

# Impact of COVID-19 on undergraduate business students: a longitudinal study on academic motivation, engagement and attachment to university

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## Abstract

**Purpose** – This study aims to explore whether the COVID-19-related circumstances hindered these academic-related variables.

**Design Methodology Approach** – The authors surveyed two groups of undergraduate business students (42% male) who completed the questionnaires at the beginning and at the end of the semester. One group of students attended only face-to-face classes in the 2018/2019 academic year ( $n = 126$ ) and the other group transitioned to online classes because of the COVID-19 outbreak in the 2019/2020 academic year ( $n = 99$ ).

**Findings** – The findings show no statistically significant group differences between the pre- and post-test in students' intrinsic and extrinsic motivation, feelings of attachment to the university and engagement dimensions of absorption and vigour. Nevertheless, a moderate negative effect was found in the dedication engagement dimension.

**Practical Implications** – The authors discuss the main results in terms of some practices that may contribute towards attenuating the effects of future emerging pandemics in the higher education setting.

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**Originality Value** – The COVID-19 pandemic imposed a rapid transition to online instruction in education institutions worldwide. However, it remains unclear to date how students' engagement, motivation and attachment to the university were negatively affected by the first COVID-19 outbreak.

**Keywords** Higher education, Engagement, Motivation, COVID-19, Attachment to university

**Paper type** Research paper

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## Introduction

The high infection rates of the SARS-COV-2 strained all aspects of society, including higher education. During the first COVID-19 outbreak, national governments imposed strict home confinement measures to thwart the spread of the virus and 85% of education institutions in Europe replaced the face-to-face classroom with online teaching (Marinoni *et al.*, 2020). This transition involved new challenges, but its impact on academic outcomes remains unclear, especially when considering the sudden nature of the imposed measures. In the current study, we explore the effects of COVID-related circumstances on students' motivation, engagement and attachment to the university using a longitudinal design.

A large body of research has shown that students' motivation relates to both engagement and attachment to university. Motivation is an important antecedent of engagement (Reeve, 2012), while relatedness (i.e. attachment to the university) is considered one critical psychological need to foster students' intrinsic motivation and academic engagement (Freeman *et al.*, 2007; Ryan and Deci, 2017; Shernoff, 2013; Strange and Banning, 2001). Moreover, prior studies have shown that motivation, engagement and attachment are predictors of academic achievement (Archambault *et al.*, 2009; Ryan and Deci, 2017; Lai, 2011; Lazowski and Hulleman, 2016; Lane *et al.*, 2015; Shernoff, 2013; Lam *et al.*, 2012; Padilla-Walker *et al.*, 2013), making important to monitor the effects of the educational solutions that were conceived during the initial stages of the COVID-19 pandemic on these academic variables.

The self-determination theory (Ryan and Deci, 2017) states that the satisfaction of psychological needs for autonomy, competence and relatedness are crucial aspects of academic motivation and the COVID-related circumstances may have hampered the fulfilment of those needs. Students experience autonomy when there is a sense of psychological freedom and perceived choice over one's behaviours and experiences in learning activities. Competence is jeopardized when learning tasks are too challenging as the student needs to perceive mastery in one's interactions with the environment. Additionally, relatedness refers to the need of establishing close emotional bonds with other people and of being a significant member of social groups. Students fulfil these psychological needs and become intrinsically motivated when teachers and peers create an authentic, warm and supportive environment. At the other end of the motivation spectrum, the concept of amotivation describes those students who do not perceive any causal links between their actions and academic outcomes. In this sense, amotivation is usually accompanied by feelings of incompetence and lack of control over one's behaviours. When it comes to online classes, students display higher levels of motivation compared to on-campus students, mainly because of students' perceptions of autonomy in their choice of course delivery (Rovai *et al.*, 2007; Shroff and Vogel, 2009; Wighting *et al.*, 2008; Kim and Frick, 2011). However, in the context of COVID-19, students did not voluntarily choose to engage in online classes. Instead, they were constrained by external circumstances. This lack of control over choice may have strained students' sense of competence and autonomy with negative implications for motivation. A cross-country study showed indeed a decrease in academic motivation of Portuguese and Italian school-aged children during the home confinement period (Zaccoletti *et al.*, 2020).

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Regarding engagement, it is more of a state rather than a stable individual attribute, being also heavily influenced by contextual factors such as policies of educational institutions and interactions with peers (Sinclair *et al.*, 2003). This means that the contextual changes in the educational settings because of the COVID-19 outbreak are likely to affect students' engagement. The literature describes several factors that influence one's engagement (Mahatmya *et al.*, 2012; Shernoff, 2013; Reeve, 2012) that may apply to COVID-19 exceptional circumstances. For example, anxiety is a natural phenomenon during disease outbreaks, considering the uncertainty around the illness outcomes and the number of deaths increasing exponentially (Pasion *et al.*, 2020). The effects of task-withdrawing emotions such as anxiety may undermine the emotional dimension of engagement (e.g. concentration, effort and self-regulation to pursue sophisticated learning strategies) (Mahatmya *et al.*, 2012; Shernoff, 2013; Reeve, 2012). The extent to which students proactively enrich their learning experiences, rather than passively receiving them, is another relevant dimension of behavioural engagement that may reduce in online settings. Taking into consideration the complex determinants of engagement, oversimplified attempts to implement online courses may have negative implications for engagement, particularly in the context of a pandemic which requires rapid curricula rearrangements (Czerkowski and Lyman, 2016).

Finally, the social isolation imposed by COVID-19 may have weakened attachment to the university. Previous findings indicate that students enrolled in online courses exhibit lower levels of attachment relative to classroom students, which is explained by the higher feelings of isolation, the lack of physical presence and participation that online students report (Lane *et al.*, 2015). It is also acknowledged that the sense of physical proximity allows for the emergence of incentives which are critical to motivating learning in online teaching settings (Tu, 2000). For instance, communication styles, computer literacy skills, language skills and paralinguistic skills have a great influence on the ability to create an apparent physical proximity. Building on these findings, attachment to the university is considered a critical concept to provide effective guidance on online teaching contexts as it is likely to constitute a promising means for maintaining one's connection to the university in times of social distance and for mitigating the negative consequences that are expected to be found in motivation and engagement.

From the reviewed literature, the first COVID-19 outbreak may have hampered students' motivation, engagement and attachment to the university because of the rapid transition to online teaching in overwhelming circumstances. To test this hypothesis, we surveyed two groups of first-year business students (classes of 2018 and 2019) about their academic motivation, engagement and attachment to the university. The class of 2018 attended only face-to-face classes while the class of 2019 transferred to online classes because of the COVID-19 outbreak. This is a longitudinal study with a pre- and post-test design, in which all participants completed the questionnaires (academic motivation, engagement and attachment to the university) at the beginning and at the end of the semester. In the next sections, we will analyse the collected data and discuss the main results.

## Methods

### *Sample and procedures*

We conducted this study in a Portuguese university, with a total 900 students in management and economics bachelor's degrees. Our school monitors changes in several academic-related engagement variables in first-year students and this brought interesting possibilities in terms of allowing for exploring differences in students' motivation, engagement and attachment to the university during the first COVID-19 outbreak.

Two groups of first-year students (2018 and 2019 classes) took part in this study. Data were collected for both groups at two time points: at the students' welcome week before

classes start (T1, September 2018 and 2019) and at the end of the first academic year (T2, May 2018 and 2019). Because of the COVID-19 outbreak, our school officially ceased classroom teaching on 11 March 2020, after four weeks of normal on-campus activity. This means that almost 70% (10 weeks) of the second semester of the 2019/2020 academic year took place on online platforms. As such, while the class of 2018 had a typical first-year experience at the university (thus acting as the control, on-campus group) the class of 2019 experienced the challenges imposed by the pandemic (i.e. online-COVID group).

The final sample included 225 undergraduate business students (42% male), aged between 17 and 26 years ( $M = 18.37$ , standard deviation [ $SD$ ] = 0.99), that completed both waves of the study. Drop-out rates from T1 to T2 were 30% in the on-campus group ( $n = 126$ ) and 27% in the online-COVID group ( $n = 99$ ). Table 1 describes participants' sociodemographic characteristics, which were not significantly different between groups. Participation was always voluntary and anonymous, and all respondents gave informed consent.

### Measures

Students' motivation towards college was assessed using the Academic Motivation Scale (Vallerand *et al.*, 1992). Participants rated their agreement with 28 statements ( $1 = not at all$  and  $7 = exactly$ ) regarding reasons why they want to attend college. These reasons are aggregated into seven dimensions (four items each) that represent the dimensions proposed by the self-determination theory: amotivation; extrinsic motivation – external regulation, introjected and identified; and intrinsic motivation – to experience stimulation, towards accomplishment and to know.

The Utrecht Work Engagement Scale (Schaufeli *et al.*, 2002) was adapted to assess students' engagement. Participants rated how often ( $0 = never$  and  $6 = every day$ ) each of the statements related to their experience as a university student on three dimensions: vigour, dedication and absorption.

Attachment was evaluated through the University Attachment Scale (France *et al.*, 2010). Participants evaluated how accurate ( $1 = not at all accurate$  and  $5 = extremely accurate$ ) each of the nine statements applied to themselves, considering two main dimensions: attachment to the group and to the members of that group.

More details on the measures and their psychometric properties (internal consistency and confirmatory factorial analysis) are provided in Supplementary Material (<https://osf.io/z82sm/>).

**Table 1.**  
Participants'  
sociodemographic  
characteristics, per  
group

Sociodemographics	On-campus	Online-COVID	Group differences
Gender	40% male 56% female	44% male 44% female	$\chi^2(1, n = 208) = 1.42, p = 0.261$
Age ( $M, SD$ )	18.36 (1.11)	18.39 (0.84)	$t(196) = 0.16, p = 0.873$
Course year	86% first-year	88% first-year	$\chi^2(1, n = 198) = 0.15, p = 0.999$
Course	13% economics 75% management	13% economics 76% management	$\chi^2(1, n = 198) = 0.01, p = 0.999$
High school background	37% public 59% private	42% public 47% private	$\chi^2(1, n = 208) = 1.84, p = 0.202$
High school grade point average (GPA)	16.66 (0.91)	16.80 (1.04)	$t(201) = 1.02, p = 0.309$
First-year university GPA	13.66 (1.56)	13.51 (1.56)	$t(186) = 0.63, p = 0.533$

## Results

A between-subjects multivariate analysis of variance was performed to analyse for statistically significant differences between T1 and T2. The subscales of attachment, motivation and engagement were included as dependent variables to correct for the expected shared variance between scale dimensions. Groups (online-COVID and on-campus) were included as the between-subjects factor and allowed to explore univariate group mean differences in the variables of interest. Bonferroni adjustments were calculated to adjusting for type I errors in multiple  $t$ -test comparisons. Table 2 presents the descriptive statistics for all variables.

There was no multivariate effect of group on attachment,  $F < 1$ . The univariate analysis revealed no significant group differences on both member ( $p = 0.854$ ) and group dimensions of attachment ( $p = 0.999$ ) [Figure 1(a)].

A non-significant group factor for motivation was also found,  $F < 1$ , across all the dimensions (all  $p$ 's  $> 0.280$ ) [Figure 1(b)].

A significant multivariate effect of group emerged in engagement from T1 to T2 [ $F(3, 221) = 12.9, V = 0.149, \eta_p^2 = 0.149, p < .001$ ]. The post-hoc analysis showed that group differences were observed in dedication ( $p < 0.001, d = 0.72$ ) but not in vigour ( $p = 0.135$ ) and absorption ( $p = 0.651$ ). The group of students that had online classes because of the COVID-19 circumstances exhibited a greater reduction in dedication compared to the group that had on-campus classes in the previous year [Figure 1(c)].

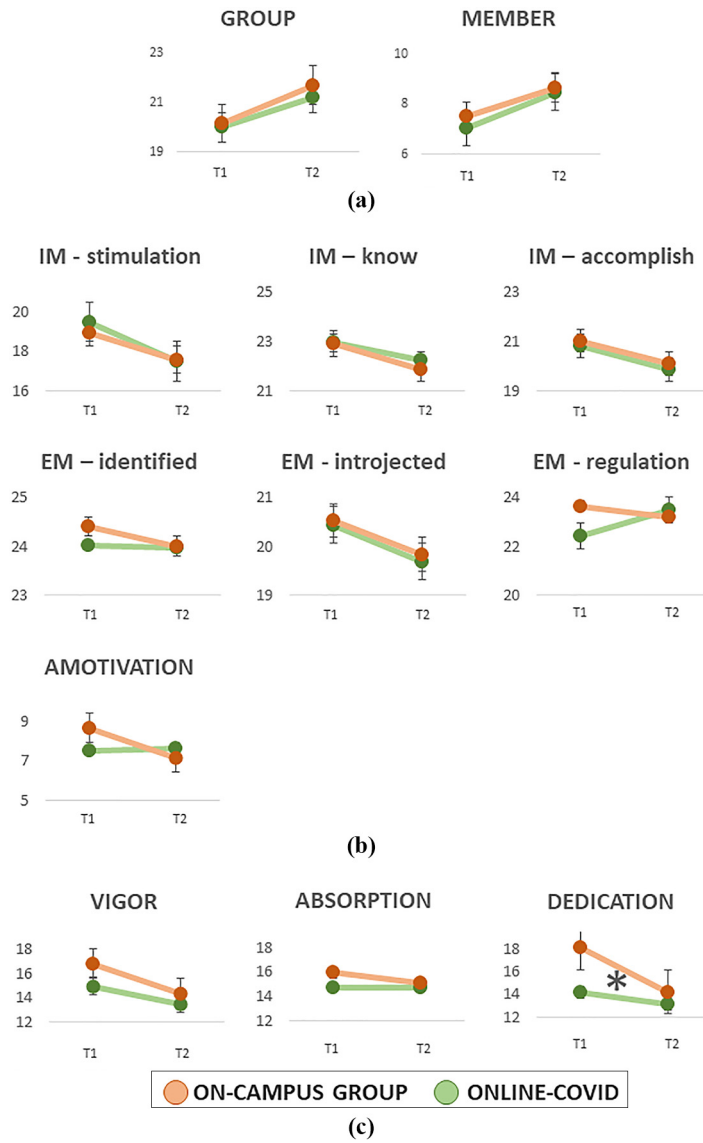
## Discussion

Higher education institutions faced complex challenges with the uncertainty brought by the first COVID-19 outbreak. Universities worldwide had to deal with a context of mounting pressure to act and were forced to rearrange their operations towards online solutions

	Online-COVID group				On-campus group			
	T1		T2		T1		T2	
	M	SD	M	SD	M	SD	M	SD
<i>Motivation</i>								
Amotivation	7.52	5.37	7.63	5.07	8.67	6.21	7.17	4.93
IM: to know	22.93	3.27	21.88	4.06	22.94	4.25	22.25	4.65
IM: to accomplish	21.02	4.11	20.09	4.75	20.81	5.35	19.85	5.04
IM: stimulation	18.96	4.94	17.57	5.13	19.50	5.25	17.51	5.53
EM: identification	24.40	2.87	24.00	3.80	24.03	3.87	23.98	3.99
EM: introjected	20.02	5.36	19.33	5.79	19.94	6.26	19.19	6.28
EM: regulation	23.65	3.82	23.22	4.17	23.43	4.30	23.48	4.13
<i>Attachment</i>								
Group	20.18	3.39	21.46	4.02	20.00	3.50	21.19	3.73
Member	7.50	1.94	8.68	1.85	7.04	2.26	8.49	1.93
<i>Engagement</i>								
Vigour	14.97	3.27	13.52	3.68	16.82	3.03	14.31	3.65
Dedication	13.70	3.44	12.65	3.83	17.62	2.72	13.72	3.93
Absorption	14.70	2.96	14.51	2.99	15.94	3.25	15.09	3.12

**Notes:** IM – intrinsic motivation; EM – extrinsic motivation

**Table 2.**  
Mean and SD for time 1 (T1) and time 2 (T2) for the online-COVID and on-campus groups



**Figure 1.** Attachment, motivation and engagement differences from time 1 (T1) to time 2 (T2) in the online-COVID (green) and on-campus groups (orange)

**Notes:** (a) Attachment; (b) motivation; (c) engagement

requiring substantial alterations in the short term. However, to date, it remains unclear how these exceptional circumstances affected important educational outcomes of undergraduate students. For this purpose, we will first discuss the results of this study. Then, the lack of significant differences in motivation, engagement and attachment to the university when comparing online and face-to-face students opened an avenue to analyse some practical

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implications. Namely, to what extent have the measures the university took to deal with this unprecedented pandemic context may have helped prevent decrease in students' motivation, engagement and attachment to the university.

Our results reveal that the group of students who were forced to move to online learning because of the COVID-19 outbreak did not show differences in academic motivation and attachment to the university from T1 to T2, compared to the group that attended only face-to-face classes in the previous academic year. This contrasts with previous studies (Zaccoletti *et al.*, 2020), as the lack of physical presence, low participation and feelings of isolation would be expected to compromise attachment to the university in online students (Lane *et al.*, 2015; Zaccoletti *et al.*, 2020). Moreover, the lack of control over choice and the reduced sense of competence and autonomy to pursue goal-oriented learning strategies resulting from changing from face-to-face classes to online classes were expected to decrease academic motivation (Kim and Frick, 2011). However, in our sample, online students were able to maintain their motivation and attachment, indicating that students' motivation to learn in an online environment interacts with the perceptions of physical proximity and social presence (Tu, 2000).

The only negative affect found in our results from the transfer from face-to-face to online learning was observed in the dedication dimension of engagement. The online students were able to maintain their energy towards academic tasks (i.e. vigour) and to remain immersed in them (i.e. absorption), but their involvement decreased (i.e. dedication). Some prior studies argue that engagement is state-dependent on contextual changes, such as those resulting from the COVID-19 context (Sinclair *et al.*, 2003; Czerkowski, and Lyman, 2016; Mahatmya *et al.*, 2012; Reeve, 2012; Shernoff, 2013). The pressure of reorganizing and adapting to a new format of classes in a short period of time, and the lack of experience in online learning, could have increased anxiety and reduced proactive involvement which could, in turn, have undermined engagement. In fact, a survey conducted during the initial stages of COVID-19 in our country revealed that anxiety levels were particularly high among individuals in the same age range of our sample (Pasion *et al.*, 2020).

In summary, our findings suggest that the changes imposed by the first COVID-19 outbreak did not compromise students' academic motivation, attachment to the university, absorption and vigour, despite a moderate negative effect in dedication ( $d = 0.72$ ).

### **Implications for practice**

Self-determination theory relies on the assumption that the satisfaction of basic psychological needs is critical to the educational process (Ryan and Deci, 2017). The threatening circumstances brought by the first COVID-19 outbreak highlights the importance of practices to safeguard not only students' health, but also their psychological needs for competence, autonomy and relatedness. Importantly, the fulfilment of these psychological needs interacts with their motivation, engagement and attachment to the university. Therefore, there is a need for systematizing educational practices that may guide decisions on teaching and learning in future pandemics.

#### *Need for competence*

Competence requires the ability to effectively interact with the environment (Ryan and Deci, 2017). The existence of protective and structured environments, together with mechanisms for obtaining continuous feedback and knowledge of results are key to fulfil the need for competence and, subsequently, motivation and engagement (Shroff and Vogel, 2009; Ryan and Deci, 2017).

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At a first moment, the ideal conditions for learning and experiencing competence during a pandemic may be highly dependent on a protective context, safeguarding health issues and guaranteeing equal opportunities in the access of technology for all stakeholders. There also other challenges and difficulties. For example, the lack of previous significant learning experiences in online platforms for both students and teachers and the needs of international students who might want to return to their home countries in different time zones. Our school attempted to create this supportive environment by offering to buy or to borrow technological equipment (e.g. tablets and computers), by creating training sessions for the use of online platforms before classes start again, and by recording live classes for students to attend and view at their own pace (Panther *et al.*, 2012).

At a second moment, and besides creating a protective and supportive environment, it is important to build a structured, predictable environment. Students need to have clear and realistic expectations about learning activities and outcomes to formulate achievable goals and pursue sophisticated self-regulatory learning strategies (Shroff and Vogel, 2009; Ryan and Deci, 2017). As such, it might be essential to help students and staff to recreate a predictable learning process amid a chaotic pandemic world. The faculty can play an important role in building this structured context by accelerating negotiations with the university management to clarify the university's response to the pandemic. When the decision is taken, then definitive changes are possible, and uncertainty is reduced. Here, communication strategies may be critical as decisions should be communicated in time, clearly and effectively. For example, in our school, all students' questions regarding COVID-19 to different members of the board, staff and professors were redirected to one assigned person. Furthermore, the first email to students regarding the COVID situation was to communicate the definitive decision to move all activities online until the end of the semester. These two strategies not only assured the consistency of the information given to students but also provided a clear learning structure in times of high uncertainty. Thus, rather than defining measures for short periods of time, that could imply further changes or revaluations of adopted decisions, it may be better to define early on the conditions for the semester, thereby providing a stable and predictable environment for students to develop adequate self-regulatory learning strategies and to remain motivated and engaged. In structured contexts, students and teaching staff are more able to foresee and anticipate the long term and, thus, this reduces the ambiguity about the future and increases the sense of control and competence to deal with all the ongoing challenges.

Teaching staff may also benefit from the clear decisions and communications strategies in terms of changes to the academic calendar, online teaching pedagogies and changes to assessments and evaluations. These features create a common approach for teachers to develop possible solutions for learning practices. One of the first measures taken by our school was to meet each course coordinator to discuss changes in course delivery. As a result, one week after the decision to suspend teaching activities, the school announced to students that classes were ready to begin and sent the new (definitive) calendar for the entire semester. This further contributed to build a predictable environment for students.

Finally, another concern to increase the need for competence relies on the continuous knowledge of results and timely feedback (Shroff and Vogel, 2009; Ryan and Deci, 2017). A recursive results–feedback system is inherently dependent on the need of autonomy and practices focused on making students and teaching staff agents of the educational process.

#### *Need for autonomy*

Within a structure capable of reducing uncertainty, students and teaching staff can be more effective stakeholders in the process of improving online teaching practices. Self-determination, autonomy, motivation and engagement are boosted by the sense of agency,



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the perceived opportunities for choice and the perceived control of one's actions (Shroff and Vogel, 2009; Ryan and Deci, 2017). By contrast, amotivation encompasses perceptions of incompetence, and the difficulty in establishing causal links between actions and academic outcomes. As a result, how individuals experience control over outcomes is affected by how individuals perceive themselves as autonomous (Shroff and Vogel, 2009). This is crucial for the effective operation of the educational transaction by restoring the belief that students can be held accountable for what they do. In self-determining contexts, options are provided to students, they are encouraged to initiate actions and to participate in the learning process. Therefore, the existence of practices encouraging students and active voices in the learning process may foster the sense of agency, motivation and engagement.

One way to achieve this is by opening communication channels with student representatives. This will guarantee a direct link to the mounting concerns of students, allowing timely action. This may work together within a recursive results–feedback system, in which students provide some guidance on their first online experiences. For example, online surveys are a useful tool to collect students' feedback on the new online learning practices. These results may then be shared among course coordinators and used to inform future decisions on learning practices. At our school, the first feedback was collected after a week and a half of online teaching. Teaching staff were eager to receive continuous feedback and have knowledge of results, and consequently the student representatives continued to provide feedback at various points during the semester.

Teaching staff can be further encouraged to be autonomous and to make their own decisions regarding how to deliver online course content and how to design online course evaluations. Ultimately, these practices make educational stakeholders aware of the main results of the students' feedback, as well as their emergent needs. They also allow stakeholders to play an active role in the process of defining new solutions to online learning. This involvement of students and teaching staff in the educational practice is also likely to affect the third key psychological need: relatedness (Ryan and Deci, 2017).

#### *Need for relatedness*

Motivation and engagement are more likely to flourish when social and interpersonal experiences contribute to one's feeling of connectedness to a group (Shroff and Vogel, 2009). As a close attribute of attachment to university (Freeman *et al.*, 2007; Shernoff, 2013), relatedness is thought to be influenced by environments of genuine caring, mutual respect, safety and a sense of affiliation or belongingness to whom one feels connected (Ryan and Deci, 2017), as well as by the active participation in social groups (Lane *et al.*, 2015). The existence of a supportive environment, together with the participation of students and teachers in the educational process to face an external threat, may enhance the bond between stakeholders and increase group cohesion and relatedness.

Furthermore, the decision of maintaining the structure as similar as possible to face-to-face teaching might be challenging, but it allows group assignments and events at the school level to continue (e.g. free online conferences, debates and round table discussion). These kept students connected to their school and their peers in times of home confinement and social distancing while promoting a sense of "normality" and unchanged levels of human interaction. In our school, some courses in the study plan follow a project-based learning strategy with a strong focus on teamwork and communication skills (Oliveira and Castro Guimarães, 2010). These courses kept their initial planned activities, in which group assignments and interactions among students were carried out in an online format. Moreover, students' perceptions of apparent physical proximity are relevant for the motivation to learn

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(Tu, 2000), and the pandemic context may have enhanced students' degree of acceptance of teachers' efforts in that respect.

### **Limitations, contributes and future directions**

The small sample size and the inclusion of business students may limit the generalization of these findings to other courses or student groups of other age ranges (Zaccoletti *et al.*, 2020). Nevertheless, our sample represents approximately 30% of the students enrolled in the first year of our management and economics bachelor's degrees. At a broad level, the value of this study's contribution may also be compromised because of the specificities of the school and university management's decisions to the pandemic. Additional studies are needed to assess wider samples of students and to monitor institutional/national policies for a better understanding of the effects of COVID-19 on the academic-related variables under analysis. Moreover, the results from the first outbreak in the pandemic may be different from subsequent outbreaks.

The inclusion of other measures (e.g. achievement) would be important to further complement the main findings. However, the data was collected in the final session of the semester before students' final exams. This assured higher participation in the study as well as the fulfilment of the ethical requirements to anonymize data. Future studies should consider this variable and include teachers' reports regarding students' motivation, engagement and attachment.

Finally, the data was collected only at the beginning and at the end of the academic year. This means that one group had the opportunity to experience only face-to-face classes, whereas the second group experienced both face-to-face and online classes because of the COVID-19 outbreak. However, because of the unprecedented circumstances of this pandemic, our priorities focused on rearranging the academic environment. As a result, we were unable to collect data now that our teaching moved online, and consequently we were unable to control the variations in students' motivation, engagement and attachment to the university.

Despite these limitations, the longitudinal design of this study allowed us to compare important academic-related variables that were expected to be affected by the COVID-imposed circumstances. This design further reduced the impact of recall bias, especially when events are highly complex and dynamic as the first COVID-19 outbreak.

Taken together, our results show no significant differences in intrinsic and extrinsic motivation, feelings of attachment to the university and engagement dimensions of absorption and vigour in business students during the first COVID-19 outbreak in Portugal. These results compelled us to discuss the practices that can be put in place to maintain students' motivation, engagement and attachment to the university in unprecedented times.

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