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Research Article

Entrepreneurial behavior and education in times of adversity

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Abstract

Purpose: The goal of this research is to identify whether the Coronavirus pandemic has influenced students' entrepreneurial behavior and perceived university support in a public university in Brazil. **Methodology**: This study used Partial Least Squares-Structural Equation Modeling (PLS-SEM) to assess the survey answered by 508 Business Administration students. **Findings**: Results reassured the positive relationship amongst Perceived University Support, Entrepreneurial Intention and Entrepreneurial Self-Efficacy. Considering students' perceptions of such elements prior and during the confinement, the relationship amongst Perceived University Support, Entrepreneurial Intention and Entrepreneurial Self-Efficacy did not present significant changes. **Originality**: This study contributes to the discussion of lockdowns and quarantines repercussions in entrepreneurial behavior and education, since this period has brought uncertainties in economic, social and health scenarios. This period of instability also raises discussions concerning technological resources and related initiatives, highlighting a necessity of innovative ideas and solutions. Moreover, these results may also offer support for professors and pedagogical staff in the disciplines remake and university environments. **Social/management contributions**: The discussion around lockdowns and quarantines repercussions is broaden, especially in the field of entrepreneurship. Educational institutions have the opportunity to invest even more in the university environment to support entrepreneurship, preparing the student for the opportunities and new scenarios that will arise and that will be necessary for the economic recovery.

Keywords: Entrepreneurial behavior; university support; pandemic effects.

Resumo

Objetivo: O objetivo desta pesquisa é identificar se a pandemia do Coronavírus influenciou o comportamento empreendedor dos alunos e a percepção do suporte universitário em uma universidade pública do Brasil **Metodologia:** Este estudo utilizou a Modelagem de Equações Estruturais por Mínimos Quadrados Parciais (MEE-MQP) para avaliar a pesquisa respondida por 508 estudantes de Administração. **Principais resultados:** Os resultados reafirmaram a relação positiva entre Suporte Universitário Percebido, Intenção Empreendedora e Autoeficácia Empreendedora. Considerando as percepções dos alunos sobre tais elementos antes e durante o confinamento, a relação entre o Suporte Universitário Percebido, a Intenção Empreendedora e a Autoeficácia Empreendedora não apresentou mudanças significativas. **Originalidade:** Este estudo contribui para a discussão das repercussões dos lockdowns e quarentenas no comportamento e na educação empreendedora, uma vez que esse período trouxe incertezas nos cenários econômico, social e de saúde. Este período de instabilidade também suscita discussões sobre recursos tecnológicos e iniciativas relacionadas, evidenciando a necessidade de ideias e soluções inovadoras. Além disso, os resultados da pesquisa fornecem subsídios para professores e equipe pedagógica na reformulação de disciplinas e ambientes universitários. **Contribuições sociais/práticas:** A discussão em torno das repercussões dos lockdowns e quarentenas é ampliada, principalmente no campo do empreendedorismo. As instituições de ensino têm a oportunidade de investir ainda mais no ambiente universitário para apoiar o empreendedorismo, preparando o aluno para as oportunidades e novos cenários que surgirão e que serão necessários para a recuperação econômica.

Palavras-chave: Comportamento empreendedor; apoio universitário; efeitos pandêmicos.

INTRODUCTION

World War II was the last episode countries had seen schools and educational institutions go into lockdown around the same time, for the same reason (Luthra & Mackenzie, 2020). This changed in December 2019, when Wuhan Health Commission notified the National Health Commission, China Center for Disease Control and Prevention and World Health Organization (WHO) of a cluster of 27 cases of pneumonia of unknown etiology (Kakodkar *et al.*, 2020). These patients presented a virus called novel coronavirus 2019 (COVID-19), which rapidly spread out around the globe (Kakodkar *et al.*, 2020; Rezaeetalab *et al.*, 2020; WHO, 2020b). This rapid dissemination led millions of people in quarantine and lockdowns, affecting several pillars of society, which was translated into an unprecedent turbulence on societal systems, whether through the implementation of social distancing measures or the reorganization of public health systems (Neumeyer *et al.*, 2020).

The emergence of COVID-19 crisis brings focus to entrepreneurship education (Loan *et al.*, 2021; Neumeyer *et al.*, 2020), since the compelled adaptation led the usual practical classes, hands-on activities and learning by doing process to another type of exposure (Campos *et al.*, 2021; Moraes *et al.*, 2021; Neumeyer *et al.*, 2020; Rönkkö & Lepistö, 2015). This change could have resulted in distancing and less practical activities due to the virtual environment. At the same time, entrepreneurial education is considered as one of the influential forces in the venture creation process (Jena, 2020), just like entrepreneurial self-efficacy, which refers to an individual's belief in his/her capability to perform tasks and roles aimed at entrepreneurial outcomes (Newman *et al.*, 2019), it also plays an important role in determining whether individuals pursue entrepreneurial careers (Newman *et al.*, 2019). Another force is entrepreneurial intention, which is seen as a good predictor of the decision to become an entrepreneur (Fragoso *et al.*, 2020). It represents the first step into a long chain of actions directed towards starting a business (Voda & Florea, 2019).

Scholars have acknowledged a positive relation between entrepreneurial intention and entrepreneurial self-efficacy (Asimakopoulos *et al.*, 2019; Fragoso *et al.*, 2020; Moraes *et al.*, 2018); entrepreneurial intention and entrepreneurial education (Ahmed *et al.*, 2019; Atiya *et al.*, 2019; Liu *et al.*, 2020), as well as entrepreneurial self-efficacy and entrepreneurial education (Amaral *et al.*, 2018; Newman *et al.*, 2019). However, literature has identified factors that may foster or inhibit entrepreneurial education (Jena, 2020; Pittaway & Edwards, 2012; Rideout & Gray, 2013; Shi *et al.*, 2020; Stamboulis & Barlas, 2014; Vesper & Gartner, 1997). Such works highlight the effects of interventions in the learning and the new business creation process. Considering that entrepreneurial education and behavior is individually driven (Caliendo & Kritikos, 2011; Krakauer *et al.*, 2018; Schmidt & Bohnenberger, 2009) and susceptible to environmental changes (Bullough & Renko, 2013; Koe, *et al.*, 2012; Küttim *et al.*, 2014; Newman *et al.*, 2019), especially in the context of developing countries (Fischer *et al.*, 2019; Guerrero, *et al.*, 2018; Moraes *et al.*, 2020), there is a need to assess entrepreneurship in turbulent environments, such as COVID-19 pandemic (Aldairany *et al.*, 2018).

In the context of the pandemic, research has shown that the feelings generated, such as anxiety and fear, had a negative impact on entrepreneurial intention (Loan *et al.*, 2021; Ruiz-Rosa *et al.*, 2020) and self-efficacy (Loan *et al.*, 2021). In addition, there is a lack of integration between crisis management, entrepreneurship, and covid-19 literature (Ratten, 2020, 2021). Therefore, this research addresses the fundamental gap of effects caused by the coronavirus pandemic (Yang *et al.*, 2020) on the relationship amongst entrepreneurial education, self-efficacy and intention (Loan *et al.*, 2021; Ratten, 2020, 2021; Ruiz-Rosa *et al.*, 2020), in a specific context.

Moreover, once personal factors matter in the pursuit of entrepreneurship (Bullough & Renko, 2013), this article addresses the following research question: *what is the COVID-19 pandemic effect on entrepreneurial behavior and in the supported importance perceived that a university should provide for entrepreneurship?* In this manner, it is intended to analyze how the pandemic, with its confinement and drastic changes to people's and organization's daily life, affected the relationships between perceived university support, entrepreneurial self-efficacy and entrepreneurial intention.

This research contributes to entrepreneurship knowledge area by expanding the information about behavioral changes related to entrepreneurship in times of crisis and uncertainty. The impacts of the pandemic on entrepreneurship, especially its education, require further investigation (Nassif *et al.*, 2020), as the outbreak has hit several countries and the outcome is still unpredictable (WHO, 2020b). Thus, this study is an interesting case because it assesses university students' understanding about the effects of COVID-19 on their entrepreneurial behavior and on the received university support, in two main stages: before and during confinement.

From a practical standpoint, this study can contribute to the discussion of lockdowns and quarantines repercussions in entrepreneurial behavior and education, in addition to serve as support for professors and pedagogical staff in the disciplines remake and university environments.

THEORETICAL DISCUSSION

The theoretical framework of this research is based on three main topics: the support of universities; the entrepreneurial behavior of students; and the coronavirus pandemic.

The Support of Universities

According to Schumpeter (1911), the entrepreneurial process is vital in economic development. Many studies have been done with the intention of unraveling the predecessors of entrepreneurship and amongst them, scholars have found the entrepreneurial education and university environment as crucial vectors (Bignotti & Le Roux, 2016; Canever *et al.*, 2017; Küttim *et al.*, 2014; Shi *et al.*, 2020; Vodă & Florea, 2019). Besides, the impact of entrepreneurial education and training have been recognized as relevant factors in developing startup firms (Zhao *et al.*, 2005; Saeed *et al.*, 2015).

The university environment is a space that offers knowledge creation and dissemination, where the formation of professional knowledge, skills, abilities and attitudes is provided by this educational base. Furthermore, universities have the responsibility to present careers to students, being entrepreneurship one possibility (Raposo & do Paço, 2011). Also, there is an appeal for universities to get closer to the market, to go beyond the role of producing science and technology, exploring the commercial sphere as well (Alves *et al.*, 2019; Campos *et al.*, 2021; Moraes *et al.*, 2021). This new role of the university allows for a process of contextual change, where research institutions become entrepreneurial institutions (Urbano & Guerrero, 2013).

In this sense, universities behave as entrepreneurship catalyst through, amongst other paths, the availability of entrepreneurial education with disciplines, events, workshops, and so on (Moraes *et al.*, 2018; Turker & Selcuk, 2009). Entrepreneurial education goes beyond traditional classroom methods, it provides students with knowledge, skills and additional capacities necessary to apply to the context of setting up a new company or business (Bezerra *et al.*, 2017; Vodă & Florea, 2019). Additionally, Ahmed *et al.* (2019) establish four broad components for entrepreneurship education: (i) taught component, where students gain specific entrepreneurial knowledge; (ii) business planning component, which aims at motivating and inspiring students to propose business ideas; (iii) interaction with practice component, that acts as networking with investors; and (iv) university support component, whose assistance will be directed at converting the ideas into a successful venture.

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Similarly, Liu *et al.* (2020) follows three modes of entrepreneurship education (i) classroom delivery involving entrepreneurship lectures, student business plan competitions, entrepreneurial projects and social organization; (ii) establishment of experimental centres, university science parks, innovation and entrepreneurship incubator bases and research centres; and (iii) through occasional part-time work placements and work-related internships, which are designed to promote students' awareness of entrepreneurship, improve students' entrepreneurial knowledge and cultivate their entrepreneurial qualities and skills (Liu *et al.*, 2020). Hence it is crucial to acknowledge that entrepreneurship education programs reinforce interactive learning, experience-based learning, role models and community and business links, formed by three main objectives.

In this fashion, university support can foster entrepreneurship (Shi *et al.*, 2020) through, for example, product creation (Almeida *et al.*, 2019), university incubators (Ahmed *et al.*, 2019; Trivedi, 2016), technology transformation and consultants (Rideout & Gray, 2013) and financial funds (Inácio Júnior *et al.*, 2016). In consonance, Kraaijenbrink *et al.* (2010) suggested that to understand the effect of university support on entrepreneurship, it was crucial to measure in which extent they could have an impact on students. Thus, this can be achieved by measuring students' perceptions of the university support that they receive or, as called by Saeed *et al.* (2015, p. 1131), "perceived university support".

According to Saeed *et al.* (2015), universities can play an important role in identifying and developing entrepreneurial traits and inclinations among students and making them capable of starting their own venture; therefore, it is critical for universities to position themselves as a hub of new venture creation. Besides, it is clear that an effective entrepreneurial education program and the entrepreneurial support provided by universities are efficient ways of obtaining the necessary knowledge about entrepreneurship and motivating young people to seek entrepreneurial careers (Saeed *et al.*, 2015).

Complementarily, the university support can be estimated in different aspects. Namely: (i) perceived concept development, related to knowledge and skills development to transform ideas into workable concepts; (ii) perceived educational support, which consists in the university's effort to raise awareness about entrepreneurship field itself; and (iii) perceived business development support, related to financial arrangements given to students (Saeed *et al.*, 2015). These dimensions illustrate the broad spectrum on how university can support entrepreneurship. Thereby, a supportive university environment performs as a vector that might enhance students' interest in the entrepreneurial field as a career option, by also developing knowledge-related, confidence and more importantly, promote and enhance self-efficacy (Mustafa *et al.*, 2016).

Entrepreneurial Behavior: Entrepreneurial Intention and Self-Efficacy

Several characteristics are linked to entrepreneurial behavior. Intention is a construct which has been acquiring attention in entrepreneurship field due to its ability of foreseeing behavior and to understand how intentions are shaped within entrepreneurship field (Fayolle & Gailly, 2015; Moraes *et al.*, 2021). Due to this issue, growing interest emerged to initiate and enhance promotion and support for entrepreneurship amongst students (Schwarz et al., 2006), besides being pointed as one of the most relevant aspects to be researched in respect to the initial phases of creating a business (Vodă & Florea, 2019). For that matter, entrepreneurial intention can be a state of mind that directs individuals towards a specific goal (Saeed *et al.*, 2015).

Several models have been created to deal with entrepreneurial intentions, being the most used in the literature: The Theory of Planned Behavior (Ajzen, 1991) and Shapero's model of Entrepreneurship Event (Shapero & Sokol, 1982). The Theory of Planed Behavior (TPB) suggests that regarding intentional behaviors, the actions are preceded by *intent*, which, in turn, is influenced by three aspects: attitudes towards behaviors, subjective norms and perceived behavioral control (Ajzen, 1991). Attitude towards behavior refers to the degree to which an individual tends to present certain behaviors in question, the second aspect is a social factor named subjective norms, which refers to the social pressures an individual may receive whether to perform certain behavior and perceived behavioral control consists in the perceived ease or difficulty at presenting certain behavior (Ajzen, 1991).

On the other hand, Pihie & Bagheri (2013) states that self-efficacy also plays a motivating role on individuals towards getting into a new career, *e.g.* opening a new venture. Self-efficacy is considered by some researchers as an influencer of the individual's choice of activities (Fragoso *et al.*, 2020; Kusmintarti *et al.*, 2014; Zhao *et al.*, 2005). In this fashion, self-efficacy is defined by Bandura (1994) as one's beliefs about their capability. It determines how individuals feel, think, behave and motivate themselves (Bandura, 1994), reason why it relates closely to business creation, once individuals tend to undertake task they consider manageable. High levels of perceived self-efficacy would enhance people's behavior in regarding to how they master their challenges, enabling stress reduction, goals accomplishments and higher effort employment (Bandura, 1994).

Regarding self-efficacy's influence on intentions, among students, several studies had previously proven self-efficacy impact on entrepreneurial intentions development and enhancement (Moraes *et al.*, 2021; Saraih *et al.*, 2018). In short, this construct measures a person's belief in his own capability of launching a business successfully (Rodríguez Gutiérrez *et al.*, 2019).

Entrepreneurship does not involve only risk-taking, creativity, leadership and proactivity, but it also requires passion and persistence, for all that, self-efficacy plays a very relevant role (Newman *et al.*, 2019). Therefore, entrepreneurial self-efficacy emerged as a research topic, being considered as an influencer of entrepreneurial intention, behavior and performance, which also led universities to focus on entrepreneurial education and training (Newman *et al.*, 2019). In this context, hypotheses 1, 2 and 3 are presented:

H1: *Perceived University Support has a positive influence on Entrepreneurial Intention.*

H2: *Perceived University Support has a positive influence on Entrepreneurial Self-Efficacy.*

H3: *Entrepreneurial Self-Efficacy has a positive influence on Entrepreneurial Intention.*

Coronavirus Pandemic

COVID-19 is an infectious disease caused by the most recently discovered type of Coronavirus, in Wuhan, China in December, 2019 (WHO, 2020b), which allegedly originated from wild animals (bats, snakes and pangolins) (Yang *et al.*, 2020). Its contamination occurs mainly by droplets generated when people cough, sneeze or talk, i.e. a person can be contaminated by breathing it in when staying less than one meter away from the contaminated patient or also by touching contaminated surfaces (Rezaeetalab *et al.*, 2020; WHO, 2020b). Its incubation process is estimated to take from 1-14 days, however, 5-6 days is the average period (Rezaeetalab *et al.*, 2020; WHO, 2020b).

Due to rapid global spread of the COVID-19 epidemic, the WHO declared the COVID-19 outbreak a pandemic in March, 2020 (WHO, 2020a), becoming the world's foremost challenge with no clear solution (Bacq *et al.*, 2020). Many countries initiated immediate responses in order to contain its spread, such as: limited travels, social distancing, home office implementations, among others (Sahu, 2020). In parallel, in order to avoid a catastrophic crash in their health systems, several countries set

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up extreme quarantine measures - including sealing off large cities, closing borders and confining people to their homes – in an attempt to prevent spread of the virus (Yang *et al.*, 2020), but the human-human transmission rapidly grew. In consonance, the state of São Paulo released the Decree No 64.881, on March 22nd, 2020, which marked the beginning of the quarantine in the State of São Paulo. It had the objective of avoiding possible contaminations and virus propagation (Brasil, 2020). The decree stated that activities involving public, such as: malls, nightclubs, gyms and stores in general were forbidden, making it possible for stores and companies to operate through delivery systems and drive thru (Brasil, 2020). These impositions restrained entrepreneurs, since they are social agents only capable of developing regional economy, not able to solve all problems related to the same locality (Nassif *et al.*, 2020).

Against this background, other spheres implanted efforts to contain the virus, especially institutions that hold larges amount of people gathered in a closed space (Liguori & Winkler, 2020; Sahu, 2020). Such measures were extended to universities, as conveners of large groups of people (Liguori & Winkler, 2020), to avoid contamination. In Brazil, Unicamp, in agreement with the Decree No 64.881, suspended its presential classes and public events in the Resolution GR 24/2020, initially from March 12th to April 12th, sequentially postponed indefinitely awaiting the situation evolution and improvement (UNICAMP, 2020a, 2020b). Once entrepreneurs, business owners and public organs are under conditions of uncertainty and under resource constraints, it is crucial refocus discussions on entrepreneurial education (Bacq *et al.*, 2020; Nassif *et al.*, 2020; Neumeyer *et al.*, 2020).

Even though entrepreneurial students are open to the new concepts, entrepreneurial education and university support may be placed at stake once activities face-to-face shifted to online education (Liguori & Winkler, 2020; Neumeyer *et al.*, 2020). The new learning environment requires adaptation to a new routine, teaching method and study rhythm, and more, demands for unorthodox actions to address immediate challenges and opportunities under conditions of uncertainty (Bacq *et al.*, 2020). Thus, the negative impact of these contextual and personal factors may have influenced entrepreneurial intention (Ahmed *et al.*, 2019; Loan *et al.*, 2021; Ruiz-Rosa *et al.*, 2020) and entrepreneurial self-efficacy (Loan *et al.*, 2021; Newman *et al.*, 2019), therefore, the perceived university support for entrepreneurship can be perceived differently by students from the learning process. In this sense, the following hypotheses are presented:

H4: *The relationship amongst Perceived University Support, Entrepreneurial Intention and Entrepreneurial Self-Efficacy before confinement differs to the one presented during the confinement.*

H4a: *The Perceived University Support prior to confinement presented a better relationship with Entrepreneurial Intention than to the one demonstrated during confinement.*

H4b: *The Perceived University Support prior to confinement presented a better relationship with Entrepreneurial Self-Efficacy than to the one demonstrated during confinement.*

H4c: *Entrepreneurial Self-efficacy, prior to confinement, presented a better relationship with Entrepreneurial Intention than to the one demonstrated during confinement.*

Table 1 presents the research hypotheses and summarizes the main authors used as a conceptual basis.

Table 1
Research hypotheses

	Description	Conceptual basis
H1	Perceived University Support has a positive influence on Entrepreneurial Intention	Saeed *et al.* (2015); Moraes *et al.* (2018; 2021); Mustafa *et al.* (2016)
H2	Perceived University Support has a positive influence on Entrepreneurial Self-Efficacy	Saeed *et al.* (2015); Moraes *et al.* (2018; 2021); Mustafa et al. (2016)
H3	Entrepreneurial Self-Efficacy has a positive influence on Entrepreneurial Intention	Moraes *et al.* (2021); Saraih et al. (2018)
H4	The relationship amongst Perceived University Support, Entrepreneurial Intention and Entrepreneurial Self-Efficacy before confinement differs to the one presented during the confinement	Loan *et al.* (2021); Ruiz-Rosa *et al.* (2020); Yang *et al.* (2020)

Source: Elaborated by the authors (2022).

Thus, based on the hypotheses presented, in an attempt to answer the research questions, Figure 1 presents the conceptual model of research.

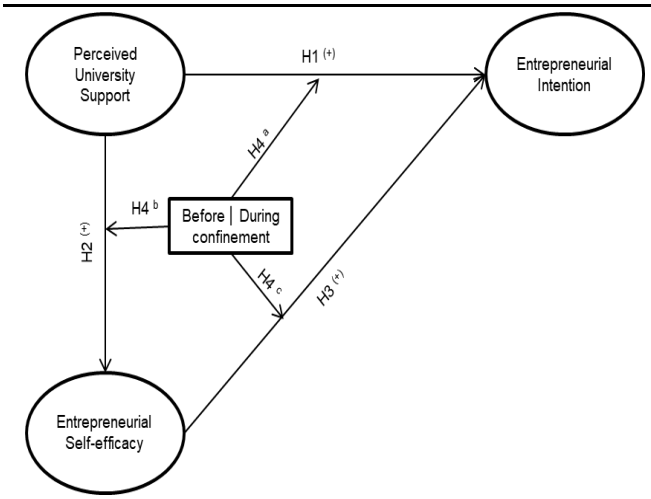

Figure 1
Conceptual model of research.
Source: Elaborated by the authors (2022).

RESEARCH METHODOLOGY AND SAMPLE

The empirical assessment of this research was developed through quantitative methodology, with the use of multivariate data analysis. Hair *et al.* (2019) state that Partial Least Squares-Structural Equation Modeling (PLS-SEM) is a statistical model used for examining the prediction and explanation of the constructs and, also, it provides a common point between path modeling and confirmatory factor analysis (CFA). Thus, it is an adequate approach to comprehend this research's purpose, which aims at identifying whether the Coronavirus pandemic has influenced entrepreneurial behavior and perceived university support.

The conceptual model constructs (Perceived University Support, Entrepreneurial Self-Efficacy, Entrepreneurial Intention and Before/During Confinement) were based in previous researches (Ahmed *et al.*, 2019; Liu *et al.*, 2020; Moraes *et al.*, 2018; Nassif *et al.*, 2020; Newman *et al.*, 2019; Rocha & Freitas, 2014; Saeed *et al.*, 2015; Shi *et al.*, 2020; Yang *et al.*, 2020), even though their relationship as a whole brings novelty to literature. Additionally, the questions regarding Perceived University Support and Entrepreneurial Self-Efficacy were based and adapted from Shi, *et al.* (2020) and Rocha, *et al.* (2014), the construct of entrepreneurial intention had as main reference the study of Saeed *et al.* (2015), while some indicators were developed by the authors.

A pre-test was carried out after formulating the hypotheses and developing the research conceptual model, to

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assess face validity in three types of audience, as suggested by Forza (2002). The first audience was three experts in entrepreneurial intention models, the second audience was three experts in structural equation modeling, and the third audience five students who were potential respondents to the questionnaire. At this stage, minor adjustments were made to the questionnaires.

Next, to evaluate the sample size and statistical power of the analysis, an analysis with the G*Power 3.1 software (Faul *et al.*, 2009) was conducted and based on the recommendations by Chin and Newsted (1999), Cohen (1988) and Hair *et al.* (2019). Considering two predictors, a significance level of 5%, a statistical power of 0.8, and an average effect size (f^2 = 0.15, which is equivalent to r^2 = 13%), the minimum size of the sample required is 68 to be suitable for estimation by Partial Least Squares Path Modeling (PLS-PM). Considering that the total number of Business students at Unicamp is 960, the final sample of 508 students covered 53% of the course's students. Thus, the sample can be considered probabilistic for Business students at Unicamp, although it is not probabilistic for the Brazilian context of business students.

The first part of the questionnaire asked the respondent to consider the scenario prior to the pandemic, and the second part of the questionnaire asked the respondent to consider the current scenario, during the pandemic.

Since, the indicators used in the questionnaire were validated by previous research or adapted from related literature, a first step in the analysis was to perform a Confirmatory Data Analysis (CFA), where measures were tested in the same model and were restricted to load on their respective factor (Brady & Cronin, 2001). CFA results and descriptive statistics are presented in Table 2. No indicators needed to be excluded from the model.

FINDINGS

The internal consistency, composite reliability, convergent validity and discriminant validity of the constructs were evaluated with SmartPLS 3 software (Hair *et al.*, 2019). Cronbach's alpha assessed internal consistency. Cronbach's alpha values between 0.70 and 0.90 are considered satisfactory for studies in more advanced stages (Fornell & Larcker, 1981). The composite reliability values should be at least 0.70 to indicate that

Table 2
Confirmatory Factor Analysis (CFA)

Questions		Standardized path loading	Critical ratio	p-value	Mean	Standard deviation
Perceived University Support[a]						
PUS1	Offer entrepreneurship disciplines	0.805	39.899	0.000	4.545	0.748
PUS2	Organize entrepreneurship events	0.886	86.115	0.000	4.376	0.834
PUS3	Contact entrepreneurship students with one another	0.854	65.364	0.000	4.456	0.810
PUS4	Support student organizations	0.444	7.670	0.000	4.614	0.708
PUS5	Offer makerspaces and fablabs	0.711	20.923	0.000	4.351	0.874
PUS6	Develop alumni programs	0.593	13.876	0.000	4.075	0.932
Entrepreneurial Self-Efficacy [b]						
SE1	Confident that I can successfully identify new business opportunities	0.836	70.061	0.000	3.355	1.083
SE2	Confident that I can successfully create new products	0.872	84.537	0.000	3.029	1.072
SE3	Confident that I can think creatively	0.758	40.268	0.000	3.721	1.053
SE4	Confident that I can successfully market an idea or new development	0.883	115.342	0.000	3.220	1.142
Entrepreneurial Intention[b]						
EI1	Be willing to do whatever it takes to be an entrepreneur	0.897	136.827	0.000	3.244	1.208
EI2	Feeling that I would make every effort to start and run my own business	0.924	188.757	0.000	3.206	1.242
EI3	To feel that my greatest achievement would be to have my own business	0.867	95.506	0.000	3.088	1.352
EI4	Intend to start a business in the coming years	0.838	68.517	0.000	3.101	1.342

Source: Based on Rocha *et al.* (2014); Saeed *et al.* (2015) and Shi *et al.* (2020).
Note: [a] Likert scale response from 1 (irrelevant) to 5 (very important). The students answered how much they thought some actions by the university were important.
[b] Likert scale responses from 1 (totally disagree) to 5 (totally agree). The students responded how much they agreed with the statements

Table 3
Summary of the Evaluation of Measurement Models

Constructs	Perceived University Support	Entrepreneurial Self-efficacy	Entrepreneurial Intention
Perceived University Support	**0.839**		
Entrepreneurial Self-efficacy	0.584	**0.882**	
Entrepreneurial Intention	0.290	0.310	**0.732**
Cronbach's Alpha	0.833	0.859	0.905
Composite Reliability	0.897	0.904	0.914
Average Variance Extracted (AVE)	0.536	0.703	0.778
Rho_A	0.897	0.877	0.914

Source: Elaborated by the authors (2022).

Thus, the final sample included 508 Business Administration students from Unicamp, with a mean age of 21 to 25 years, 52% female and 96% single. With the authorization of the unit's management, invitations were sent in the institutional email of all Business Administration students to voluntarily participate in the questionnaire. The questionnaire was available to be answered between October 20th and November 12th, 2020.

The University of Campinas (Unicamp) is the second best teaching and research institution in Brazil and the 214th best in the world, according to the QS World University Rankings (Elsevier, 2021). In the international ranking by the British publication, Times Higher Education, of the World University Ranking 2019, the university is at the 401–500 level in the world and first place in Brazil ("Times Higher Education | World University Rankings," 2020). Unicamp's internal entrepreneurial university pathways have a positive effect on students' start-up actions (Guerrero *et al.*, 2014) and when compared with other universities from emerging countries, it has higher entrepreneurship outputs.

the items are enough to represent their respective constructs (Hair *et al.*, 2019). The average variance extracted (AVE) is one of the criteria for testing the convergent validity of a construct (Fornell & Larcker, 1981). AVE values higher than 0.50 are acceptable to indicate that a large amount of the mean-variance of the indicators is captured by each factor and not by the measurement error (Hair *et al.*, 2019). All the mentioned values are within these limits (Table 3). The discriminant validity evaluates the distinction between two similar constructs. To confirm the discriminant validity of the model, the square root of AVE that is presented on the diagonal of the correlation matrix (Table 3) should present values higher than the correlation with other constructs (Hair *et al.*, 2019). The square root of AVE values suggests that there is no relationship between the indicators associated with their respective construct with other constructs of the model.

The value of Variance Inflation Factor (VIF) for each subsection of the structural model was analyzed to assess collinearity. If 0.2 < VIF < 5, the collinearity of the construct is

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adequate, and all values are within those established by Hair *et al.* (2019). The Student's t-test analyzes the hypothesis that the coefficients of correlation are equal to zero. If the results of this test indicate values higher than 1.96, the hypothesis is rejected, and the correlation is significant (Hair *et al.*, 2019).

The bootstrapping technique was used to evaluate the statistical significance of the constructs and all values of the relationships presented Student t-values higher than 1.96 (significance level = 5%), as seen on Table 4.

Table 4
Coefficients of the Structural Model – Between constructs

Path	Sample mean	Standard deviation	T-statistics	p-values
Entrepreneurial Self-efficacy → Entrepreneurial Intention	0.539	0.025	21.657	0.000
Perceived University Support → Entrepreneurial Self-efficacy	0.290	0.031	9.408	0.000
Perceived University Support → Entrepreneurial Intention	0.154	0.026	5.806	0.000

Source: Elaborated by the authors (2022).

According to the results (Table 4), all relationships are significant at a significance level of 5%, supporting hypotheses 1, 2 and 3. These results are in line with previous studies, which indicate that the perceived university support has a positive influence on entrepreneurial intention and self-efficacy (Saeed *et al.*, 2015; Moraes *et al.* 2018, 2021; Mustafa *et al.*, 2016), and that self-efficacy has a positive influence on entrepreneurial intention (Moraes *et al.* , 2021; Saraih *et al.*, 2018).

To evaluate the coefficient of determination (R^2), analysis was based on Cohen (1988) and Faul, Erdfelder, Lang, and Buchner (2007), whose studies established that R^2 values equal to 2%, 13%, and 25% are considered, respectively, as small, medium and large effects. Regarding our analysis, the model presented R^2 of 0.084 for the construct self-efficacy, considered between small and medium, and R^2 of 0.363 for the construct entrepreneurial intention, considered high. Also, for SEM models, values of Q^2 higher than zero indicate the predictive relevance of the path model, which means that, in this study, the values are considered adequate (Hair *et al.*, 2019).

In order to test whether there are differences between the relationships prior and during the pandemic periods, a multigroup analysis (Table 5) was performed (Hair *et al.*, 2019).

Table 5
Analysis of relationships according to the moment - during and before the pandemic

Path	Path coefficients difference (during – before)	p-values
Entrepreneurial Self-efficacy → Entrepreneurial Intention	0.011	0.821
Perceived University Support → Entrepreneurial Self-efficacy	-0.027	0.659
Perceived University Support → Entrepreneurial Intention	0.044	0.384

Source: Elaborated by the authors (2022).

Following our empirical results, it is possible to acknowledge that there are no differences prior and during the pandemic concerning the relationships amongst perceived university support, entrepreneurial self-efficacy and entrepreneurial intention, not confirming hypotheses 4, 4a, 4b and 4c. These results are contrary to those found by other authors. For Loan *et al.* (2021) and Ruiz-Rosa *et al.* (2020), the pandemic resulted in a decrease in entrepreneurial intention. Also, in Loan *et al.* (2021), the results point to an impact on self-efficacy as well. In the present study, in which we compared the moment before and the moment during the pandemic, the results indicated the students' perception did not change significantly. This may have been due to the fact that we were confronted two different moments, while other authors carried out an analysis in just one moment. The complete model is presented in Figure 2.

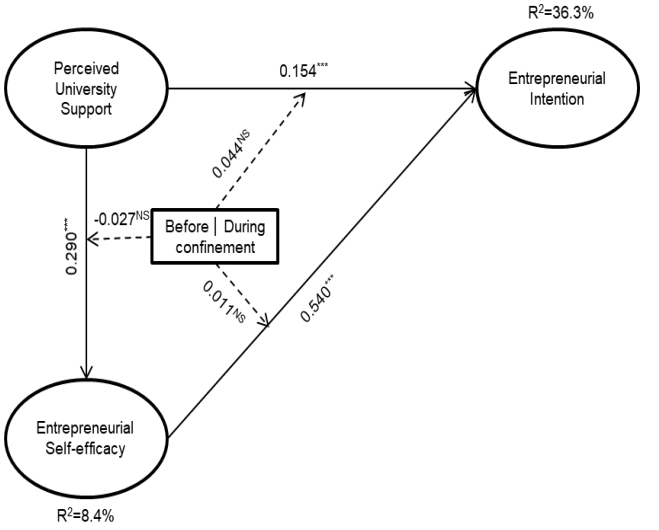

Figure 2
Complete empirical model.
Notes: * = significant at 5%; ** = significant at 1%; *** = significant at 0.1%; NS = not significant
Source: Elaborated by the authors (2022).

The synthesis of the study hypotheses is shown in Table 6.

Table 6
Synthesis of the Study Hypotheses Tests

	Description	Result
H1	Perceived University Support has a positive influence on Entrepreneurial Intention	Confirmed
H2	Perceived University Support has a positive influence on Entrepreneurial Self-Efficacy	Confirmed
H3	Entrepreneurial Self-Efficacy has a positive influence on Entrepreneurial Intention	Confirmed
H4	The relationship amongst Perceived University Support, Entrepreneurial Intention and Entrepreneurial Self-Efficacy before confinement differs to the one presented during the confinement	Not confirmed
H4a	The Perceived University Support prior to confinement presented a better relationship with Entrepreneurial Intention than to the one demonstrated during confinement	Not confirmed
H4b	The Perceived University Support prior to confinement presented a better relationship with Entrepreneurial Self-Efficacy than to the one demonstrated during confinement	Not confirmed
H4c	Entrepreneurial Self-Efficacy, prior to confinement, presented a better relationship with Entrepreneurial Intention than to the one demonstrated during confinement	Not confirmed

Source: Elaborated by the authors (2022).

DISCUSSION

This research focused on unraveling the effect of Coronavirus pandemic at Unicamp students on entrepreneurship behavior, in specifics self-efficacy and intention, as well as on the entrepreneurial education, particularly perceived university support. The results reaffirmed previous research results that studied the university environment, entrepreneurial intention and self-efficacy (Moraes *et al.*, 2018, 2021; Mustafa *et al.*, 2016; Saeed *et al.*, 2015; Saraih *et al.*, 2018). However, the results were contrary to those found in the literature regarding the impact of covid on entrepreneurial behavior (Loan *et al.*, 2021; Ruiz-Rosa *et al.*, 2020; Yang *et al.*, 2020).

Considering the confirmed hypotheses, the research reiterates the complementarity of the entrepreneurship triad and reinforces the determining factors of entrepreneurial intention (Fragoso *et al.*, 2020), as seen in Newman *et al.* (2019). Although Newman *et al.* (2019) centered their study in entrepreneurial self-

efficacy, they highlighted the extant research on entrepreneurial self-efficacy, its antecedents and outcomes. According to their perspective, self-efficacy interacts reciprocally with internal and external environments, acting as a key theoretical approach to study entrepreneurial actions and beliefs. Entrepreneurial education act as one of its antecedents, due to proper experiences supply, emotional competences and psychological traits enhancement, whereas entrepreneurial intention is transmitted as one of its outcomes, since it is associated with the individuals' perceptions of handling given situations. Therefore, the entrepreneurial thinking englobes entrepreneurial education, entrepreneurial self-efficacy and entrepreneurial intention.

Regarding the unconfirmed hypotheses, although the relationships between perceived university support, entrepreneurial intention and entrepreneurial self-efficacy show differences, these differences were not significant. It is noteworthy that the effect of the pandemic was considered through the students' perceptions of such elements, before and during confinement. The COVID-19 pandemic and the many blockages in economies around the world have created a unique situation that has no documented equivalent in the entrepreneurship literature (Kuckertz *et al.*, 2020). Thus, these results may be linked to the achievement of long-term goals and the tendency to persevere and sustain the effort when faced with difficulties or setbacks in life (Salisu *et al.*, 2020). It aligns with the concept of resilience within the field of entrepreneurship, since it relates to one's preparedness or capacity to adjust, and, it also carries an encouragement of entrepreneurial activity, behaving as a determinant of entrepreneurial intention (Korber & McNaughton, 2018).

Alongside these findings, individuals have to sail through tough conditions and in crisis context to minimize the impacts of COVID-19 crisis and, optimistically, restore functionality (Salisu *et al.*, 2020). Within entrepreneurship field, crisis management is predominantly aimed at evaluating the actions done to mitigate its potential negative consequences, but taking into consideration the challenges presented by COVID-19, it seems suitable the embrace of iterative and flexible approaches such as effectual logic (Kuckertz *et al.*, 2020; Sarasvathy, 2001).

Another point to be highlighted is that, although entrepreneurial self-efficacy generally demonstrates high levels of influence on entrepreneurial intention (Fragoso *et al.*, 2020; Moraes *et al.*, 2021; Saraih *et al.*, 2018), results showed that perceived university support was higher assessed at Unicamp, as they imply entrepreneurial knowledge lead to entrepreneurial intention. Put differently, entrepreneurial education contributes to the development of entrepreneurial intentions (Küttim *et al.*, 2014; Lüthje & Franke, 2003; Peterman & Kennedy, 2003). Accordingly, the online instruction broadens the spectrum of learning entrepreneurial education, straying away from the traditional teaching and pedagogical solutions (Liguori & Winkler, 2020).

Such fundamental aspects of this entrepreneurship triad make noteworthy its unity and triple nexus. Alternatively, the dramatic nature of COVID-19 could have initiated an undesired outcome for potential entrepreneurs, but these research findings illustrated the entrepreneurship connection to risk-taking, resilience, uncertainty and agile nature (Bacq *et al.*, 2020; Caliendo & Kritikos, 2011; Kuckertz *et al.*, 2020; Neumeyer *et al.*, 2020).

CONCLUSION

This paper portrayed the relationship amongst Perceived University Support, Entrepreneurial Self-Efficacy and Entrepreneurial Intention during one of most economically and socially disruptive events since the financial crisis in 2008 (Neumeyer *et al.*, 2020). This article addressed the COVID-19 possible effects, prior and during confinement, on student's entrepreneurial behavior and education and found no significant difference between the two-time sets.

It is known that entrepreneurial success depends on the support that entrepreneurs receive from their environment (Neumeyer *et al.*, 2020), such as entrepreneurial resilience, that may serve as a crucial passageway to entrepreneurial success (Salisu *et al.*, 2020). However, from a different perspective, the lack of support also matters. Kucketz *et al.* (2020) enlighten Germany's current economic climate and state that since the COVID-19 outbreak, the niche of entrepreneurs had sales reduced while unaltering the fixed cost, representing a combination unfavorable for the long-term survival. Thus, the COVID-19 crisis besides threatening economy and health systems, it also threatens the potential for innovation that small business could have proven viable in normal times.

The research helped to fill the research gaps, which contribute to the construction of the field of scientific knowledge. By presenting an investigation model with two cross-sections of data collection, the research adds information about the effects of the coronavirus pandemic on the relationship between entrepreneurial education, self-efficacy and entrepreneurial intention (Loan *et al.*, 2021; Ratten, 2020, 2021; Ruiz-Rosa *et al.*, 2020) in a developing country context. The results reinforce that an online and non-traditional approach to entrepreneurship education can be used perfectly, despite the contextual circumstances (Liguori & Winkler, 2020). Furthermore, even with the uncertainties of the COVID-19 pandemic (WHO, 2020a), this may not be a strange scenario for entrepreneurship in Latin America, as uncertainty plays a central role as linked to the decision to innovate, continuous experimentation and learning (Guerrero *et al.*, 2014; Isenberg, 2010). Finally, the information collected from a renowned Brazilian university complements the studies on perception of university support, entrepreneurial self-efficacy and entrepreneurial intention, while complementing the body of research on possible influences of the COVID-19 pandemic, integrating crisis management and entrepreneurship, which is another gap in the literature (Ratten, 2020, 2021).

From a practical point of view, the results bring interesting perspectives to the context of a developing country. Although the pandemic has aroused fears of an economic crisis, where many jobs were lost in all economic sectors (Nicola *et al.*, 2020), it is possible to see positive points, such as a period of accelerated diffusion of digital technologies, micro-level initiatives and consideration of established forms of resource intensive use (Karabag, 2020). Thus, understanding that the pandemic has not yet impacted the entrepreneurial behavior of students, universities can take the opportunity to improve the university environment to support entrepreneurship, better preparing students for the opportunities and challenges in the post-pandemic moment. The results also demonstrate the need to increase students' self-efficacy, which can be achieved with more innovative initiatives to promote entrepreneurship in universities, connecting students to markets and going beyond conventional strategies based on courses and training aimed at entrepreneurship (Moraes *et al.*, 2021).

It is important to notice that our results and discussion do not go without limitations. Mainly, it comprised only students enrolled at Unicamp. Therefore, the debate brought evidences of this specific group. This study considered the student's perception, which stands as a subjective manner and reflects personal inclination. Besides, students from all years were approached, therefore the maturation in students' perceptions might differ when considering freshmen and senior students. Also, despite the extensive efforts to characterize the periods prior and during the confinement, scholars are still uncovering this theme and there might be more dimensions to be considered.

Further investigations are needed to validate this conceptual model. Replicating the study with students from other universities and other states, as well as encompassing an array of

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fields and levels could enrich the analyses. Besides, future investigation can focus on students from a specific course or year of graduation to understand their intention on endeavoring, even with external influences. Also, deepening the understanding of these constructs and their relation by performing a qualitative approach could offer further the understanding of these constructs and their interrelations. Another possibility is to perform a longitudinal study to evaluate the phases prior, during and posterior of students' perception on entrepreneurial intention, self-efficacy and university environment. From our perspective, perhaps COVID-19 effects are still immature, which demands closer and longer investigations, particularly in the field of entrepreneurship.

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Conflict of interest statemen

I declare for due purposes that the authors have no conflicts of interest.

Authors' statement of individual contributions

Roles	Contributions by authors		
	Rocha A.K.L. da	Pelegrini G.C.	Moraes G.H.S.M. de
Conceptualization	■	■	■
Methodology			■
Software			■
Validation	■	■	■
Formal analysis	■	■	■
Investigation	■	■	
Resources	■	■	■
Data Curation	■	■	■
Writing - Original Draf	■	■	■
Writing - Review & Editing	■	■	■
Visualization	■		■
Supervision		■	
Project administration	■	■	■
Funding acquisition	■	■	■

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