a 6-factor solution. In total, the factors accounted for 56.39% of the variance, which is a satisfactory result, consistent with the analyses cited in the research review by Lee [19]. The authors labeled the factors based on the item content.

The 4 factors mirrored work life areas: workload, control, community, and values. The next factor was labeled teaching quality and comprised 2 of Leiter's areas of work life: fairness and rewards. The final factor, unique for academic life, was labeled administration.

- The first factor – teaching quality – comprised 6 items, with the highest loading on item 20 (“Academic teachers praise us when we are active in the classroom”). This factor reflected items measuring Leiter's areas of work life: fairness (3 items) and rewards (3 items).
- The second factor – workload – comprised 4 items, with the highest loading on item 1 (“I feel that the number of duties at the university is too big for me”).
- The third factor – values – comprised 5 items, with the highest loading on item 23 (“The content assimilated in college seems to me detached from life, too ‘theoretical’”).
- The fourth factor – administration – comprised 3 items, with the highest loading on item 14 (“I feel that dealing with administrative matters at my university is burdensome and badly organized”).
- The fifth factor – community – comprised 3 items, with the highest loading on item 11 (“We support each other in my student group”).

- The sixth factor – control – comprised 4 items, with the highest loading on item 6 (“During my studies, I have a lot of freedom in constructing my own course of study”).

There were 3 double-loading items: 5 (“I feel that only imitating or reproducing the content presented by lecturers is viewed positively at the university”), but it loaded considerably higher on factor 4 (control) than on factor 1 (values); 12 (“I can count on the understanding and support of my lecturers”) loaded higher on factor 2 (teaching quality) than on factor 4 (control); and 21 (“The classes I attend are interesting for me”) loaded higher factor 1 (values) than 2 (teaching quality). Since each was conceptually more meaningful in the categories of the factors with the higher loadings, they were retained there.

Correlations among the 6 factors were also computed, which showed, as expected, that the distinguished factors were related to each other. Table 2 shows the correlation matrix between these factors. These correlations were significant but only weakly or at most, moderately.

Invariance across the forms of studies

The authors also examined the scale invariance by the form of studies (full-time or extracurricular studies). To test the invariance the authors performed MGCFA. First, a model for configural invariance was estimated, then for metric invariance, where factor loadings within groups were fixed. Then a model for scalar invariance was estimated, where regression intercepts were additionally fixed, and finally, a model for strict invariance, where residuals within comparison groups were fixed. To evaluate model fit, various fit indices were used: comparative fit index (CFI), Tucker-Lewis index (TLI), normed fit index (NFI), root mean squared error of approximation (RMSEA), and standardized root mean squared residual (SRMR).

Analysis of the *Areas of Academic Life Scale* invariance by the form of studies is presented in Table 3.

Table 1. Factor pattern matrix for the 25-item scale (rotation converged in 6 iterations) in students (N = 659), study conducted online in May–July 2021, Poznań, Poland

| Item | Factor | | | | | |
|--|--------------|------------------|--------------|--------------|----------------|--------------|
| | values | teaching quality | workload | control | administration | community |
| I feel that the number of obligations at the university is too big for me | −0.132 | −0.121 | 0.760 | −0.094 | −0.117 | −0.047 |
| Teachers flood us with materials to be prepared for classes | −0.139 | −0.102 | 0.764 | −0.090 | −0.122 | 0.027 |
| I find the content I am learning incomprehensible or too difficult to acquire on my own. | −0.325 | −0.155 | 0.564 | −0.075 | −0.014 | −0.008 |
| I fulfill my university duties at the expense of other activities (e.g., time with my family or hobbies) or rest | 0.022 | −0.021 | 0.615 | −0.398 | 0.002 | −0.081 |
| I feel that only imitating or reproducing the content presented by lecturers is viewed positively at the university* | 0.313 | 0.115 | −0.096 | 0.566 | 0.144 | 0.008 |
| I have a great deal of freedom in constructing my individual course of study at the university | 0.136 | 0.231 | −0.054 | 0.668 | 0.115 | 0.089 |
| As students, we have influence on decisions made at the university | 0.182 | 0.264 | −0.093 | 0.549 | 0.121 | 0.096 |
| I do not have the ability to modify or adjust my schedule to accommodate other responsibilities* | 0.027 | 0.018 | −0.214 | 0.623 | 0.010 | 0.067 |
| I have good relationships with my fellow students | 0.087 | 0.110 | 0.111 | 0.173 | 0.052 | 0.696 |
| In my group, there is rivalry (achievements, grades, popularity)* | 0.121 | 0.022 | −0.222 | −0.008 | 0.012 | 0.706 |
| In my student group, we support each other | 0.052 | 0.183 | 0.020 | 0.070 | 0.090 | 0.834 |
| I can count on understanding and support from my lecturers | 0.168 | 0.554 | −0.296 | 0.339 | 0.115 | 0.036 |
| I have good contact with the administrative staff of the faculty, e.g., student services office staff, dean's office | 0.022 | 0.145 | −0.023 | 0.106 | 0.748 | 0.038 |
| I feel that handling administrative issues at my university is tedious and poorly organized* | 0.136 | 0.062 | −0.081 | 0.120 | 0.860 | 0.062 |
| I feel that I am not well-informed on administrative matters or the university's formal requirements* | 0.137 | 0.166 | −0.141 | 0.075 | 0.755 | 0.057 |
| I feel that I am fairly evaluated by my teachers during classes | 0.238 | 0.619 | −0.143 | 0.068 | 0.062 | 0.145 |
| I know and understand the criteria for assessment and grading | 0.067 | 0.578 | −0.217 | −0.186 | 0.111 | 0.046 |
| University teachers appreciate our achievements | 0.154 | 0.664 | −0.041 | 0.358 | 0.150 | 0.082 |
| University teachers generally recognize our efforts | 0.171 | 0.649 | −0.096 | 0.353 | 0.126 | 0.108 |
| University teachers praise us when we are active in classes | 0.144 | 0.625 | 0.081 | 0.157 | 0.066 | 0.060 |
| The classes I attend are interesting for me | 0.644 | 0.318 | −0.062 | 0.090 | −0.045 | 0.109 |
| I feel that I learn many things unnecessarily* | 0.776 | 0.066 | −0.212 | 0.129 | 0.087 | 0.034 |
| The content I acquire during my studies seems disconnected from my life, too "theoretical"* | 0.810 | 0.087 | −0.175 | 0.135 | 0.109 | 0.089 |
| The content taught at the university seems to me to be outdated and obsolete* | 0.708 | 0.120 | −0.155 | 0.125 | 0.148 | 0.063 |
| I am convinced that the knowledge I acquire will be useful in my future job | 0.594 | 0.264 | 0.035 | 0.116 | 0.068 | 0.075 |

Loadings >0.40 are bolded.

* Reverse-coded items.

Table 2. Correlation matrix between factors in students (N = 659), study conducted online in May–July 2021, Poznań, Poland

| Factor | Correlation | | | | |
|---------------------|-------------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 |
| 1. Workload | – | | | | |
| 2. Control | –0.401** | – | | | |
| 3. Community | –0.144** | 0.232** | – | | |
| 4. Teaching quality | –0.387** | 0.510** | 0.321** | – | |
| 5. Values | –0.380** | 0.438** | 0.232** | 0.499** | – |
| 6. Administration | –0.256** | 0.317** | 0.172** | 0.376** | 0.338** |

** p < 0.01.

Table 3. Model fit indices based on Satorra-Bentler [23] correction for robust standard error computation in students (N = 659), study conducted online in May–July 2021, Poznań, Poland

| Model | χ^2 | df | p | CFI | TLI | RMSEA (95% CI) | SRMR |
|------------|----------|-----|--------|-------|-------|---------------------|-------|
| Configural | 1631.711 | 764 | <0.001 | 0.995 | 0.995 | 0.039 (0.036–0.041) | 0.051 |
| Metric | 1655.695 | 787 | <0.002 | 0.987 | 0.986 | 0.042 (0.039–0.045) | 0.056 |
| Scalar | 1802.165 | 810 | <0.003 | 0.983 | 0.982 | 0.044 (0.041–0.047) | 0.057 |
| Strict | 1872.996 | 840 | <0.004 | 0.982 | 0.982 | 0.044 (0.041–0.047) | 0.059 |

CFI – comparative fit index; df – degrees of freedom; RMSEA – root mean square error of approximation; SRMR – standardized root mean square residual; TLI – Tucker-Lewis index.

Estimation method: diagonally weighted least squares (DWLS); optimization method: nonlinear minimization, bounded (NLMINB).

Table 4. Model comparison – scaled difference test (method: Satorra-Bentler [23]) in students (N = 659), study conducted online in May–July 2021, Poznań, Poland

| Model | χ^2 | df | χ^2 diff | df diff | Pr(> χ^2) |
|------------|-----------|-----|---------------|---------|-----------------|
| Configural | 852.2695 | 764 | – | – | – |
| Metric | 1023.9053 | 787 | 46.22636 | 23 | 0.0028031 |
| Scalar | 1114.2708 | 810 | 147.42633 | 23 | <0.00001 |
| Strict | 1165.2568 | 840 | 70.12444 | 30 | 0.0000467 |

χ^2 diff – difference in χ^2 ; df – degrees of freedom; df diff – difference in degrees of freedom; Pr(> χ^2) – probability greater than the χ^2 value.

The configural invariance model provided a good fit to the data, suggesting that the factor structure was equivalent across the 2 groups tested. The metric invariance model, which postulates invariant factor loadings across groups, fitted the data well. The scalar invariance model, which assumes equal item intercepts across all groups, and the strict invariance model also fitted the data well.

Comparing configural, metric, scalar, and strict invariance models by the form of studies (Table 4) has shown significant differences.

The authors interpreted the value of the Satorra-Bentler scaled χ^2 (SB χ^2) with caution since, with such large samples, the chi-square likelihood ratio tests may give significant results even with practically negligible deviations from invariance [20].

Table 5. Models deltas of robust indices in students (N = 659), study conducted online in May–July 2021, Poznań, Poland

| Model | Δ CFI | Δ RMSEA | Δ SRMR |
|---------------------|--------------|----------------|---------------|
| Configural – metric | 0.008 | –0.003 | –0.005 |
| Metric–scalar | 0.004 | –0.002 | –0.001 |
| Scalar–strict | 0.001 | 0.000 | –0.002 |

Δ CFI – change in comparative fit index; Δ RMSEA – change in root mean square error of approximation; Δ SRMR – change in standardized root mean square residual.

So the authors further examined models deltas of robust indices (Table 5). It was assumed that a decrease in CFI <0.01 and an increase in RMSEA >0.015 indicate significant differences within groups. For SRMR, an increase of 0.01 for scalar and strict invariance, and 0.03 for metric invariance, indicated significant group differences [21]. Such a decrease in CFI and TLI nor an increase in RMSEA was not observed in any case.

Therefore, it can be assumed that measurement invariance of the *Areas of Academic Life Scale* was fully confirmed across the form of studies, suggesting that individuals of both groups of students understood the scale items in very similar ways.

Reliability

The authors considered one aspect of reliability: internal consistency. The internal consistency coefficients (Cronbach's α) for the 6 factors were good enough and satisfac-

tory for the newly developed scale. The observed internal consistency coefficients for the 6 factors ranged from $\alpha = 0.64$ to $\alpha = 0.82$. The observed internal consistency coefficient for the total scale was $\alpha = 0.68$ (Table 6).

Construct validity

Finally, the authors evaluated construct validity. In the survey, the authors included the outcome variable for construct validation: academic burnout. The correlations among the 6 areas and of the 6 areas with the three subscales of the MBI-GSS are displayed in Table 7.

All 6 areas of academic life were significantly correlated with the three dimensions of student burnout, with the highest correlation coefficients between workload and exhaustion and between values and cynicism (with a negative relationship).

DISCUSSION

Psychosocial conditions in the academic environment are important for student functioning. Their academic engagement and well-being depend to a large extent on the conditions provided by the academy: an imbalance between organizational demands and student needs can cause stress, which, in the absence of coping resources, can contribute to the development of burnout syndrome. Universities, despite their rigorous nature, should ideally be sanctuaries for exploration, learning, and personal development. However, burnout, with its detrimental

Table 6. Descriptive statistics for the 6 factors and Cronbach's α in students (N = 659), study conducted online in May–July 2021, Poznań, Poland

| Factor | Min. | Max | M | SD | Skewness | Kurtosis | Cronbach's α |
|------------------|------|------|------|------|----------|----------|---------------------|
| Workload | 1.00 | 5.00 | 3.23 | 0.73 | –0.06 | –0.30 | 0.72 |
| Control | 1.00 | 4.75 | 2.82 | 0.69 | –0.28 | –0.14 | 0.65 |
| Community | 1.00 | 5.00 | 3.76 | 0.74 | –0.72 | 0.77 | 0.64 |
| Teaching quality | 1.00 | 5.00 | 3.47 | 0.56 | –0.33 | 0.60 | 0.77 |
| Values | 1.00 | 5.00 | 2.95 | 0.76 | 0.01 | –0.49 | 0.83 |
| Administration | 1.00 | 5.00 | 2.84 | 0.85 | 0.03 | –0.05 | 0.74 |

Table 7. Correlation between burnout and areas of academic life in students (N = 659), study conducted online in May–July 2021, Poznań, Poland

| Academic life area | Spearman's ρ coefficient | | |
|--------------------|-------------------------------|--------------------|-----------------------------------|
| | burnout – exhaustion | burnout – cynicism | burnout – personal accomplishment |
| Workload | 0.489** | 0.374** | –0.225** |
| Control | –0.333** | –0.369** | 0.259** |
| Community | –0.168** | –0.234** | 0.188** |
| Teaching quality | –0.319** | –0.361** | 0.300** |
| Values | –0.398** | –0.586** | 0.354** |
| Administration | –0.223** | –0.256** | 0.120** |

** $p < 0.01$.

impact on mental health, scholastic achievements, and future occupational prospects, jeopardizes this ideal [17]. Recognizing its root causes, particularly organizational aspects, is not just advantageous but essential. This recognition is pivotal for designing a robust measurement tool to gauge organizational factors contributing to student burnout. Acknowledging these facets allows stakeholders to develop strategic interventions, ensuring students navigate the academic world successfully.

The purpose of this study was to analyze the validity of the new scale to measure academic factors of student burnout. Overall, the examination of responses from a large sample of Polish university students supports the validity of the 6-factor structure of the *Areas of Academic Life Scale*. The authors used the burnout questionnaire to verify the authors' construct's validity. In the authors' research all correlations between academic life subscales and burnout subscales were significant, their directions were consistent with theoretical assumptions. While the authors acknowledge that the observed correlations are also on weaker side, it's worth noting that even weak correlations can be of practical significance, especially in context where other factors can play a considerable role (e.g., personal factors explaining academic burnout). Moreover, in some fields or with certain variables, stronger correlations may not be common due to the multifactor nature of the construct being stud-

ied. Very similar results of correlations between work areas and occupational burnout were obtained by Leiter and Maslach [7] for *Areas of Worklife Scale* (AWS), in their study the highest correlation of the AWS and the MBI-GS was between workload and exhaustion (0.54) while the lowest was between workload and efficacy (0.04).

The internal consistency of the subscales is satisfactory. The model of the scale fits the empirical data well in the groups of full-time and extracurricular students. The model fit was very good: and was sufficient to accept the *Areas of Academic Life Scale* factor validity. Therefore, it can be assumed that full-time students will use the scale similarly to extracurricular students. The *Areas of Academic Life Scale* appears also to be a reliable instrument for measuring organizational factors of academic burnout. Given that the authors' scale is in the initial stages of development, the observed reliability is promising and suggests potential for refinement and further validation. Taken together, these findings suggest that the newly developed scale can form an important addition to studying factors that contribute to student burnout. The authors also recommend further research to improve the scale's reliability in the future and validity tests, such as predictive validity in longitudinal research.

The 6 distinguished areas of academic life mostly correspond to the areas of professional life proposed by Leiter. Four elements are the same between the 2 scales. How-

ever, there are also differences – 2 areas of work contributed to one academic factor: fairness and rewards. It was called the Teaching quality. With regard to work, the discretionary factor included the items of remuneration and recognition. With regard to the academic life of students, remuneration does not apply, and appreciation of the effort put into studying is perceived by students as fair. There is also a new factor, Administration, which addresses how students perceive their treatment in college and the organization of the teaching process.

Limitations

There are also several limitations to the current research. First, in the current study, the authors assessed the internal psychometric features of the new scale without referring to students from different fields of study or different types of universities. This happened because the authors' collaboration for participant recruitment was primarily with institutions offering pedagogy courses. In this regard, it is also worth pointing out that women predominated among the authors' respondents. Women are often overrepresented among pedagogical students and it is reflected in the authors' sample. The goal of the authors' study was to provide initial validation for the instrument, and while the sample is not as diverse as the authors might desire, it offers valuable insights into the environmental factors for a group of students in general. The authors recognize that it will be important to collect additional data and conduct a separate CFA to provide a more robust validation of the authors' instrument. As for now, the authors agree that the findings from this sample might not generalize to male students or students from other fields. Secondly, the internal consistency of the 2 subscales is slightly lower than 0.7, but this measurement applies to the shorter (3-item) subscales. Finally, as the authors' data are based on a single measurement wave, the authors were not able to test them for test-retest reliability. Future research should address this issue.

CONCLUSIONS

In conclusion, as with professional burnout, academic burnout develops as a result of stress. Consequently, it affects students' well-being and their engagement in learning. As increasing demands and scarcity of resources make stress a common occurrence in the academic work environment [22] it is worth considering a diagnosis of the organization in terms of its impact on students. Just as organizational factors play a crucial role in professional burnout, they are equally, if not more, significant in the context of student burnout. Recognizing and addressing these mismatches can offer a proactive approach in preventing or mitigating the detrimental effects of burnout among university students.

The academic experience, despite its rigors, should ideally be a time of exploration, learning, and personal growth. Burnout, with its deleterious effects on mental well-being, academic performance, and future professional life, undermines this ideal. As such, understanding its root causes, especially the organizational factors, is not just beneficial but imperative. By doing so, stakeholders can pave the way for strategic interventions, ensuring that students not only survive but thrive in the academic landscape. People who are employed at universities in decision-making, managerial and executive positions should be able to locate specific, dysfunctional areas of the organization in such a way as to effectively intervene and counteract the burnout of employees or students, which is not only an issue for an individual but also a problem of workplace compatibility [6, p. 51].

Author contributions

Research concept: Teresa Chirkowska-Smolak, Magdalena Piorunek, Żaneta Garbacik

Research methodology: Teresa Chirkowska-Smolak, Magdalena Piorunek

Collecting material: Teresa Chirkowska-Smolak, Magdalena Piorunek, Żaneta Garbacik

Statistical analysis: Teresa Chirkowska-Smolak

Interpretation of results: Teresa Chirkowska-Smolak,

Magdalena Piorunek, Żaneta Garbacik

References: Żaneta Garbacik

REFERENCES

1. Portoghesi I, Leiter MP, Maslach C, Galletta M, Porru F, D'Aloja E, et al. Measuring Burnout Among University Students: Factorial Validity, Invariance, and Latent Profiles of the Italian Version of the Maslach Burnout Inventory Student Survey (MBI-SS). *Front Psychol.* 2018;9(2105):1–9. <https://doi.org/10.3389/fpsyg.2018.02105>
2. Maslach Ch, Leiter MP. Prawda o wypaleniu zawodowym. Co zrobić ze stresem w organizacji. 1st ed. Warszawa: Wydawnictwo Naukowe PWN; 2011. Polish.
3. Piorunek M, Garbacik Ż, Poczucie koherencji i stres doświadczany przez pracowników i studentów w środowisku akademickim. *Ann Univ Mariae Curie Skłodowska Med Sectio J Paedagogia Psychologia.* 2021;34(4):67–86. Polish. <http://doi.org/10.17951/j.2021.34.4.67-86>
4. Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Ann Rev Psychol.* 2021;52(1):397–422. <https://doi.org/10.1146/annurev.psych.52.1.397>
5. Maslach C. Burnout: A multidimensional perspective. In: Schaufeli WB, Maslach C, Marek T, editors. *Professional burnout: Recent developments in theory and research.* Washington DC: Taylor & Francis; 1993. p. 19–32.
6. Maslach Ch. Leiter M. Pokonać wypalenie zawodowe. Sześć strategii poprawienia relacji z pracą. 1st ed. Warszawa: Wolters Kluwer; 2010. Polish.
7. Leiter MP, Maslach C. Areas of worklife: A structured approach to organizational predictors of job burnout. In: Perrewé P, Ganster DC, editors. *Research in occupational stress and well being.* 2004;3. p. 91–134. [https://doi.org/10.1016/S1479-3555\(03\)03003-8](https://doi.org/10.1016/S1479-3555(03)03003-8)
8. Stallman HM, Hurst CP. The university stress scale: measuring domains and extent of stress in university students. *Aust Psychol.* 2016;51(2):128–134. <https://doi.org/10.1111/ap.12127>
9. Stallman HM. Psychological distress in university students: a comparison with general population data. *Aust Psychol.* 2010;45(4):49–257. <https://doi.org/10.1080/00050067.2010.482109>.
10. Lin SH, Huang YC. Life stress and academic burnout. *Active Learn High Educ.* 2014;15(1):77–90. <https://doi.org/10.1177/1469787413514651>
11. Nowakowska K, Jabłkowska-Górecka K, Borkowska A. Style radzenia sobie ze stresem i zespołem wypalenia zawodowego u studentów ratownictwa medycznego i ratowników medycznych. *Psychiatr i Psychol Klin.* 2009;9(4):242–248. Polish.
12. Łoza O. Porównanie zespołu wypalenia u studentów dwóch uniwersytetów medycznych (Warszawa, Koszyce). *Psychiatr.* 2015;12(2):108–112. Polish.
13. Pieniawska K, Śmiech K, Bar K, Pawlas K. Zawód przez zawodem – czy wypalenie może objawiać się już na studiach? Badanie populacji polskich studentów medycyny. *Med Srod.* 2017;20(2):22–31. <https://doi.org/10.19243/2017203>. Polish.
14. Niedobylski S, Michta K, Wachół K, Niedziałek K, Łopuszańska U, Samardakiewicz M, et al. Academic burnout, self-esteem, coping with stress and gratitude among Polish medical students – a cross sectional study. *Curr Probl Psychiatry.* 2022;23(4). <https://doi.org/10.2478/cpp-2022-0023>.
15. Chirkowska-Smolak T. Organizacyjne czynniki wypalenia zawodowego. *Ruch Praw Ekon Socjol.* 2009;LXXI(4):257–272. Polish.
16. Schaufeli WB, Leiter MP, Maslach C, Jackson SE. The MBI-general survey. In: *Maslach Burnout Inventory Manual.* Maslach C, Jackson SE, Leiter MP, editors. Palo Alto, CA: Consulting Psychologists Press; 1996. p. 38–51.
17. Chirkowska-Smolak T, Górecki T, Klakus M, Metzger W, Szargan M. The factorial validity of the Maslach Burnout Inventory: Student Survey (MBI-SS) in Poland. *Pol Psychol Bull,* in press 2023.
18. Rosseel Y. lavaan: An R Package for Structural Equation Modeling. *J Stat Softw.* 2012;48(2):1–36. <https://doi.org/10.18637/jss.v048.i02>

19. Lee EH. Review of the psychometric evidence of the perceived stress scale. *Asian Nurs Res (Korean Soc Nurs Sci)*. 2012; 6(4):121–127. <https://doi.org/10.1016/j.anr.2012.08.004>
20. Hu L, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Struct Equ Modeling*. 1999;6(1):1–55. <https://doi.org/10.1080/10705519909540118>
21. Chen FF. Sensitivity of goodness of fit indexes to lack of measurement invariance. *Struct Equ Modeling*. 2007;14(3):464–504. <https://doi.org/10.1080/10705510701301834>
22. Khan A, Din SU, Anwar M. Sources and adverse effects of burnout among academic staff: A systematic review. *CITIES*. 2019;9(2):350–362.
23. Satorra A, Bentler PM. Ensuring positiveness of the scaled difference chi-square test statistic. *Psychometrika*. 2010; 75(2):243–248. <https://doi.org/10.1007/s11336-009-9135-y>.