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ARTIGOS

Conexões entre adaptação acadêmica e sintomas ligados à depressão, ansiedade e estresse em universitários

Connections between academic adaptation and symptoms linked to depression, anxiety and stress in university students

Conexiones entre la adaptación académica y la depresión, ansiedad y el estrés en estudiantes universitarios

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Resumo: Na transição e permanência dos estudantes no Ensino Superior, são identificados inúmeros processos inerentes à adaptação acadêmica como a manifestação de sintomas psicopatológicos que podem estar associados às dificuldades de se adaptar a esse contexto. O objetivo geral desta pesquisa foi investigar as relações entre a adaptação acadêmica e sintomas ligados a depressão, ansiedade e estresse em universitários. A amostra, composta por 310 estudantes de instituições predominantemente particulares do Centro-Oeste, respondeu remotamente a instrumentos de autorrelato. Os resultados indicaram relações entre as dimensões da adaptação acadêmica e os sintomas psicopatológicos. Observou-se, ainda, a interação desses construtos com as variáveis autoindicação de diagnóstico prévio para transtornos mentais e realização de tratamento psicológico/psiquiátrico. Os achados obtidos da análise de redes podem subsidiar a elaboração de intervenções para promover a adaptação acadêmica e reduzir a incidência de sintomas psicopatológicos na graduação.

Palavras-chave: adaptação; psicopatologia; bem-estar; avaliação psicológica.

Abstract: The transition and permanence in Higher Education demand numerous processes inherent to academic adaptation, potentially triggering psychopathological symptoms linked to difficulties in adapting to this context. This research aimed to investigate the relationships between academic adaptation and symptoms related to depression, anxiety, and stress among university students. The sample comprised 310 students from predominantly private institutions in Brazil's Central-West, who completed self-report instruments remotely. Results revealed relationships between dimensions of academic adaptation and psychopathological symptoms. Furthermore, this study observed interactions between these constructs and variables such as self-reported mental disorders diagnosis and psychological/psychiatric treatment. Network analysis findings can inform interventions to promote academic adaptation and reduce psychopathological symptoms incidence in college programs.

Keywords: adaptation; psychopathology; well-being; psychological assessment.

Resumen: Durante la transición y permanencia de los estudiantes en la educación superior, se identifican procesos inherentes a la adaptación académica, como la manifestación de síntomas psicopatológicos que pueden estar asociados a dificultades de adaptación. Este estudio investigó la relación entre adaptación académica y síntomas de depresión, ansiedad y el estrés en estudiantes universitarios. La muestra estuvo compuesta por 310 estudiantes de instituciones mayoritariamente privadas del Centro-Oeste brasileño, completó autoinformes remotos. Resultados mostraron relaciones entre dimensiones de adaptación

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académica y síntomas psicopatológicos. Además, el estudio observó interacciones entre constructos/variables: diagnóstico previo autodeclarado de trastornos mentales y tratamiento psicológico/psiquiátrico. Hallazgos de redes informan intervenciones para promover la adaptación académica y reducir la incidencia de síntomas psicopatológicos en grado.

Palabras clave: adaptación; psicopatología; bienestar psicológico; evaluación psicológica.

Introduction

The transition and adaptation to Higher Education (HE) usually cause difficulties experienced by students, mainly due to their personal characteristics. On the one hand, there are young people who arrive at HE without defined vocational choices (Vautero et al, 2020). On the other hand, some of them have low levels of autonomy, gaps in their academic training that point to difficulties in a more demanding and complex level of education (Zoltoswki & Teixeira, 2020).

Adapting to the university environment can be challenging for students due to several factors, such as intense academic load, new social environment, responsibilities and autonomy, demands for emotional regulation, financial and time control (Soria et al., 2019). Sahão and Kienen (2021) found in their study a significant portion of students who reported suffering from an anxiety disorder, feeling unmotivated, facing sleep problems and feelings of helplessness, despair and loneliness.

Furthermore, factors such as fear of making mistakes, academic competitiveness and work overload have also been associated with negative impacts on students' mental health (Souza et al., 2022). Therefore, it is important that higher education institutions are aware of this issue and offer adequate support to promote the emotional well-being of their students. Freitas et al. (2022) believe that they need to be encouraged to recognize the signs of depression, anxiety and stress in themselves and their colleagues, so that they can seek help when necessary.

The etiology of depression disorder is multifactorial and involves a complex interaction between genetic, biological, psychological and environmental factors. This disorder is a highly prevalent and debilitating mental health condition characterized by persistent symptoms of sadness, loss of interest or pleasure, changes in appetite and sleep, fatigue and lack of energy, as well as difficulty concentrating and suicidal thoughts (American Psychiatric Association, 2022). The study by Cuijpers et al. (2014) emphasized the seriousness of the impact of depression given the consequences for daily functioning, social relationships and occupational productivity, for which early identification and appropriate treatment are essential to reduce the burden caused by this condition and improve quality of life of those affected.

Studies have identified genetic variants associated with the risk of developing the disorder, many of which are related to neurological pathways involved in emotional processing and mood regulation. Environmental factors such as traumatic childhood events, chronic stress, and socioeconomic adversity also play an important role in the development of depression. Among university students there is an increasing prevalence of depressive symptoms, with factors such as academic overload, pressure to perform and loneliness (Milaneschi et al., 2017).

In turn, anxiety disorder involves feelings of excessive worry and anxiety, significantly interfering with the daily life of affected individuals (APA, 2022). Javaid et al. (2023) estimate that 4.05% of the global population—approximately 301 million individuals suffer from anxiety disorders. The number of affected individuals increased by more than 55% between 1990 and 2019. Metrics related to anxiety disorders show a continuous rise in both prevalence and incidence. Gökdağ and Kızıltepe (2023) suggest that psychological factors, such as traumatic experiences, chronic stress and individual vulnerabilities, have also been associated with the development of this disorder. Silva et al. (2021) warned of an increasing incidence of anxiety symptoms among university students, with concerns regarding academic performance, adaptation to the university environment and pressure to achieve goals.

In turn, exposure to traumatic events and adversities faced in different social contexts in which

the individual is inserted, as well as inadequate social support have been aspects widely related to the increased risk of developing stress disorder in adult life. It is a psychiatric condition characterized by a persistent and dysfunctional stress response to traumatic events or stressful situations, which can cause significant harm to the individual's life (APA, 2022).

The relationship between depression, anxiety and stress disorders with the academic adaptation process is complex and can significantly impact students' performance in the university context, making it difficult to cope with academic and social demands. Depression can interfere in motivation and interest in studies, making the academic adaptation process more challenging. Furthermore, the previously mentioned disorders can also lead to difficulties in time management and organization of academic activities, impacting productivity and academic performance (Silva et al., 2021).

However, the academic adaptation process can be a triggering factor for the development of these disorders. Adapting to a new and challenging environment can provoke feelings of sadness and melancholy, contributing to the development of depression (APA, 2022). The pressure to achieve good results, competition between students and the intense workload can generate excessive stress and anxiety (Denovan & Macaskill, 2021). To this end, social support, whether from friends, family or mental health professionals, can provide the necessary support to face academic difficulties and challenges (Picton et al., 2018). Early identification of symptoms and appropriate therapeutic intervention are essential to prevent these disorders from interfering more deeply with students' academic adaptation (Sahão & Kienen, 2020).

Based on the above, the objective of this research was to analyze the relationships between symptoms present in psychopathologies (depression, anxiety and stress) and the dimensions of academic adaptation of Higher Education students. The specific objective was to investigate the possible interactions among academic adaptation, symptoms of depression, anxiety, and stress, and the variables of self-reported mental disorder diagnosis and self-reported psychologist/psychiatrist treatment.

Method

Participants

Sample composed of 310 participants, mostly from higher education institutions located in the Distrito Federal, with ages ranging between 17 and 65 years old (M_{age} = 26,66; *DP* = 10,30). Of these participants, 234 identified as female, 71 as male and four selected the "other" option. Students from Psychology (*n* = 222), Medicine (*n* = 52); Biomedicine (*n* = 11), Nursing (*n* = 10), Veterinary Medicine (*n* = 8), Nutrition (*n* = 3), Dentistry (*n* = 2), Biological Sciences (*n* = 2) and Pharmacy (*n* = 1) courses participated. There were new participants – 1st semester (*n* = 52), 2nd semester (*n* = 8), 3rd semester (*n* = 52); intermediaries, 4th semester (*n* = 28), 5th semester (*n* = 34), 6th semester (*n* = 32), 7th semester (*n* = 29), 8th semester (*n* = 29); and finalists – 9th semester (*n* = 29), 10th semester (*n* = 11) and 11th semester (*n* = 1).

Instruments

Adaptation to Higher Education Questionnaire (QAES; Araújo et al., 2014). It is a measuring instrument composed of 40 items that assess the adaptation of university students to the academic environment. It provides relevant data for understanding and supporting the adaptation process based on five dimensions that cover emotional, social and academic aspects. Based on the sample of this research, QAES presented an adequate internal structure: CFI = .97; TLI = .97; RMSEA = .07 (IC 90% .07 – .08), Based on the sample of this research, QAES presented an adequate internal structure: just as its factors reached ideal values regarding to reliability estimates – Institutional Dimension, cc = .84; Study Dimension, cc = .86; Personal-Emotional Dimension, cc = .87; Social Dimension, .94; Career Dimension, .94.

Depression, Anxiety and Stress Scale (DASS-21;

Vignola & Tucci, 2014). It is an instrument that measures the levels of symptoms of depression, anxiety and stress in adults. It is composed of three subscales, and provides a comprehensive assessment of negative emotional dimensions, helping to identify intervention and treatment needs. Considering the sample of this research, DASS-21 presented adequate values of internal structure (CFI = 1.00; TLI = 1.00; RMSEA = .04 (IC 90% .03 – .05) and reliability estimates – Depression, cc = .92; Anxiety, cc = .92; Stress, .90.

Identification Questionnaire. Resource used to collect sample characterization data and to obtain two variables analyzed in the research, referring to two items with a dichotomous answer key (yes/no): having a previous diagnosis of mental disorders and undergoing psychological/psychiatric treatment. Therefore, the first variable represents a "self-reported mental disorder diagnosis", and the second variable denotes the student's status of "self-reported psychologist/psychiatrist treatment."

Data collection procedure

The project that generated this research report followed the guidelines of Resolution CNS 466/12, being approved by the Ethics and Research Committee of the institution to which it is linked. This study used nonprobability convenience sampling to recruit university students. We designed the sample size to accommodate the statistical analyses intended for the research. Data collection was carried out in the first semester of 2023 remotely and asynchronously through the Google Forms platform. The snowball format was applied to publicize the research on social media (Instagram), messaging application (WhatsApp), and in person approach to students at a private higher education institution in the Distrito Federal, presenting an invitation for voluntary participation in the research.

Data analysis procedure

The data were analyzed using JASP software (version 0.17.3) and Statistical Package for the Social Sciences (SPSS, v. 26). The absence of normality of the sample data was verified using the Shapiro test -Wilk – $p < .05$. To attend the general objective of the research, Spearman rank correlation analysis was used. (ρ). Parameters for interpreting the magnitude of correlations: $\rho \leq .10$, trivial magnitude; ρ between .11 and .29, small; ρ between .30 and .49, moderate; $\rho \geq .50$, high (MacDougall, 2024). To achieve the specific objective, Student's *t*-test and Multivariate Analysis of Variance (MANOVA) were also employed. Due to the deviation from normality of the data, the *bootstrap* resampling method (1000 samples) was applied in these analyses. In Student's *t* test, the effect size of statistical significance was evaluated using Cohen's *d* and in MANOVA using ηp^2 – the references for interpreting these coefficients are described in MacDougall (2024).

We used network analysis to achieve the general and specific objectives. For the selection of the components of each network, we chose items from the Adaptation to Higher Education Questionnaire (QAES) and the Depression, Anxiety and Stress Scale (DASS-21) using Confirmatory Factor Analysis. The first three items that had the highest factor loading were chosen to compose the networks, as shown in Table 1. The reliability estimates of both instruments were verified using Composite Reliability (cr).

We employed the EBICglasso estimator to structure the three networks. The strength of the connections identified in each network was evaluated by the sparsity value (0 to 1). The relevance of the components of academic adaptation and psychopathological symptoms was assessed using the z-score of the strength, proximity and intermediation indices (Epskamp et al., 2018). Three networks were tested: Network 1. Connections between indicators of academic adaptation, depression, anxiety and stress for the general sample; Networks 2 and 3, connections between the constructs due to the variables "self-declaration of mental disorder" and "undergoing psychological/psychiatric treatment".

Table 1 - *Factor Loads of the QAES and DASS-21 Items Selected to Compose the Network Analysis*

Item	QAES – Institutional Dimension	FL
36	Satisfaction with learning support spaces at the university (library, computer and study rooms)	.79
6	Identification with the IES (e.g. values and rules)	.68
31	Good spaces in the IES to spend time in between classes	.66
Item	QAES – Studies Dimension	FL
33	Try in your studies out of determination to achieve good results	.89
38	When faced with difficulties, do not give up on understanding a subject/performing an activity	.75
18	Plan daily study activities	.73
Item	QAES – Personal-Emotional Dimension	FL
24	Do not feel sad/down	.92
9	Do not have thoughts linked to sadness	.82
14	Do not feel disoriented/confused	.80
Item	QAES – Social Dimension	FL
12	Satisfaction with friends at the IES	.90
7	Feeling close to friends made at the IES	.85
37	Be able to establish good relationships with course mates	.84
Item	QAES – Career Dimension	FL
25	Perception of achieving objectives from the undergraduate course	.87
30	Consider the current course as the best	.87
15	Be on a course that matches your interests and skills	.82
Item	DASS_21 – Depression	FL
13	Feeling sad and discouraged	.90
10	Feeling like there is nothing to desire	.84
17	Feeling worthless	.84
Item	DASS_21 – Anxiety	FL
19	Feeling of an altered heart even without physical effort (increased heart rate/arrhythmia)	.87
9	Worry about panicking and feeling ridiculous	.86
15	Feeling of panic	.86
Item	DASS_21 – Stress	FL
8	Feeling of always being nervous	.85
18	Feeling of being too emotional/sensitive	.79
12	Difficulty relaxing	.79

Legend. FL = Factor Load.

Results

To achieve the general objective of this research, Table 2 reports the results of the correlations between the dimensions of academic adaptation and the psychopathological symptoms manifested by the sample of university students. The same table shows the statistical significance of the partial correlation coefficients between the same constructs, in which the incidence of previous diagnosis of mental disorders was controlled, as well as the performance of psychological and/or psychiatric accompaniment. The increase and decrease in partial correlation values compared

to bivariate correlations did not reflect changes in magnitude and direction.

Table 2 - *Correlations between Academic Adaptation and Depression, Anxiety and Stress*

Bivariate correlations (*N* = 309)					
	AA_Institutional	AA_Studies	AA_Personal-Emotional	AA_Social	AA_Career
Depression	**-.12***	**-.29*****	**-.60*****	**-.17****	**-.21*****
Anxiety	-.03	-.08	**-.58*****	-.01	-.04
Stress	-.11	**-.15****	**-.65*****	-.07	-.07
Partial correlations – control variable: having a previous diagnosis of mental disorders (*N* = 108)					
	AA_Institucional	AA_Studies	AA_Personal-Emotional	AA_Social	AA_Career
Depression	**-.12***	**-.28*****	**-.58*****	**-.17****	**-.22*****
Anxiety	-.01	-.04	**-.55*****	-.01	-.04
Stress	-.10	**-.13***	**-.64*****	-.07	-.07
Partial correlations – control variable: carry out psychologist/psychiatrist accompaniment (*N* = 164)					
	AA_Institutional	AA_Studies	AA_Personal-Emotional	AA_Social	AA_Career
Depression	**-.12***	**-.30*****	**-.60*****	**-.18****	**-.21*****
Anxiety	-.02	-.08	**-.57*****	-.02	-.04
Stress	-.10	**-.15****	**-.65*****	-.08	-.07

*Legend***.** AA = Academic adaptation

*Note***.** Statistically significant bold partial correlation indices at level $^{***}p < .001$; $^{**}p < .01$**;** $^{*}p < .05$.

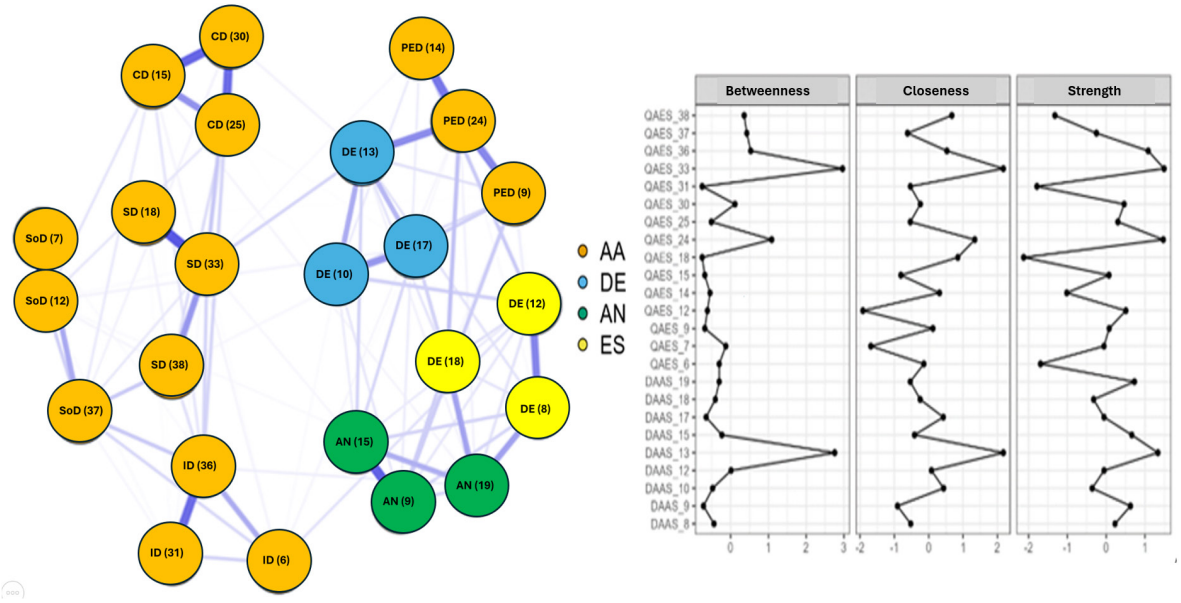
Figure 1 (general sample) presents a network whose connections deepen the understanding of the relationships between the components of academic adaptation and psychopathological symptoms among higher education students. The network has 24 nodes, 104 edges ≠ 0 and presented a moderate sparsity value (0.62). Based on the thickness of the edges, weak connections between the components of academic adaptation and psychopathological symptoms of depression, anxiety and stress can be visually perceived.

The centrality indices (graph located in the right corner of Figure 1) indicate that the most important nodes in the network (*strength*), concern the dimensions of academic adaptation to study – item QAES_33, "making an effort in studies out of determination to achieve good results" and personal-emotional – item QAES_24, "not feeling sad/dejected". When considering psychopathological symptoms, the strongest nodes in the network refer to depression – item DASS_13, "feeling sad and discouraged"; to anxiety – item DASS_15, "feeling of panic" and item DASS_19, "feeling of an altered heart even without physical effort (increased heart rate/arrhythmia)"; and stress – item DASS_8, "feeling of always being nervous".

The node that quickly affects other nodes in the network (*closeness*) within the scope of academic adaptation refers to the study dimension (item QAES_33, "putting effort into studies out of determination to achieve good results"). In psychopathological aspects, depression (item DASS_13, "feeling sad and discouraged"), stress (item DASS_12, "difficulty relaxing") and anxiety (item DASS_15, "feeling of panic").

In turn, the study dimension of academic adaptation represented with the previously mentioned item QAES_33 had the highest z value for intermediation (*betweenness*), signaling that the effort in studies to obtain good results occupies the shortest path between the components of the network. In psychopathological aspects, the highest intermediation index was detected for the symptom of depression, which denotes sadness/discouragement; for stress by indicating "difficulty relaxing" (item DASS_12); and for anxiety with the "feeling of panicking" (item DASS_15).

Figure 1 - *Graphs of Connections between Academic Adaptation and Psychopathological Symptoms and Strength, Centrality and Intermediation Indexes – General Sample of University Students*



Legend. AA = dimensions of academic adaptation; CD = Carrer Dimension; PED = Personal-Emotional Dimension; SD = Studies Dimension; SoD = Social Dimension; ID = Institutional Dimension; DE = symptoms of depression; NA = symptoms of anxiety; ES = symptoms of stress.
Note. The description of each item that makes up the network is found in Table 1.

Regarding the specific objectives of the research, the values displayed in Table 3 show a statistically significant interaction effect between symptoms of depression, anxiety and, stress, considering the variables self-reported mental disorder diagnosis and self-reported psychological/psychiatric treatment. Students who indicated self-reported mental disorder diagnosis and were self-reported psychological/psychiatric treatment had higher averages in psychopathological symptoms compared to students who did not endorse both mental health variables. In academic adaptation, only statistical significance was verified for the interaction effect between self-reported mental disorders diagnosis and the personal-emotional dimension – a higher average was identified in this dimension among students who did not have a self-reported mental disorders diagnosis. The effect size of statistical significance of these group comparisons ranged from trivial to small.

Descriptive statistics indicated that 108 students had some diagnosis of mental disorders. Among these students and considering that when recording the type of diagnosis there was the possibility of presenting more than one disorder, the prevalence of disorders associated with anxiety was counted (n = 78), depression (n = 33), Attention Deficit Hyperactivity Disorder (n = 19), Bipolar Disorder (n = 7), Obsessive Compulsive Disorder (n = 3), Eating Disorders (n = 2), Autism Spectrum Disorder (n = 2), Premenstrual Dysphoric Disorder (n = 2), Borderline Personality Disorder (n = 1), High Abilities/Giftedness (n = 1), Burnout (n = 1), Tourette's syndrome (n = 1) and Fibromyalgia (n = 1).

Table 3 - *Interaction Effect of Academic Adaptation and Depression, Anxiety, and Stress Symptoms Perceived with Self-reported Mental Health*

Self-reported Psychopathologies Diagnosis - Psychopathological Symptoms Perceived by University Students						
	T	Groups	*M (DP)*	IC 95% Inf	IC 95% Sup	*d*
Depression	**4.38*****	Yes	8.31 (5.62)	1.53	4.04	.13
		No	5.53 (4.79)			
Anxiety	**7.14*****	Yes	9.23 (5.81)	3.34	5.88	.12
		No	4.62 (4.57)			
Stress	**4.94*****	Yes	11.20 (4.89)	1.76	4.10	.09
		No	8.27 (5.12)			
Self-reported Psychopathologies Diagnosis – Dimensions of Academic Adaptation						
	T	Groups	*M (DP)*	IC 95% Inf	IC 95% Sup	*d*
Institutional	-.73	Yes	23.99 (5.22)	-1.67	.77	.03
		No	24.44 (5.16)			
Studies	-1.64	Yes	24.89 (6.13)	-2.67	.24	.03
		No	26.10 (6.25)			
Personal-emotional	**-3.85*****	Yes	21.72 (6.51)	-4.76	-1.54	.03
		No	24.87 (7.44)			
Social	.06	Yes	29.87 (7.00)	-1.62	1.73	.03
		No	29.82 (7.23)			
Career	.35	Yes	32.73 (6.12)	-1.22	1.74	.02
		No	32.47 (6.40)			
Self-reported Psychological/Psychiatric Treatment - Psychopathological Symptoms Perceived by University Students						
	t	Groups	*M (DP)*	IC 95% Inf	IC 95% Sup	*d*
Depression	**2.30***	Yes	7.13 (5.70)	.19	2.50	.02
		No	5.79 (4.60)			
Anxiety	**4.22*****	Yes	7.43 (5.84)	1.36	3.73	.03
		No	4.88 (4.73)			
Stress	**2.37***	Yes	9.95 (5.33)	.23	2.55	.02
		No	8.56 (5.01)			
Self-reported Psychological/Psychiatric Treatment – Dimensions of Academic Adaptation						
	t	Groups	*M (DP)*	IC 95% Inf	IC 95% Sup	*d*
Institutional	-1.05	Yes	23.99 (5.07)	-1.79	.54	.01
		No	24.61 (5.30)			
Studies	.01	Yes	25.68 (6.11)	-1.39	1.40	.01
		No	25.68 (6.37)			
Personal-emotional	-1.89	Yes	23.04 (7.33)	-3.19	.06	.01
		No	24.60 (7.15)			
Social	1.15	Yes	30.27 (6.78)	-.66	2.53	.01
		No	29.34 (7.51)			

Self-reported Psychopathologies Diagnosis - Psychopathological Symptoms Perceived by University Students

	T	Groups	*M (DP)*	IC 95% Inf	IC 95% Sup	*d*
Career	.80	Yes	32.83 (5.94)	-.84	1.99	.01
		No	32.26 (6.68)			

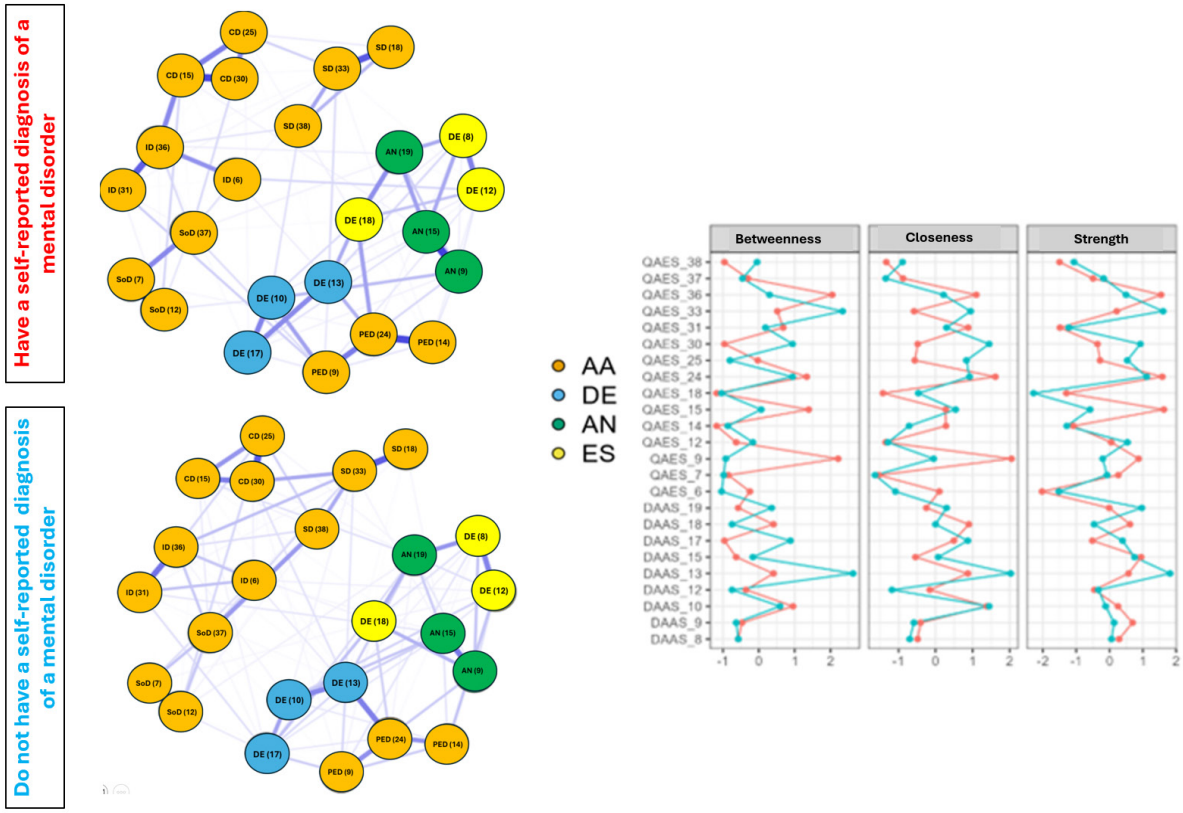
Note$_1$. Statistically significant comparisons *** p <.001; ** p < .01; *p < .05
Note$_2$. Lower and Upper Confidence Intervals (95%) generated by the *bootstrap* resampling method (1000 samples).

The result of the MANOVA indicated that there was no interaction effect between the variables self-reported mental disorder diagnosis and were self-reported psychological/psychiatric treatment with academic adaptation and psychopathological symptoms – F = 1.24 (8.301); p = .27; ηp^2 = .03. It is noteworthy that 164 students indicated self-reported psychological/psychiatric accompaniment. The link between academic adaptation and psychopathological symptoms was also examined, considering both variables. Figure 2 shows a network that considers self-reported mental disorder diagnosis, displaying 24 nodes for students who answered yes or no to this variable in both groups. The category has a self-reported mental disorder diagnosis and had 90 edges ≠, 0, and .67 sparsity. The category does not self-reported a mental disorder diagnosis, with 114 edges ≠ zero and a sparsity of .59.

In the category self-reported mental disorder diagnosis, the z-score values displayed in the graph of network centrality indices (right corner of Figure 2) show that the symptom of depression "feeling sad and discouraged" (item DASS_13) stands out for strength, proximity and intermediation. The same occurred for the symptom of anxiety "feeling of an altered heart even without physical effort (increased heart rate/arrhythmia)" (item DASS_19). The stress symptom "feeling of always being nervous" (item DASS_8) demonstrated greater importance for the network (strength), as well as the potential for intermediation, while the indicator "feeling of being too emotional/sensitive" (item DASS_18) was the one that most affected other nodes in the network (proximity). In academic adaptation, the component of the studies dimension "making an effort in studies out of determination to achieve good results" (item QAES_33) gained greater importance and intermediation in the network; and the career dimension item "considering the current course as the best" (item QAES_30) stood out in the proximity index.

In the category in which students not self-reported a mental disorder diagnosis, the symptom of depression "feeling like there is nothing to want" (item DASS_10) showed higher z-score values for closeness and intermediation, while "feeling sad and discouraged" (DASS_13) stood out in terms of strength for the network. The symptom of anxiety "feeling of an altered heart even without physical effort (increased heart rate/arrhythmia)" (item DASS_19) had greater relevance in proximity and intermediation, and in this last indicator, the aspect "concern about panicking and feeling ridiculous" (item DASS_9) also stood out. The strongest node for anxiety was represented by the "feeling of panicking" (item DASS_15). When considering stress, the "feeling of being too emotional/sensitive" (item DASS_18) had a higher z value for strength, closeness and intermediation. In academic adaptation, the nodes with the greatest importance for the network (strength) referred to the institutional dimension "satisfaction with learning support spaces at the university (library, computer and study rooms)" (item QAES_36), to the personal-emotional dimension "not feeling sad/downcast" (item QAES_24) and to the career dimension "being on a course consistent with interests and skills" (item QAES_15). The component of the personal-emotional dimension "not having thoughts linked to sadness" was highlighted in the network in proximity and intermediation.

Figure 2 - *Graphs of Connections between Academic Adaptation and Psychopathological Symptoms and Strength, Centrality and Intermediation Indexes – Self-reported Mental Disorders Diagnosis*



Legend[1]. AA = dimensions of academic adaptation; CD = Carrer Dimension; PED = Personal-Emotional Dimension; SD = Studies Dimension; SoD = Social Dimension; ID = Institutional Dimension; DE = symptoms of depression; NA = symptoms of anxiety; ES = symptoms of stress.
Note[1]. Centrality indices graph: Red line = Have a self-reported mental disorder diagnosis; Blue line: Do not have a self-reported mental disorder diagnosis.
Note[2]. The description of each item that makes up the network is found in Table 1.

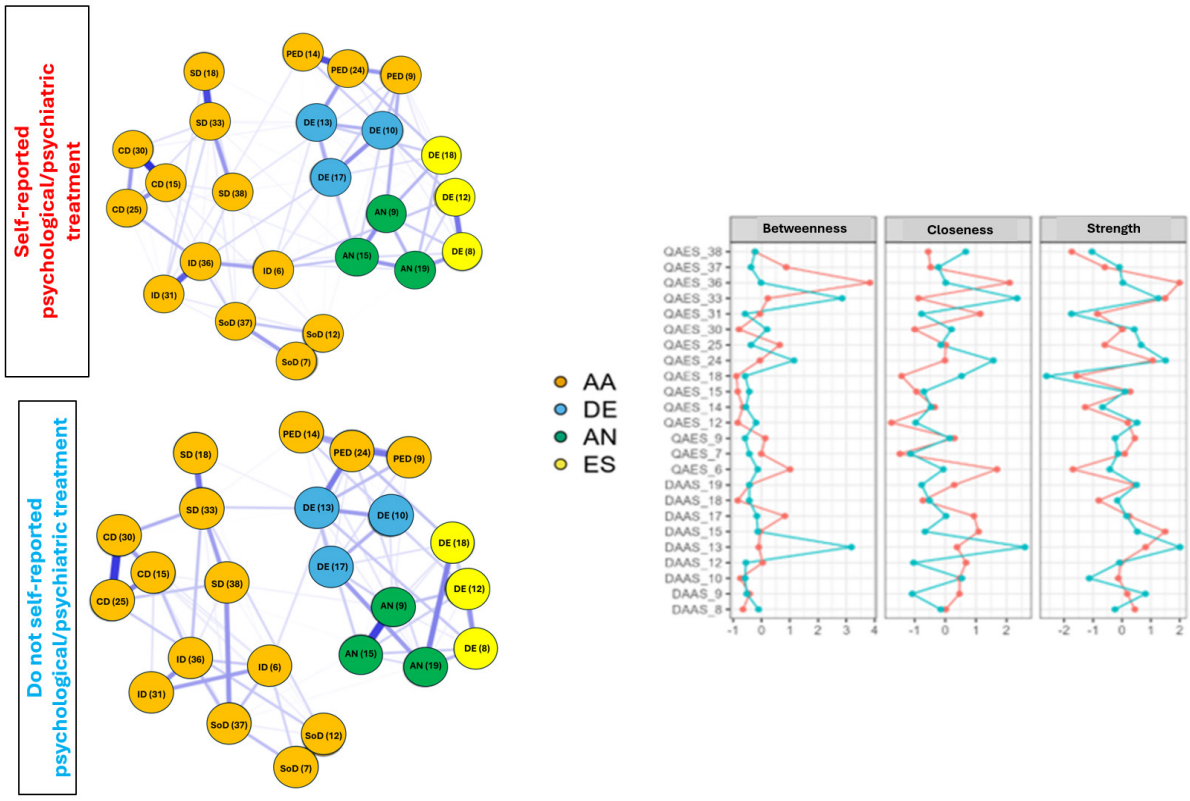
Finally, Figure 3 highlights the network containing the connections between the dimensions of academic adaptation and symptoms of depression, anxiety, and stress, considering self-reported psychological/psychiatric treatment. This network has 24 nodes for each category that make it up, with 101 edges ≠ zero and sparsity of .63 to perform the treatment, and 89 edges ≠ zero and sparsity of .68 to not perform it.

Among the students who indicated self-reported psychological/psychiatric treatment, the graph of centrality indices (see right corner of Figure 3) highlights the nodes with the most important degree of the network (strength), as well as with the highest index of proximity and intermediation, the psychopathological symptoms "feeling worthless" (item DASS_17) – depression, and "feeling of panic" (item DASS_15) – anxiety. The stress symptom "difficulty relaxing" (item DASS_12) stood out in the proximity and intermediation indicators, while the "feeling of always being nervous" (item DASS_8) was observed in the strength index. In academic adaptation, the item "satisfaction with learning support spaces at the university (library, computer and study rooms)" (item QAES_36) from the institutional dimension of academic adaptation was highlighted in the three centrality indices.

Still in the graph of centrality indexes reported in Figure 3, among the students who did not sel-

f-reported psychological/psychiatric treatment, depression stood out for strength, closeness, and intermediation through the symptom "feeling sad and discouraged" (item DASS_13). In the proximity and intermediation indices, the components of anxiety "feeling of panicking" (item DASS_15) and stress "feeling of always being nervous" (item DASS_8) stand out. The strength indicator highlights the importance of the symptoms of anxiety "concern about panicking and feeling ridiculous" (item DASS_9) and stress "difficulty relaxing" (item DASS_12). In the proximity and intermediation indicators, the dimension of academic adaptation to studies was highlighted through the item "making an effort in studies out of determination to achieve good results" (item QAES_33) and in strength the representative of the personal-emotional dimension "not feeling sad /downcast" (item QAES_24).

Figure 3 - *Graphs of Connections between Academic Adaptation and Psychopathological Symptoms and Strength, Centrality and Intermediation Indexes – Variable Self-Reported Psychological/Psychiatric Treatment*



Legend[1]. AA = dimensions of academic adaptation; CD = Carrer Dimension; PED = Personal-Emotional Dimension; SD = Studies Dimension; SoD = Social Dimension; ID = Institutional Dimension; DE = symptoms of depression; NA = symptoms of anxiety; ES = symptoms of stress.
Note[1]. Centrality indices graph: Red line = Self-reported psychological/psychiatric treatment; Blue line: Do not self-reported psychological/psychiatric treatment.
Note[2]. The description of each item that makes up the network is found in Table 1.

Discussion

This study's main objective was to analyze the relationships between the dimensions of academic adaptation and psychopathological symptoms in a sample of university students.

The result of the correlations highlights the importance of the personal-emotional dimension of academic adaptation as a protective potential for symptoms linked to depression, anxiety and stress, in scenarios involving self-reported mental disorder diagnosis and self-reported psychological/psychiatric treatment. This dimension is associated with self-esteem and feelings of physical and psychological well-being inherent to experiences in Higher Education (Araújo et al., 2014). The negative correlations between the dimension of academic adaptation to study with depression and stress indicate that supporting and encouraging the development of good study habits can minimize the effects of psychopathological symptoms, especially academic stress (Dávila et al., 2022). From this perspective, promoting academic adaptation in the career, social and institutional dimensions can minimize the incidence of symptoms linked to depression, based on greater integration of students (Sahão & Kienen, 2021).

In a general context, the connections obtained with the network analysis presented in Figure 1 highlight the study dimension of academic adaptation, considering the effort. This component is associated with the student's motivational quality, as well as academic performance (Ferraz et al., 2020). Therefore, strengthening it through interventions that consider study habits and the components of personal-emotional adaptation, another dimension present in the network, can minimize the incidence of psychopathological symptoms (Ferraz et al., 2020; Gökdağ & Kızıltepe, 2023; Silva et al., 2021). In this sense, the network connections signal and emphasize sadness and discouragement in the incidence of depression symptoms, the feeling of panic in anxiety and nervousness in stress. Paying attention to these indicators helps interventions aligned with student demands, especially for those in the academic adaptation phase, who are more likely to manifest these symptoms (APA, 2022; Denovan & Macaskill, 2021).

The results of comparisons of differences between groups demonstrate that it is important to consider the presence of a previous diagnosis of mental disorders for actions linked to academic adaptation in the personal-emotional dimension, since students who stated that they had it presented a higher prevalence of symptoms associated with depression, anxiety and stress. With the deepening of the connections exposed in the network represented by Figure 2, it was verified that the study dimension, with emphasis on effort, prevails, in addition to the career, in the aspect of valuing the course, with the potential to affect other dimensions of academic adaptation. The psychopathological symptoms that stand out in the network in the context of the self-reported mental disorder diagnosis are the same as those presented for the general sample. When viewing the results from the perspective of self-reported mental disorder diagnosis, the potential of the dimensions of academic study, personal-emotional and career adaptation for mental health and psychological well-being is observed, as highlighted by Vautero et al. (2020) and Zoltoswki and Teixeira (2020).

When considering the self-reported psychological/psychiatric treatment variable, there was no interaction with the dimensions of academic adaptation. It was also found that the incidence of psychopathological symptoms was higher among those who underwent psychological/psychiatric interventions. The connections analyzed in the network stratified by the self-reported psychological/psychiatric treatment variable displayed in Figure 3 show different relationships from the other networks evaluated here, helping to understand the result obtained with the group differentiations mentioned above. This condition highlights the importance of three dimensions of academic adaptation, namely, institutional, regarding satisfaction with learning support spaces, personal-emotional, in not feeling sad, and career, being on a suitable course with the skills. Personal-emotional adaptation also appears with thoughts linked to sadness as they occupy the shortest path and have the potential to more quickly affect other components of the network.

In psychopathological indicators, the network

that considered self-reported psychological/psychiatric treatment showed the shortest path and the ability to reach other elements of the network to be hopelessness as a symptom of depression, and the most important component to be sadness. Anxiety is added in addition to the racing heart due to its position and attribute of affecting the other components of the network, the concern of panicking/feeling ridiculed and the feeling of panic, which prevails as the most important node. In stress, unlike the two networks presented previously, the incidence of perceiving oneself as being too emotional is observed. These results retrace the scenario exposed by Sahão and Kienen (2021) in terms of the symptoms identified.

As final considerations, it is highlighted that the connections obtained here with network analysis must be properly contextualized for their generalization in other samples of university students, considering the compatibility of the level of academic adaptation and intensity of psychopathological symptoms, which must be evaluated in each context. This is because it is recognized that the present research starts from a specific situation, in which the sample comes mainly from higher education institutions, especially private ones, located in the Central-West region of Brazil. Therefore, it is suggested to expand the sample representation in terms of territorial coverage and type of institution to incorporate public educational institutions.

Advancement in research on the topic requires the application of other resources to verify the variables previous diagnosis for mental disorders and psychological/psychiatric treatment. The sample consisted mostly of women studying psychology. These characteristics may bias the results, given that exposure to information during psychology courses may or may not lead to misperceptions about one's mental health, even though each person's suffering is real. However, there is a possibility of misdiagnosis, given how precarious the various processes involved in a session can sometimes be to obtain a diagnosis.

The possible limitation of this research is recognized in being based only on student information, without using systematized means for this purpose, as is the case with a psychological assessment process. Self-reporting of whether one is receiving treatment is a more fragile piece of information. Furthermore, it is important to note that there may be differences between groups receiving psychological treatment and those receiving psychiatric treatment. Additionally, based on these results, it is suggested to investigate further these phenomena that permeate students' mental health during the academic adaptation process. This would incorporate into the analyses age group, stage of the undergraduate course, academic fields, and socioeconomic aspects, particularly concerning access to mental health services.

Studies like this one, on indicators of psychopathology using network analysis, have been widely carried out to help understand mental disorders, as they point to symptoms that stand out among others, and are also applicable here to better understand how academic adaptation works. Still in relation to the potential for generalizing the results, it is also worth considering that the intermediation index is the most reliable among the centrality indicators, but, in any case, caution is needed when interpreting the results (Leme et al., 2020). Therefore, investing in more studies of this nature is necessary to identify stability in these results.

References

American Psychiatric Association [APA]. (2022). *DSM-5-TR: Manual diagnóstico e estatístico de transtornos mentais* (Text Revised). Artmed.

Araújo, A., Almeida, L. S., Ferreira, J. A., Santos, A. A. A., Noronha, A. P., & Zanon, C. (2014). Questionário de Adaptação ao Ensino Superior (QAES): Construção e validação de um novo questionário. *Psicologia, Educação e Cultura, 18*(1), 131–145. https://www.researchgate.net/publication/268148778_Questionario_de_Adaptacao_ao_Ensino_Superior_QAES_Construcao_e_validacao_de_um_novo_questionario

Bandelow, B., Reitt, M., Röver, C., Michaelis, S., Görlich, Y., & Wedekind, D. (2015). Efficacy of treatments for anxiety disorders: a meta-analysis. *International Clinical Psychopharmacology*, *30*(4), 183–192. https://doi.org/10.1097/YIC.0000000000000078

Bayram, N., & Bilgel, N. (2008). The prevalence and socio-demographic correlations of depression, anxiety and stress among a group of university students. *Social Psychiatry and Psychiatric Epidemiology*, *43*, 667–672. https://doi.org/10.1007/s00127-008-0345-x

Bradley, R., Greene, J., Russ, E., Dutra, L., & Westen, D. (2005). A multidimensional meta-analysis of psychotherapy for PTSD. *American Journal of Psychiatry*, *162*(2), 214–227. https://doi.org/10.1176/appi.ajp.162.2.214

Bzuneck, J. A., & Boruchovitch, E. (2019). Motivação de estudantes no Ensino Superior: Como fortalecê-la? In L. S. Almeida (Ed.). *Estudantes do Ensino Superior: Desafios e oportunidades* (pp. 17-34). ADIPSIEDUC.

Cuijpers, P., Karyotaki, E., Weitz, E., Andersson, G., Hollon, S. D., & van Straten, A. (2014). The effects of psychotherapies for major depression in adults on remission, recovery and improvement: a meta-analysis. *Journal of Affective Disorders*, *159*, 118–126. https://doi.org/10.1016/j.jad.2014.02.026

Dávila, O. L. S., Vásquez, B. J. S., Flores, S. M. M., & Lira, L. A. N. (2022). Relación entre hábitos de estudio y estrés académico en los estudiantes universitarios del área de Ciencias Básicas de Lima (Perú). *Revista Ciencias de la Salud, 20*(1), 1–15. https://doi.org/10.12804/revistas.urosario.edu.co/revsalud/a.10716

Denovan, A., & Macaskill, A. (2021). Stress and subjective well-being among first year UK undergraduate students. *Journal of Happiness Studies, 15*(4), 427–441. http://orcid.org/0000-0001-9972-8699

Epskamp, S., Borsboom, D., & Fried, E. I. (2018). Estimating psychological networks and their accuracy: A tutorial paper. *Behavior Research Methods, 50*(1), 195–212. https://doi.org/10.3758/s13428-017-0862-1

Ferraz, A. S., Lima, T. H., & Santos, A. A. A. (2020). O papel da adaptação ao ensino superior na motivação para aprendizagem. *Educação: Teoria e Prática, 30*(63), e39. https://doi.org/10.18675/1981-8106.v30.n.63.s14692

Freitas, P. H. B., Meireles, A. L., Barroso, S. M., Bittencourt, M. B., Abreu, M. N. S., David, G. L., & Cardoso, C. S. (2022). Perfil de qualidade de vida e saúde mental de estudantes universitários da área da saúde. *Pesquisa, Sociedade e Desenvolvimento*, *11*(1), e35011125095. http://dx.doi.org/10.33448/rsd-v11i1.25095

Gökdağ, C., & Kızıltepe, R. (2023). Risk Factors in Depression and Anxiety Disorders from the Framework of Developmental Psychopathology. *Psikiyatride Güncel Yaklaşımlar-Current Approaches in Psychiatry, 15*(2), 257–274. https://doi.org/10.18863/pgy.1118163

Javaid, S. F., Hashim, I. J., Hashim, M. J., Stip, E., Samad, M. A., & Ahbabi, A. A. (2023). Epidemiologia dos transtornos de ansiedade: carga global e associações sociodemográficas. *Middle East Curr Psychiatry 30*(44). https://doi.org/10.1186/s43045-023-00315-3

Leme, D. E. C., Alves, E. V. C., Lemos, V. C. O., & Fattori, A. (2020). Análise de redes: uma abordagem de estatística multivariada para pesquisas em ciências da saúde. *Geriatrics, Gerontology and Aging, 14*(1), 43–51. http://dx.doi.org/10.5327/Z2447-212320201900073

Lewis, G., et al. (2019). Genome-wide association studies of major depression: methodological challenges and opportunities. *Biological Psychiatry, 86*(5), 369–377. http://dx.doi.org/10.1038/mp.2010.109

MacDougall, J. (2024). *A User's Guide for JASP*. JASP. https://jasp-stats.org/jasp-materials/#manuals

Milaneschi, Y., Lamers, F., Peyrot, W. J., Baune, B. T., Breen, G., Dehghan, A., Forstner, A. J., Grabe, H. J., Homuth, G., Kan, C., Lewis, C., Mullins, N., Nauck, M., Pistis, G., Preisig, M., Rivera, M., Rietschel, M., Streit, F., Strohmaier, J., Teumer, A., Auwera, S., Wray, N. R., Boomsma, D. I. & Penninx, B. W. (2017). Genetic association n of major depression with atypical features and obesity-related immunometabolic dysregulations. *JAMA Psychiatry, 74*(12), 1214–1225. http://dx.doi.org/10.1001/jamapsychiatry.2017.3016

Morais, M. G., Silva, I. M. A. O., Versiani, E. R., Silva, C. C. G., & Moura, A. S. (2021). Serviços de apoio à saúde mental do estudante de Medicina: uma revisão sistemática. *Revista Brasileira de Educação Médica, 45*(2), e071. https://doi.org/10.1590/1981-5271v45.2-20200428

Picton, C., Kahu, E. R., & Nelson, K. (2018). 'Hardworking, determined and happy': First-year students' understanding and experience of success. *Higher Education Research & Development, 37*(6), 1260–1273. http://dx.doi.org/10.1080/07294360.2018.1478803

Sahão, F. T., & Kienen, N. (2021). Adaptação e saúde mental do estudante universitário: revisão sistemática da literatura. *Psicologia Escolar e Educacional, 25,* e224238. http://dx.doi.org/10.1590/2175-35392021224238

Silva, A. C. S., Meireles, A. L., Cardoso, C. S., Barroso, S. M., Oliveira, D. C. R., Paula, W., Andrade, M. C. R., & Bandeira, M. B. (2021). Relação entre Vivência Acadêmica e Ansiedade em Estudantes Universitários. *Contextos Clínicos, 14*(2), 563–587. http://dx.doi.org/10.4013/ctc.2021.142.09

Soria, K. M., Torrez, M. A., Cady, C. L., & Snyder, A. (2019). First-year college students' perceptions of friendships, relationships, and self-identity. *Journal of College Student Development, 60*(3), 280–297.

Souza, K. C. B, Lima, S. F. B, Avelaneda, E. F., & Garcia, J. M. (2022). A saúde mental dos profissionais da saúde. *Revista Ciências da FAP*, *5*, 54–67. https://revistas.fadap.br/ciencias/article/view/28

Vautero, J., Taveira, M. C., & Silva, A. D. (2020). A influência da família na tomada de decisões de carreira: uma revisão de literatura. *Revista Brasileira de Orientação Profissional, 21*(1), 17–28. http://dx.doi.org/10.26707/1984-7270/2020v21n103

Vignola, R. C. B., & Tucci, A. M. (2014). Adaptation and validation of the depression, anxiety and stress scale (DASS) to Brazilian Portuguese. *Journal of Affective Disorders, 155*, 104—109. https://doi.org/10.1016/j.jad.2013.10.031

Zoltoswki, A. P. C., & Teixeira, M. A. P. (2020). Desenvolvimento da autorregulação da aprendizagem em estudantes universitários: Um estudo qualitativo. *Psicologia em Estudo*, *25,* e47501. https://doi.org/10.4025/psicolestud.v25i0.47501

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