STUDENTS PERCEIVED ACADEMIC STRESS, SENSE OF BELONGING, ADAPTABILITY, SPORTS AND DEPRESSION IN THE SECOND YEAR OF THE PANDEMIC

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Abstract

The COVID-19 pandemic has been challenging for academia. Educators and students hopes for a short duration of the pandemic were disappointed soon and in 2021, one year after the onset of the pandemic, most universities were still restricted to online teaching. At the same time, ensuing restrictions due to COVID-19 coupled with uncertainty about the duration of these adverse circumstances, brought high pressure for many students.

Within this background, the present study focuses on the question, to which degree students could develop and use coping mechanisms in these adverse circumstances and draw on personal resources such as sense of belonging, adaptability, and stress-outbalancing behaviors like sports. The aim of this study was to evaluate Austrian students perceived academic stress and was conducted from May to July 2021. Altogether, 202 students, 71 males (35.1%) and 131 females (64.9%) between 18 to 52 years old (M=23.74, SD=5.26) participated. Statistical analyses found significant correlations between perceived academic stress and sense of belonging (socially and organizationally), adaptability, depression, but no significant correlation with sports. In the regression, three variables significantly contributed to the assessment of academic stress. Adaptability and sense of belonging to a peer-group as well as adaptability decreased perceived academic stress. In contrast, depressive symptoms were positively related to academic stress. Altogether, 34.0% of the variance could be explained by the regression equation. Higher levels of perceived academic stress could mostly be explained by a lack of adaptability to the actual situation and sense of belonging to a peer group but a higher amount of perceived depression.

These results point at measures that can be taken to alleviate students' stress. Perceived academic stress and mental-health problems like depressive symptoms should not be taken too lightly, as they do not only concern only individual students, but have consequences for the university as a whole.

Keywords: University students, sense of belonging, perceived academic stress, adaptability, sports.

1. Introduction

The Coronavirus disease outbreak (COVID-19) has affected lives all over the world. Universities with all its members – educators, researchers, students, academic and non-academic staff – have been hit in specific ways. This meant for educators in the first year of the pandemic to suddenly switch to remote teaching forms, often within one or only a few days and to adapt teaching, learning and testing to completely new circumstances (Procentese et al., 2020). Hopes that learning and teaching could switch to normal were disappointed again and again in the various pandemic waves. These circumstances put enormous stress on all members of academia. However, stress has not always negative consequences. According to Joseph et al. (2021) a certain amount of academic stress can be beneficial (e.g. promoting learning), but excessive academic stress impairs performance and well-being of students and may even lead to severe symptoms of strain like depressive symptoms, anxiety and other health-related problems. Studies in Asia as well as in Europe found a negative impact of the pandemic on mental well-being like severe anxiety (Cao et al., 2020) and depression (Essadek & Rabeyron, 2020); the lack of interpersonal communication of students is regarded to be one reason for this.

Insecurity and unpredictability of learning circumstances, e.g. not knowing about dates and formats of the next classes or even exams, added further pressure on students with implications for their perception of academic stress and academic performance (c.f. Bedewy & Gabriel, 2015).

However, there are also factors that may cushion strain. In an academic context, sense of belonging to a social group or to the organization, in this case the student peers and the university, may

help to reduce academic stress (c.f. Procentese et al., 2020). Students with a higher sense of belonging also show better adaptability and adjustment to challenges (c.f. Arslan, 2021; Besser et al., 2020). Previous studies point at the positive and strain-protective effects of sense of belonging to the university. Higher perceived belonging to the university was associated with lower self-reported academic stress (Capone et al., 2020). Previous studies showed that organizational identification is an even better predictor for achievement than social identification (Wilkins et al., 2016).

In 2012 Décamps and colleagues conducted a study with French students which indicated that students with intensive sport practice (more than 8 hours per week) reported lower scores of general stress and academic stress than those with rare practice. Recent studies with large international samples found that individuals performing physical activity during lockdown reported better mood than their colleagues (e.g. Brand et al., 2020). These results were replicated in 2021 by Fernandez-Rio et al. (2021) who found a potential positive connection between physical activity and well-being. Individuals with significantly lower depressive symptoms performed more physical activity during isolation than beforehand. Therefore, in the present study students' sports activities were also regarded as a cushioning factor.

The study aimed to evaluate, how the students' situation during the third lockdown and the weeks after and to find protective factors, which could be used to make recommendations to the universities. We hypothesized that students perceived academic stress is negatively associated with their sense of belonging (social and organizational), adaptability to the new situation and physical activity, but positively associated with the perceived depressive symptoms.

2. Methods and materials

2.1. Participants

A total of 215 participants took part in the study, conducted from May to July 2021. They were recruited via advertisements on the mailing list of the university and on social media (Facebook and Instagram). All participants gave their informed consent, through a generated participant code individual data was anonymized. Participants were asked to provide demographics including sex, age, academic semester, academic level, native language and diagnosed clinical illnesses (e.g. depression). Ten participants had to be excluded because they indicated, that they were diagnosed with a clinical illness. Further three participants made inconclusive statements e.g. studying 100 semesters. Finally, data of 202 students, 71 males (35.1%) and 131 females (64.9%) between 18 to 52 years old (M=23.74, SD=5.26) were used for the analysis. In the sample, 158 students (78.2%) were at Bachelor level, 39 (19.3%) at Master and five (2.5%) studying at doctoral level. The majority reported German to be their native language (n=197; 97.5%). Students reported physical activity (sports) of M=2.43 (SD=1.71) hours per week in the last weeks (Min=0, Max=10) during the third lockdown in Austria.

2.2. Material and variables

Perception of Academic Stress. Participants were asked to rate their perceived academic stress level using the German version of the Perception of Academic Stress Scale (PAS; Bedewy & Gabriel, 2015). This instrument consists of eighteen items which are answered on a five-point Likert scale, ranging from "strongly disagree" to "strongly agree". The internal consistency reliability (Cronbach's Alpha) of the scale was α=.814, and for the dimensions students' academic self-perceptions (k=6) α=.675, academic expectations (k=4) α=.303 and faculty work and examinations (k=6) α=.780.

Adaptability. Self-perceived adaptability to the COVID-19 situation was measured by an adapted German version of the Adaptability Scale (Martin et al., 2012). This scale comprises nine items in the format of a seven-point Likert scale, ranging from "strongly disagree" to "strongly agree". The internal consistency reliability (Cronbach's Alpha) of the scale (k=9) was α=.843. The first order factors 'cognitive-behavioral' (k=6; α=.793) and 'affective' (k=6; α=.787) were highly correlated (r=.564), as recommended by the authors the high order factor was used for the analysis (Martin et al., 2013).

Sense of Belonging Scales (peers and university). Hoffmans' adapted German version of the Sense of Belonging Scale was used. It comprises twenty-six statements (e.g. "I have developed personal relationships with other students who I met in class.") in the format of a five-point Likert scale, ranging from "completely untrue" to "completely true". The internal consistency reliability (Cronbach's Alpha) of the primary scale (k=26) was α=.896. For sense of belonging to the university an adapted subscale of Wilkins et al. (2016) questionnaire was used with an internal consistency of α=.875. It comprises four statements (e.g. "I feel strong ties with my university".) in the format of a seven-point Likert scale, ranging from "strongly disagree" to "strongly agree".

Depressive symptoms. Depressive symptoms were measured by the German version of the Beck Depression Inventory (BDI-II, Hautzinger et al., 2006), a 21-item self-report scale. All items of the scale are scored based on a four point Likert scale, each individually adjusted to the specific symptoms (e.g. energy loss). The internal consistency reliability (Cronbach's Alpha) of the scale (k=21) was α=.872.

3. Results

Pearson correlations were calculated to explore relationships between relevant variables. Table 1 shows descriptive statistics and correlations of the variables. Sports activities did not significantly correlate with perceived academic stress, adaptability, sense of belonging to the university and depressive symptoms, but showed a small, yet significant correlation with sense of belonging. Taking a closer look, the dimensions of sense of belonging peer support (M=18.83, SD=8.66; r=.188) and classroom support (M=7.14, SD=4.96, r=.144) showed a significant relationship, but no significant results were found for faculty support (M=10.99, SD=5.29, r=.040) or empathetic faculty understanding (M=8.90, SD=3.13, r=.086).

Table 1. Descriptive statistics and Correlations of Main Study Variables.

Variables	N	Mean M	SD	PAS	Adaptability	SoB to peers	SoB to university	Depressive symptoms	Sport
Perceived academic stress (PAS)	202	28.04	9.89		-.368**	-.300**	-.150*	.550**	-.054
Adaptability	202	37.20	7.99			.190**	.242**	-.360**	.042
SoB to peers	202	45.85	15.95				.327**	-.309**	.117*
SoB to university	202	8.57	4.23					-.256**	.081
Depressive symptoms	202	11.65	8.98						.041
Sport	202	2.43	1.71						

*Note: *p<.05; **p<.01; SoB Sense of belonging*

A multiple regression with four criterion variables was carried out to investigate which aspects contributed to students perceived academic stress. Predictor variables were the students' adaptability, sense of belonging, perceived university belonging and depressive symptoms. We assumed a linear relation between the independent (predictor) and dependent (criterion) variables, meaning we would expect that increases in one variable would be related to an increase or decrease in another. Earlier analysis showed no significant differences in the perceived academic stress between males (M=26.51, SD=10.02) and females (M=28.88, SD=9.76) (t(200)=-1.633, p=.379), thus further analysis were conducted without considering gender. Prior analysis showed that the assumptions were fulfilled, physical activity (sport) did not show a relationship with perceived academic stress and therefore was not included in the regression analysis to predict perceived academic stress.

Three variables significantly contributed to perceived academic stress during the third lockdown and the following weeks. Adaptability and the social component of sense of belonging (the organizational component "the perceived belonging to the university" did not significantly contribute) obtained a negative β-weight. Higher values were related to decreased perceived academic stress. The variable depression obtained a positive β-weight; higher values in depression come in line with a higher amount of academic stress. Altogether, 34.0% of the variance could be explained by the regression equation (see Table 2).

Table 2. Summary of the multiple regression analysis (regression coefficients, significance).

	Perceived academic stress			
R	B	SE B	β	Significance
Adaptability	-.239	.077	-.193	**
SoB to peers	-.089	.039	-.143	*
SoB to university	.139	.146	.059	
Depressive symptoms	.497	.071	.451	**
R^2	.340			

*Note: B = unstandardized regression coefficient β. SE B = standard error of B. β = standardized regression coefficient. *p < .05; **p < .01; ***p < .001. Sample size n =202. SoB = Sense of belonging.*

Of the sample, 43 students experienced a minimal (21.3%) (9-13 points), 27 a mild (13.4%) (14-19 points), 29 a moderate (14.4%) (20-28 points) and 13 a severe (6.4%) (29-63 points) depression using the classification system of the German BDI-II version (Hautzinger et al., 2006), although participants with diagnosed clinical disorders were excluded. There was no significant difference between males (M=11.46, SD=8.32) and females (M=11.75, SD=9.35) (t(200)=-.213, p=.825) regarding the BDI-II score.

4. Discussion

Previous studies paid attention to several protective factors, but all focused either on sense of belonging or sports. We wanted to present strategies for universities where to expand their offers for students (e.g. peer systems, sports programs, mental health programs). The initial assumptions were that higher self-reported adaptability (c.f. Besser et al., 2020) and social aspects of sense of belonging (e.g. peer support, empathetic faculty understanding) (c.f. Procentese et al., 2020), sense of belonging to the university (Capone et al., 2020), and sports activities (e.g. Décamps et al., 2012) would decrease the perception of academic stress. Furthermore, depressive symptoms were assumed to increase the perception of stress. In the statistical analyses not all of these variables contributed to the perception of stress. Three variables proved to be important for the perception of stress: adaptability, sense of belonging to the peer group, and depressive symptoms.

Adaptability to the COVID-19 situation. In the first year of the pandemic the relationship between adaptability to the COVID-19 situation and sense of belonging had already been found (Besser et al., 2020). The results of the present study also point at the importance of this variable.

Social sense of belonging. It was especially interesting to investigate the impact of this variable in the second year of the pandemic in which students had suffered from an ongoing period of reduced social contacts. Yet, still feeling of being part of a social group and receiving emotional support contributed positively to the adjustment to the COVID situation and decreased the perception of stress. These results speak for designing support strategies at universities for students which can be individually offered, e.g. tutorials, mentoring programs through peers (c.f. Lee et al., 2021).

Depressive symptoms. A further important result concerns the incidence of depressive symptoms since almost 21 percent of the students reported moderate or severe depression symptoms. The present data gathered in a cross-sectional design allow no interpretation of causal relationships. Nevertheless, these results are of concern and the high proportion of students reporting moderate or even severe symptoms seems alarming. It would be worth to conduct further studies, e.g. qualitative studies to obtain a better insight.

Contrary to initial expectations, two variables were not able to explain the perception of stress.

Sports activities. With a mean of 146 minutes per week, the majority of the participants did not follow the WHO recommendations on physical activity (Fernandez-Rio et al., 2021) during the home isolation 150 minutes/week of moderate physical activity: 122 students (60.4%) reported sports engagement of two hours or less per week, 75 (37.1%) three to six hours per week and only five students (2.5%) eight hours or more per week. However, contrary to previous studies (Décamps et al., 2012) the length of sports activities was not related to perceived stress levels. There are different explanations for this result. Overall, the length of students' sport activities was not overly high and contrary to other studies there were only few participants with intensive training.

Sense of belonging to the university. Contrary to expectations this variable was not significant in the regression equation. It might be that in the pandemic the reduced contacts with the university (e.g., using services, visiting the building, having personal contact with staff, etc.) over more than one year impaired a sense of belonging and thus the variable could not unfold its assumed effect (Capone et al., 2020; Procentese et al., 2020). Some students at this point may have hardly ever entered the university in person in the COVID pandemic. Also, the construct was measured with the questionnaire of Wilkins et al. (2016) a different tool than in previous mentioned COVID-19 related studies.

Altogether, the results point at important factors that cushion students against feelings of stress and to measures that universities can take to support students' well-being. The latter mainly concern increasing students' social sense of belonging. Therefore, designing support strategies at universities for students which can be individually offered, e.g. tutorials, mentoring programs through peers is recommended (c.f. Lee et al., 2021).

Limitations. Limitations of the study mainly concern the cross-sectional design. However, due to the organizational circumstances and accessibility of the sample, it was not possible to include different points in time. Further limitations concern the generalizability of the results as mainly psychology students took part in the study. Nevertheless, the results give a further insight into factors that influence students' well-being and point at important measures that universities can take.

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