
SOCIAL SUPPORT AND STUDY ENGAGEMENT: EFFECTS ON ACADEMIC PERFORMANCE OF BUSINESS STUDENTS

Anderson Betti Frare¹
Ilse Maria Beuren²
Jorge Katsumi Niyama³

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ABSTRACT

The aim of the study is to analyze the effects of social support (professors and peers) and study engagement on the academic performance of undergraduate business students. A survey was carried out with undergraduate students from the Business Administration and Accounting Sciences courses of a federal higher education institution (HEI) in Brazil, resulting in a final sample of 204 students. The hypotheses were tested with structural equation modeling. Additionally, a fuzzy-set qualitative comparative analysis was used. The results suggest positive effects of the support of professors and peers on study engagement and, consequently, on academic performance. Study engagement promotes full (partial) mediation between professor support (peer support) and academic performance. Complementary findings indicate that students have up to three solutions to achieve high academic performance. The solution that covers most students reveals that regardless of the course, age or gender, the presence of peer support and study engagement are essential, while professor support is complementary. Evidence is added on the determinants of academic performance of students in the business area, in addition to providing evidence of the mediating role that study engagement can play between professor and peer support and academic performance. It also provides insights and input for students, professors, directors of business colleges, universities, decision makers and society in general. Essentially, determinants of study engagement and better levels of student performance are presented.

¹ PhD in Accounting from the Universidade Federal de Santa Catarina (Federal University of Santa Catarina) - UFSC, Professor of the Department of Accounting at the Universidade Federal do Rio de Janeiro (Federal University of Rio de Janeiro) – UFRJ, Av. Pasteur, 250 - Urca, Rio de Janeiro - RJ, 21941-901, anderson_betti_frare@hotmail.com, +55 48 3721-3891.
<https://orcid.org/0000-0002-4602-7394>

² PhD in Controllershship and Accounting from the School of Economics, Business and Accounting of the Universidade de São Paulo (University of São Paulo) - USP, Professor of the Postgraduate Program in Accounting at the Federal University of Santa Catarina - UFSC, Campus Universitário Reitor João David Ferreira Lima, s/nº, Trindade – Florianópolis – SC, 88040-970, ilse.beuren@gmail.com, +55 48 3721-3891
<https://orcid.org/0000-0003-4007-6408>

³ PhD in Controllershship and Accounting from USP, Professor of the Postgraduate Program in Accounting Sciences at the Universidade de Brasília (University of Brasília) – UnB, Campus Universitário Darcy Ribeiro, s/nº, Brasília – DF, 70910-900, jkatsumi@unb.br, +55 61 3107-0812
<https://orcid.org/0000-0002-8738-3838>

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SUORTE SOCIAL E ENGAJAMENTO NOS ESTUDOS: EFEITOS NO DESEMPENHO ACADÊMICO DE ESTUDANTES DA ÁREA DE NEGÓCIOS

RESUMO

O objetivo do estudo é analisar os efeitos do suporte social (professores e colegas) e do engajamento nos estudos no desempenho acadêmico de estudantes de graduação da área de negócios. Uma *survey* foi realizada com estudantes de graduação dos cursos de Administração e Ciências Contábeis de uma instituição de ensino superior (IES) federal do Brasil resultando em uma amostra final de 204 estudantes. As hipóteses foram testadas com modelagem de equações estruturais. Adicionalmente, fez-se uso da análise qualitativa comparativa *fuzzy-set*. Os resultados sugerem efeitos positivos do suporte de professores e de colegas no engajamento nos estudos e, conseqüentemente, no desempenho acadêmico. O engajamento nos estudos promove mediação total (parcial) entre o suporte de professores (suporte de colegas) e desempenho acadêmico. Os achados complementares apontam que os estudantes apresentam até três soluções para alcançar alto desempenho acadêmico. A solução que contempla a maior parte dos discentes revela que indiferente do curso, idade ou gênero, a presença de suporte de colegas e engajamento nos estudos são essenciais, enquanto o suporte de professores é complementar. São agregadas evidências sobre determinantes do desempenho acadêmico de discentes da área de negócios, além de fornecer indícios do papel mediador que o engajamento nos estudos pode assumir entre o suporte de professores e de colegas com o desempenho acadêmico. Também se proporciona insights e subsídios para estudantes, professores, diretores de faculdades de negócios, universidades, tomadores de decisões e sociedade em geral. Essencialmente, são apresentados determinantes do engajamento nos estudos e de melhores níveis de desempenho discente.

Palavras-Chave: Suporte Social, Suporte de Professores, Suporte de Colegas, Engajamento nos Estudos, Desempenho Acadêmico.

1 INTRODUCTION

Social support comprises relationships in which a party receives encouragement and assistance from their superiors or peers (Park et al., 2020). In the educational context, support from superiors refers to teachers, while peer support refers to colleagues (Wilcox et al., 2013). This social support is relevant for students to show engagement in their studies, which consists of dedication, absorption, and vigor to continue academic activities (Loscalzo & Giannini, 2019; Schaufeli et al., 2002). Students engaged in studying tend to achieve higher levels of academic performance (Siu et al., 2021; Slåtten et al., 2021; Vîrgă et al., 2020).

Academic performance is the subject of several studies in business higher education (Ahinful et al., 2019; Almutawa & Suwaidan, 2020; Booth et al., 1999; Byrne & Flood, 2008). In addition to this performance being a relevant metric for students, courses, and institutions (Allen et al., 2008; Chia, 2005), it is associated with several positive factors, such as employability in the labor market (Pinto & Ramalheira, 2017). However, new evidence is necessary to understand which elements can promote higher levels of academic performance, as it is a complex process and outcome, composed of multifaceted determinants and variables (Beatson et al., 2020).

In the Brazilian context, evidence for the determinants of higher education academic performance in business is more limited. The studies focused on the analysis of other variables, such as learning style (Silva & Oliveira Neto, 2010), class attendance, discipline characteristics (Araújo et al., 2013), educational technologies (Quintana & Afonso, 2018), contingency factors (Amaro & Beuren, 2018), gender (Nasu, 2020), book reading (Mallmann et al., 2021; Nasu, 2018), learning cycle (Melo et al., 2021), in addition to student demographic variables and faculty characteristics (Miranda et al., 2015). Therefore, investigating perceived support from professors and peers and study engagement seems timely.

Engagement in studies plays a facilitating role between various student behaviors and results, such as between psychological capital (Vîrgă et al., 2020), supportive study climate (Slåtten et al., 2021), psychological capital and social support (Siu et al., 2021), which impact academic performance. Although Siu et al. (2021) analyzed the mediating role of study engagement between social support and academic performance, the effects of professor and peer support were analyzed jointly, which does not allow an understanding of the role of each source of support. In addition, the sample is exclusively primary school students from an Asian country. This encourages us to explore the role of each of these sources of support, professors and peers, for a sample of business higher education.

This article addresses these research gaps, providing a comprehensive view of professor and peer support, study engagement, and their effects on academic performance. This study aims to analyze the effects of social support (from professors and peers) and study engagement on the academic performance of undergraduate business students. To this end, we conducted a survey with students of undergraduate courses in Business Administration and Accounting Sciences of a federal higher education institution (HEI) in Brazil, and the sample was 204 students. Hypotheses were tested via Partial Least Squares Structural Equation Modeling (PLS-SEM). In addition, we applied the fuzzy-set Qualitative Comparative Analysis (fsQCA) technique to the data.

The PLS-SEM results reveal that social support (professors and peers) instigates study engagement, and that this indirectly results in higher levels of academic performance. The complementary findings of the fsQCA suggest that, for these students to achieve high academic performance, three solutions (pathways) are possible and lead to the same outcome. The solution covering the largest share of students indicates that peer support and study engagement are essential, and professor support is complementary, regardless of course, age, or

gender. Moreover, in all of these three solutions that lead to high performance, peer support is indispensable.

The results of the study provide contributions to the literature and practice. First, there is new evidence regarding the determinants of academic performance of business students in the Brazilian context. In addition, there is evidence of the mediating role that study engagement can play between professor support, peer support, and academic performance. On the other hand, the results provide insights and information for students, professors, heads of business schools, universities, educational decision-makers, and society in general.

This article has five subsections. The first one revealed introductory aspects, while the next section contemplates the literature review and shows the five hypotheses developed. The third section covers the methodological pathway of this study, followed by the analysis and discussion of the results. The last section presents the conclusions, implications, and contributions, as well as the limitations perceived in the study and the possible opportunities arising from these limiting factors.

2 THEORETICAL BACKGROUND

2.1 Social support and study engagement

Social support consists of relationships between individuals in which one party receives support and encouragement from superiors and peers for a certain purpose (Park et al., 2020). This social support represents an individual's perception of how much they are helped and are part of a social network (Wills, 1991), in addition to referring to the perception of the adequacy of social ties, such as the appreciation and respect received (Eagle et al., 2019). In the educational context, superiors can be characterized as professors, and peers as classmates (Baker, 2013; Wilcox et al., 2006). Social support in higher education can trigger a range of behaviors, positive outcomes and, consequently, academic success (Mishra, 2020).

This study proposes that one of the first positive effects of social support (professors and peers) refers to the potential increase in study engagement. This engagement refers to positive and rewarding study behavior, with three essential facets: vigor, dedication, and absorption (Loscalzo & Giannini, 2019; Schaufeli & Bakker, 2004). Vigor refers to aspects regarding the level of energy, resilience, and persistence to face challenges; dedication encompasses inspiration, pride, and enthusiasm to leverage engagement; and absorption comprises deep immersion for greater assimilation and understanding (Schaufeli et al., 2002). This discussion originally took place in the context of employee engagement, and later, there were adaptations for discussions in the educational environment, such as about student engagement (Loscalzo & Giannini, 2019).

On the one hand, professors play a key role in their relationship with students, by engaging them in academic activities and fostering learning (Xerri et al., 2018). Aspects such as feedback from superiors, the way subjects are conducted, use of resources, relationship and communication power are determinants of the students' learning process (Beck & Rausch, 2014). Concomitantly, professors'

satisfaction focuses on achieving personal fulfillment, which often consists of developing teaching work and maintaining a healthy and stable relationship with students (Araújo et al., 2017). All of this reveals a favorable climate for professor support to positively affect student engagement in their studies.

On the other hand, peer support can be essential to assist students in higher education, through support in difficult tasks and moments, in addition to interaction and social exchange in everyday life, which facilitates engagement and interaction (Xerri et al., 2018). This peer support instigates cooperation and consideration among peers, which facilitates the achievement of a common goal (Park et al., 2020). Usually, peer support is positively associated with academics' satisfaction with the learning process (Adler et al., 2021). In summary, findings for several student samples suggest that this type of social support increases study engagement (Rautanen et al., 2020; Siu et al., 2021). Thus, the expectation for higher education students of business courses in Brazil is that:

H1a. Professor support positively influences study engagement.

H1b. Peer support positively influences study engagement.

2.2 Study engagement and academic performance

The identification of elements that influence academic performance remains a topic of interest to academia in several areas of knowledge, including in the context of higher education in the business area (Almutawa & Suwaidan, 2020; Amaro & Beuren, 2018; Booth et al., 1999; Byrne & Flood, 2008), mainly due to the concern with the employability of students in the labor market (Pinto & Ramalheira, 2017). Academic performance can have several perspectives and metrics, objective and subjective; in this study, the discussion considers student satisfaction compared to their dedication to studies, together with student satisfaction compared to the dedication and performance of other students (Kaveski & Beuren, 2020).

Several studies have focused on understanding the factors that generate higher or lower levels of academic performance of students. Silva and Oliveira (2010) found that different learning styles (active, sensory, sequential, and visual) of professors and students result in different levels of academic performance of the latter. Araújo et al. (2013) found that several characteristics, such as older age and being further along in the course, were related to higher levels of academic performance. Quintana and Afonso (2018) showed that the use of technology, in particular chats and forums, can increase students' academic performance. Amaro and Beuren (2018) found that the father's level of education, amount of study hours, and work experience positively affected academic performance. Gender, family income, marital status (Nasu, 2020) and out-of-class reading hours (Mallmann et al., 2021; Nasu, 2018) are also considered determinants of academic performance. In addition, psychological aspects such as narcissistic traits (Lima et al., 2017) and procrastination (Ribeiro et al., 2014) affect academic performance. In short, several factors may have an effect on the performance of business students (Miranda et al., 2015).

In addition to the mentioned factors, one of the main means for students to achieve satisfactory academic performance is study engagement (Siu et al., 2021). Evidence suggests a positive influence of study engagement on academic performance, which has already been observed in samples of primary school students in Hong Kong (Siu et al., 2021), bachelor students in various fields in Norway (Slåtten et al., 2021), and university students in Romania and India (Vîrgă et al., 2020). However, for a sample of undergraduate business students, in a different country from the other studies (Brazil, an emerging economy), conclusive results are not yet available. Testing this hypothesis in new contexts is relevant to understand possible differences or similarities arising from context, culture, and environmental factors (Slåtten et al., 2021). Based on the above reasoning, the relationship is expected to be confirmed, according to the hypothesis stated below:

H2. Study engagement positively influences academic performance.

2.3 Social support, study engagement, and academic performance

By considering that social support (professors and peers) can influence study engagement, and that this can promote academic performance, we assume that study engagement can act as a facilitating variable. There is evidence of the mediating effect of study engagement on the relationships between several variables and academic performance. For example, study engagement mediates (facilitates) the relationship of psychological capital (Vîrgă et al., 2020), supportive study climate (Slåtten et al., 2021), and psychological capital and social support (Siu et al., 2021) with student performance. For social support, Siu et al. (2021) considered a multidimensional scale, combining family, professor, and peer support. Therefore, considering this support in different ways can indicate specific benefits (from professors or peers) for the student.

On the one hand, professors treating students fairly, listening to what they have to say, encouraging well-being, and praising them when they do a good job (Miklikowska et al., 2019) stimulates students to have higher levels of energy, enthusiasm, and immersion in their studies (Loscalzo & Giannini, 2019). This may result in greater satisfaction with self-perceived academic performance. Furthermore, professors contribute to learners' achievement of higher levels of autonomy by supporting and encouraging independent problem solving (Yoon et al., 2018). This autonomy is crucial to instigate study engagement, and, indirectly, a better academic performance (Oriol-Granado et al., 2017).

On the other hand, peer help with difficult tasks, peer interaction to talk about course-related problems, and general peer support to maximize course achievement (Park et al., 2020) have the potential to improve study engagement (Loscalzo & Giannini, 2019). Thus, this support can improve academic performance. Learning environments in which students perceive an absence of peer support may lead them to report higher levels of isolation, and even anxiety and depression, when compared to students who have greater peer support (Chambel & Curral, 2005). Thus, it is noticeable that peer support is fundamental to encourage satisfaction and engagement in studies, and consequently academic performance (Adler et al., 2021; Park et al., 2020).

The research constructs are multi-items from previous literature, captured in a seven-point *Likert* scale (Appendix A). The professor support construct was originally called "perceived professor support", and is based on five items from Miklikowska et al. (2019). Respondents indicated the degree of agreement (1= strongly disagree and 7= strongly agree) for items such as "most of my professors listen to what I have to say" and "there are professors I can talk to if I have any problems related to the course". The classmate support construct was called "peer support", and is based on three items from Park et al. (2020). Students indicated the degree of agreement (1= strongly disagree and 7= strongly agree) with items such as "my classmates help me with difficult tasks" and "my classmates listen to me when I need to talk about problems related to the course". The specific change in the nomenclature of the constructs converges to a standardization of both for a broad view of "social support".

The study engagement construct is composed of three dimensions, which are absorption, vigor, and dedication, each with three items. This scale was adopted from Loscalzo and Giannini (2019), who relied on the Utrecht Work Engagement Scale - Student Version (UWES-S-9) by Schaufeli and Bakker (2004). Respondents indicated the intensity (1= never and 7= always, every day) of study engagement, in items such as: "when I am doing my work as a student, I feel bursting with energy" (vigor), "I am enthusiastic about my studies" (dedication), and "I feel happy when I am studying intensively" (absorption). Finally, the academic performance construct considers the two items from Kaveski and Beuren (2020), in which students indicated their level (1= very rarely and 7= very often) of satisfaction with academic performance: "overall, I am satisfied with my academic performance compared to my dedication to studies" and "overall, I am satisfied with my academic performance compared to my classmates' dedication to studies and their performance".

In addition to the latent constructs, we considered three control variables. The first variable (course) has a dichotomous nature (0= Business Administration and 1= Accounting Sciences). The second (age) was based on two subgroups (0= less than 25 years old and 1= 25 years or older). The third (gender) is dichotomous (0= male and 1= female). A third option of "I prefer not to answer" had no respondents, regarding the gender of the students. Based on the above, these three control variables were made binary in the data analyses. Course, age, and gender are variables that may present significant differences in relation to academic performance (Santos et al., 2020; Tomás-Miquel et al., 2016). The inclusion of these control variables due to tangible characteristics of the sample allows a more accurate hypothesis test, based on the control of the observed heterogeneity (Hair Jr. et al., 2017).

3.3 Techniques for data analysis

We used PLS-SEM to test the hypotheses of this study. The application of this technique makes it possible to highlight the symmetry between the proposed relationships, with flexibility for the absence of data normality, complex modeling, insertion of control variables, mediation tests, among other aspects (Hair Jr. et al., 2017). In addition, we applied fsQCA to understand the asymmetric interface of conditions and outcome (Ragin, 2008). In this technique, the necessary and

sufficient conditions for achieving high academic performance are analyzed. In short, the combination of PLS-SEM and fsQCA allows a broad approach to the studied phenomenon (Frare & Beuren, 2021; Varma et al., 2021).

4 ANALYSIS AND DISCUSSION OF THE RESULTS

4.1 PLS-SEM analysis

The first technique we used for data analysis is PLS-SEM. All constructs have reflective measurement, and study engagement is a second-order construct, composed of three first-order constructs. At the initial stage of the measurement model analysis, we excluded one item of the construct "professor support" for model adjustment. After this procedure, we obtained the results in Table 1, regarding factor loadings (Panel A), internal consistency (Panel A), convergent validity (Panel A), discriminant validity (Panel B and Panel C), in addition to the descriptive statistics of the constructs (Panel A).

Table 1

Measurement model

Panel A: Descriptive statistics, factor loadings, reliability, and validity							
Variables	Mean	SD	Factor loadings (>0.7)	α (>0.7)	CR (>0.7)	AVE (>0.5)	
1. TS	5.37	1.17	[0.778; 0.841]	0.840	0.893	0.675	
2. CS	5.33	1.39	[0.910; 0.941]	0.922	0.951	0.865	
3. SE	4.14	1.34	[0.795; 0.927]	0.936	0.950	0.865	
4. AP	5.06	1.25	[0.939; 0.949]	0.878	0.942	0.891	
Panel B: Correlation and discriminant validity - Fornell-Larcker ($\sqrt{AVE} > c$)							
Variables	1	2	3	4	5	6	7
1. TS	0.822						
2. CS	0.219	0.930					
3. SE	0.464	0.265	0.930				
4. AP	0.142	0.369	0.375	0.944			
5. Course	0.041	0.044	0.198	-0.055	-		
6. Age	-0.003	-0.328	-0.025	-0.104	-0.066	-	
7. Gender	-0.074	0.051	-0.030	-0.047	0.013	-0.149	-
Panel C: Discriminant validity - HTMT (<0.9)							
Variables	1	2	3	4	5	6	7
1. TS							
2. CS	0.245						
3. SE	0.514	0.285					
4. AP	0.156	0.408	0.411				
5. Course	0.053	0.059	0.204	0.057			
6. Age	0.091	0.343	0.032	0.113	0.066		
7. Gender	0.083	0.052	0.051	0.051	0.013	0.149	

Legend 1: PS = professor support; CS = classmate support; SE = study engagement; AP = academic performance.

Legend 2: The bold values on the diagonal (Panel B) represent the square root of the AVE.

Source: based on the survey data.

The factor loadings had satisfactory values (>0.70). We used Cronbach's *alpha* (α) and composite reliability (CR) to measure internal consistency, and both values were adequate (>0.70). As for convergent validity, we used average variance extracted (AVE), with acceptable values (>0.50). As mentioned in the

methodology section, course, age, and gender are binary, single-item variables; therefore, the criteria of factor loadings, internal consistency, and convergent validity do not apply. Two parameters confirmed discriminant validity: the Fornell-Larcker perspective, in which the square root of the AVE is greater than the correlation with the other constructs; and the Heterotrait-Monotrait Ratio (HTMT), with adequate values (<0.90) (Hair Jr. et al., 2017). In addition, we applied Harman's single factor test to highlight any problems related to common method bias. The analysis showed four factors accumulating 71.50% of the total variance of the instrument, with the 1st factor accumulating less than 50% (40.07%). Thus, this bias does not represent a problem (Podsakoff et al., 2003).

After meeting the assumptions of the measurement model, Table 2 presents the results of the structural model, with the description of the path analysis and consequent hypothesis testing, as well as the evaluation of the quality of this model. In this stage, we applied the bootstrapping process, using the bias corrected and accelerated bootstrap, with 5,000 repetitions and two-tailed test at 5% significance level.

Table 2

Structural model

Panel A: Path analysis						
Relationship	Value β	T-test	P-value	CI [2.5%; 97.5%]	Mediation	Decision
TS→SE	0.426	6.485	0.000***	[0.286; 0.542]	-	H1a supported
CS→SE	0.172	2.577	0.010**	[0.037; 0.298]	-	H1b supported
SE→AP	0.364	4.866	0.000***	[0.216; 0.511]	-	H2 supported
TS→AP	-0.091	1.115	0.265	[-0.259; 0.065]	-	-
TS→SE→AP	0.155	3.467	0.001***	[0.079; 0.253]	Total	H3a supported
CS→AP	0.297	3.496	0.000***	[0.126; 0.454]	-	-
CS→SE→AP	0.063	2.296	0.022**	[0.016; 0.124]	Partial	H3b supported
Course→AP	-0.137	2.181	0.029**	[-0.253; -0.009]	-	-
Age→AP	-0.016	0.203	0.839	[-0.169; 0.131]	-	-
Gender→AP	-0.058	0.920	0.358	[-0.175; 0.072]	-	-
Panel B: Multicollinearity, R² and Q²						
Variables	Maximum VIF(< 3)		R ²	Q ²		
Study engagement	1.051		0.236	0.156		
Academic performance	1.379		0.222	0.190		

Legend 1: PS = professor support; CS = classmate support; SE = study engagement; AP = academic performance.

Legend 2: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: based on the survey data.

The variance inflation factor (VIF) verifies the plausibility of the existence of multicollinearity, in which values less than 3 indicate the absence of this problem (Hair Jr. et al., 2017). The coefficient of determination (R²) indicates the predictive power of the model, where values between 0.13 and 0.26 represent medium to large explanatory power (Cohen, 1988). Finally, the Stone-Geisser indicator (Q²) indicates the predictive relevance of the model, in which values greater than zero

are satisfactory (Hair Jr. et al., 2017). Thus, the structural model presents considerable assumptions.

4.2 Analysis using fsQCA

Calibration should convert the original values of the variables to fuzzy values, that is, between 0 and 1, varying between full membership, cross-over point, and full nonmembership (Ragin, 2008). To this end, the constructs in a seven-point *Likert* scale (professor support, classmate support, study engagement, and academic performance) receive theoretical anchors at points 6, 4, and 2 (Frare & Beuren, 2020; Ordanini et al., 2014), while the other variables (course, age, and gender) are dichotomous and, consequently, calibrated as crisp-set (Ragin, 2000, 2008).

After calibration, the study adopted the necessary condition analysis. In general terms, the conditions (professor support, classmate support, study engagement, course, age, and gender) may be always necessary (consistency greater than or equal to 0.90), almost always necessary (consistency between 0.80 and 0.90), or not necessary, for the occurrence of a certain outcome (Ragin, 2000), in this case, high academic performance. Table 3 presents the results for the necessary condition analysis.

Table 3
Necessary conditions for high academic performance

Conditions	Consistency	Coverage
Professor support	0.878	0.795
~ Professor support	0.225	0.837
Classmate support	0.875	0.837
~ Classmate support	0.231	0.705
Study engagement	0.672	0.896
~ Study engagement	0.457	0.734
Course	0.596	0.714
~ Course	0.404	0.750
Age	0.346	0.676
~ Age	0.654	0.759
Gender	0.602	0.721
~ Gender	0.398	0.739

Legend: Tilde (~) = absence of the condition.

Source: based on the survey data.

Both professor and classmate support are almost always necessary for the achievement of high academic performance, as consistencies are between 0.80 and 0.90 (Ragin, 2000). The other conditions do not appear to be necessary for the desired outcome.

In a third stage, the study conducts the analysis of sufficient conditions. To ascertain whether combinations of conditions can lead to the same outcome (high academic performance), the first step is to create a truth table, and then refine it with a consistency threshold of 0.80 (Ragin, 2008). FsQCA provides complex, parsimonious, and intermediate solutions, and the study considers only the intermediate and parsimonious solutions (Ragin, 2008). On

the one hand, when a combination appears in both, it is considered central; on the other hand, when the combination appears only in the intermediate solution, it is considered peripheral (Fiss, 2011). Table 4 shows the three sufficient solutions obtained with the application of fsQCA.

Table 4
Sufficient solutions for high academic performance

Conditions	High academic performance		
	Solution 1	Solution 2	Solution 3
<i>Social support</i>			
Professor support	●		●
Classmate support	●	●	●
<i>Engagement</i>			
Study engagement	●		
<i>Course</i>			
Business Administration ○ / Accounting Sciences ●			
<i>Age</i>			
< 25 years ○ / ≥ 25 years ●		○	
<i>Gender</i>			
Male ○ / Female ●		●	○
Raw coverage	0.603	0.402	0.317
Unique coverage	0.063	0.117	0.060
Consistency	0.925	0.826	0.885
General coverage		0.879	
General consistency		0.845	

Legend 1: Model: Academic performance = f (professor support, classmate support, study engagement, course, age, and gender).

Legend 2: Black circles (●) indicate the presence of the condition for the solution; white circles (○) indicate an absence of the condition for the solution; cells without circles indicate the indifference of the condition for the solution. Larger circles indicate that the condition is essential to the solution; smaller circles indicate that the condition is complementary to the solution.

Source: based on the survey data.

All solutions showed satisfactory consistency (greater than or equal to 0.80) (Ragin, 2008). In addition, the general coverage of the model covers 87.9% of cases, which is adequate (between 25% and 90%) (Ragin, 2008). Three combinations of conditions lead to the same result (equifinality), where Solution 1 indicates that, regardless of the course, age, and gender, the presence of social support from professors and peers and study engagement cover the highest proportion of cases in the sample, in a raw way (60.3%), and uniquely (6.3%). Furthermore, Solution 2 represents a portion of the group of women under 25 years of age, regardless of the course, who perceive professor support and study engagement as indifferent, but presence of classmate support as essential. Additionally, Solution 3 represents part of the male group, who, regardless of the course and age, perceive study engagement as indifferent, but presence of social support from professors and classmates as essential.

The finding of three solutions with the same outcome follows the equifinality perspective, emerging from the analysis of sufficient conditions of fsQCA (Ragin, 2000; 2008). In light of this, some aspects can be considered for this sample. First, course is indifferent across the three solutions, thus suggesting that Business Administration and Accounting Sciences students achieve high levels of performance from the same causal solutions. Second, the most comprehensive configuration in the sample (Solution 1) is indifferent as to gender. However, Solution 2 covers female individuals, while Solution 3 covers male individuals. On the one hand, Solution 2, in addition to comprising only women, limits the age to less than 25 years. This audience can only achieve high academic performance with classmate support. On the other hand, Solution 3 indicates that males in the sample, regardless of age, can achieve high academic performance with the support of professors and peers. The literature supports these findings, as different ages and genders may have different levels of academic performance (Sadler-Smith, 1996). Overall, the findings highlight the role of fsQCA to discover solutions that are applicable to the global sample, besides solutions that exclusively address a gender (male or female) and/or a certain age group (younger or older) (Cruz et al., 2022).

4.3 Discussion of results

Support from professors ($\beta=0.426$; $p<0.01$) and classmates ($\beta=0.172$; $p<0.05$) positively influences study engagement, which leads us to accept H1a and H1b. Thus, both professors and classmates play an important role in students' study engagement, that is, in their vigor, dedication, and absorption (Loscalzo & Giannini, 2019; Schaufeli & Bakker, 2004). Encouragement and assistance from superiors and peers contribute to student engagement (Park et al., 2020), thus manifesting the appreciation and respect that arise in these social bonds (Eagle et al., 2019). Finally, professor feedback, rapport, and communication (Beck & Rausch, 2014), and peer help with difficult tasks, daily interaction, and a sense of belonging to the group (Xerri et al., 2018) are relevant means for students to engage in their studies. This result corroborates previous literature (Rautanen et al., 2020; Siu et al., 2021), extending the perspective to a sample of business higher education students, as well as analyzing the effect of each source of support (professors and peers) individually.

Study engagement positively influences academic performance ($\beta=0.364$; $p<0.01$), which supports H2. To achieve high academic performance, the solution that contemplates the largest share of students has the presence of work engagement. In two other more specific and less comprehensive solutions, work engagement is indifferent. Previous literature has indicated that study engagement is a direct antecedent of academic performance (Siu et al., 2021; Slåtten et al., 2021; Vîrgă et al., 2020). In general terms, this implies that the energy to face the challenges, the inspiration for the tasks, and the immersion to learn (Schaufeli et al., 2002) are elements that increase the students' levels of satisfaction compared to the dedication to the studies (Kaveski & Beuren, 2020).

Professor support indirectly and positively influences academic performance through study engagement ($\beta=0.155$; $p<0.01$), thus allowing the acceptance of H3a. The direct relationship between professor support and

academic performance is not statistically significant ($\beta=-0.091$; $p>0.10$), which suggests full mediation, that is, the indirect relationship is statistically significant, while the direct relationship is not (Hair Jr. et al., 2017). In addition, professor support is almost always necessary for students to achieve high academic performance. Consistent with this, of the three solutions sufficient for high academic performance, professor support is present in two and indifferent in one. Consequently, this finding suggests that professors, by listening to, assisting, and encouraging students, (Miklikowska et al., 2019) stimulate higher levels of study engagement (Loscalzo & Giannini, 2019), which results in higher academic performance.

Classmate support indirectly and positively influences academic performance through study engagement ($\beta=0.063$; $p<0.05$), thus supporting H3b. The direct relationship between classmate support and academic performance is also statistically significant ($\beta=0.297$; $p<0.01$), which suggests partial mediation, that is, both relationships (direct and indirect) are statistically significant (Hair Jr. et al., 2017). In addition, classmate support is almost always necessary for students to achieve high academic performance. In all three possible solutions for high academic performance, classmate support is essentially present. This suggests that the help of classmates in difficult tasks, the interaction between them to discuss problems and issues related to the course (Park et al., 2020) improve study engagement (Loscalzo & Giannini, 2019), which improves academic performance.

5 CONCLUSION

This study aimed to analyze the effects of social support (from professors and peers) and study engagement on the academic performance of students in two undergraduate business courses at a Brazilian public HEI. We developed five hypotheses and tested them using PLS-SEM, obtaining statistical support for all of them. Complementarily, the fsQCA technique allowed us to understand which configurations of conditions are highlighted for students to achieve high academic performance. Due to the observed heterogeneity, the variables age, gender, and course of the students were considered control variables in the proposed analyses.

The findings allow us to conclude that social support, whether from professors or peers, is a relevant factor to encourage students to engage in studies, and that this results in better academic performance. Professor help and attention do not have a direct effect on academic performance, while peer help and interaction do. However, for both cases, vigor, dedication, and absorption in studies act as facilitators between this social support and academic performance, that is, there is a sequential effect of social support (professors and peers) on study engagement and, consequently, on academic performance. The complementary analysis indicates three ways (solutions) students use to achieve high academic performance:

a) regardless of course, age, and gender, the largest share of students essentially need classmate support and study engagement, and, complementarily, support from professors;

b) the presence of classmate support is essential in all three ways that lead students to high academic performance;

c) if there is a lack of professor support, and/or lack of classmate support, and/or lack of study engagement, students do not achieve high academic performance.

5.1 Implications and contributions

This study provides implications and contributions to the literature. It provides new evidence on determinants of academic performance of business students (Ahinful et al., 2019; Almutawa & Suwaidan, 2020; Beatson et al., 2020; Booth et al., 1999; Byrne & Flood, 2008), particularly for the Brazilian context (Amaro & Beuren, 2018; Araújo et al., 2013; Mallmann et al., 2021; Melo et al., 2021; Miranda et al., 2015; Nasu, 2018, 2020; Quintana & Afonso, 2018; Silva & Oliveira Neto, 2010). In particular, the study includes the discussion about social support from professors and peers, together with the perspective of study engagement.

It also contributes to the line of studies that indicate study engagement as a mediating (facilitating) variable between certain behaviors and outcomes (Siu et al., 2021; Slåtten et al., 2021; Vîrgă et al., 2020). This is relevant for the advancement of the literature on study engagement, especially from the UWES-S-9 scale (Loscalzo & Giannini, 2019). It also expands on the discussion by Siu et al. (2021) by considering the unique effects of professor support and peer support, as well as adopting a sample from business higher education in a developing country with an emerging economy. Additionally, it reveals that students from both courses use the same strategies (causal solutions) to achieve high levels of performance. Thus, there is a homogeneity of students of Business Administration and Accounting Sciences, regarding the combinations of professor support, classmate support, study engagement, gender, and age that lead to high academic performance.

The results can also be useful for students, professors, business school managers, education policy makers, and society in general. Students get insights into ways to achieve higher levels of academic performance, such as the importance of social support and study engagement. Professors receive informational inputs that, as they teach subjects, use resources, promote good relationships and communication, contribute to the teaching-learning process (Beck & Rausch, 2014), reflecting directly on study engagement and indirectly on academic performance. For business school directors and education policymakers, the results provide insight into drivers of student academic performance, as low performance may be associated with higher dropout rates (Korhonen et al., 2014; Pereira et al., 2021). For society, the findings are useful since students' academic performance in a course is one of the requirements for employability (Pinto & Ramalheira, 2017), which drives the local, regional, and national economy and development.

5.2 Limitations and recommendations

This study has limitations that may lead to new research opportunities. Firstly, the sample is limited to two business courses (Business Administration and

Accounting Sciences) from only one Brazilian public university. Therefore, expanding the research to new contexts is essential to increase the understanding of the phenomenon at a macro level. Secondly, regarding social support, the study considers exclusively support from professors and peers, thus, exploring support from family, friends, and others involved may bring new insights. In addition, exploring whether professors' academic characteristics (Zabolotny et al., 2020) are related to students' study engagement and academic performance is also an opportunity. Third, new technologies can influence this teaching-learning process in the business area (Martins et al., 2021; Matta et al., 2021), and, consequently, reflect on academic engagement and performance. In light of this, including this technological perspective in new studies seems timely.

Student performance was assessed with a subjective metric, and could be complemented with other proxies such as academic achievement indices. In addition, narcissistic personality traits may be associated with higher levels of academic performance, when this evaluation is carried out by the student (Lima et al., 2017), which was not considered in this research and could be addressed in new studies on the subject. Students' negative behaviors, such as procrastination, can reduce academic performance (Ribeiro et al., 2014), which we did not analyze in this research and can be contemplated in new investigations. Finally, data collection took place through a cross-sectional survey. Thus, further research may focus on other forms of data collection, such as interviews, archives, and academic records. Also, considering a longitudinal perspective can provide valuable insights.

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Appendix A

Research instrument

Professor support (Miklikowska et al., 2019)

1. Most of my professors treat me fairly.
2. Most of my professors listen to what I have to say.
3. There are professors I can talk to if I have any problems related to the course.
4. Most professors want their students to feel good.
5. Some professors praise me when I do a good job.

Classmate support (Park et al., 2020)

6. My classmates help me with difficult tasks.
7. My classmates listen to me when I need to talk about problems related to the course.
8. My classmates help me a lot to maximize my performance in the course.

Study engagement – UWES-S-9 (Schaufeli & Bakker, 2004; Loscalzo & Giannini, 2019)

9. When I am doing my work as a student, I feel bursting with energy. (Vigor)
10. I feel energetic and capable when I'm studying or going to class. (Vigor)
11. I am enthusiastic about my studies. (Dedication)
12. My studies inspire me. (Dedication)
13. When I get up in the morning, I feel like going to class. (Vigor)
14. I feel happy when I am studying intensely. (Absorption)
15. I am proud of my studies. (Dedication)
16. I am immersed in my studies. (Absorption)
17. I get carried away when I am studying. (Absorption)

Academic performance (Kaveski & Beuren, 2020)

18. Overall, I am satisfied with my academic performance compared to my dedication to studies.
19. Overall, I am satisfied with my academic performance compared to my classmates' dedication to studies and their performance.