



Self-Efficacy and Social Skills: Mediators of the Relationship between Stress and Academic Adaptation

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Abstract: Admission to the university is marked by demands for academic, personal and emotional performance, leading to stressful experiences. This study aimed to compare the variables stress, self-efficacy, social skills and academic adaptation among first-year and third-year students and to determine whether self-efficacy and social skills can mediate the relationship between stress and academic adaptation. The following instruments were used: Higher Education Adaptation Questionnaire, Academic Stress Scale, Higher Education Self-efficacy Scale, and Social Skills Questionnaire. A total of 606 university students participated. The t-test and mediation analyses were performed. As a result, third-year students presented statistically higher levels of stress than first-year students. Self-efficacy and social skills were able to mediate the relationship between stress and academic adaptation. The study was able to contribute to understanding how stress impacts academic adaptation.

Keywords: higher education, stress, self-efficacy, social skills

Autoeficácia e Habilidades Sociais: Mediadores da Relação entre Estresse e Adaptação Acadêmica

Resumo: O ingresso na universidade é marcado por exigências de desempenho acadêmico, pessoal e emocional, propiciando experiências estressoras. Este estudo teve como objetivo comparar estresse, autoeficácia, habilidades sociais e adaptação acadêmica entre estudantes do primeiro e do terceiro período e verificar se a autoeficácia e as habilidades sociais podem mediar a relação do estresse com a adaptação acadêmica. Participaram do estudo 606 universitários. Foram utilizados os instrumentos Questionário de Adaptação ao Ensino Superior, Escala de Estresse Acadêmico, Escala de Autoeficácia na Formação Superior e Questionário de Habilidades Sociais. Foi realizado teste *t* e análises de mediação. Como resultados, alunos do terceiro período apresentaram níveis estatisticamente maiores de estresse do que os de primeiro. A autoeficácia e as habilidades sociais mediarão a relação do estresse com a adaptação acadêmica. O estudo foi capaz de contribuir na compreensão de como o estresse impacta a adaptação acadêmica.

Palavras-chave: ensino superior, stress, autoeficácia, habilidades sociais

Autoeficacia y Habilidades Sociales: Mediadores de la Relación entre Estrés y Adaptación Académica

Resumen: El ingreso a la universidad está marcado por diferentes exigencias de desempeño. El objetivo fue comparar el estrés, la autoeficacia, las habilidades sociales y la adaptación académica entre los estudiantes del primer y tercer período y verificar si la autoeficacia y las habilidades sociales pueden mediar la relación del estrés con la adaptación académica. Se utilizaron los instrumentos Cuestionario de Adaptación a la Educación Superior, Escala de Estrés Académico, Escala de Autoeficacia en la Formación Superior y Cuestionario de Habilidades Sociales. Participaron del estudio 606 universitarios. Fue realizado teste *t* y análisis de mediación. Los estudiantes del tercer período presentaron niveles estadísticamente mayores de estrés que los de primero. La autoeficacia y las habilidades sociales mediaron la relación del estrés con la adaptación académica. El estudio fue capaz de contribuir en la comprensión de cómo el estrés impacta la adaptación académica.

Palabras clave: educación superior, estrés, autoeficacia, habilidades sociales

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Academic adaptation is the process university students experience when admitted to Higher Education and is marked by performance requirements, adjustment to new rules, and new forms of social interaction. Students are expected to integrate their emotional, social and vocational competencies, balancing external demands and personal needs. In addition, it is important that they feel capable and

adapt to new ways of relating, new methods of studying and managing time, as well as dealing with concerns about their future career (Nogueira-Martins & Nogueira-Martins, 2018).

However, when there is an inconsistency between the preparation of these students and the complexity of the challenges described, students may feel academically dissatisfied, leading to disinvestment in studies, broken expectations of academic fulfillment, and, ultimately, resulting in students dropping out of their educational programs and institutions (Araújo et al., 2014). Understanding higher education dropout as harmful to both society and students, it is important to trace factors related to academic adaptation and the potential reasons that lead students to dropout, aiming at comprehending them and developing strategies that prevent dropout.

The university is a setting that can be more conducive to change compared to other social institutions, and with a diversity of experiences that challenge values, attitudes and convictions, while providing greater openness to new attitudes and behaviors (Araújo et al., 2014; Carmo & Polydoro, 2010). Thus, it can be said that the expected trend is that, given the possibility of self-development, students feel more adapted to the academic context over time. Farias and Almeida (2020) also point out that students usually create expectations about their entry into Higher Education, leading to an impact on other factors relevant to the adaptation process, such as income, academic engagement and satisfaction, especially in the early years.

Soares et al. (2019), by examining the differences between students in the first three years in relation to the variables related to academic adaptation, concluded that first-year students seem to have a less realistic understanding of the academic experience. However, over time students seem to develop other skills that facilitate their process in the academic setting, such as coping or self-affirmation skills with risk and greater determination in career choice. Thus, it is also possible that higher levels of adaptation to the university are found in incoming students, since they have a more idealized view of the academic milieu.

The study by Casanova et al. (2020), with the objective of analyzing the difficulties anticipated and felt by newcomers to Higher Education, found that students can enter Higher Education anticipating difficulties related to the institution and to interpersonal relationships, overestimating the difficulties they will actually encounter, compared to the self-assessment made weeks after entering the university. The authors also point out that, after a few weeks of classes, learning difficulties may be higher than expected by students before their entrance. In a short time, students' self-perceptions of their adaptation skills can vary significantly.

The variation observed in the university student's perception of their own skills can be explained by the fact that academic adaptation can be understood as a complex and multidimensional process that involves several personal and contextual factors. As pointed out by Sahão and Kienen (2020), the less sequenced curricular activities and with less support from textbooks or manuals (materials that were

common in the educational path prior to the University), less structured schedules and the more intense pace of study are some of the characteristics of the academic context. Additionally, the heterogeneity of people with whom to relate, the restructuring of a support network, among other factors, are changes that represent stressors for students (Sahão & Kienen, 2020).

The difficulties in dealing with academic adaptation, especially in the early years at the University, are related to the stress rates that individuals experience in this situation (Sahão & Kienen, 2020). According to Rocha et al. (2019), stress in the university setting occurs due to requirements that exceed students' resources. The authors say that there are three possibilities of cognitive assessments for students: (1) the distinction between what constitutes a threat or not based on personal beliefs, self-efficacy and objective, in addition to situational factors; (2) coping with the condition or repression of the aversive impact, which occurs when subjects have their own means of coping, involving their skills; and (3) subjects understand and reinterpret stressful events, restructuring events that were previously threatening as possibly benign (Rocha et al., 2019).

Given the possible responses to common stressful situations in the academic environment, it is pertinent to investigate other variables that may have an impact on the relationship between stress and academic adaptation, since considering this alternative implies enabling new understandings about university adjustment. One of these variables may be the belief of self-efficacy, a fundamental concept that is a component of Albert Bandura's Social Cognitive Theory (Bandura, 1997). Self-efficacy is a personal deduction, resulting from several personal and environmental factors that result in the subject's judgment of their own abilities to perform actions necessary to achieve a certain performance considered satisfactory (Bandura, 1997). In the university context, it translates as the student's reading of their own abilities to acquire, apply and expand the content learned in the program, in addition to setting goals, planning careers, regulating actions in the learning process, meeting deadlines, among other activities inherent to the academic setting (Polydoro & Guerreiro-Casanova, 2010).

Lopes and Meurer (2019) state that some investigations adopt the Social Cognitive Theory in order to test the ability to mediate self-efficacy beliefs in the relationships between environmental, behavioral and human-learning factors. The Social Cognitive Theory assumes that external factors, such as social conditions and educational structures, do not affect human behavior directly, but rather through beliefs of self-efficacy; hence, these are also likely to be related to academic behavior (Lopes & Meurer, 2019). Thus, assuming that personal beliefs and self-efficacy may play a role in distinguishing what constitutes a stressful threat in the academic setting (Rocha et al., 2019), it is possible that they play a mediating role in the relationship between stress and academic adaptation.

Self-efficacy beliefs can be constructed and reinforced based on different sources, which include the subject's direct

experiences, observation of peers, social persuasions, and emotional states (Bandura, 1997). Thus, an individual's levels of perceived self-efficacy do not remain static, being reinforced or not with the accumulation of experiences. It is expected that over time in the program, students can develop greater identification with the program through the accumulation of experiences, thus increasing the sense of competence and self-efficacy.

Dominguez-Lara and Fernández-Arata (2019), when comparing Psychology students in different years of the program, concluded that students at the end of the program have higher levels of self-efficacy compared to incoming students. Rosinha and Andrade (2020), when analyzing possible predictors of academic success in a military higher education institution, in a longitudinal study, pointed out that self-efficacy levels increased in the second and third year, thus self-efficacy could be considered a predictor of academic success.

Even taking into consideration the student's belief of their own abilities, the behavior performed by the student can affect their decisions and determine the amount of time spent and the perseverance in a given goal (Lopes & Meurer, 2019). While self-efficacy beliefs are involved in motivational processes, they are not directly related to individual skills themselves, but to the individual's belief of their capabilities; social skills seem to be involved in academic behavior, considering that the deficit in communication skills, civility, assertiveness and expression of positive feelings can hinder the process of adaptation to the university setting (Soares & Del Prette, 2015).

Social skills can be conceptualized as social behaviors that are valued in a given cultural context, yielding favorable results for the individual and their environment. They can be learned, being important to deal in a socially competent manner with interpersonal interactions (Del Prette & Del Prette, 2010). In addition to being considered adaptive behaviors, they can also be considered, in most cases, factors that transform the setting, mainly through more specific skills, such as assertiveness or leadership capacity (Del Prette & Del Prette, 2010).

During the academic adaptation process, students are expected to learn academic and social behaviors through the observation of colleagues, teachers and through the consequences of their own behaviors. It is assumed that while the university setting requires social skills, it also establishes demands in which they are necessary and can be enhanced; thus, a more elaborate prior repertoire can facilitate the academic adaptation process (Soares & Del Prette, 2015).

Thus, social skills can be enhanced and training based on academic situations can assist students in acquiring better proficiency in social skills (Nazar et al., 2020). However, in standard educational contexts, students' social skills do not necessarily seem to improve over the first university years, which may imply low encouragement or guidance from institutions, with significant variations only being observed when comparing first-year students with last-year students (Bauth et al., 2019), since the development of this repertoire involves very different contexts.

The research of how motivational and behavioral components can be related to the academic adaptation of students is justified by the need to improve the resources that can facilitate this adjustment, mitigating the possible psychological suffering of university students and mainly avoiding the dropout of these students, which causes damage to personal, social and institutional development. Given the above, this study aimed to compare stress, self-efficacy, social skills and academic adaptation among first-year and third-year students and to determine whether self-efficacy and social skills can mediate the relationship between stress and academic adaptation.

Method

Participants

A total of 606 university students in the first year (52.5% of the sample) and third year (47.5%) from several higher education institutions participated in the study. As an inclusion criterion, students should be enrolled in a Higher Education institution, attending the first or third year of any undergraduate program, in order to collect data more consistent with the critical period for academic adaptation. As an exclusion criterion, participants could not be students of Distance Learning programs. Thus, all students should be enrolled in an in-person undergraduate program, even if they were in remote education due to the COVID-19 pandemic. The students' mean age was 23.3 years ($SD = 0.3$) and 73.2% were female, 25.9% were male, and 0.9% preferred not to answer. Regarding the type of institution, 81.2% of the respondents were from public universities and 18.8% from private universities.

Instruments

The *Higher Education Adaptation Questionnaire* (QAES) (Araújo et al., 2014) has 40 items and uses a Likert scale, ranging from strongly disagree to strongly agree. The items are divided into five dimensions: Career Planning (F1 – eight items) ($\alpha = 0.88$), Social Adaptation (F2 – eight items) ($\alpha = 0.86$), Personal-Emotional Adaptation (F3 – eight items) ($\alpha = 0.74$), Study Adaptation (F4 – eight items) ($\alpha = 0.75$), and Institution Adaptation (F5 – eight items) ($\alpha = 0.81$). The *Cronbach's Alpha* of the Questionnaire for the sample studied in the present study was 0.90.

The *Higher Education Self-Efficacy Scale* (AEFS) (Polydoro & Guerreiro-Casanova, 2010) consists of 34 items in a 10-point Likert format, ranging from little capable to very capable. The items are divided into five factors: Academic self-efficacy (F1 - nine items) ($\alpha = 0.88$), Self-efficacy in education regulation (F2 - seven items) ($\alpha = 0.87$), Self-efficacy in proactive actions (F3 - seven items) ($\alpha = 0.85$), Self-efficacy in social interaction (F4 - seven items) ($\alpha = 0.80$) and Self-efficacy in academic management (F5 - four items) ($\alpha = 0.80$). The *Cronbach's Alpha* of the Scale for the sample studied in the present study was 0.96.

The *Social Skills Questionnaire* (CHASO) (Caballo & Salazar, 2017) is composed of 40 items on a Likert scale, ranging from “very little characteristic of me” to “very characteristic of me.” The items are divided into 10 factors, each of which corresponds to a type of skill: Interacting with strangers (four items) ($\alpha=0.79$), Expressing positive feelings (four items) ($\alpha=0.81$), Facing criticism (four items) ($\alpha=0.78$), Interacting with people who attract me (four items) ($\alpha=0.90$), Maintaining peace of mind in the face of criticism (four items) ($\alpha=0.68$), Speaking in public or interacting with superiors (four items) ($\alpha=0.80$), Dealing with situations of exposure to ridicule (four items) ($\alpha=0.64$), Defending one’s rights (four items) ($\alpha=0.72$), Apologizing (four items) ($\alpha=0.81$), and Denying requests (four items) ($\alpha=0.71$). The *Cronbach’s Alpha* of the Questionnaire for the sample studied in the present study was 0.90.

The *Academic Stress Scale* (EEA) (Freires et al., 2018) is composed of 13 items on a Likert scale that ranges between strongly disagree and strongly agree. The scale is unifactorial ($\alpha=0.88$). All items are statements about how the respondent may feel on a daily basis in relation to the academic context. The *Cronbach’s Alpha* of the Scale for the sample studied in the present study was 0.86.

All instruments are available in full on the Internet, with the exception of CHASO in Portuguese (Caballo & Salazar, 2017). The latter was made available by the main author in its Portuguese version, whose authorization was received for application in the sample. For the instruments whose validation article was not carried out in Brazil, QAES and CHASO, the *Cronbach’s Alpha* calculated based on the study participants indicates reliability of the instruments for the sample used.

Procedures

Data collection. The questionnaires were applied *online* through the Google Forms platform. The scales were publicized to university students from Brazilian Higher Education Institutions, who were asked to answer them if they felt comfortable contributing to the research. Access to the instruments was preceded by an explanation of the research objectives and the risks involved. The application of the scales was also preceded by the Informed Consent Form (ICF) and the Sociodemographic Data Questionnaire in order to identify information that characterized the sample. All data were collected during the COVID-19 pandemic, between July 2021 and December 2021.

Data analysis. The data were analyzed using the SPSS 26 program for Windows. Considering that the hypothesis of data normality was accepted, parametric tests were performed that assume the normal distribution of the sample (Tabachnick & Fidell, 2019). Pearson’s correlation was used to evaluate the correlation between the variables collected considering a significance level of 5% ($\alpha=0.05$) (*two-tailed*). *Student’s t-test* was used to compare first-year students and third-year students. *Bootstrapping* procedures

(1000 resamples; 95% CI BCa) were performed to correct deviations from the normal distribution of the sample and provide greater reliability of the results (Haukoos & Lewis, 2005). Simple mediation analyses were performed, based on logistic regression, using the syntax and macro for SPSS developed by Hayes (2013). For mediation to be proven, the indirect effect must be significant. The indirect effect was tested by *Bootstrapping* (1000 resamples). The use of *bootstrapping* requires a smaller sample and the results for the corrected bias show the analysis is consistent under different conditions, so the number of participants was adequate for the proposed analysis (Fritz & MacKinnon, 2007).

Ethical Considerations

The project was approved by the Research Ethics Committee of the State University of Rio de Janeiro, CAAE No. 42548720.3.0000.5282, Opinion 4.821.938. All participants clicked to accept the Informed Consent Form.

Results

Student’s t-test was performed for independent samples in order to compare the variables academic adaptation, stress, self-efficacy and social skills between first-year and third-year students. Table 1 presents the results.

The results showed no statistically significant difference between the groups for the variables academic adaptation, self-efficacy and social skills. For the variable stress, third-year students had statistically higher scores than first-year students. The effect of the difference, however, can be considered irrelevant (*Cohen’s d* = 0.18) (Cohen, 1988).

To test the mediation power of the variables, analyses based on logistic regression were performed. The results are shown in Table 2.

For the first stage, in which the objective was to test the indirect effect of self-efficacy on the impact of stress on academic adaptation, it can be observed that self-efficacy can play a mediating role in the relationship between stress and academic adaptation. It can be said that the effect of stress on academic adaptation with the presence of the mediator was lower than without it, that is, part of the impact (37%) of the independent variable stress on the dependent variable academic adaptation can be explained by the mediator variable self-efficacy. It is also observed that the indirect effect was significant ($p < 0.001$).

At a second time, we tested the mediating power of social skills on the impact of stress on academic adaptation. It is observed that social skills can mediate the effect of stress on academic adaptation. The presence of the mediating variable social skills reduced the impact of stress on academic adaptation and had a significant indirect effect ($p < 0.001$). The mediated effect, in this case, was 9%, indicating a lower mediating power than self-efficacy in the relationship between stress and academic adaptation.

Table 1

Results of the test of difference in levels of academic adaptation, stress, self-efficacy and social skills between first-year and third-year students

		Scores		<i>t</i> -test statistics (Bootstrapping)					
		<i>M</i>	<i>SD</i>	<i>t</i>	<i>Gl</i>	<i>p</i> -value	Difference from Mean	Difference from Mean CI (95%)	
								Lower limit	Upper limit
Academic Adaptation	First year	135.08	20.03	0.75	604	0.45	1,21		
	Third year	133.87	19.40						
Stress	First year	36.55	9.53	-2.20	604	0.02*	-1,73	-3.27	-0.18
	Third year	38.28	9.80						
Self-efficacy	First year	262.71	48.96	0.11	604	0.91	0,42	-6.95	7.79
	Third year	262.29	42.85						
Social skills	First year	126.22	22.52	-0.05	604	0.95	-0,90	-3.59	3.39
	Third year	126.31	21.23						

Note. * = $p < 0.05$.

Table 2

Results of the mediation tests

	Effect without mediator	Effect with mediator	Indirect effect	Mediated effect
Impact of stress on academic adaptation with mediation of self-efficacy	-1.16 (0.001)*	-0.74 (0.001)*	-0.42 (0.001)*	37%
Impact of stress on academic adaptation with mediation of social skills	-1.16 (0.001)*	-1.06 (0.001)*	-0.10 (0.001)*	9%
Impact of self-efficacy on academic adaptation with mediation of social skills	0.28 (0.001)*	0.27 (0.001)*	0.01 (0.06)	1%
Impact of social skills on academic adaptation with mediation of self-efficacy	0.35 (0.001)*	0.05 (0.06)	0.29 (0.001)*	86%

Note. * = $p < 0.001$.

However, social skills were not able to mediate the impact of self-efficacy on academic adaptation. The indirect effect, in this case, cannot be considered significant ($p > 0.05$). Only 1% of the impact of self-efficacy on academic adaptation can be explained by social skills. However, it is concluded that self-efficacy has mediating power on the impact of social skills on academic adaptation.

Finally, it can be understood that the effect of social skills on academic adaptation was eliminated with the presence of the mediating variable self-efficacy. The mediated effect was 86% and it can be said that the significance of the impact of social skills on academic adaptation can be entirely explained by self-efficacy, since

the indirect effect was significant ($p < 0.001$) while the effect without the presence of the mediator stopped being significant ($p > 0.05$) (Hayes, 2013).

Discussion

The results indicate new directions regarding the assessment of the variables academic adaptation, stress, self-efficacy, and social skills in the studied group. When the groups of first-year and third-year students were observed, no significant difference was observed between the variables, except for the variable stress.

With regard to academic adaptation, it can be said that more consistent differences are often observed in the literature when first-year and last-year students are compared (Carmo & Polydoro, 2010), indicating that three years may not be enough for there to be a significant adjustment. In addition, it is often observed that students in the first years have a series of expectations that result in a less realistic view of the university setting, which may be a justification for third-year students not necessarily being better adapted (Soares et al., 2019). These results can also corroborate the study of Casanova et al. (2020) regarding the anticipation of difficulties of students entering Higher Education, in which the authors point out that after a few weeks of classes, learning difficulties may be higher than students expected.

It should also be considered that the students' experience in remote teaching due to the COVID-19 pandemic may have contributed to a more obscure contact with the academic experience than in the regular in-person period. Therefore, it is possible that, contrary to expectation, the students did not have increased self-efficacy scores due to the lack of engagement in practical activities that fostered their sense of competence.

The variable social skills, in turn, is essential to the academic adaptation process and can be acquired by students (Soares & Del Prette, 2015). However, the educational context does not always provide the necessary contingencies for its acquisition, since it is not common to encourage studying or training Social Skills, with a gap where there should be greater valorization of behaviors that promote greater social competence in the academic setting. Still reflecting the low investment in these skills, teachers or employees also do not necessarily have a socially skilled repertoire (Nazar et al., 2020). Thus, their relevance to university adjustment can be affirmed, but it is shown the need to invest in the acquisition of these skills as well as in the development of a more elaborate repertoire within institutions. However, it is worth considering that it is also possible that there is no difference in the levels of self-efficacy and social skills because the period of three initial years is not enough for there to be a development in these variables.

Stress was the only variable that presented a statistically significant difference when comparing groups of first-year and third-year students. It is observed in the literature that university students tend to report a higher level of stress in situations of performance demands or task overload, but such data are not associated with the year of training in which the student is (Sahão & Kienen, 2020). However, when re-examining studies that point out that incoming students commonly present an unrealistic or imaginative view of Higher Education (Casanova et al., 2020; Soares et al., 2019), the result obtained is justified, inferring that the higher levels of stress in third-year students may be associated with the more realistic contact with academic demands compared to first-year students. Moreover, this understanding is consistent with the idea that stress levels may be habitually associated with test periods, which incoming students have often not yet experienced, which contributes to lower levels of stress.

When observing the results for the mediating roles of self-efficacy and social skills in the impact of stress on academic adaptation, we finally obtained two main points that should be noted: (1) self-efficacy and social skills were mediators of this impact; (2) self-efficacy fully mediated the impact of social skills on academic adaptation. Regarding the first point, it can be said that the results are in line with what Rocha et al. (2019) state as possibilities of possible cognitive assessments for students: students may be able to reassess what they understand as a threat when they take into account their sense of self-efficacy and may be able to cope with a stress condition by relying on their own skills.

Initially, it was assumed in the present study that socially skillful behaviors could mediate the impact of self-efficacy on academic adaptation, which was not confirmed. However, considering the notion that, according to Albert Bandura's Social Cognitive Theory (Bandura, 1997), external factors do not affect behavior directly, but rather through self-efficacy beliefs (Lopes & Meurer, 2019), self-efficacy can present as mediator not only of the impact of stress on academic adaptation, but also of the impact of social skills on academic adaptation, indicating the importance of this variable in the process.

The initial objective of this study was to compare stress, self-efficacy, social skills and academic adaptation among first-year and third-year students and to determine whether self-efficacy and social skills can mediate the relationship between stress and academic adaptation. It was observed, mainly, the confirmation of the mediating role that self-efficacy beliefs and social skills have on the impact of stress on academic adaptation. Furthermore, it was observed the importance of self-efficacy in the impact of social skills on academic adaptation in the studied sample.

Thus, it is expected that it will be possible to develop practical interventions aimed at the discussion and possibly elaboration of these variables. In addition to social skills being trainable, self-efficacy beliefs can be strengthened through different sources, which may provide clues to relevant points of discussion. Also considering the population of incoming students, earlier interventions, with high school students, emerge as a possibility.

As limitations of the study, there is the majority participation of students from public institutions and the data collection adapted to the online format due to the pandemic of the new coronavirus. With regard to the last point, this research presented as a gap the absence of possible considerations of students regarding remote teaching in programs that are regularly in person and the implications thereof.

Finally, further research is suggested in order to investigate the relationship between the variables and between other possible cognitive or behavioral factors that are relevant to the academic adaptation process. Investigation of other models of interaction between these variables is also encouraged, aiming to fill gaps in the understanding of adaptation to the University and to bring to light ways to make this process healthier and more functional.

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