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Research Article

Examining university student burnout in relation to demands, resources and perfectionism: The mediating role of emotional regulation

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Student burnout is an important mental health issue in higher education. The development of the symptoms is often described by the Demand-Resource Model. We aimed to explore how interpersonal factors interact with the educational context in the development of burnout. Therefore, perfectionism and emotional regulation were assessed in addition to study demands and resources. 331 university students participated in our online study. Structural Equation Modeling showed that demands are positively, while resources are negatively, linked to burnout. Maladaptive perfectionism and maladaptive emotional regulation were positively related to burnout, but contrary to our hypothesis, the adaptive dimensions of perfectionism and emotional regulation were not always negatively related to burnout. Moreover, the relationship between both maladaptive and adaptive perfectionism and burnout was positively mediated by maladaptive emotion regulation strategies. Our results suggest factors that may promote or protect against burnout and thus help both prevention and intervention.

Keywords: Emotional regulation; JD-R Model; Perfectionism; University student burnout

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1. Introduction

Mental health problems among students in higher education and dropout rates are high in general (Martos et al., 2021; OECD, 2019; Richardson et al., 2012), and numerous studies focus on the increasing burnout rates among students (Nicita et al., 2025). Its severity is reflected in its official recognition as a health problem by the World Health Organization since 2019 (World Health Organization, 2019). As the literature clearly shows a link between student burnout and external factors as the Demand-Resource Model framework, our research aims to extend the understanding of the underlying mechanisms leading to burnout with a focus on interpersonal aspects such as perfectionism and emotion regulation.

In the school context, demands may include career choice anxiety and emotional demands, while resources consist of possibility of development and control. Previous research has shown that demands can contribute to burnout, while resources can act as a safety net (Bakker et al., 2007; Bottiani et al., 2019; Dicke et al., 2018). Perfectionism is also a factor linked to burnout: as perfectionism increases, training participants are at increased risk of burnout (Seong et al., 2021).

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We can distinguish between adaptive and maladaptive dimensions. Regarding the relationship between burnout and perfectionism, burnout is negatively related to adaptive perfectionism and positively related to the maladaptive dimension (Chang et al., 2015, 2016, 2020; Falco et al., 2014; Luo et al., 2016). Other-oriented perfectionism is not much discussed in the literature, so our aim is to explore this dimension in relation to these factors. Some studies reported lower levels of burnout with other-oriented perfectionism, while others found a positive correlation (Childs & Stoeber, 2010; Farjami & Rahmani, 2016). The positive association of this dimension with narcissism (Barnett & Flores, 2016; Schwarzkopf et al., 2016) and machiavellianism (Mirkovic & Bianchi, 2019), as well as social isolation (Stoeber et al., 2017), led us to expect a positive association with burnout. Like perfectionism, emotion regulation can be divided into adaptive and maladaptive forms and also affects burnout. The literature suggests that maladaptive emotion regulation strategies are positively related to burnout, whereas adaptive strategies are negatively related (Iuga et al., 2023; Naz & Qureshi, 2024).

The main aim of the research is to examine the predictive and mediating effects of these factors on burnout. Based on the theoretical background, we believe that each factor in the model has significant predictive power for burnout. We believe that emotion regulation strategies may mediate the relationship between perfectionism and burnout. With this study, we aim to gain a broader understanding of the factors that influence student burnout, which can inform further research and help develop prevention and intervention techniques. The advantage of our research is that it examines burnout in the context of both external and internal factors.

1.1. Burnout and the Demand-Resource Framework

Burnout syndrome is a common mental health problem today, so it is essential to examine its development and processes. It can be described as a consequence of workload and long-term stress (Maslach & Goldberg, 1998). The multidimensional, general features of the phenomenon are detailed in Maslach's (1982) typology of emotional exhaustion, performance decline, and depersonalisation. Freudenberger (1974) has linked the onset and duration of illness to burnout, describing burnout sufferers as more likely to become ill and taking longer to recover. Behavioural characteristics may include frequent headaches, insomnia or a tendency to cry more easily (Freudenberger, 1974). Maslach and Goldberg (1998) added that at the level of emotional reactions, frequent negative emotions, anger and impatience are typical. Other approaches offer alternative classifications of the symptoms: exhaustion, mental distance, and emotional and cognitive impairment (Romano et al., 2022; Schaufeli et al., 2020).

Burnout was defined by Freudenberger (1974) and has been a popular topic of research ever since. Although the symptoms were first examined in the context of professional work, burnout affects many people in other areas as well: A systematic study found an overall prevalence of 55.4% for some dimensions of student burnout (Rosales et al., 2021). Moreover, the symptoms not only affect the person experiencing them but also have a significant impact on the environment (Leiter & Maslach, 1988). Burnout has been studied in a variety of education systems, in primary and secondary schools and in universities (Bask & Salmela-Aro, 2013; Fiorilli et al., 2017; Hazag et al., 2010; Jagodics & Szabó, 2022; Salmela-Aro et al., 2009; Schaufeli et al., 2002; Williams et al., 2018). While attending classes, students are exposed to continuous performance situations and are thus under long-term and stable mental-emotional stress.

In a higher education environment, depending on the subject, there are challenging periods when students have to write dissertations, papers, presentations, and exams, and they also have to perform well. These situations can lead to burnout, which is confirmed by research: according to Győrffy et al. (2016), overload and the consequences of stress are the main causes. Research shows that higher levels of burnout increase the risk of dropout (Bumbacco & Scharfe, 2023; Marôco et al., 2020). The high number of students suffering from burnout draws attention to the severity of the problem, which increases during the university years (Madigan & Curran, 2021; Sharma et al., 2023).

The Demand-Resource Model examines the factors that promote and inhibit burnout. Demerouti et al. (2001) described two types of burnout: factors that hinder task performance are called demands, while factors that facilitate task performance are called resources. Demands include components that are mentally, physically, or emotionally overwhelming over a long period, such as extreme weather conditions, high task volume, physically demanding environments, time pressure, constant noise or emotionally demanding social relationships (Bakker & Demerouti, 2007; Bakker et al., 2007).

A growing body of research has confirmed the link between burnout and demands and resources. According to these findings, resources are negatively correlated with burnout, while demands are positively correlated (Bakker et al., 2007; Bottiani et al., 2019; Dicke et al., 2018). Burnout is determined not only by the number of demands but also by the ratio of resources to demands (Jagodics & Szabó, 2014).

One of the great advantages of the Demand-Resource Model is its flexibility. Indeed, the factors built into it are background factors that can be applied in a variety of contexts (Bakker & Demerouti, 2007; Demerouti et al., 2001). As a result, the relevance of the model has begun to be explored not only in the workplace but also in educational settings (Cilliers et al., 2017; Hodge et al., 2019; Jagodics & Szabó, 2022; Lesener et al., 2020), and we have applied it in our research. In a school context, resources might include, for example, teacher support or feedback, while demands might include careerchoice anxiety or emotional demands (Demerouti et al., 2001).

1.2. Burnout and Perfectionism

Burnout has been studied about several factors, one of which is perfectionism. This is defined as an individual's pursuit of perfection and unrealistically high performance and is also characterised by critical self-evaluation (Flett & Hewitt, 2002). As perfectionism increases, training participants are at increased risk of burnout (Seong et al., 2021). A multidimensional perspective is now increasingly common in the study of perfectionism.

We can distinguish between adaptive and maladaptive dimensions. The former is a healthy form, in the Hewitt-Flett model [HFMPS] (Hewitt & Flett, 1991) it is called self-oriented perfectionism (SOP), defined as a sense of satisfaction resulting from a great deal of effort to achieve high performance and associated with good adjustment in environments that require cooperation (Stoltz & Ashby, 2007). In maladaptive perfectionism, in HFMPS, it is called socially prescribed; an individual develops high personal performance norms while being extremely self-critical (Rice & Stuart, 2010). They reported less persistence in completing difficult or boring tasks because of the role of the environment in achieving their goals. This puts them at a serious disadvantage in their studies (Mills & Blankstein, 2000). The link between burnout and perfectionism is an increasingly popular research topic. Maladaptive perfectionists were more likely to experience burnout than adaptive ones. Most of the findings show a negative relationship between SOP and burnout and a positive relationship between SPP and burnout (Chang et al., 2015, 2016, 2020; Falco et al., 2014; Luo et al., 2016).

In HFMPS, the third aspect of perfectionism is the other-oriented dimension [OOP] (Hewitt & Flett, 1991). It is neither an adaptive nor a maladaptive dimension (Stoeber, 2020). Stoeber (2014) describes this dimension as a dark form of perfectionism. In this case, individuals do not expect perfection from themselves but from others and are therefore highly critical of those who do not meet their standards (Stoeber, 2020). This is a less-researched area, especially among students. Findings on this dimension are conflicting: in work settings, it is associated with lower levels of burnout (Childs & Stoeber, 2010), while others have found an opposite relationship for teachers (Farjami & Rahmani, 2016). Research has linked it to narcissism, antisocial behavior, and machiavellianism (Sherry et al., 2014; Stoeber, 2014; Stoeber, 2020). Given that narcissism (Barnett & Flores, 2016; Schwarzkopf et al., 2016) and machiavellianism (Mirkovic & Bianchi, 2019) have been positively associated with burnout, in addition to opposite results, we expected that OOP would also be positively associated with burnout. This is compounded by the fact that they are

socially isolated due to their weak interpersonal relationships (Stoeber et al., 2017). Some studies do not examine this dimension, citing the focus of research on high expectations for individuals (Chang et al., 2015; Yu et al., 2016). However, it would also be important to consider the OOP as they have a major impact on their environment. Indeed, the resulting behaviors help to reinforce socially imposed perfectionism in peers, which may lead to the development of depressive symptoms in the peer environment (Smith et al., 2017). We believe that it is important to explore in the present research how high demands on others are related to burnout and emotion regulation strategies and whether burnout is predicted by this dimension.

1.3. Burnout and Cognitive Emotional Regulation

Persistent negative emotional states that lead to emotional exhaustion play an important role in the development of burnout. For this reason, higher levels of emotion regulation help to reduce the persistence of negative emotions experienced as a result of stressful situations (Brackett et al., 2010; Chang, 2013).

Recent decades have seen a resurgence in the study of emotion management, with a particular focus on emotion regulation, a field that has expanded significantly due to the development of process models outlining stages of emotion control (McRae & Gross, 2020). This skill involves the expression and control of positive and negative emotions, and successful regulation is associated with well-being and health (DeSteno et al., 2013). It can be defined as a goal-directed process that influences the intensity, duration, and type of emotion experienced. It also involves the ability to manage emotional responses that can be regulated and moderated (Tamannaeifar & Hadadi, 2023). These strategies can be divided into adaptive and maladaptive types. The former include acceptance, positive focus shifting, planning, positive reappraisal, and perspective taking. Maladaptive types include self-blame, rumination, catastrophising, and blaming others (Rey et al., 2020).

Previous claims have suggested that SOP is a self-directed personality pattern that is relatively separate from the social aspects of perfectionism. Therefore, in terms of emotion regulation strategies, it should be mostly related to self-construal constructs (e.g., self-criticism and high self-esteem), OOP should be mostly related to other-oriented constructs (e.g., authoritarianism and blaming others), and finally, SPP should be mostly related to perceptions of socially-related information (e.g., fear of negative evaluation and concern for social approval) (Hewitt & Flett, 1991).

Another recent study found that repetitive negative thinking of cognitive emotion regulation supported the link between perfectionism and burnout (Cabaços et al., 2023). Individual differences in emotion regulation are the key to mental well-being. Therefore, we can hypothesise that adaptive and maladaptive forms of emotion are differentially associated with burnout. It has found a negative relationship between adaptive emotion regulation strategies and burnout and a positive relationship between maladaptive forms and burnout (Iuga et al., 2023; Naz & Qureshi, 2024). The results for perfectionism are not so clear-cut, as a positive correlation was also found between adaptive and maladaptive perfectionism dimensions and maladaptive emotion regulation strategies. However, more maladaptive strategies were associated with socially prescribed perfectionism (Castro et al., 2017; Rudolph et al., 2007). Personal emotion regulation has been excluded from the demand resource model. Several studies have shown that emotional and psychological stress is a direct determinant of burnout, which can be explained not only by excessive job demands and associated resource scarcity but also by personal emotion regulation (Yang et al., 2018).

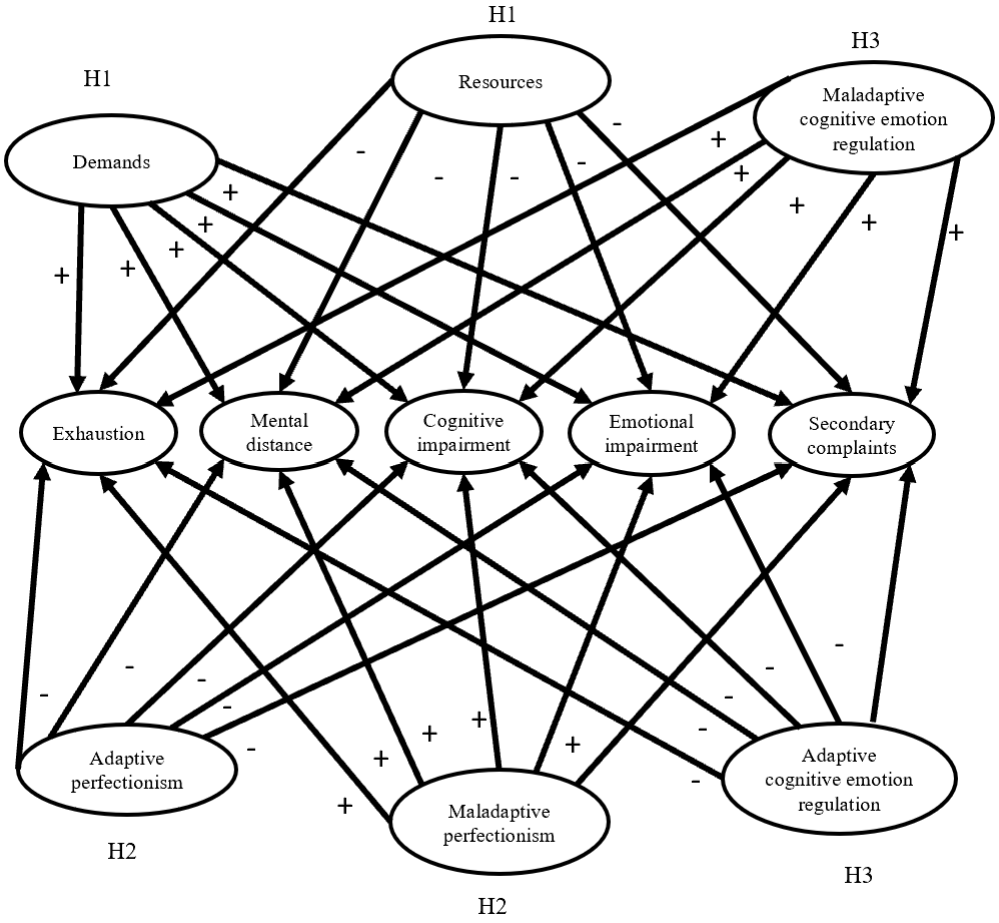
1.4. The Purpose of the Study

Research on student burnout is becoming increasingly important as the number of people experiencing it grows. Our study aims to explore burnout with the demands-resources model, perfectionism, and emotion regulation. We are curious to see how well our theoretical model fits the data according to the fit indicators. This will provide us with a broader understanding of the

factors that influence student burnout, thus laying the foundation for further research and helping to develop prevention and intervention techniques.

Figure 1

Expected results of structural equation modeling



2. Method

2.1. Participants and Procedure

Data was collected online using a Google form. Criteria for participation in the survey included being a university student and studying for a bachelor's, master's, or undivided degree. Before completing the questionnaire pack, participants were informed about the topic of our research and the approximate time needed to complete it. They were also told that data collection was anonymous and that they could stop at any time without repercussions. Individual feedback was not given, as the data will be used in aggregate form for statistical analysis. Participants did not receive any compensation. The study procedures were conducted following the Declaration of Helsinki. The research process was approved by the research ethical committee of University of Szeged before data collection. Our email address has been included for contact purposes. 331 people took part in the survey (255 women, 70 male, 6 non-binary) who were between 18 and 51 years old (M = 23.6, SD = 4.47).

2.2. Measures

The Burnout Assessment Tool is a five-point Likert scale measure of burnout (1 = never, 5 = always) developed by Schaufeli et al. (2020). We used the Hungarian adaptation (Jagodics et al., in press). It assesses both primary and secondary symptoms of burnout. The primary symptoms include Exhaustion (Cronbach α = 0.825), Mental detachment (Cronbach α = 0.842), Cognitive impairment (Cronbach α = 0.912), and Emotional impairment (Cronbach α = 0.847). In the Hungarian adaptation, the secondary complaints were not split as in the original instrument

(Cronbach α = 0.827). There are 31 items because two from the original (7 and 10) were removed in the Hungarian language adaptation based on factor analysis.

The University Demand-Resource Questionnaire has a two-factor structure and contains 34 items. This instrument was developed by Jagodics and Szabó (2022) based on the Demand-Resource Model (Demerouti et al., 2001). 17 of these items relate to resources and 17 to demands. The measure consists of 5 to 5 subscales for both resources and demands. The demands include the following factors: Work style (Cronbach α = 0.855), Mental (Cronbach α = 0.765) and Emotional demands (Cronbach α = 0.752) as well as Career choice anxiety (Cronbach α = 0.849) and Conflicts with teachers (Cronbach α = 0.796). Resources include opportunities for Possibility of development (Cronbach α = 0.876), Information (Cronbach α = 0.882), Feedback (Cronbach α = 0.701), Control (Cronbach α = 0.766) and Support of lecturers (Cronbach α = 0.825) (Jagodics & Szabó, 2022). Responses are labelled on a six-point Likert scale (1 = not at all typical of me, 6 = very typical of me).

The Hewitt-Flett Multidimensional Perfectionism scale is a widely used measure of perfectionism that has been developed by Hewitt and Flett (1991) and adapted to Hungarian by Olajos et al. (2021). It consists of 24 items and measures three types of perfectionism: adaptive Self-oriented perfectionism (Cronbach α = 0.930), Other-oriented perfectionism (Cronbach α = 0.872), and maladaptive Socially prescribed perfectionism (Cronbach α = 0.866). Respondents are asked to indicate how much they agree with the statement on a 7-point Likert scale (1 = not at all typical, 6 = very typical).

The Cognitive Emotion Regulation Questionnaire distinguishes between adaptive and maladaptive types of emotion regulation. The measuring instrument was developed by Garnefski et al. (2001), and its validation in Hungarian was developed by Miklósi et al. (2011). It consists of 36 items. Adaptive strategies include Acceptance (Cronbach α = 0.715), Positive refocusing (Cronbach α = 0.897), Planning (Cronbach α = 0.790), Positive reappraisal (Cronbach α = 0.802), and putting into perspective (Cronbach α = 0.723). Maladaptive scales include Self-blame (Cronbach α = 0.776), Rumination (Cronbach α = 0.817), Catastrophizing (Cronbach α = 0.815), and blaming others (Cronbach α = 0.843). Responses are given on a five-point Likert scale (1 = rarely, 5 = almost always).

2.3. Data Analysis

Data analysis was carried out using the statistical software JAMovi 2.2.5. First, the results of the descriptive statistics were considered. Then, a reliability test (Cronbach α) was performed to measure the reliability of the scales. In a third step, Pearson's correlation was used to test the significance of the relationships between the subscales, based on the results of the normality test. Then we used structural equation modelling [SEM] in the data analysis to explore which demand, resource, perfectionism, and emotion regulation factors could predict each burnout symptom and to what extent. We had not read such a model in the previous literature but found it relevant to build because of the correlations between the factors that were supported.

For the interpretation of the SEM, we used the following fit indicators: chi-square, chi-square/df (<5), CFI (>.95), TLI (>.95), RMSEA (<.05) and SRMR (<.05). Values in parentheses are those of Hu and Bentler (1999), which we used as benchmarks for the evaluation of our model.

3. Results

3.1. Preliminary Analysis and Descriptive Statistics

Before statistical analysis, a reliability study was carried out to test the reliability of the scales. The results showed that all the subscales were reliable. In addition, a normality test was performed on the subscales, which was tested by peak and skewness values. The range between -2 and 2 was defined as the criterion, based on the recommendation of Kim (2013), the results of which are presented in Table 1. These were used to assume a normal distribution of the variables, and parametric tests were used in subsequent analyses.

Table 1
Pre-testing: the results of descriptive statistics and the values of the skewness and kurtosis

	Mean	*SD*	*Skewness*	*Kurtosis*
Burnout Assessment Tool				
Core symptoms				
Exhaustion	3.360	0.835	−0.230	−0.243
Mental distance	2.330	1.010	0.565	−0.530
Cognitive impairment	3.080	0.889	−0.058	−0.510
Emotional impairment	2.900	0.669	−0.062	−0.396
Secondary complaints	2.730	0.769	0.093	−0.536
BAT total score	2.890	0.678	0.010	−0.414
Demand-Resource Questionnaire				
Resources				
Support of lecturers	4.450	1.040	−0.487	−0.176
Possibility of development	4.460	1.090	−0.578	−0.221
Information	4.270	1.060	−0.408	−0.264
Feedback	3.500	1.110	−0.001	−0.469
Control	4.740	0.998	−0.864	0.656
Resources total score	4.280	0.788	−0.101	−0.479
Demands				
Mental demands	3.730	1. 160	−0.207	−0.582
Work style	3.420	1.290	−0.011	−0.842
Emotional demands	3.220	1.260	0.105	−0.797
Conflicts with lecturers	2.600	1.360	0.576	−0.651
Career choice anxiety	3.310	1.590	0.142	−1.200
Demands total score	3.320	0.930	−0.062	−0.736
Hewitt-Flett Perfectionism Scale				
Adaptive				
Self-oriented	5.020	1.220	−0.380	−0.449
Other-oriented	3.710	1.210	0.035	−0.091
Maladaptive				
Socially prescribed	4.010	1.380	0.316	−0.619
Perfectionism total score	3.98	0.793	−0.600	0.381
Cognitive Emotion Regulation Questionnaire				
Adaptive				
Acceptance	3.520	0.800	−0.285	0.50
Positive refocusing	2.900	1.010	−0.103	−0.819
Planning	3.820	0.796	−0.672	0.710
Positive reappraisal	3.460	0.916	−0.298	−0.440
Putting into perspective	3.220	0.860	−0.376	−0.130
Adaptive total score	3.380	0.594	−0.649	1.220
Maladaptive				
Self-blame	3.680	0.827	−0.368	−0.40
Rumination	3.470	0.953	−0.376	−0.34
Catastrophizing	2.400	0.992	0.405	−0.81
Other-blame	2.100	0.863	0.416	−0.99
Maladaptive total score	2.910	0.597	−0.038	−0.30
Emotion Regulation total score	3.170	0.442	−0.608	1.24

Note. SD = standard deviation.

3.2. Correlation Analysis

Our first hypothesis (H1) was that demands are positively and resources are negatively related to burnout (Bakker et al., 2017; Bottiani et al., 2019; Dicke et al., 2018). Pearson correlation analysis confirmed our assumptions (H1) about the associations between burnout symptoms and demand-resource scores in the majority of cases (Table 2). Demands were positively related to burnout

scores. Mostly moderate and strong relationships were observed, except for conflicts with lecturers, which were negligibly linked to burnout. On the other hand, the resources were negatively linked to the five subscales of burnout. The analysis revealed mostly weak and moderate associations between resources and burnout, while in the case of the possibility of development and mental distance, strong links were observed ($r(229) = -0.695$; $p < .001$). The strongest correlations between demands and burnout are the Mental demands and Exhaustion scale ($r(229) = 0.589$; $p < .001$), and BAT total score ($r(229) = 0.513$; $p < .001$); Emotional demands and Emotional Impairment ($r(229) = 0.549$; $p < .001$), Secondary complaints ($r(229) = 0.505$; $p < .001$), and BAT total score ($r(229) = 0.537$; $p < .001$); Demands total score and Exhaustion ($r(229) = 0.563$; $p < .001$), Emotional impairment ($r(229) = 0.617$; $p < .001$), Secondary Complaints ($r(229) = 0.528$; $p < .001$), and BAT total score ($r(229) = 0.626$; $p < .001$).

Table 2
Correlation analysis: the results of correlation analysis between BAT and JD-R

		Exhaustion	*Mental distance*	*Cognitive impairment*	*Emotional impairment*	*Secondary complaints*	*BAT total score*
Resources	Support of lecturers	−0.119*	−0.344**	−0.233**	−0.236**	−0.104	−0.269**
	Possibility of development	−0.198**	−0.695**	−0.342**	−0.364*	−0.091	−0.452**
	Information	−0.244**	−0.396**	−0.305**	−0.357**	−0.215**	−0.383**
	Feedback	−0.185**	−0.316**	−0.270**	−0.304**	−0.191**	−0.318**
	Control	−0.223**	−0.300**	−0.313**	−0.338**	−0.238**	−0.351**
	Resources total score	−0.260**	−0.555**	−0.393**	−0.430**	−0.224**	−0.477**
Demands	Mental demands	0.589**	0.173*	0.419**	0.517**	0.460**	0.513**
	Workload	0.435**	0.134*	0.234**	0.357*	0.361**	0.359**
	Emotional demands	0.471**	0.335**	0.381**	0.549**	0.505**	0.537**
	Conflicts with lecturers	0.288**	0.251**	0.239*	0.336*	0.294**	0.342**
	Career choice anxiety	0.242**	0.500**	0.337**	0.414**	0.262**	0.444**
	Demands total score	0.563**	0.416**	0.458**	0.617**	0.528**	0.626**

Note. Significant correlations are displayed as *$p < .05$, **$p < .001$.

According to our second hypothesis (H2), the maladaptive dimension of perfectionism (SPP) is positively related to burnout, whereas adaptive (SOP) is negatively related (Falco et al., 2014; Chang et al., 2015, 2016, 2020; Luo et al., 2016). In addition, we believe that OOP is also positively correlated with burnout. Based on normality tests, we also used Pearson correlations to analyze the data (see Table 3).

Table 3
Pearson correlation results based on BAT and Hewitt Perfectionism Questionnaire scores

	Exhaustion	*Mental distance*	*Cognitive impairment*	*Emotional impairment*	*Secondary complaints*	*BAT total score*
Self-oriented	0.125*	−0.121*	−0.037	0.108*	0.209**	0.046
Other-oriented	0.030	−0.050	−0.036	0.013	0.025	−0.010
Socially prescribed	0.306**	0.322**	0.305**	0.422**	0.364**	0.418**
Perfectionism total score	0.256**	0.099	0.140*	0.307**	0.332**	0.261**

Note. Significant correlations are displayed as *$p < .05$, **$p < .001$.

The results show that our hypothesis was not fully supported. Adaptive perfectionism is positively correlated with some burnout symptoms and negatively correlated with others. As expected, SPP was positively correlated with burnout symptoms. The OOP dimension was not significantly correlated with any burnout symptoms. The strongest correlations were found with SPP and emotional distress ($r(229) = 0.422$; $p < .001$), as well as with secondary complaints ($r(229) =$

0.364; $p < .001$) and the total BAT score ($r(229) = 0.418$; $p < .001$). In addition, total perfectionism scores were moderately correlated with secondary complaints ($r(229) = 0.332$; $p < .001$) and emotional impairment ($r(229) = 0.307$; $p < .001$).

According to our third hypothesis (H3), maladaptive strategies of emotion regulation (self-blame, rumination, catastrophizing, blaming others) are positively related to burnout, whereas adaptive types (acceptance, positive focus shift, planning, positive reappraisal, perspective taking) are negatively related (Iuga et al., 2023; Naz & Qureshi, 2024).

The results of the Pearson correlation (see Table 4) show that our hypothesis is partially confirmed, as the relationships for the maladaptive subscales point in the expected direction, but the adaptive emotion regulation acceptance subscale shows a positive correlation with burnout symptoms. All significant correlations are weak or moderate in strength. The most significant correlations are between self-blame and secondary complaints ($r(229) = 0.353$; $p < .001$), catastrophizing and exhaustion ($r(229) = 0.366$; $p < .001$), and emotional impairment ($r(229) = 0.427$; $p < .001$). The maladaptive scale is moderately correlated with exhaustion ($r(229) = 0.366$; $p < .001$) and with total BAT scores ($r(229) = 0.399$; $p < .001$).

Table 4
Pearson correlation results based on BAT and Cognitive Emotion Regulation Questionnaire scores

		Exhaustion	*Mental distance*	*Cognitive impairment*	*Emotional impairment*	*Secondary complaints*	*BAT total score*
ACER	Acceptance	0.199**	0.105	0.191**	0.227**	0.206**	0.222**
	Positive refocusing	0.018	0.000	−0.077	−0.044	−0.059	−0.036
	Planning	−0.073	−0.219**	−0.201**	−0.156*	−0.027	−0.179**
	Positive reappraisal	−0.154*	−0.243**	−0.283*	−0.266**	−0.145*	−0.275**
	Putting into perspective	−0.008	0.014	−0.066	−0.029	0.021	−0.027
	Adaptive total score	−0.010	−0.109*	−0.135*	−0.086	−0.011	−0.093
MCER	Self-blame	0.168*	−0.015	0.177**	0.273**	0.353**	0.210**
	Rumination	0.186**	−0.045	0.158*	0.226**	0.273**	0.175**
	Catastrophizing	0.366**	0.235**	0.365**	0.427**	0.315**	0.414**
	Other-blame	0.149*	0.214*	0.223**	0.230**	0.121*	0.236**
	Maladaptive total score	0.338**	0.151*	0.356**	0.445**	0.405**	0.399**
	Total score	0.205**	0,010	0.119*	0.213**	0.247**	0.179**

Note. ACER: Adaptive cognitive emotion regulation; MCER: Maladaptive cognitive emotion regulation.

3.3. The Model Estimation – SEM

The main aim of the research is to examine the mediating effects of the demand-resource model, perfectionism, and emotion regulation on burnout. This was done using the statistical method of structural equation modelling.

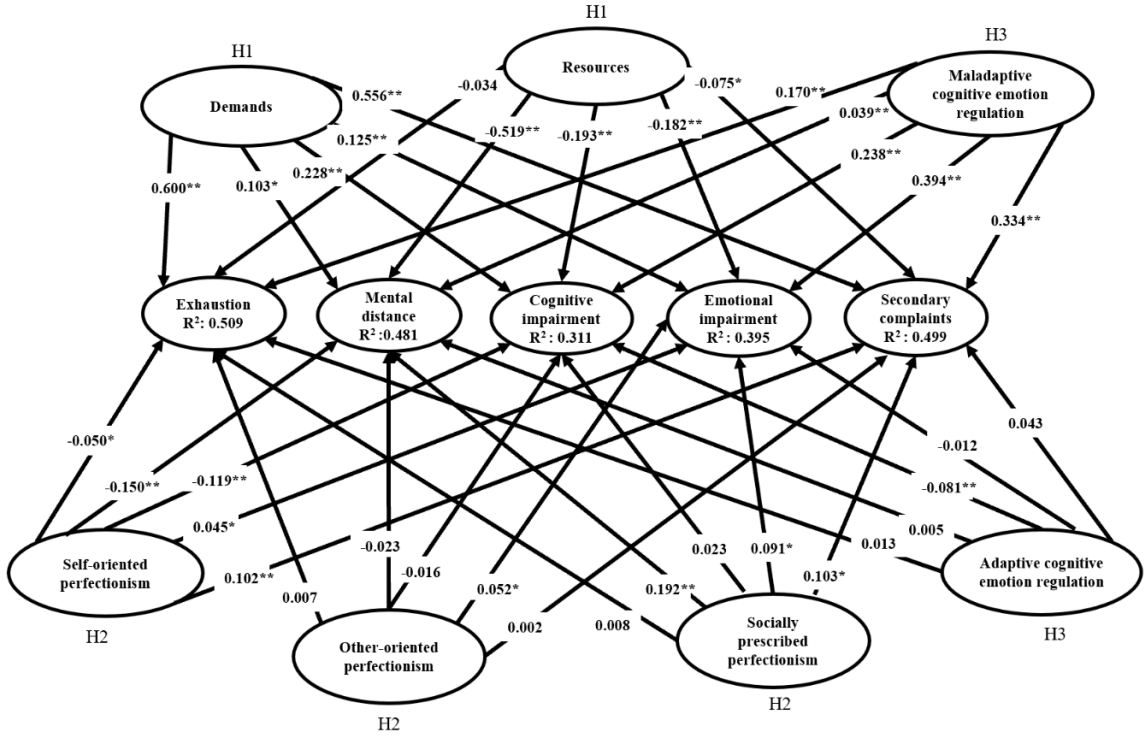
The results show that a model with good goodness of fit was obtained (CFI = 0.903; TLI = 0.900; SRMR = 0.079; RMSEA: =0.054, CI = 95%, χ^2 = 14770, p < 0.001, df = 7535, χ^2/df = 1.96). The analysis shows that each of the demand, resource, perfectionism, and emotion regulation subscales is associated with at least one burnout symptom. The relationships are shown in Figure 2 as β values.

The association of burnout with adaptive, self-oriented perfectionism also shows a result contrary to our hypothesis, as it positively predicts emotional impairment (β = 0.045) and secondary complaints (β = 0.102). In contrast, it negatively predicts exhaustion (β = −0.050), mental distance (β = −0.150), and cognitive impairment (β = −0.119). For adaptive emotion regulation, we also found positive directional relationships with some burnout subscales, but these results were not significant. Demands have the strongest predictive values for exhaustion (β = 0.600) and secondary complaints (β = 0.556), and resources strongly predict mental distance (β = −0.519). Based on the SEM, demands have high predictive power for exhaustion (β = 0.509) and secondary

complaints (β = 0.556), and resources predict mental distance most strongly (β = −0.519). Our model explains 50.9% of the variance in the burnout subscale, 48.1% of the variance in the mental distance subscale, 31.1% of the variance in the cognitive impairment subscale, 39.5% of the variance in the emotional impairment subscale, and 49.9% of the variance in the secondary complaints subscale.

Figure 2

Results of structural equation modelling with the demand-resources model, perfectionism, and emotion regulation about burnout

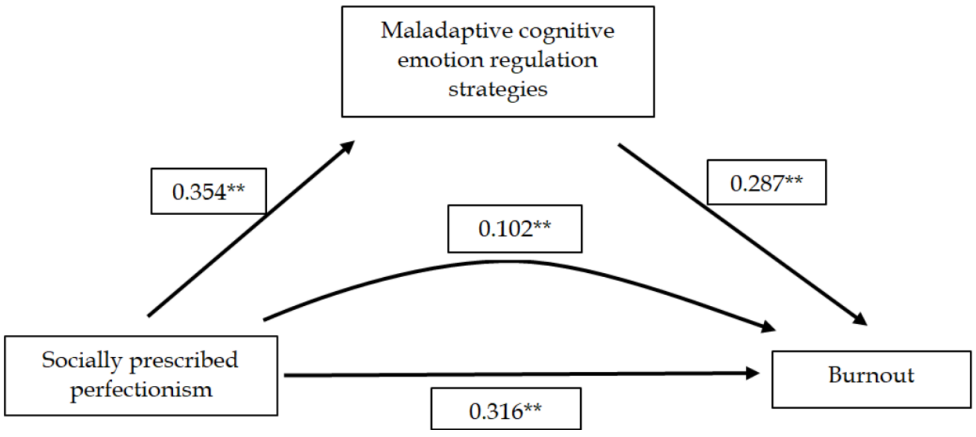


3.4. Mediation Analysis

To understand burnout in a more complex way, mediation analyses were conducted. We first examined the relationship between maladaptive and then adaptive perfectionism and burnout through the mediation of maladaptive emotion regulation strategies.

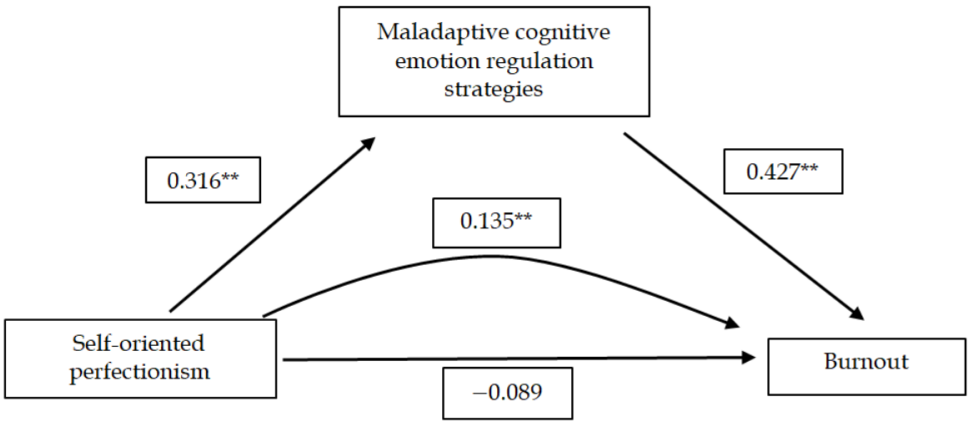
Figure 3

The results of a mediation analysis between socially prescribed perfectionism and burnout mediated by maladaptive emotion regulation strategies



Note. $^{**}p < .001$

Figure 4
The results of a mediation analysis between self-oriented perfectionism and burnout mediated by maladaptive emotion regulation strategies



Note. $^{**}p < .001$

In the second case, we obtained a full mediation, with maladaptive emotion regulation strategies positively mediating the relationship between adaptive perfectionism and burnout ($\beta = 0.135$).

4. Discussion and Conclusion

The aim of our research was to investigate the predictive effects of resources, demands, perfectionism, and emotion regulation on burnout symptoms. First, Pearson correlations were used to establish the relationships between the variables under investigation. Our results supported the theoretical background and thus confirmed the relationship between the variables (Bakker et al., 2007; Bottiani et al., 2019; Dicke et al., 2018).

According to our first hypothesis (H1), demands are positively related, and resources are negatively related to burnout. Our hypothesis was supported by the findings. Of the resource types, the strongest negative relationship was found between personal development and mental distance, while the strongest negative relationships were found between mental demands and emotional exhaustion and emotional impairment, while emotional demands had the strongest associations with emotional exhaustion and secondary complaints. The results of the correlation analysis show that the fewer resources students have and the more demands they face, the higher the level of student burnout. This confirms previous findings (Bakker et al., 2007; Bottiani et al., 2019; Dicke et al., 2018). This underlines the importance of resource-centered education. Furthermore, our present results show that although all correlations were significant, we found mostly high correlations between burnout symptoms and demands.

However, based on the literature, it is important to see that burnout is not only determined by the amount of demands but mainly by the ratio of resources to demands (Bakker et al., 2007; Jagodics & Szabó, 2014). Thus, going back to the importance of resources, in addition to high demands, they can have a significant impact on how students cope with burnout by providing a kind of safety net. Control and access to information can be strongly related: letting students know what to expect from their lecturers can increase their sense of control. In addition, support from lecturers has been shown to reduce mental distance, i.e., to influence the extent to which students can be enthusiastic about their studies. This enthusiasm can also be enhanced by the opportunity for personal development, where students can feel that they are learning interesting things and gaining competence for their future work. This could be enhanced by a more practical educational structure. On the student side, it may be worthwhile to set different individual goals, such as mastering a skill or achieving a certain grade point average.

According to our second hypothesis (H2), the socially prescribed dimension of perfectionism (maladaptive) and the other-oriented dimension would be positively related to burnout, whereas the self-oriented dimension (adaptive) would be negatively related. This hypothesis was partially confirmed, as we did not find a negative correlation with all burnout symptoms in the case of the self-oriented form, whereas maladaptive perfectionism was positively correlated with it, as expected. No significant results were found for the other-oriented dimension. Only a few studies have examined this dimension, but suggesting that it is associated with lower levels of burnout (Childs & Stoeber, 2010), while others have found a strong positive correlation (Farjami & Rahmani, 2016). Previous evidence has also shown that OOP is an ambivalent form of perfectionism (Childs & Stoeber, 2010). In our research, OOP was able to predict emotional impairment. So, our results suggest that this dimension may also lead to burnout. In our analysis, we found a moderately strong positive correlation between SPP and burnout. This relationship has been shown previously (Yu et al., 2016). Thus, the more a student feels that the environment expects perfectionism from them, the more stressed, anxious, and worried they feel, which can also on sleep.

Not all studies have found that perfectionistic aspirations and healthy perfectionists are only associated with positive traits (Stoeber & Otto, 2006). The positive association between adaptive perfectionism and some burnout symptoms may mean that it is important to analyze the mediating effect of other factors, as they may be associated with negative outcomes. This provides an additional research opportunity in the area of perfectionism. It is also important to highlight the context in which perfectionism can be adaptive and how it can retain only its positive features.

Among the studies that aim to reduce perfectionism is one that emphasizes increasing self-acceptance, which means approaching our failures and pain without judgement, rather than self-judgment. This can provide a sense of security that removes the anxiety caused by a challenge, thus improving critical self-evaluation - a key trait of perfectionists. Self-affirmation can lead to a more accepting self-image, in which tension from overly high expectations is reduced, thus reducing the need for self-inhibiting strategies (Barnett & Sharp, 2016). For instance, students may want to emphasize self-acceptance by placing themselves in a university context, e.g. if they do not get the best grade but a good one, accepting that this is how they could have performed in that situation, avoiding extreme self-criticism and distancing themselves from what their lecturers would have expected of them - which is not necessarily the case.

According to our third hypothesis (H3), maladaptive types of emotion regulation will be positively related to burnout, whereas adaptive types will be negatively related. This was partially supported, but some findings differed from the literature on which we based our hypothesis: In their study, Iuga et al. (2023) found a negative relationship between adaptive emotion regulation strategies and burnout and a positive relationship between maladaptive forms and burnout. However, we have results that are consistent with the literature regarding the negative relationship between positive reappraisal and burnout (Vinter et al., 2021).

Higher scores are associated with maladaptive emotion regulation strategies, suggesting that student burnout is more associated with this type of emotion regulation. Acceptance shows a low positive correlation with all of the burnout symptoms except for the mental distance symptom. This is different from the expected result, so the research suggests that acceptance alone does not help to reduce burnout.

Among the adaptive emotion regulation types, planning showed the strongest negative correlation with mental distance, in addition to cognitive impairment. So, if the student sees learning as a positive thing for them, it will be easier to focus on it. It is also worth considering how best to deal with a negative situation. Among the maladaptive types, catastrophizing showed a positive correlation of moderate strength with exhaustion and emotional impairment.

For example, maladaptive perfectionist traits in the literature include rumination about mistakes, which can lead to a deficit in the regulation of negative emotions (Frost et al., 1990). This is also evident in the findings that are closely related to emotional impairment, where they report

difficulties with emotion regulation. If the student is experiencing these symptoms, it may be worthwhile to learn adaptive emotion regulation techniques. The teaching and use of relaxation methods and cognitive behavioural therapy in a school setting can provide an opportunity to actively and passively regulate tension and release negative emotions and thoughts related to the situation. This can be supported by autogenic relaxation training (Goldbeck & Schmid, 2023) or mindfulness (Perry-Parris et al., 2022).

We based the construction of our model in the SEM on previously shown significant relationships between the factors we studied, but we could not find any research on this model in the literature. It may also be relevant that Yang et al. (2018) formulated that emotion regulation is not included in the demand-resource model, although many studies have shown that psychological and emotional stress are direct determinants of burnout, which can be explained not only by excessive job demands and associated resource scarcity, but also by individual emotion regulation (Yang et al., 2018). Our model was found to be adequate, with a high level of variance in individual burnout symptoms explained by the predictors.

The subsequent mediation analysis was designed to explore the relationship between the factors in more detail. Former results suggested that maladaptive perfectionism is related to all maladaptive emotion regulation strategies, whereas adaptive perfectionism is related to only some of them (Castro et al., 2017; Hewitt & Flett, 1991; Rudolph et al., 2007). Because of its self-directed nature, it is most closely related to self-construal's (e.g., self-criticism) (Hewitt & Flett, 1991). Our results suggest that the relationship between both self- and socially prescribed perfectionism and burnout was positively mediated by maladaptive emotion regulation strategies. Therefore, not only is it important for people with maladaptive perfectionism to learn successful emotion regulation, but it is equally important to help students with adaptive perfectionism who are generally mentally healthy. This may be one aspect of maintaining or strengthening the adaptive side of perfectionism.

5. Limitations

When interpreting the results of our research, it is important to note some limitations. The population cannot be considered representative of Hungarian university students. There is a gender imbalance due to the underrepresentation of men. In addition, participation was voluntary, so it can be assumed that students with lower levels of burnout completed our questionnaires. The nature of the research was cross-sectional, so it may be worth investigating longitudinal trends in burnout alongside these factors in the future. There are also limitations in the use of questionnaires, as the BAT is a new measure and is not yet widely used in the literature to assess burnout.

6. Summary and Outlook for the Future

Our research highlights the importance of the level and ratio of demands and resources in higher education. In the present study, demands were more strongly associated with burnout, but from a student perspective, it is important to highlight resources, which are also an important predictor of burnout according to SEM. The most important of these is the opportunity for personal development, as this can increase enthusiasm and a sense of competence for studying. This can increase their commitment to stay in education and thus reduce dropout rates. This could be enhanced by a more practical educational structure. Students may want to set individual goals that give them a sense of achievement, such as achieving a certain GPA or mastering a skill. In terms of perfectionism, adaptive types have not always been shown to be negatively associated with burnout. Mediation analysis highlighted the importance of maladaptive emotion regulation strategies in mediating the relationship between adaptive perfectionism and burnout. However, it may also be important to examine other underlying factors that may influence the maintenance of the benefits of adaptive perfectionism.

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Data availability: The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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