Analysis of the Pedagogical Aspects of Academic Stress Research at University: A Systematic Review

Jana Martincová
Tomas Bata University in Zlín

Sabina Fridrichová
Tomas Bata University in Zlín

Michaela Bílá
Tomas Bata University in Zlín

The objective of this professional text is to create a review study covering the phenomenon of academic stress. For this purpose, the method of analysing available sources from the Web of Science and SCOPUS databases was used. In total, 38 academic sources were identified that focused on researching academic stress amongst higher education students. For the selected studies, we analysed the context of the research, research concept and the recommendations given by these studies. In addition to this analysis, we also produce a SWOT analysis looking at the strengths and weaknesses of the research surveys alongside the opportunities and threats for further investigations.

Keywords: academic stress, systematic review, research analysis, SWOT analysis, higher education

INTRODUCTION

Over 60% of university students in the Czech Republic fail their studies or drop out early. At some faculties, up to 90% of students fail in their first or second year of studies. These data were recorded in 2018 in the Czech Republic and, at the current time, there is discussion of increased student failures in regard to the COVID-19 pandemic. This information is alarming. We need to begin investigating what factors result in academic failure in the Czech Republic. We would expect one of these factors to be academic stress. This concept, much investigated abroad, has not yet been looked at constructively in the Czech Republic. It is also a subject that has not been a subject of research analysis at Czech universities. This is implied from an analysis of Czech academic periodicals from the year 2000 (*Pedagogická Orientace*, *Studia Peadagogika*, *E-pedagogium*, *Orbis Scholae*, *The New Educational Review*, *Pedagogika*) where none of these journals have any record of studies on academic stress in their archives. Our analysis also suggests that the concept is little measured within European countries. The concept is most often investigated in the U.S. or Asian countries. It is extremely important at the start of our analysis to note the importance of the socio-cultural environment in investigating academic stress. The education system of a specific country, cultural regulatives and the artefacts and traditions in that country form a significant

approach to higher education and the formation of relations between the university, academic staff and students. It is this approach that appears in the different studies to be crucial for regulating academic distress, which in turn induces many psychosomatic problems and leads to academic failure. For this reason, we have produced this case study to analyse selected foreign research surveys on academic stress within the university environment. It is very important to note that we are viewing academic stress in the context of higher education. Some authors (Polo et al., 1996, p. 159 in Garcia-Ros et al., 2011) identify academic stress that is linked to the educational environment, but this does not necessarily have to mean higher education. In this context, academic stress can also be found within primary and secondary education.

Another area that should be addressed before an actual analysis of academic stress research is the terminological inconsistency of the expression. The term "academic stress" is often confused with depression, anxiety and worry. Gupta and Khan (1987) in Zheng et al. (2020) describe academic stress as mental distress caused by the anticipated frustration of students and linked to academic failure or with the awareness of such failure. Our task, however, will not be to discuss academic stress only within a psychological context as we rather aim primarily to focus on the pedagogical context of the phenomenon.

For this reason, and due to the necessity of precisely defined criteria for our systematic review study, we here define how we perceive academic stress within a pedagogical context: *Academic stress is a precisely defined form of stress that occurs within the academic environment and has a significant impact on the undergraduate preparation of higher education students. It comprises eustress and distress, which occur as a result of the educational situation at higher education institutions within a specific socio-cultural environment and lead to academic success or failure.* The essence of this definition of academic stress is its perception not just at a negative level (*distress*) but also through the Yerkes–Dodson law, acknowledging that the full potential of eustress (the optimum stress level) can be made use of within the academic environment. On the basis of the research surveys analysed, we can see that there is minimal investigation of eustress within the academic environment.

The importance of researching academic stress is evidenced, for example, in a study by Al-Zeyadi and Mohammed (2019), which ascertained that 70% of nursing students suffer mild academic stress and 30% of students have a serious form of academic stress. For this reason and despite the fact that academic stress is a topic that is now widely explored, it is essential that we focus on new concepts and changes that have occurred within this issue. To be innovative in researching academic stress, we must primarily investigate current academic knowledge of the issue. For this reason, we are producing a systematic review study on the issue of academic stress research.

Methodology of Research

The objective of the submitted study is: (1) to write an introduction to the investigation of academic stress; (2) to analyse and synthesise selected studies identified on the basis of a series of criteria; (3) to produce a SWOT analysis of the research studies on the selected topic; and (4) to create a recommendation concept.

On the basis of the formulated goals, we posit the following research questions: *How is academic stress investigated within the higher education environment abroad? What are the characteristics of research studies in terms of the research context, research concept, data collection tools, data analysis method and recommendations? What are the strengths and weaknesses of academic stress research studies? What opportunities and threats arise from academic stress research?*

We utilised a document analysis method to analyse data. We made use of the Web of Science and SCOPUS databases to find studies on academic stress. We used the following keywords: "academic stress", "academic stress" AND "higher education". We placed the condition that the term "academic stress" should be in the article title as we assumed this would indicate it as the main variable. This assumption proved correct. Another condition was to make the search within *Subject area: Social Sciences.* Using these key search criteria, we identified 63 sources within the SCOPUS database and 10 sources within the Web of Science database.

Thus, in our primary selection we analysed 73 academic studies. While this figure is not particularly large, the studies had to be subjected to further evaluation according to the following criteria.

Academic Stress Research Sample Study Selection Criteria
- focused on a higher education environment,
- focused on research into academic stress amongst students and not university employees.

These criteria were set because many studies do not research academic stress in regard to the academic environment (Vestad and Tharaldsen, 2021; Olepegba, Onigbogi and Uye, 2021). The other condition was academic stress research using a research sample comprising higher education students. Some research, which we will also name below, focuses primarily on university academic staff or administrative staff. In this regard, this refers more to work-related stress. These conditions further narrowed the research sample to 38 sources.

Within our research, we also critically assessed the following areas covered by the selected studies: (1) academic stress research context; (2) research concept; (3) research tool and data analysis; and (4) recommendations for making use of research findings.

Results of Research

Academic Stress Research Context

The context of academic stress research is determined by the overall research focus. We differentiate two core concepts: psychological and pedagogical. The *psychological concept* dominates. Most studies focus on researching academic stress in relation to psychological variables such as emotion (Nazari and Far, 2019), emotional regulation (Chacón-Cuberos et al., 2021), emotional intelligence (Ranasinghe et al., 2017), depression (Carballo, Hernánder and Goméz, 2020) and burnout of academic staff (Doyle and Hind, 1998). We should, however, point out that we looked for studies within the field of Social Sciences. When we removed the criterion of Social Sciences and chose the field of Psychology, we identified a further 12 studies. As we have already mentioned, because the pedagogical context is fundamental for this study we focus more deeply on the pedagogical research of academic stress.

In a *pedagogical context*, studies investigate the connection between academic stress and pedagogical variables such as academic success (Kötter, Wagner, Brűheim and Voltmer, 2017), learning style, active learning (Magnavita and Chiorri, 2018) and self-efficacy of students (Crego et al., 2016). There are many more variables, but these basic ones are most often found in the studies. In a pedagogical context, measurements of academic stress levels are often descriptive (e.g. Dada, Babatunde and Adeleye, 2019; Aihie and Ohanaka, 2019; Zamroni et al., 2019; Ramachandrian and Dhanapal, 2018; Brown, Aderson-Johnson and McPherson, 2016) and often complemented by research into the relationship or difference between the level of academic stress and the selected variable. We determined the pedagogical context of these studies in accordance with the focus of the journals in which they were published. Exactly 28 studies were published in the following pedagogical journals: *Education and Training, Studies in Higher Education, Journal of Educational and Social Research, Journal of Applied Research in Higher Education* and *Higher Education.* We consider an overall focus on and analysis of academic stress from a pedagogical perspective to be most compelling for a precise description of pedagogical situations and interventions leading to a growth in or elimination of academic stress. We consider the research by Zarate-Santana, Patino-Alonso, Sánchez and Galino-Villardon (2021) to be a very well executed study, investigating academic stress in relation to study approach (in-depth, superficial) and strategies for managing stress (rational, emotional). Their research sample comprised 1,012 respondents at the public University of Salamanca, Spain. The authors ascertained that there is a relationship between learning approach, specifically a deep learning style, and academic stress. They also confirmed that there is a relationship between students' gender and the extent of academic stress. Another study of importance in our opinion is research by Nazari and Far (2019) who used structural models to produce a supposition for the relationship between academic stress, teaching skills and academic emotions (negative, positive), and their connection to academic results. It is fascinating that this research did not confirm a relationship between teaching skills and students' academic stress. In this field, we recommend undertaking a similar study focusing on the relationship between level of academic stress and academic staff personal qualities as we would expect the relationship between student and teacher to be fundamental for regulating academic stress levels.

Indeed, neither the psychological nor pedagogical context of these studies is entirely insulated. Individual contexts interact and complement each other, something we consider to be particularly prominent within these studies. We can see this in the above-mentioned study by Nazari and Far (2019). We shall now look at the concept of these studies, in particular presenting qualitative and quantitative studies.

Research Concepts

In terms of research concept, we found that most studies commonly make use of quantitative methodologies, using questionnaires as a research tool. Within the *quantitative concept* there is a wide range of studies that employ different variables and model relationships between pedagogical and psychological variables. Psychological variables (anxiety, depression, intelligence) dominate; however, and as we have already noted, we need to focus on educational processes, constructs and means affecting academic stress level.

We also need to focus not just on academic *distress*, but also academic *eustress*. An interesting perspective on academic stress research in a positive connotation is given in an article by Travis, Kaszycki, Geden and Bunde (2020) who analysed eustress within the higher education environment. Their core idea, which is significant for academic stress research, is that stressors perceived as goal-relevant and manageable increase motivation and an individual's motivation and well-being. In contrast, stressors not considered manageable are perceived as hampering performance. Here, we can see a relationship to the Yerkes–Dodson law. This is a unique study as other studies primarily look at academic stress in relation to distress. The significant link between academic stress and the academic objectives students set themselves was also confirmed by Adom, Essel and Chukwuere (2020). An important finding presented in this study is the fact that academic stress cannot be entirely eliminated from academic life. You (2018) also discusses this idea, describing the relationship between motivation, resilience in learning and academic stress. The primary and fundamental outcome of that research is that students who have high motivation to study are less stressed and less influenced by their environment. Other important quantitative studies of academic stress also include studies by Tsang and Lian (2020), Turner and Simmons (2020) and Leslie, Brown and Aiken (2021).

In regard to the thematic focus of quantitatively oriented pedagogical studies, we see studies focused on the relationship between academic stress, perceived employability and academic engagement (Ma and Bennett, 2021), students' cultural values, class culture and academic stress (Muchsini and Siswandari, 2020), the influence of socio-demographic factors, resilience and stress-reducing activities on students' academic outcomes (Van Hoek, Portzky and Franck, 2019) and relations between learning approaches, perceived stress and expected and actual academic outcomes (Ohrstedt and Lindfors, 2018). We have listed here only a few of the latest studies of interest. The objective of this study is not to give a detailed list of quantitative research on the topic of academic stress but rather to create a particular overview of how to consider this concept.

Many quantitative studies also look at researching academic stress coping strategies. In this category, we include the following studies: Valdivieso-León, Mangas; Tous-Pallarés and Espinoza-Díaz (2020), Gustems, Calderon and Calderón-Garrdiio, (2019); and Dada, Babatunde and Adeleye (2019). These studies all identify various strategies for managing stress. A particularly interesting perspective is given by the first study (Valdivieso-León, Mangas, and Espinoza-Díaz, 2020), which uses a regression analysis to explain 30% of the variance in academic stress through academic obligations, expectations, interpersonal difficulties and the expression of one's own ideas. It also identifies the most utilised strategies for managing academic stress, which include *desiderative thinking,* emotional expression, problem solving and social withdrawal. The authors propose that the model created, alongside the identified coping strategies, could serve as a basis for a training programme focused on managing academic stress.

Amongst quantitatively focused research studies we can also find a wide range of research samples. Most frequently, we see research samples within medical fields that include nurses, medical students, dental medical students (Van Hoek, Portzky and Franck, 2019; Magnavita and Chiorri, 2018; Dilbone et al., 2018; Kötter, Wagner, Brüheim and Voltmer, 2017; Pani et al., 2017; Brown, Anderson-Johnson and McPherson,

2016). Other studies focus on researching academic stress without looking at a particular subject (e.g. Ma and Bennet, 2021; Chacon-Cuberos et al., 2021; Travis, Kaszycki, Geden and Bunde, 2021; Adom, Essel and Chukwuere, 2020; Dada, Babatunde and Adeleye, 2019; Aihie and Ohanaka, 2019). Only one study (Valdivieso-León, Mangas, and Espinoza-Díaz, 2020) has a research sample comprising students of pedagogy subjects. Missing is a greater range of subjects and an investigation of the relationship between the study focus and level of academic stress. It would be very interesting to identify what the relationship is between academic stress level and study focus (humanities, technical, science subject, etc.). Another idea for research lacking in the quantitative concept would be to ascertain the relationship between academic stress and an assessment of the difficulty of the study subject. There are a large number of ideas for the quantitative research of academic stress. Although academic stress is an oft-used concept, there have been no in-depth studies into its connection, e.g. with higher education students' study experience, the relationship between academic stress and the subject curriculum, and minimising academic stress through placements and a practical focus in study. This is all within the quantitative concept. Many new approaches, however, are also presented in qualitative research.

Quantitative research undoubtedly dominated the research we analysed. Nevertheless, in analysing available sources we did identify some studies focused on investigating academic stress using a *qualitative research concept*. These include a study by Leslie, Brown and Aiken (2021) who investigated academic stress amongst master's nursing students at a Jamaican university. Using in-depth interviews with nine nursing students and a thematic content analysis, they ascertained that students perceive their master's degree as very stressful, particularly due to the rigid curriculum structure, workload and lack of support from academic staff. The article also includes an idea we have already identified within many other research surveys that specifically, academic staff, teachers and universities should implement a stress management strategy within the subjects they teach and ensure the tasks and demands made of students are precisely arranged. In sum, this should create an environment that facilitates learning and reduces stress. This is an area also looked at by Turner and Simmons (2020). Their research focuses on an entirely unique research sample in terms of academic stress research: building and construction students. The authors used inductive and deductive thematic analysis to ascertain individuals' resilience (RAU) and identified the key role of a partnership approach between the university, academic staff and students in order to reduce the prevalence of academic stressors (Turner and Simmons, 2020). Another qualitatively focused study is research on understanding the reasons for academic stress through photographic documentation of educational situations by Tsang and Lian (2020), which we shall write about in our analysis of research tools.

In terms of *experimental research*, we found one particularly significant study, which was published in 2021 and authored by Luisa Lampe and Brigitte Müller-Hilke. These authors focus on researching academic stress and eliminating stress through *Mindfulness-based Intervention*. This type of intervention is based on the attention given to students. We can also refer to it as taking notice of students. The researchers found that if we pay more attention to students, we also eliminate the level of their academic stress. This finding came about from data the authors acquired through an experiment with 143 students of medicine (Lampe and Müller-Hilke, 2021).

Other authors who have looked at intervention in order to reduce academic stress are Sultan, Amin and Khan (2021). These authors note that they anticipated reduction of stress would lead to an increase in students' emotional intelligence. For their experiment, the authors made use of a research sample of $n = 46$ for the intervention group and $n = 50$ for the control group. The authors also confirmed the necessity of intervention (*Stress Management Intervention*) in order to reduce students' academic stress and improve their academic outcomes. This research also led to the publication of a book of the same name.

The final research concept is *data meta-analysis*, for which there is a single example in academic stress research. We present here one study that provides a very good description of the relationship between academic stress, time management and study failure. The authors (Ahmady et al., 2021) thoroughly analysed eight studies and found a relationship between academic stress and study failure. The correlation coefficient in the individual studies ranged roughly between 0.32 and 0.43. This is a very good, clearly written study and contains adequate statistical data about the different pieces of research. The authors also propose further work on the data in regard to intervention in order to alleviate academic stress. It would be

appropriate to undertake another meta-analysis of academic stress with a focus on specific variables such as obesity, emotional intelligence, gender, academic success, academic engagement or coping strategies. These are the variables most commonly found in academic databases and they provide interesting information on this phenomenon. In undertaking meta-analyses, we often encounter the problem of an absence of statistical coefficients that we can use to calculate the e*ffect size* of the relationship between academic stress and the selected variable. Some authors decide only to use descriptive statistics or else they draw their conclusions without basing them on a statistical analysis of the data. Very often, academic stress research does not make use of so-called substantive reasoning techniques such as a *coefficient of determination, Cohen's d* and other statistical tools.

Research Tools and Data Analysis

Another area that we analyse is research tools. Due to the structure of research concepts and the *prevalence of quantitative concepts*, the dominant data collection method was the questionnaire. Within foreign research, there are a large number of research tools that are used to investigate the concept of academic stress within tertiary education. We consider some of the most important to include:

- Daily Hassless Index for College (Schafer, 1996), used by authors Chee, Shorty and Kurpius (2019)
- Academic Stress Questionnaire (ASQ), Cronbach's alpha = 0.86 (Zamroni, Hidayah, Ramli and Hambali, 2019)
- Academic Stress Scale (PASS) (Bedewy and Gabriel, 2015; Aihie and Ohanaka, 2019)
- Academic Expectations Stress Inventory (e.g. Ang and Huan, 2006)

These research tools make use of scales to ascertain the level of academic stress. Other questionnaires are often used in addition to these tools in order to investigate other variables analysed in relation to academic stress or conceived as predictors of academic stress.

We also encounter the occasional study focused on ascertaining the validity and reliability of research tools relating to the topic, such as Simonelli-Muñoz et al. (2018) who adapted the Student Stress Inventory-Stress Manifestations (SSI-SM) questionnaire for higher education students, specifically nursing students. No other such studies were identified within our selection. If we look at other databases such as *Research Gate*, then we can find other studies (Izzati, Tentama and Suyono, 2020; Guzman-Castillio et al., 2018; Alzaeem, Sulaiman and Gillani, 2010).

A greater focus on analysing research tools would be highly appreciated. An analysis and subsequent synthesis of questionnaires looking at academic stress could create a more objective platform for investigating the concept. Similarly, adapting research tools for different socio-cultural environments and discussion of the importance of the socio-cultural environment in such adaptations would create an interesting perspective in researching academic stress.

The selected tool is linked to the data analysis method. Most studies make use of structural modelling, regression analysis and factor analysis in order to ascertain the relationship between variables. Inferential statistics are also used a lot. The basis of every study, however, is a descriptive analysis, something we note because as a result we acquired a detailed picture of the level of academic stress. On the other hand, we also encountered studies that make use of only basic methods of data statistical analysis. An example of this is a study by Chandra (2021), which gave an analysis of the level of academic stress and emotional intelligence amongst students in India. The author used a chi-square test for data analysis, something that in our opinion did not extract all the information the data contained. We also think the low number of respondents ($n = 94$) is another research limitation on this article.

In assessing *qualitative research study tools*, the most commonly used tool is the in-depth interview. An interesting research tool was used by Tsang and Lian in 2020 while investigating academic stress amongst students in Hong Kong. They used so-called *photovoice* for their research. Fifteen students took photographs to capture their experience of learning. Thematic analysis was applied for data analysis (Tsang and Lian, 2020). We think it is beneficial to use different data collection tools at a qualitative level. We did not identify the use of focus groups, observation or document analysis in any of the studies.

In terms of data analysis, most of the qualitative studies we have presented here make use of thematic data analysis through which important themes are identified within the perception of academic stress. What is lacking, however, is the use of grounded theory studies to identify the process of academic stress emergence and determine the intervening conditions, context and management strategy. Additionally, a paradigmatic model could be used to ascertain what impacts academic stress has on higher education students. Another research design, which is not usually used in academic stress qualitative research, is the case study method; in this context, we can use an analysis of the average case of a student for whom a high level of academic stress is identified in order to monitor variables found in this concept. At the same time, a case study could be used to look at the reasons for academic failure of a specific student and determine the role of academic stress in this failure. It should be noted that qualitative studies do not meet the requirements of many journals because their results are only in relation to the respondents investigated; hence, they are also not accepted by a number of specialist periodicals. Despite this fact, we should not dismiss the use of qualitative studies. There is an opportunity here to undertake mixed research in which we can use quantitative methodology to verify findings arising from qualitatively identified conclusions. This route would certainly provide valuable information contributing to the development of academic stress theories and not just within a pedagogical context. The final area we focus on is the recommendations arising from the research surveys.

Recommendations Provided by the Studies

There were recommendations of great interest within individual studies based on data collection and methods used. A very common recommendation involved a method of intervention to minimise academic stress. An important role was played here by co-operation between students, teachers and the university. There were different forms of intervention. We identified the following three basic interventions:

- *Partnership Intervention* (Turner and Simmons, 2020) based on communication between subjects within the academic environment and co-operation on the goals of student learning;
- *Stress Management Intervention* based on screening endangered students and subsequent planning, organisation and co-operation in order to minimise academic stress (Sultan, Amin and Khan, 2021); and
- *Mindfulness-based Intervention* based on the attention paid to students and observation of students (Lampe and Müller-Hilke, 2021).

A question that remains in terms of intervention to minimise academic stress is the use of centres at universities designated for this purpose. As stated by Boyraz, Granda, Baker, Tidwell and Waits (2016), such consultation centres are little-used by students. For this reason, we prefer the idea of direct work and co-operation between an academic staff member and the student in regard to determining commensurate tasks, requirements and assignments as well as creating a performance-stimulating university environment.

Other recommendations we found in the research studies included: (1) better interaction between university, teachers and students; (2) teaching students various strategies for managing stress (Gustems-Carnicer, Calderon and Calderon-Garrido, 2019; Adom, Essel and Chukwuere, 2020); (3) supporting students in self-care (O'Neill, Slater and Batt, 2019); (4) increasing students' psychological immunity and academic resilience in order to reduce academic stress; (5) identifying students who are in danger of stress due to low socio-economic status and providing them with support (Adom, Essel and Chukwuere, 2020); (6) including a course that prepares students for the academic environment and helps them develop stress management strategies in the first year of bachelor's degrees (Aihei and Ohanaka, 2019); (7) teachers should create meaningful tasks and give a reason for undertaking the task (You, 2018); (8) taking account of the difficulty of tasks for students (You, 2018) with excessively easy or difficult tasks not able to motivate students (Vollmeyer and Rheinberg, 2006).

We can find many more proposals for improving the situation in terms of academic stress at universities in the research studies. As we have stated, the primary proposal is always to make an intervention through consultancy centres for students or intervention centres for managing academic stress. We think that including a course in the first year of studies in which students would be introduced to their studies and the demands that will be made of them is a particularly interesting idea. Within this course, students would also

learn about time management, methods to reduce procrastination, techniques for setting goals and, in particular, strategies for managing stress. These are precisely the obstacles that students described as the main stressors alongside the personality of the teacher and his/her teaching approach.

S. W. O. T. Analysis of Sample Studies

Analysis of the chosen studies led us to produce the following SWOT analysis in which we have taken account of the strengths and weaknesses of academic stress studies alongside the threats and opportunities this topic creates for further research.

TABLE 1
SWOT ANALYSIS OF ACADEMIC STRESS STUDIES

Strengths of Reviewed Academic Stress Studies

- diversity of academic stress definitions
- recommendations for university intervention centres
- extensive recommendations for research in academic stress
- academic stress research in different socio-cultural environments
- ascertaining the cause of academic stress and identifying stress management strategies (Dada, Babatunde and Adeleye, 2019)
- identifying the relationship between academic stress and students' academic results (Leppink et al., 2016)
- identifying the relationship between level of academic stress and student performance (Khanehkashi Basavarajappa, 2011; Ramaprabou et al., 2018)
- confirmation of relationship between gender and level of academic stress (Khanehkashi Basavarajappa, 2011; Mehmet, Karaman et al., 2019; García-Ros et al., 2011)
- confirmation of relationship between level of academic stress and student obesity and muculoskeletal system disorders (Ekpenyong et al., 2013)
- analysis of relationship between level of academic stress and other variables such as motivation, wellbeing, aggression, depression, anxiety and lifestyle (Khanehkeshi Basavarajappa, 2011; Jones et al., 2018; Huang et al., 2020; Collins et al., 2010; Mehmet, Karaman et al., 2019; Ekpenyong, 2013; Fernández, Gonález et al., 2015; Zheng et al., 2020)
- relationship between student stress, perceived employability and academic engagement of students in China, $n = 1{,}155$ (Ma and Bennett, 2021)
- identification of the major impact of academic stress on the health of higher education students (Casuso-Holgado et al., 2019)
- research into academic stress amongst academic staff (Sabino, Santos, Carvalhais et al., 2011; Rothmann, Barkhuizen and Wissing, 2004; du Plessis, 2020). The most cited article in the Web of Science in the field of academic stress amongst university employees is an article by Barkhuizen and Rothmann (2008) that focuses on researching work-related stress amongst academic workers in South Africa.
- confirmation of the influence of class cultural values on the level of academic stress (Muchsini and Siswandari, 2020) alongside a proposal for incorporating cultural values into teaching models in order to minimise academic stress

Weaknesses of Reviewed Academic Stress Studies

- absence of large meta-analyses of studies
- inconsistent definitions of academic stress and its reference to any education environment
- many studies make use of a very low number of respondents (Smith and Renk, 2007; Dziegielewski et al., 2004; Collins et al., 2010; Ramaprabou et al., 2018; Martin Monzón, 2007)

- quantitative focus of research studies and minimal number of qualitative studies undertaken (Leslie, Brown and Aiken, 2021)
- use of overly simple statistical data analysis methods (Chandra, 2021)
- use of the term in different environments, e.g. elementary and secondary school, university (Ursin, Jarvinen and Pihlaja, 2021)

Opportunities Arising from Reviewed Academic Stress Studies

- creating an intervention programme/plan
- investigating academic stress as a result of the COVID-19 pandemic (Chandra, 2021)
- focusing on the university environment and investigating stress amongst academic staff
- undertaking qualitative studies with the use of case studies or grounded theory
- quantitative studies with a larger population sample and segmentation according to study focus
- research of academic stress in a pedagogical context

Threats Arising from Reviewed Academic Stress Studies

- inaccurate understanding of the term "academic stress"
- issue of academic stress research methodology and the impact of the socio-cultural environment alongside the application of results in different socio-cultural environments
- psychologisation of the issue without taking account of the education environment

Strengths predominate in our analysis, which we consider encouraging for researching academic stress. Because most of the reviewed studies were undertaken between 2018 and 2021, it is evident that academic stress is gaining greater prominence, and both research tools and data analysis methods are being specified. The listed strengths also include the many interesting findings that current research provides. This is not an exhaustive list and we have chosen only those studies that correlate the most with the focus of this review.

In terms of weaknesses, we would particularly like to highlight the lack of different types of meta-analysis, which would create a more unified academic stress theoretical concept. Due to the diversity of studies, meta-analyses could be created especially in the areas of investigating academic stress within healthcare fields, analysis of academic stress and self-efficacy, and research of academic stress and study results.

A very important opportunity currently available to us is to research academic stress amongst students during the period of the coronavirus pandemic. Most higher education institutions have moved from face-to-face teaching to distance learning, which is undertaken entirely online. This can result in a highly stressful environment for many students due to worse concentration, lack of social contact, limited teamwork conditions, lack of study life and the overall change in environment.

A major threat we observe and feel in academic stress research is the claim that it is psychological. The argument made by many experts is that academic stress is purely a matter of psychology. Here, we would like to note the necessity of also investigating academic stress from a pedagogical perspective and eliminating educational constructs and processes that produce negative academic stress, and, conversely, boosting pedagogical situations to create the optimal conditions for stress, which improves performance. In so doing, we do not wish to dispute the importance of psychology in this area. A multidisciplinary context of the issue should be formed in society today while considering the phenomenon from various perspectives.

CONCLUSION

In this study, we have presented an analysis of research papers that examined academic stress as the principle research variable. These studies were undertaken in multiple countries (U.S., Indonesia, Spain, China, South Korea, etc.). Unfortunately, no research on this topic has been undertaken in the Czech Republic, which is rather surprising given the history and tradition of Czech higher education. According

to the findings of individual studies, academic stress has a large influence on the academic success of students, which should be the primary objective of tertiary education so as to produce a competently prepared graduate who is competitive within the labour market. We also anticipate that if students take on a stress management coping strategy and tools for effective work and study during their studies, then this will increase their mental resilience in employment once their studies have finished. It would also be worth verifying this assumption even though some studies (Turner and Simmons, 2020) already incorporate this assumption.

Concluding the study, we recommend future research that focuses on academic stress in the Czech Republic. Through identifying levels of academic stress and strategies that Czech students experience we can consider possible intervention proposals, thus reducing academic failure.

Other studies that could be undertaken in this field and have already been mentioned in different parts of this study include:

- a case study of student academic failures with emphasis placed on the role of academic stress in student failure;
- grounded theory on students with a high level of academic stress and creation of a paradigmatic model; the importance of a psychologically focused interview with students should be underscored here;
- meta-analysis of academic stress amongst students of health sciences, meta-analysis of academic stress studies and gender, and meta-analysis of studies of academic stress and self-efficacy;
- studies focused on investigating the reliability and validity of academic stress research tools;
- systematic review studies of academic stress research tools;
- studies of academic stress focused on students' study experience, the role of the teacher in managing academic stress, the relationship between academic stress, time management, procrastination and student preparation for teaching alongside other educational variables;
- studies of academic stress amongst adult individuals studying part-time;
- an intervention programme minimising academic stress during the period of the coronavirus pandemic, verifying its effect size and others.

Although academic stress is a researched concept, we can see that new issues continue to arise, allowing us to examine academic stress within new concepts and contexts.

In this review study, we have given an account of the current situation regarding investigation of academic stress, using the latest verified sources. We have ascertained the context of investigating academic stress and evaluated options for research survey concept (qualitative, quantitative, experimental, meta-analyses), and found that there is a lack of use of mixed methods research. We have also described the tools used for data collection and the methods of analysis most often used in academic stress studies. In conclusion, this study lists many recommendations that are in line with the latest findings in researching the academic stress phenomenon. Valuable findings are provided in our SWOT analysis in which we refer to the strengths and weaknesses of academic stress research and consider the threats and opportunities this issue creates.

ACKNOWLEDGEMENTS

REFERENCES

Adom, D., Essel, H.B., & Chukwuere, J. (2020) The state of academic stress in the higher institutions of Ghana: The way forward. *Universal Journal of Educational Research*, *8*(2). DOI:10.13189/ujer.2020.080201

Ahmady, S., Kalantarion, M., Sharifi, F., & Yaseri, M. (2021). Relation between stress, time management, and academic achievement in preclinical medical education: A systematic review and meta-analysis. *Journal of Education and Health Promotion*, *10*(1). https://doi.org/10.4103/jehp.jehp_600_20

Aihie, O.N., & Ohanaka, B.I. (2019). Perceived Academic Stress among Undergraduate Students in a Nigerian University. *Journal of Educational and Social Research*, *9*(2). DOI: 10.2478/jesr-2019-0013.

Alzaeem, A.Y., Sulaiman, S., & Gillani, S., (2010). Assessment of the validity and reliability for a newly developed Stress in Academic Life Scale (SALS) for pharmacy undergraduates. *International Journal of Collaborative Research on Internal Medicine and Public Health*, *2*.

Al-Zeyadi, S., & Mohammed, S.H. (2019). Measures academic stress among undergraduate nursing students. *Indian Journal of Forensic Medicine and Toxicology*, *13*(4). DOI 10.5958/0973-9130.2019.00425.0

Ang, R.P., & Huan, V.S. (2006). Academic expectations stress inventory: Development, factor analysis, reliability, and validity. *Educational and Psychological Measurement*, *66*(3). DOI:10.1177/0013164405282461

Balanza, S., Rivera-Caravaca, J.M., Vera-Catalán, T., Lorente, A.M., & Gallego-Gómez, J.I. (2018, May). Reliability and validity of the student stress inventory-stress manifestations questionnaire and its association with personal and academic factors in university students. *Nurse Education Today*, *64*, 156–160. https://doi.org/10.1016/j.nedt.2018.02.019

Barkhuizen, N., & Rothmann, S. (2008). Occupational stress of academic staff in South African higher education institutions. *South African Journal of Psychology*, *38*(2). DOI: 10.1177/008124630803800205

Bedewy, D., & Gabriel, A. (2015). Examining perceptions of academic stress and its sources among university students: The Perception of Academic Stress Scale. *Health Psychology Open*, *2*(2). DOI: 10.1177/2055102915596714

Boyraz, G., Granda, R., Baker, C.N., Tidwell, L.L., & Waits, J.B. (2016). Posttraumatic stress, effort regulation, and academic outcomes among college students: A longitudinal study. *Journal of Counseling Psychology*, *63*, 475–486. doi:10.1037/cou0000102

Brown, K., Anderson-Johnson, P., McPherson, A.N. (2016). Academic-related stress among graduate students in nursing in a Jamaican school of nursing. *Nurse Education in Practice*, *20*. DOI:10.1016/j.nepr.2016.08.004

Carballo, L.I.C., Hernández, A.A., Goméz, O.G. (2020). Estrés académico y depresión mental en estudiantes de primer año de medicína. *Revisa Cubana de Educacion Medica Superior*, *34*(2).

Castillo, A.G., Saez, K., Perez, C., & Castillo Navarrete, J.L. (2018). Validity and reliability of SISCO inventory of academic stress among health students in Chile. *JPMA. The Journal of the Pakistan Medical Association*, *68*(12).

Casuso-Holgado, M.J., Moreno-Morales, N., Labajos-Manzanares, M.T., & Montero-Bancalero, F.J. (2019, October 28). The association between perceived health symptoms and academic stress in Spanish Higher Education students. *European Journal of Education and Psychology*, *12*(2). https://doi.org/10.30552/ejep.v12i2.277

Chacón-Cuberos, R., Olmedo-Moreno, E.M., Lara-Sánchez, A.J., Zurita-Ortega, F., & Castro-Sánchez, M. (2019, November 15). Basic psychological needs, emotional regulation and academic stress in university students: A structural model according to branch of knowledge. *Studies in Higher Education*, *46*(7), 1421–1435. https://doi.org/10.1080/03075079.2019.1686610

Chee, C.L., Shorty, G., Kurpius, S.E.R. (2019). Academic Stress of Native American Undergraduates: The Role of Ethnic Identity, Cultural Congruity and Self-Beliefs. *Journal of Diversity in Higher Education*, *12*(1). DOI 10.1037/dhe0000094

Collins, S., Coffey, M., & Morris, L. (2008). Social Work Students: Stress, Support and Well-Being. *British Journal of Social Work*, *40*(3), 963–982. https://doi.org/10.1093/bjsw/bcn148

Crego, A., Carrillo-Diaz, M., Armfield, J.M., Romero, M. (2016) Stress and academic performance in dental students: The role of coping strategies and examination-related self-efficacy. *Journal of Dental Education*, *80*(2).

Dada, J.O., Babatunde, S.O., & Adeleye, R.O. (2019). Assessment of academic stress and coping strategies among built environment undergraduate students in Nigerian higher education. *Journal of Applied Research in Higher Education*, *11*(3). DOI: 10.1108/JARHE-06-2018-0100

Dilbone, D.A., Feng, X., Su, Y., Xirau-Probert, P., Behar-Horenstein, L.S., & Nascimento, M.M. (2018, June). Influence of Preparatory Workshops on Dental Students' Academic Performance and Stress on Their First Operative Dentistry Psychomotor Exam. *Journal of Dental Education*, *82*(6), 608–613. https://doi.org/10.21815/jde.018.068

Doyle, C., & Hind, P. (1998). Occupational stress, burnout and job status in female academics. Gender, *Work and Organization*, *5*(2). DOI 10.1111/1468-0432.00047

Du Plessis, M. (2020). Model of coping with occupational stress of academics in a South African higher education institution. *SA Journal of Industrial Psychology*, *46*, a. n. a1714. DOI: 10.4102/sajip.v46i0.1714

Dziegielewski, S.F., Turnage, B., & Roest-Marti, S. (2004). Addressing Stress with Social Work Students: A Controlled Evaluation. *Journal of Social Work Education*, *40*(1), 105–119. https://doi.org/10.1080/10437797.2004.10778482

Fernández González, L., González Hernández, A., & Trianes Torres, M.V. (2017). Relaciones entre estrés académico, apoyo social, optimismo-pesimismo y autoestima en estudiantes universitarios. *Electronic Journal of Research in Education Psychology*, *13*(35). https://doi.org/10.14204/ejrep.35.14053

García-Ros, R., Pérez-González, F., & Luis A. Natividad, J.P.-B. (2012). Evaluación del estrés académico en estudiantes de nueva incorporación a la universidad. Revista Latinoamericana de Psicología. *Revista Latinoamericana de Psicología*, *44*(2), 143–154. Retrieved from http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-05342012000200012&lng=en&tlng=es

Gustems, J., Calderon, C., & Calderón-Garrido, D. (2019). Stress, coping strategies and academic achievement in teacher education students. *European Journal of Teacher Education*, *42*(4). DOI:10.1080/02619768.2019.1576629

Huang, N., Qiu, S., Alizadeh, A., & Wu, H. (2020). How Incivility and Academic Stress Influence Psychological Health among College Students: The Moderating Role of Gratitude. *International Journal of Environmental Research and Public Health*, *17*(9), 3237. https://doi.org/10.3390/ijerph17093237

Izzati, C., Tentama, F., & Suyono, H., (2020). Academic Stress Scale: A Psychometric Study for Academic Stress In Senior High School. *European Journal of Education Studies*, *7*(7). http://dx.doi.org/10.46827/ejes.v7i7.3161

Jones, P.J., Park, S.Y., & Lefevor, G.T. (2018). Contemporary College Student Anxiety: The Role of Academic Distress, Financial Stress, and Support. *Journal of College Counseling*, *21*(3), 252–264. https://doi.org/10.1002/jocc.12107

Kötter, T., Wagner, J., Brüheim, L., & Voltmer, E. (2017). Perceived Medical School stress of undergraduate medical students predicts academic performance: An observational study. *BMC Medical Education*, *17*(1). DOI: 10.1186/s12909-017-1091-0

Lampe, L., & Müller-Hilke, B. (2021). Mindfulness-based intervention helps preclinical medical students to contain stress, maintain mindfulness and improve academic success. *BMC Medical Education*, *21*(1). DOI: 10.1186/s12909-021-02578-y

Leppink, E.W., Odlaug, B.L., Lust, K., Christenson, G., & Grant, J.E. (2016). The Young and the Stressed. *Journal of Nervous & Mental Disease*, *204*(12), 931–938. https://doi.org/10.1097/nmd.0000000000000586

Lerma, E., Vela, J.C., & Watson, J.C. (2019, April). Predictors of Academic Stress Among College Students. *Journal of College Counseling*, *22*(1), 41–55. https://doi.org/10.1002/jocc.12113

Leslie, K., Brown, K., & Aiken, J. (2021). Perceived academic-related sources of stress among graduate nursing students in a Jamaican University. *Nurse Education in Practise*, *53*. DOI:10.1016/j.nepr.2021.103088

Ma, Y., & Bennett, D. (2021). The relationship between higher education students' perceived employability, academic engagement and stress among students in China. *Education and Training*, *63*(5). DOI: 10.1108/ET-07-2020-0219

Magnavita, N., & Chiorri, C. (2018). Academic stress and active learning of nursing students: A cross-sectional study. *Nursing Education Today*, *68*, 128–133. DOI 10.1016/j.nedt.2018.06.003

Martín Monzón, I.M. (2007). Estrés académico en estudiantes universitarios. *Apuntes de Psicología*, *25*(1), 87–99. Retrieved from https://idus.us.es/bitstream/handle/11441/12812/file_1.pdf?sequence=1&isAllowed=y

Muchsini, B., & Siswandari, (2020). Class culture and the academic stress of digital natives generations. [Budaya kelas dan stres akademik generasi bawaan digital]. *Cakrawala Pendidikan*, *39*(1). DOI:10.21831/cp.v39i1.26910.

Nazari, N., & Far, D.M. (2019). The relationship between teaching skills, academic emotion, academic stress and mindset in university student academic achievement prediction: A PLS-SEM approach. *Journal of Intellectual Disability - Diagnosis and Treatment*, *7*(3). DOI: 10.6000/2292-2598.2019.07.03.9

O'Neill, M., Yoder Slater, G., & Batt, D. (2019, January 2). Social Work Student Self-Care and Academic Stress. *Journal of Social Work Education*, *55*(1), 141–152. https://doi.org/10.1080/10437797.2018.1491359

Ohrstedt, M., & Lindfors, P. (2018). Linkages between approaches to learning, perceived stress and expected and actual academic outcomes among first-semester psychology students. *Journal of Further and Higher Education*, *42*(1). DOI: 10.1080/0309877X.2016.1206856

Olepegba, P.O., Onigbogi, S.O., & Uye, E.E. (2021). Academic stress and personality traits as predictors of substance use among adolescents in secondary schools in Osun state, Nigeria. *Nigerian Journal of Economic and Social Studies*, *63*(1).

Pani, S.C., Al Khabbaz, H.J., Bin Enayeg, S.H., & Bin Zouman, A.H. (2017). The relationship between examination-related academic stress, salivary antioxidant capacity and exercise patterns of final-year Saudi dental students. *European Journal of Dental Education*, *21*(4). DOI:10.1111/eje.12225

Ramachandiran, M., & Dhanapal, S. (2018). Academic stress among university students: A quantitative study of generation Y and Z's perception. *Pertanika Journal of Social Sciences and Humanities*, *26*(3).

Ranasinghe, P., Wathurapatha, W.S., Mathangasinghe, Y., & Ponnamperuma, G. (2017). Emotional intelligence, perceived stress and academic performance of Sri Lankan medical undergraduates. *BMC Medical Education*, *17*(1). DOI: 10.1186/s12909-017-0884-5

Renk, K., & Smith, T. (2007). Predictors of Academic-Related Stress in College Students: An Examination of Coping, Social Support, Parenting, and Anxiety. *Journal of Student Affairs Research and Practice*, *44*(3). https://doi.org/10.2202/1949-6605.1829

Rothmann, S., Barkhuizen, N., & Wissing, M. (2004). Stress and burnout of academic staff in higher education institution in South Africa. *International Journal of Psychology*, *39*(5–6).

Sabino, A., Santos, M., Carvalhais, J., et al. (2011). Factores de risco de stress relacionado com o trabalho e níveis de stress percebido no corpo académico: Estudo numa instituição do ensino superior politécnico. [Risk factors of work related stress and perceived levels of stress in academics: A study in a polytechnic higher education institution]. *Conference: 7th International Symposium on*

Occupational Safety and Hygiene (SHO). Location: Univ Minho, Sch Engn, Guimaraes. PORTUGAL Date: FEB 10-11, 2011, 572–577. Retrieved from http://pessoais.dps.uminho.pt/parezes/downloads/sho2011.pdf

Schafer, W.E. (1996). *Stress management for wellness* (3rd ed.). Fort Worth, TX: Harcourt Brace Jovanovich.

Sultan, S., Amin, R., & Khan, M.A., (2021). Managing stress through stress management intervention for increasing emotional intelligence and academic achievement. *Youth Voice Journal*, *4*.

Travis, J., Kaszycki, A., Geden, M., & Bunde, J. (2020). Some stress is good stress: The challenge-hindrance framework, academic self-efficacy, and academic outcomes. *Journal of Educational Psychology*, *112*(8). DOI: 10.1037/edu0000478

Tsang, K.K., & Lian, Y. (2020) Understanding the reasons for academic stress in Hong Kong via photovoice: Implications for education policies and changes. *Asia Pacific Journal of Education*, *41*(2). DOI: 10.1080/02188791.2020.1772719

Turner, M., & Simmons, D.R. (2020). Taking a Partnered Approach to Managing Academic Stress: An Undergraduate Study. *International Journal of Construction Education and Research*, *16*(4). DOI:10.1080/15578771.2019.1619637

Ursin, P., Jarvinen, T., & Pihlaja, P. (2021). The Role of Academic Buoyancy and Social Support in Mediating Associations Between Academic Stress and School Engagement in Finnish Primary School Children. *Scandinavian Journal of Educational Research*, *65*(4). DOI:10.1080/00313831.2020.1739135

Valdivieso-León, L., Mangas, S.L., Tous-Pallarés, J., & Espinoza-Díaz, I.M. (2020). Coping strategies for academic stress in undergraduate students: Early childhood and primary education. [Estrategias de afrontamiento del estrés académico universitario: Educación infantil-primaria]. *Education XXI*, *23*(2). DOI: 10.5944/educxx1.25651

Van Hoek, G., Portzky, M., & Franck, E. (2019). The influence of socio-demographic factors, resilience and stress reducing activities on academic outcomes of undergraduate nursing students: A cross-sectional research study. *Nurse Education Today*, *72*. DOI: 10.1016/j.nedt.2018.10.013

Vestad, L., & Tharaldsen, K.B. (2021). Building Social and Emotional Competencies for Coping with Academic Stress among Students in Lower Secondary School. *Scandinavian Journal of Educational Research*. DOI: 10.1080/00313831.2021.1939145

Vollmeyer, R., & Rheinberg, F. (2006). Motivational effects on self-regulated learning with different tasks. *Educational Psychology Review*, *18*(3), 239–253. https://doi.org/10.1007/s10648-006-9017-0

Yamini, Ch. (2020). Online education during COVID-19: Perception of academic stress and emotional intelligence coping strategies among college students. *Asian Education and Development Studies*, *10*(2). DOI: 10.1108/AEDS-05-2020-0097

Zamroni, Hidayah, N., Ramli, M., & Hambali, I.M. (2019). Academic stress and its sources among first year students of Islamic Higher Education in Indonesia. *International Journal of Innovation, Creativity and Change*, *5*(4).

Zheng, J., Jiang, N., & Dou, J. (2020). Autonomy Support and Academic Stress: A Relationship Mediated by Self-regulated Learning and Mastery Goal Orientation. *New Waves Educational Research & Development*, *23*, 43–63. Retrieved from https://files.eric.ed.gov/fulltext/EJ1264274.pdf