

Case Study

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## Burnout Among Students of Technical Faculties in Serbia – A Case Study

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**Abstract:** Even though university students are not employees of the faculties, their academic duties (attending classes, taking exams, writing term papers and essays, and so on) can be considered as forms of work, whereby they engage socially with their teachers and other students, which is why student burnout has come into increased focus of numerous studies. The aim of this paper is to examine the relationship between gender, tuition fee status, and year of study and burnout among the students of basic academic studies at one of the public faculties in southern Serbia (N=194) using the School Burnout Inventory (SBI-U 9). The obtained results indicate that moderate exhaustion, cynicism, and the feeling of inadequacy are related to moderate burnout of the majority of the students. It has been determined that gender influences one burnout dimension – exhaustion, while the students' tuition fee status is related to cynicism and inadequacy, as is their year of study. This study also found that high degree of burn-out increases with the years of study.

*Keywords:* burnout, gender, student tuition fee status, year of study.

### Introduction

The burnout syndrome was investigated for the first time by Herbert Freudenberger in the second half of the 20<sup>th</sup> century. The initial research was primarily concerned with the so-called helping professions, which are characterized by extensive social contacts, a high level of responsibility, and strenuous work effort (e.g. healthcare, social services, etc.). Burnout is most commonly defined as an inadequate response to occupational stress exposure, whereby employees feel exhausted and experience detachment from and negativity toward their job, accompanied by a feeling of reduced job efficiency “which can occur among individuals who work with other people in some capacity” (Maslach and Jackson, 1981, 1984, 1986, according to Maslach, 1993, pp. 20-21). The main reasons are believed to be personal traits and stressful situations in the work environment (personal and organizational factors). Different scales have been used to measure burnout, some of which only measure one dimension – exhaustion (e.g. BM – Burnout Measure), while others cover a broader scope of burnout (see Jocić, 2018, p. 37). Over time, researchers realized that burnout affects not only medical doctors, nurses, physical therapists, paramedics, social workers but also all other employees regardless of where they work.

Even though burnout is related to occupational stress, student activities such as class attendance, sitting for examinations, and completion of various specific assignments can also be considered as a form of work, despite the fact that students are not formally employed by their faculties. In every higher education institution, students are constantly faced with demands that are in fact materialized as stress-inducing situations (Rosales Ricardo and Rosales Paneque, 2013), so the student population finally became a topic of interest among burnout researchers.

Academic burnout is a consequence of and response to chronic stress caused by personal and organizational factors, such as the following: large number of courses and high academic demands (insufficient information given for assignment completion, accompanied by inadequate teacher demands); inadequate workload distribution (duration and number of classes, time required to complete pre-exam duties such as writing term papers or essays, duration of exam terms, exam schedules); access to library holdings; lack of logistical and infrastructural support (underequipped computer rooms, outdated

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equipment, inadequate ventilation, lighting, and even furniture, inadequate public transportation to/from the university/faculty, etc.); lack of financial support for students through scholarships; poor support for the administrative staff; rigid organization; difficulty in participating in and making decisions; and absence of student organizations. Students' stress can also be due to poor relations between them and their teachers (teachers continuously devaluing their capabilities) or between students themselves (lack of socializing or solidarity, conflicts between students), or due to a lack of participation in cultural, recreational, and other extracurricular activities. The list should be expanded by students' self-expectations, as well as expectations from their family, friends, and professors (Osorio, Parrello and Prado, 2020; Baik, Larcombe and Brooker, 2019; Caballero, Breso and González, 2015; Barradas Alarcón et al., 2017; Rosales Ricardo and Rosales Paneque, 2013; Palacio Sañudo et al., 2012).

Student burnout was usually investigated using two scales – the Maslach Burnout Inventory – Student Survey (MBI-SS) and the School Burnout Inventory (SBI-U 9). Both scales measure burnout in terms of exhaustion, cynicism, and the feeling of inadequacy/inefficiency. Exhaustion is associated with the feeling of exerting oneself to fulfil one's academic duties, and it is manifested in the feeling of fatigue owing to the demands of the teaching process. Academic cynicism refers to the indifference toward one's duties and a sense of detachment from them. Inadequacy refers to the feeling of inefficiency regarding duty fulfilment and the loss of confidence about one's ambitions (Salmela-Aro and Read, 2017; Kutsal and Bilge, 2012; Martínez Martínez and Pinto, 2005). The consequences of student burnout may lead to class absenteeism, reduced motivation to study, dropping out (Yang and Farn, 2005), and even various mental disorders.

Thus far, numerous studies of student burnout have been conducted, which is why only a few of them, which used the abovementioned scales, will be mentioned here. Burnout was usually investigated among students studying to become healthcare workers. For instance, Čarapina and Ševo (2017) and De-Abreu et al. (2011) investigated burnout among medical students, while Bonafé, Maroco and Campos (2014) investigated dentistry students, all using the MBI scale. Yang (2004) used this scale to examine burnout among students of technical sciences, Nikodijević, Anđelković Labrović and Đoković (2012) among students of organizational sciences, and Martínez Martínez and Pinto (2005) among students of different profiles, who were then classified into two groups – humanities and social sciences and experimental and technical sciences. Among others, the SBI scale was used by Osorio, Parrello and Prado (2020), Platania et al. (2020), Osorio et al. (2020), Helve (2019), Salmela-Aro and Reada (2017), Robins, Roberts and Sarris (2017), Boada-Grau et al. (2015), Moyano and Riano-Hernandez (2013), and Salmela-Aro and Kunttu (2010) when investigating the academic burnout of students of medical as well as natural, technical, and social sciences and humanities.

Student burnout was the topic of only several Serbian studies. To the present authors' knowledge and according to the literature review, burnout was studied among medical students (Ilić et al., 2017; Backović et al., 2012) and among students of faculties accredited in the field of technical and technological sciences (Nikodijević, Anđelković Labrović and Đoković, 2012; Miltojević, Ilić Krstić and Orlić, 2021), whereby different scales were utilised.

The aim of this research is to determine the degree of academic burnout among the students of basic (undergraduate) academic studies at one of the faculties accredited for the field of technical and technological sciences. The objectives are to examine the extent of burnout and the influence of gender, student tuition fee status, and the year of study on burnout (exhaustion, cynicism, and the feeling of inadequacy).

The set aims and objectives led to the following hypotheses: (H1) Student burnout depends on the degree of exhaustion, cynicism, and the feeling of inadequacy; (H2) There are gender differences in the degree of student burnout; (H3) Student tuition fee status influences the degree of student burnout; (H4) Year of study influences the degree of student burnout.

## Materials and Methods

Research instrument: Considering that student burnout has been rather under-investigated in Serbia, this research focuses on three burnout dimensions using the School Burnout Inventory (SBI-U 9). The scale is based on the Bergen Burnout Indicator, which contains 15 items, and the School Burnout Inventory, which contains 10 items measuring the three dimensions of pupil burnout: (a) four items measuring exhaustion at school; (b) three items measuring cynicism toward the significance of school; and (c) three items measuring the feeling of inadequacy at school. However, one of the items concerning the feeling of inadequacy did not refer to personal feelings toward school assignments, so the student burnout scale

now contains 9 items within three subscales: Exhaustion: I feel overburdened by my schoolwork; I often sleep badly because of matters related to my schoolwork; I brood over matters related to my schoolwork a lot during my free time; and The pressure of my schoolwork causes me problems in my close relationships with others; Cynicism: I feel a lack of motivation in my schoolwork and often think of giving up; I feel that I am losing interest in my schoolwork; and I am continuously wondering whether my schoolwork has any meaning; and Feeling of inadequacy: I often have feelings of inadequacy in my schoolwork and I used to have higher expectations of my schoolwork than I do now. The degree of agreement was measured using a 6-point Likert scale ranging from 1 (I completely disagree) to 6 (I completely agree). According to the authors, the scale has a good internal consistency with Cronbach's alpha ( $\alpha$ ) of 0.88, as do the subscales: exhaustion:  $\alpha=0.80$ , cynicism:  $\alpha=0.80$ , feeling of inadequacy:  $\alpha=0.67$  (Salmela-Aro at al., 2009). This instrument was used to examine student burnout and thus validate the scale in Finland (Salmela-Aro and Kunttu, 2010), Spain (Moyano and Riano-Hernandez, 2013; Boada-Grau at al., 2015), Peru (Delgadillo, Merino and Caballero, 2013), Columbia (Aguilar-Bustamante and Riano-Hernandez, 2013), Italy (Platania at al., 2020), and Mexico (Osorio at al., 2020).

The present research yielded Cronbach's alpha of 0.82, which indicates good scale reliability and internal consistency. Reliability was also good for the exhaustion subscale,  $\alpha= 0.79$ , and cynicism,  $\alpha =0.84$ , while a somewhat lower value was obtained for the feeling of inadequacy –  $\alpha= 0.65$ .

The results were processed using methods of descriptive statistics (frequency, percentage, mean value, standard deviation and correlation). Chi-square test was used to test hypotheses for  $p<0,05$ , and analysis of variance (ANOVA) with LSD and Tukey's HSD to determine the significance of differences, whereas eta squared was used to determine the influence between the groups.

Data processing was conducted using SPSS 20.0 software.

Research sample: The sample comprises 194 students, 37.6% of which are male (M) and 62.4% female (F). The highest percentage of the sample (73.8%) has their tuition fee covered in full by the state budget (B), while 26.2% pay for their tuition fee themselves, i.e. they are self-financed (S). The sample includes students from all four years of study: 22% first-year (1<sup>st</sup>), 26.2% second-year (2<sup>nd</sup>), 12.6% third-year (3<sup>rd</sup>), and 39.3% fourth-year students (4<sup>th</sup>).

The data were collected using a survey conducted via Google in November 2020. The survey was anonymous and sanctioned by the faculty's vice-dean for education.

## Results

Regardless of their gender, tuition fee status, and year of study, the highest percentage of the students experienced moderate burnout. Likewise, the highest percentage experienced moderate exhaustion, cynicism, and the feeling of inadequacy (Table 1).

**Table 1**  
*Degree of student burnout on the scale and subscales*

	Burnout	Exhaustion	Cynicism	Inadequacy
Mild	9.8%	10.8%	19.6%	14.4%
Moderate	58.2%	53.6%	49.5%	49.0%
Severe	32.0%	35.6%	30.9%	36.6%

The results indicate a positive and significant correlation between the burnout dimensions themselves as well as between the dimensions and burnout. Likewise, a correlation was found between tuition fee status, year of study, and burnout, between two burnout dimensions – cynicism and inadequacy, and between gender and exhaustion (Table 2).

**Table 2**  
*Correlation matrix*

	1	2	3	4
1. Burnout	–			
2. Exhaustion	,519**			
3. Cynicism	,694**	,470**		
4. Inadequacy	,756**	,519**	,694**	–
5. Gender	0.50	,152*	-,011	,050
6. Tuition fee status	,259**	,030	,308**	,259**
7. Year of study	,199**	,121	,210**	,199**

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

According to our data, gender influences only one burnout dimension – exhaustion. A statistically significant relationship was determined between student tuition fee status and academic cynicism and inadequacy. Also, the obtained values indicate that there is a statistical significance between the year of study and academic cynicism (Table 3).

**Table 3**  
*Statistical significance of gender, tuition fee status and year of study and burnout*

		Burnout	Exhaustion	Cynicism	Inadequacy
Gender	Pearson Chi-Square	2.031	6.092	5.845	0.506
	df	2	2	2	2
	Asim.Sig.	0.362	0.048	0.054	0.777
Tuition fee status	Pearson Chi-Square	6.360	2.571	23.285	14.063
	df	2	2	2	2
	Asim.Sig.	0.042	0.276	0.000	0.001
Year of study	Pearson Chi-Square	12.474	8.498	13.876	10.165
	df	6	6	6	6
	Asim.Sig.	0.052	0.204	0.031	0.118

The obtained eta squared values indicate that gender does not influence student burnout, tuition fee status has only a weak influence, whereas year of study has a moderate influence on academic burnout (Table 4).

**Table 4**  
*Influence of gender, tuition fee status, and year of study on burnout*

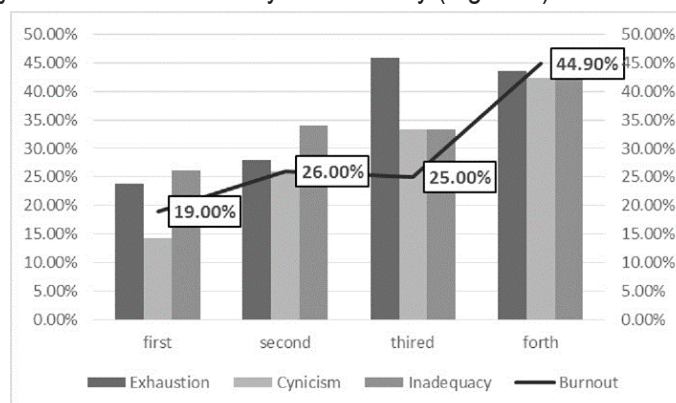
		Mean	Std. Deviation	Eta Squared
Gender	M	2.1644	0.64579	0.005
	F	2.2562	0.58493	
Tuition fee status	B	2.1597	0.59910	0.030
	S	2.4000	0.60609	
Year of study	1 <sup>st</sup>	2.0476	0.58236	0.060
	2 <sup>nd</sup>	2.1200	0.62727	
	3 <sup>rd</sup>	2.1667	0.56466	
	4 <sup>th</sup>	2.3974	0.58863	

Compared to the male students, twice as many female students experienced severe exhaustion. In addition, a significantly higher percentage of self-financed compared to budget-financed students experienced severe cynicism and feeling of inadequacy. The highest percentage of third-year students experienced severe exhaustion, while the highest percentage of fourth-year students experienced severe cynicism and feeling of inadequacy (Table 5).

**Table 5**  
*Gender, tuition fee status, and year of study in relation to student burnout*

			Burnout	Exhaustion	Cynicism	Inadequacy
Gender	M	Mild	13.7%	12.3%	24.7%	16.4%
		Moderate	56.2%	63.0%	38.4%	49.3%
		Severe	30.1%	24.7%	37.0%	24.2%
	F	Mild	7.4%	9.9%	16.5%	13.2%
		Moderate	59.5%	47.9%	56.2%	48.8%
		Severe	33.1%	42.1%	27.3%	38.0%
Tuition fee status	B	Mild	11.1%	9.7%	22.9%	17.4%
		Moderate	61.8%	56.9%	55.6%	53.4%
		Severe	27.1%	33.4%	21.5%	29.2%
	S	Mild	6.0%	14.0%	10.0%	6.0%
		Moderate	48.0%	44.0%	32.0%	36.0%
		Severe	46.0%	42.0%	58.0%	58.0%
Year of study	1 <sup>st</sup>	Mild	14.3%	9.5%	21.4%	21.4%
		Moderate	66.7%	66.7%	64.3%	52.4%
		Severe	19.0%	23.8%	14.3%	26.2%
	2 <sup>nd</sup>	Mild	14.0%	10.0%	24.0%	22.0%
		Moderate	60.0%	62.0%	50.0%	44.0%
		Severe	26.0%	28.0%	26.0%	34.0%
	3 <sup>rd</sup>	Mild	8.3%	12.5%	29.2%	8.3%
		Moderate	66.7%	41.7%	37.5%	58.3%
		Severe	25.0%	45.8%	33.3%	33.4%
	4 <sup>th</sup>	Mild	5.1%	11.5%	12.8%	7.7%
		Moderate	50.0%	44.9%	44.9%	47.4%
		Severe	44.9%	43.6%	42.3%	44.9%

The data indicate that severe burnout is the most pronounced among fourth-year students, with the biggest difference in severe burnout observed between first- and fourth-year students. The data also indicate that severe cynicism increases with years of study (Figure 1).



*Figure 1.* Influence of year of study on severe burnout (exhaustion, cynicism, and the feeling of inadequacy)

## Discussions

Student burnout: Regardless of their gender, tuition fee status, and year of study, the highest percentage of the students experienced moderate burnout (Table 1). The obtained data partially correlate with the data obtained by [Osorio, Parrello and Prado \(2020\)](#), the only difference being the results from a single subscale, as they found mild cynicism in their sample, within which 57% of the respondents experienced mild, while 43% experienced moderate and severe cynicism. According to our data, moderate and severe cynicism are prevalent among students (80.4%), whereas mild cynicism was found in less than one-fifth (19.6%) of the respondents. The prevalence of moderate and severe cynicism among Serbian students was confirmed by the data obtained in [Nikodijević, Anđelković Labrović and Đoković \(2012\)](#) and [Miltojević, Ilić-Krstić and Orlić \(2021\)](#). The former study found moderate and severe cynicism among 66.5% of the student respondents, while the latter found them in 56% of the students. Such high percentages accompanied by a detached attitude toward learning, a lack of interest in academic work, and failure to see the purpose of higher education ([Salmela-Aro and Read, 2017](#)) can be explained by social circumstances and the state of the labour market. Completion of one's studies in this transitional period provides no guarantees of finding work within one's profession. A significant number of graduates find employment outside of their profession and often requiring a much lower level of education.

As expected, the results also indicate a positive and significant relationship between the burnout dimensions themselves as well as between the dimensions and burnout (Table 2), which corresponds to the findings by [Salmela-Aro et al. \(2009\)](#).

Gender and burnout: The results from previous studies relating gender and burnout vary. According to some of them, burnout is more pronounced among women ([Purvanova and Muros, 2010](#)), or there is no relationship between gender and burnout ([Breso, Salanova and Schaufeli, 2007](#); [Galan et al., 2011](#)), whereas some studies only found differences between gender and certain burnout dimensions ([Nikodijević et al., 2012](#)).

The results of the present study indicate that gender does not influence burnout (Table 3 and Table 4), but that it is related to a single burnout dimension – exhaustion (Table 2). Exhaustion is more pronounced among the female students, because moderate and severe burnout was found in 90% of the female and 87.7% of the male students. The obtained mean values indicate small differences (M: M=2.18, SD=0.694; F: M=1.25, SD=0.674) and the eta squared (0.023) indicates a weak influence of gender on exhaustion. Our data do not correlate with the data obtained in some previous studies. Studies of burnout among students of technical sciences and among students of different scientific fields, which include technical and technological sciences, showed that male students experience a higher degree of burnout compared to female students ([Yang, 2004](#); [Martinez Martinez and Pinto, 2005](#)), but they do correlate with the results obtained by [Miltojević, Ilić Krstić and Orlić \(2021\)](#), [Osorio, Parrello and Prado \(2020\)](#), [Salmela-Aro and Read \(2017\)](#). The explanation for our results may be sought among gender stereotypes that emphasize higher emotional sensitivity of women as well as those that prescribe the roles and duties of women in our culture. In addition to their role as workers, or academic workers in this particular case, women have many other roles, such as housework, care for the younger and elderly household members, and so forth, which leads to their being overburdened because they have to balance different roles and which potentially causes emotional exhaustion.

Tuition fee status and burnout: According to our results, tuition fee status has an influence on burnout (Table 2 and 3). However, the differences of mean values are small and the eta squared of 0.030 indicates a weak influence of tuition fee status on burnout (Table 4).

Differences between budget-financed (B) and self-financed (S) students were found for all three cynicism items. A higher percentage of self-financed students (cumulative percentage of 90%) expressed moderate and high cynicism compared to budget-financed students (cumulative percentage of 77.1%). The obtained mean values (B: M=1.648, SD=0.715; S: M=2.000, SD=0.816) indicate differences between these two categories of students, while the eta squared of 0.043 indicates a weak influence of tuition fee status on academic cynicism.

A significantly higher percentage of self-financed students (68%) compared to budget-financed students (43%) partly agree, agree, and completely agree that they feel a lack of motivation in their schoolwork and often think of giving up. A significantly higher percentage of self-financed students (cumulative percentage of 46.2%) state that they are losing interest in their schoolwork compared to budget-financed students (29.7%). In addition, most self-financed students (46.2%) partly agree, agree, and completely agree that they are continuously wondering whether their schoolwork has any meaning compared to budget-financed students (40.5%). The obtained results show that self-financed students foster a more cynical attitude toward their academic duties compared to budget-financed students. Lack

of motivation and interest in one's studies as well as the re-assessment of the purpose of one's studies require further investigation. The causes may be sought in the reasons why students opt for a particular study programme, the tuition fee amount, the financial status of the students and their families, and the labour market conditions upon their graduation.

A statistically significant relationship was determined between the student tuition fee status and the feeling of inadequacy (Table 2 and 3). Ninety-four percent of the self-financed students reported a moderate and strong feeling of inadequacy, which again exceeded the number of budget-financed students (82.7%). The mean values indicate a difference among the two categories (B:  $M=1.945$ ,  $SD=0.664$ ; S:  $M=2.307$ ,  $SD=0.630$ ), while the eta squared of 0.067 indicates that there is a moderate influence of the tuition fee status on the feeling of inadequacy.

A somewhat higher percentage of self-financed students (58.4% compared to 53.5% of budget-financed-students) partly agree, agree, and completely agree that they often have feelings of inadequacy in their schoolwork. Eighty-six percent of self-financed and 58.4% of budget-financed students partly agree, agree, and completely agree that they used to have higher expectations of their schoolwork than they do now. The obtained data about the feeling of inadequacy pertaining to a reduced sense of competence and accomplishment (Salmela-Aro, Tolvanen and Nurmi, 2009) requires further investigation into the structure of the study programmes and the organization of the teaching process.

Year of study and burnout: A correlation has been established between the year of study and cynicism and feeling of inadequacy (Table 3). The differences in mean values (Table 4) and the eta squared of 0.060 indicate a moderate influence of the year of study on burnout. The ANOVA values  $F(3, 4.026)$ ,  $p = 0.008$  indicate that the differences are significant, but subsequent tests only showed a difference between the first- and fourth-year students (Sig. 0.002) and between the second- and fourth-year students (Sig. 0.011). In addition, the present findings partially correlate with the findings by Galan et al. (2011) and Salmela-Aro and Read (2017) in that the degree of burnout increases with the years of study, even though a deviation was observed in our sample among third-year students. According to our data, the percentage of students experiencing severe burnout is more than two times higher for fourth-year students compared to first-year students (Figure 1). Cumulative percentages indicate that moderate and severe burnout increases with years of study (1<sup>st</sup> 85.7%, 2<sup>nd</sup> 86%, 3<sup>rd</sup> 91.7%, and 4<sup>th</sup> 94.9%), which can reflect negatively on occupational burnout after graduating and finding employment. The claim by Robins, Roberts and Sarris (2017) that it is necessary to examine the influence of student burnout on subsequent workplace burnout is thus fully justified.

Although no correlation was found between the year of study and exhaustion, it is relevant to note that some differences were indeed observed between the groups. A high percentage of first-year students (90.5%) exhibit moderate and severe exhaustion, which is in keeping with the findings by Galan et al. (2011) and which can be attributed to the transition from secondary to higher education, different study obligations, a lack of information regarding study programmes (duties and grading), and so forth. On the exhaustion scale, the only statistical significance was found between the year of study and the first exhaustion item (I feel overburdened by my schoolwork). Mean value comparison (1<sup>st</sup> year:  $M=3.98$ ,  $SD=1.024$ ; 2<sup>nd</sup> year:  $M=3.60$ ,  $SD=1.278$ , 3<sup>rd</sup> year:  $M=3.88$ ,  $SD=1.484$ , 4<sup>th</sup> year:  $M=4.12$ ,  $SD=1.279$ ) indicates small differences, while the eta squared (0.027) suggests a weak influence. The ANOVA test was used to examine the influence of the year of study on the feeling of being overburden by schoolwork and a statistically significant difference was found –  $F(3, 1.750)$ ,  $p= 0.158$ . Subsequent comparisons showed a significant difference only between the mean values of second- and fourth-year students (Sig. 0.025). A significantly higher portion of fourth-year students (78.1%) compared to second-year students (66%) partly agree, agree, and completely agree with this item. Such a high percentage of fourth-year students can be explained by the additional obligations that await them, because in addition to attending classes and fulfilling their pre-exam duties, they also have to perform internships and write their final undergraduate paper.

The majority of students expressed moderate cynicism regardless of their year of study. A high level of cynicism is the most pronounced among fourth year students (Table 5 and Figure 1), which suggests a cynicism trend that grows with the years of study. The ANOVA test was used to examine the influence of the year of study on cynicism. The strength of the influence is apparent from the eta squared of 0.075, which is interpreted as moderate influence. A statistically significant difference was found among the groups –  $F(3, 5.138)$ ,  $p=0.002$ . Subsequent comparisons showed that there were significant differences (Sig. 0.002 and Sig. 0.029) of the mean values between the first-year ( $M=3.21$   $SD=1.159$ ) and the second-year students ( $M=3.46$   $SD=1.474$ ) compared to the fourth-year students ( $M=4.15$   $SD=1.387$ ), whereas no difference was determined between the mean value for the third-year ( $M=3.33$   $SD=1.761$ ) and all the other students. These data correlate with certain data on the relationship between the year of study and

the degree of cynicism (Galan et al., 2011).

It is important to note that the number of students who partly agree, agree, and completely agree with item the lack of motivation and thoughts of giving up, increases with the year of study (1<sup>st</sup> year 42.8%, 2<sup>nd</sup> year 44%, 3<sup>rd</sup> year 45.8%, 4<sup>th</sup> year 57.7%). The eta squared of 0.016 indicates a weak influence, while the comparison of mean values did not indicate significant differences between the groups (1<sup>st</sup> year: M=3.31, SD=1.370; 2<sup>nd</sup> year: M=3.04, SD=1.525; 3<sup>rd</sup> year: M=3.33, SD=1.736; 4<sup>th</sup> year: M=3.55, SD=1.726). Cumulative percentages (1<sup>st</sup> year 23.8%, 2<sup>nd</sup> year 36%, 3<sup>rd</sup> year 41.7%, 4<sup>th</sup> year 66.7%) indicate that the number of students who agree and completely agree that they are losing interest in their schoolwork increases with the year of study. The ANOVA test was used to determine the influence of the year of study on loss of interest in schoolwork and a statistically significant difference  $F(3, 6.730)$ ,  $p = 0.000$  was established between the groups. Subsequent comparisons showed that there were significant differences of the mean values between the first-year (M=2.88, SD=1.087) and the second-year students (M=3.06, SD=1.434) compared to the fourth-year students (M=3.99, SD=1.583), whereas no significant differences were found between the third-year (M=3.33, SD=1.761) and the fourth-year students. The eta squared of 0.096 indicates a moderate influence of the year of study on the lack of interest in schoolwork. Cumulative percentages (1<sup>st</sup> year 21.4%, 2<sup>nd</sup> year 56%, 3<sup>rd</sup> year 45.8%, 4<sup>th</sup> year 70.6%) indicate that the majority of fourth-year students partly agree, agree, and completely agree that they re-evaluate the meaning of their schoolwork. The ANOVA test determined a statistically significant difference  $F(3, 9.035)$ ,  $p = 0.000$  between the groups. The mean values (1<sup>st</sup> year: M=2.74, SD=1.191; 2<sup>nd</sup> year: M=3.30, SD=1.515; 3<sup>rd</sup> year: M=3.29, SD=1.429; 4<sup>th</sup> year: M=4.09, SD=1.508) and the eta squared of 0.122 indicate a strong influence of the year of study on the third cynicism item. Subsequent comparisons showed that there were significant differences between the first- and fourth-year students (Sig. 0.000) and the second- and fourth-year students (Sig. 0.012). The high level of cynicism observed among the fourth-year students is particularly concerning, as this is the year where they prevalently attend applied professional courses and they are nearing the end of their studies. The reasons can perhaps be found in the factors related to the organization of studies and the current state of society, specifically the difficulties with finding employment in one's profession. The high percentages of students who lose motivation and consider dropping their studies indicate the need for social support from faculty employees and other students (Ekornes, 2021; Čarapina and Ševo, 2017).

The moderate influence of year of study on burnout can be explained by the degree of agreement with the attitudes concerning the feeling of inadequacy, although no statistical significance was found (Table 4). Regardless of the year of study, most students reported a moderate feeling of inadequacy (Table 5). The obtained mean values indicate minimal differences. The ANOVA test was used to examine the influence of the year of study on the feeling of inadequacy. The scope of the influence is apparent from the eta squared of 0.040, which is interpreted as weak influence. A statistically significant difference  $F(3, 3.106)$ ,  $p = 0.028$  was determined between the groups. Subsequent comparisons showed that there were significant differences (Sig. 0.045) of the mean values only between the second- (M=3.66, SD=1.349) and fourth-year students (M=4.27, SD=1.199), whereas the comparison of the mean values between the first- (M=3.69, SD=1.405) and third-year students (M=3.83, SD=1.167) and against the other two groups revealed no significant differences. In contrast with some studies, which showed that the number of students with a strong feeling of inadequacy decreases with the year of study, the present research yielded the opposite results. Namely, 18.7% more fourth-year students have a strong feeling of inadequacy compared to the first-year students.

With the advancement in years of study, the percentage of students who partly agree, agree, and completely agree with item I often have feelings of inadequacy in my schoolwork decreases (1<sup>st</sup> year 57.1%, 2<sup>nd</sup> year 56%, 3<sup>rd</sup> year 54.2%, 4<sup>th</sup> year 52.6%). The mean value differences are minimal (1<sup>st</sup> year: M=3.55, SD=1.365; 2<sup>nd</sup> year: M=3.36, SD=1.206; 3<sup>rd</sup> year: M=3.50, SD=1.383; 4<sup>th</sup> year: M=3.45, SD=1.526), while the eta squared of 0.002 does not indicate an influence of the year of study on inadequacy in schoolwork. A relationship was observed between the year of study and the second inadequacy item I used to have higher expectations of my schoolwork than I do now. Cumulative percentages indicate that the majority of students, from 50% to 81.3%, partly agree, agree, and completely agree that they used to have higher expectations of their schoolwork than they do now (1<sup>st</sup> year 57.1%, 2<sup>nd</sup> year 50%, 3<sup>rd</sup> year 62.5%, 4<sup>th</sup> year 81.3%). The largest difference was found between the students who completely agree with this item, depending on their year of study. Comparisons of the mean values indicate differences (1<sup>st</sup> year: M=3.45, SD=1.485, 2<sup>nd</sup> year: M=3.46, SD=1.729; 3<sup>rd</sup> year: M=3.79, SD=1.414; 4<sup>th</sup> year: M=4.69, SD=1.442), while the eta squared of 0.128 indicates a strong influence of the year of study on the said item. The ANOVA test determined a statistically significant difference  $F(3, 8.962)$ ,  $p = 0.000$  between the groups. Subsequent comparisons showed that there were significant differences (Sig. 0.000) between first- and fourth-year

students as well as between second- and fourth-year students, while no significant differences were found after comparing the mean values between first- and third-, second- and third-, and third- and fourth-year students. The data obtained from fourth-year students regarding their reassessment of the meaning of schoolwork and their lack of motivation, as well as those obtained from third- and fourth-year students regarding their loss of interest in schoolwork, are cause for concern. The reasons should be sought in the social circumstances but also in the very organization of studies at the faculty. The inability to find employment in one's profession, the legislation concerning the issuing of licences and certificates, and the cost of studying are certainly some of the social aspects whose change the faculty can only partially influence. However, the risk factors can be sought at the faculty itself, such as the insufficient number of applied professional courses, deficient laboratory equipment, inadequate evaluation of pre-exam duties, overly extensive scope of literature for certain courses, and inadequate grading methods.

## Conclusions

The results obtained in this research lead to the conclusion that there is a relation between the degree of exhaustion, cynicism, and the feeling of inadequacy and the degree of burnout among university students, which confirms the first hypothesis. The majority of the surveyed students exhibited moderate burnout. The remaining three hypotheses were not confirmed, but what was confirmed was that there is a relation between gender and exhaustion, specifically that exhaustion is more pronounced among female students, that self-financed students and final-year students exhibit more pronounced cynicism, and that self-financed students exhibit a more pronounced feeling of inadequacy. Since burnout directly affects students' quality of life within and outside the academic environment (Rosales and Rosales, 2013), further studies of this topic are required to help prevent long-term negative psychosocial consequences for the students as well as potential issues that higher education institutions would face if more students were to drop out.

Limitations: The present research had its share of limitations. Primarily, the sample comprised students of only one faculty dealing with the field of technical and technological sciences, so it is impossible to generalize the results. In addition, only a few variables (gender, tuition fee status, and year of study) were examined against burnout. An objective analysis of burnout causes would require the inclusion of other variables, such as average grade, sources of financial support during studies and financial status of the family, length of studying, permanent place of residence and temporary accommodation during studies, social support system, and a variety of psychological factors. Additionally, the lack of studies investigating burnout among students of technical faculties made the results comparison all the more difficult, as did the insufficient use of the SBI scale in Serbia.

Regardless of the above limitations, this research presumably puts the issue of student burnout into focus, especially of those students enrolled in a study programme accredited in the field of technical and technological sciences, and it broadens the scope of using the SBI-U 9 scale to study student burnout in Serbia.

Limitations notwithstanding, considering the degrees of burnout registered among the surveyed students, it is necessary to acquaint them with personal burnout prevention strategies, for example, how to prioritize, how to set realistic daily and weekly goals, how to approach actual studying and assignment completion, and so forth. Likewise, it is necessary to devise an organizational prevention strategy by analyzing daily and weekly students' engagement in their faculty duties, class materials and pre-exam activity loads, and the schedule of exam periods and the exams themselves. In the course of study programme accreditation, special attention should be given to harmonizing the programme with the needs of the society and the labour market as well as with the legal requirements governing the issuing of licences and certificates. Acquainting the students with personal burnout prevention strategies and devising an organizational strategy will require additional effort from all faculty employees and the formation of a special team to tackle the incidence of burnout, to introduce preventive measures, and to help students overcome this syndrome.

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## Conflict of interests

The author declares no conflict of interest.

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