The impact of COVID-19 on university students and competences in education for sustainable development: Emotional intelligence, resilience and engagement

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ABSTRACT

As the Covid-19 pandemic brought most in-person activities to a halt, radical and visible changes were imposed in all social interactions, including teaching and academic activity in general. This challenging setting tested the education system's capacity to successfully address the Sustainable Development Goals. The success of education for sustainable development (ESD) requires training in the specific skills needed to face the highly emotionally demanding post-pandemic context. In this line, this study focuses on university students' capability to understand and manage emotions, an issue considered to be a key factor in ESD. The aim of this study is to show how students' emotional intelligence influenced their resilience, with repercussions on their engagement and subsequent academic performance. The research model was tested through a questionnaire addressed to 340 students from three different universities during the full lockdown of March–May 2020 as a result of the pandemic.

Results show that emotional intelligence was positively related to resilience, which in turn was related to engagement, and consequently, resulted in better academic performance. This finding should spark interest in developing emotional intelligence in education, not only because it produces healthy citizens in the long term, but also because of its short-term positive impacts in the classroom, particularly in such adverse situations as those described here. This study provides a model that links classic variables on educational and positive psychology research with ESD in times of COVID-19.

1. Introduction

The fact that education for sustainable development (ESD) is crucial in contributing to more sustainable, socially just, and equitable societies was clearly settled through the 17 Sustainable Development Goals (SDG) by the United Nations (ONU, 2015). The agreement established 17 SDG and 169 targets to be implemented during the period 2016–2030. These 17 interrelated targets are designed to cover a wide range of social, economic and environmental challenges. However, they will not be met without fundamental transformations in citizens' actions and behaviours, and in the way societies and economies operate, all of which depends to a great extent on the role of education in this process. Target 4.7 of SDG 4 (Quality Education) highlights the need to "ensure that all learners acquire the knowledge and skills needed to promote sustainable development". Therefore, ESD aims at developing competences that empower individuals to reflect on their own actions, considering their current and future social, cultural, economic, and environmental impacts from a local and a global perspective (Tejedor et al., 2019). Thus, it seems that in the last decade fruitful research on integrating different competences for sustainable development were becoming more evident (e.g. Robina et al., 2020; Watson et al., 2013).In this line, according to the literature there are several competences for sustainable development such as responsibility, emotional intelligence (EI), system orientation, future orientation, personal involvement, and action taking that may be integrated in the academic curricula (Roorda, 2002). In fact, it seems that competences related to EI are more commonly integrated in the educational system.

On the other hand, education in general and specifically ESD is facing challenging times. On March 11, 2020, the World Health Organisation declared the novel coronavirus (SARS-CoV-2) outbreak an unprecedented global pandemic. The coronavirus has affected the education of over 1500 million students globally, having an adverse impact on 89.4% of the world's students according to UNESCO data (CEPAL, 2020). The pandemic severely disrupted teaching activity, as

all education systems suddenly had to find suitable ways of adapting to the new online teaching environment in a context of pressing social isolation. This isolation has been a new experience that has been challenging the emotional skills of the people, showing sometimes certain deficiencies in the application of ESD. Maintaining psychological and emotional well-being is a challenge facing all members of the educational community, and never before have well-developed adaptation and emotional resilience life skills been so important.

In this frame, socio-emotional learning is a valuable tool for mitigating the harmful effects of the public health crisis as well as a basic condition for learning. Placing socio-emotional learning at the heart of education offers the opportunity to transform and develop a more holistic, humanistic curriculum, an aspect that has proved essential to human development in these challenging times. According to the UN, the pandemic offers an opportunity to turn the crisis into a stimulus to reach the SDG (Hörisch, 2021), build strong alliances (SDG 17) and guarantee access to education (SDG-4), thereby reducing the negative effects of COVID-19. While education cannot be held responsible for dealing with or "vaccinating" against world problems, it can encourage us to critically evaluate harmful lifestyles by helping us to evolve towards critical conceptions of what it means to be more responsible and intelligent human beings, based on solidarity (Carbonell, 2020). Hence, while formal contexts like schools and universities lean heavily towards methodologies that foster cognitive reasoning, with generally decontextualised tasks that have little connection with real local and world problems of daily life (Carbonell, 2020), working to achieve the SDG through ESD invites us to develop other more humanistic skills that we now need more than ever to cope with the emotional context brought about by the pandemic.

In recent months a growing number of studies have explored the relationship between emotions and students' academic performance in the context of the pandemic (Atlam et al., 2022; Iqbal et al., 2021; Limniou et al., 2021; Wang et al., 2022). However, there is still a gap in the literature about the relationship between emotional intelligence and academic performance under the framework of ESD, which is one of the contributions of the present study. Our study is framed within the ESD literature and draws from social psychology. Two main questions are explored in this paper: whether all EI dimensions developed with the same intensity during the weeks of lockdown; and whether students with a more highly developed EI found it easier to adapt to the academic circumstances imposed by the pandemic. Therefore, we examine whether the students' emotional competences were related to adaptive consequences such as resilience, engagement and performance during the lockdown. The results of this analysis lead us to a series of conclusions on whether universities, and the education system in general, are providing students with the emotional competences (in line with the ESD) they need to cope with complicated situations such as the current one in a social, economic and political context marked by the challenge of achieving the SDG.

The rest of the paper is structured as follows. In the next section a review of the literature provides support for the variables and relationships proposed in the theoretical model. The next section describes the methodology and reports the results. Finally, we discuss the results, draw some conclusions and identify the study's limitations.

2. Literature review

2.1. Education for sustainable development (ESD) and competences for sustainable development (CSD)

There are a great variety of definitions of and approaches to ESD, although most of them agree that ESD is a combination of existing and yet to be identified guiding principles, knowledge, skills, perspectives, and values that are organised around sustainability concepts and issues (Hopkins and McKeown, 2002, p.18). What makes ESD such an interesting and necessary approach to study is that it has a holistic and transformational view on education that takes into account learning content, outcomes, and pedagogy in line with the care for the environment (Barth et al., 2007). We agree with the idea of understanding ESD holistically and considering environment not only as the physical eco-system but as emotions and values of people and society, where, for instance, the care for others' wellbeing may be also considered a form of sustainable development. In this framework the role of competences for sustainable development plays a crucial role in ESD.

Competences for sustainable development (CSD) departs from a comprehensive and holistic view and may be considered as a set of knowledge, skills, values, and attitudes necessary to ensure today's students and future leaders are ready to deal with complex issues regarding sustainability (Lambrechts et al., 2013). Several authors report on these competences, using different settings and models (e.g. Roorda, 2002; Schaufeli et al., 2002). In this sense, Lambrechts et al. (2013) offer a complete and integrated view from different authors including six main blocks of competences with similar characteristics: responsibility (values, ethics, reflection), emotional intelligence (transcultural understanding, empathy, solidarity, compassion), system orientation (interdisciplinary), future orientation, personal involvement (self-motivation, motivating others, learning), and the ability to take action (participatory skills).

In this study we follow the conceptualisation of Lambrechts et al. (2013), and we will focus mainly on emotional competences to analyse their effects on resilience, academic engagement and performance during the pandemic lockdown. We focus on emotional competences for two reasons: firstly, because they seem to be one of the competences most commonly integrated in the academic curricula for sustainable development in higher education (Lambrechts et al., 2013); and second, because the role of emotions has been crucial in how people manage the uncertainty that the pandemic is causing in our daily lives (Wang et al., 2022).

2.2. Competences for sustainable development: emotional intelligence

The uncertainty arising from the COVID-19 pandemic, the real risks of catching the disease, and information overload accentuated by the effect of social media have flooded our screens and airwaves with alarming news, triggering natural commonplace human emotions like anxiety, stress, frustration and widespread unease (Duan and Zhu, 2020). This hostile context has tested the resilience of students and professors, who have had to put in place coping strategies so as to keep academic courses going, and of course, challenging the application of CDS. The literature has described how a well-developed EI –defined as an interrelated set of skills to identify, use, understand and manage our own and other people's emotions (Mayer and Salovey, 1997; Mayer et al., 2016)– is crucial to successfully adapt to such adverse situations. According to Frank et al. (2019) and Estrada et al. (2020, 2021), it is essential to develop EI in order to feel, think and act sustainably and in harmony with the ecosystem and to improve its health, particularly at a time when humanity as a whole is facing health, economic and social risks.

Emotions contain information on people's relationships with their environment and are usually triggered when the relationship between an individual and their context changes in a crisis situation (Lazarus, 1991). For a deeper look at EI, we must go back to Gardner's (1993) *multiple intelligences*, a proposal made to counterbalance the academic intelligence paradigm. Gardner argued that various types of intelligences are needed to cope in life (e.g. linguistic, logical-mathematical, intrapersonal and interpersonal, among others). For the purposes of this study we focus on two of these. The first is *interpersonal intelligence*, which is the capacity to understand the intentions, motivations and desires of other people; it allows us to relate to and work with others effectively. A person's interpersonal intelligence competences will affect the way they observe and accept personal differences by understanding others' feelings, moods and motivations,

through empathy and interaction. Our second focus is on *intrapersonal intelligence*, which refers to individuals' capacity to understand themselves and recognise their own motivations, feelings and fears. This intelligence strengthens self-control by allowing individuals to organise their feelings and desires, which translates into both personal and social well-being. The widely accepted model to measure and apply EI is the Mayer and Salovey's (1997) four-branch model. This model encompasses four competences: (1) perceiving, evaluating and expressing emotion; (2) using emotions to facilitate thought; (3) understanding and analysing emotions, and (4) managing emotions reflexively. Thus, in this line, EI implies the ability to perceive, evaluate and accurately express one's own and others' emotions; the ability to access and/or generate feelings when they facilitate thought, the ability to understand emotions and emotional knowledge, and the ability to manage emotions that promote emotional and intellectual growth (Brackett et al., 2006; Mayer and Salovey, 1997). Our study continues in this line by using Brackett et al.'s (Brackett et al., 2006) categorisation to evaluate individuals' capacity to understand and manage their emotions (intrapersonal sphere) through the dimensions *understanding, use* and *individual management*, and their capacity to perceive and manage others' emotions (interpersonal sphere) through the dimensions *perception* and *social management*. The use of this categorisation is an added value in the present study as it distinguishes between the two spheres of emotional intelligence –intrapersonal and interpersonal– in the challenging context students faced during the Covid-19 lockdown. Finding out how they manage their own emotions and possibly those of their classmates and teachers helps us to understand the role these EI dimensions play in developing resilience, engagement and academic performance.

2.3. The ripple effect of emotional intelligence: resilience, academic engagement and academic performance

With lockdown came isolation and the loss of intergroup relationships, at least with the direct personal contact usually associated with them, which tested the students' emotional competences and their resilience. Resilience refers to individuals' and groups' ability to adapt to challenges or threats. Garmezy (1991) defined resilience as "the capacity for recovery and maintained adaptive behavior that may follow initial retreat or incapacity upon initiating a stressful event". Resilience is a positive concept that recognises the mechanisms for successfully coping with setbacks and strengthens individuals: biological temperament, internal characteristics, particularly intelligence, temperament, internal locus of control or dominance; the family and the environment in which the person lives; and the number, intensity and duration of stressful or adverse circumstances the person has experienced throughout their life. Resilience has even been considered as functionally the same as invulnerability and resistance to stress (Garmezy et al., 1984). In this vein, Masten and Powell (2003) state that resilience refers to "patterns of positive adaptation in the context of significant risks or adversity". These authors contend that it is not a trait of the individual, since it may vary over time and in different stages of life, and is manifest in their behavior and life patterns. In their review of the concept, Kumpfer and Hopkins (1993) identify seven factors of resilience in young people: optimism, empathy, insight, intellectual competence, self-esteem, direction or mission, and determination and perseverance. These characteristics are associated with specific coping skills acquired by young people who develop resilience through their interaction with the environment. These skills can be grouped into various types: emotional, management, interpersonal, social, intrapersonal, academic, work, rebuilding, planning, and life and problem-solving skills. The authors' proposals suggest a possible link between positive emotions and resilience. Positive emotions will facilitate resilience. We may therefore posit a possible relationship between the EI students showed in the pandemic situation and their resilience, which leads us to the following research hypotheses:

H1. The emotional perception of others' emotions influences students' resilience in the Covid-19 context

H2. The use and facilitation of one's own emotions influence students' resilience in the Covid-19 context

H3. Understanding one's own emotions influences students' resilience in the Covid-19 context

H4. Managing one's own emotions influences students' resilience in the Covid-19 context

H5. Managing others' emotions influences students' resilience in the Covid-19 context.

On the other hand, the study of academic resilience has attracted a great deal of interest in recent years (Fínez and Morán, 2014). This is partly because all students can experience situations of poor performance, adversity or pressure related to their studies (Gonzales et al., 2020). In this context, some authors define academic resilience as students' ability to overcome the stressful situations and pressure arising from their studies (Vizoso et al., 2018). In other words, resilience is a dynamic and evolving process through which students acquire the knowledge, abilities and skills to help them face an uncertain future with a positive attitude, creativity and optimism, and by relying on their own resources (Manzano and Ayala, 2013). Therefore, resilient students will be better able to cope with academic demands in the right way (Fínez and Morán, 2014). Students' resilience capacity will help them to persevere in their tasks and maintain a positive attitude when difficulties arise; this persistence in their studies is therefore directly related to academic engagement. Moreover, resilience is one of the main dimensions associated with psychological well-being and academic success (Kristjánsson, 2012). The relationship between resilience and engagement in academic contexts has been endorsed in numerous studies (Ayala and Manzano, 2018; Berzosa, 2017; Vizoso et al., 2018). It is therefore important to discover whether resilience capacity in the pandemic context is related to academic engagement, which leads us to the following hypothesis:

H6. Resilience influences academic engagement in the Covid-19 context.

Finally, one of the variables associated with academic performance is engagement. Academic engagement is a positive and affective-cognitive state of mind characterised by vigour, dedication, and absorption (Schaufeli and Bakker, 2004). In that sense, vigour refers to high degree of mental resilience in the learning process, a willingness to invest effort in one's studies, and a positive approach (Schaufeli et al., 2002). Dedication is characterised by a sense of significance, enthusiasm, identification, and perceiving studying as meaningful (Schaufeli et al., 2002). Absorption is characterised by behavioural achievements and flow-like experiences, such as being so fully immersed and happily engrossed in one's studying that time passes quickly (Schaufeli et al., 2002).

The positive link between engagement and academic performance has been widely demonstrated in the literature (Chambel and Curral, 2005; Schaufeli et al., 2002; Vizoso et al., 2018). In fact, dedicated and enthusiastic students are more likely to adopt mastery approaches and achieve higher grades (Howell, 2009; Miralles et al., 2019). Some authors find that higher engagement is characteristic of students with more enthusiastic and optimistic attitudes to learning (King et al., 2015), and at the same time this optimism, or attitudes associated with positive psychological capital, have a direct impact by improving their academic performance (Carmona et al., 2019). Thus, engagement corresponds to a psychological state manifested in a sense of well-being that students feel about a particular academic challenge in their studies, which essentially implies their inherent desire to contribute something of value to their work. This may be even more relevant in difficult situations such as the period of lockdown students faced during the first months of the COVID-19 pandemic. These observations lead us to our final hypothesis:

H7. Engagement is directly linked to academic performance.

Based on the above, Fig. 1 presents the model tested in this study.

3. Methodology

3.1. Sample selection and data collection

The study was carried out as part of a collaboration agreement signed by three higher education institutions in three Spanish regions. Under this agreement we were able to interview a wide range of students in terms of region, academic discipline, course, qualifications and gender; the resulting diverse and highly representative sample maximises the generalisability of our results.

Prior to the fieldwork a group of experts in the area of education revised the questionnaire, which was then pretested on a sample of 25 students. This process led to some improvements in the wording and confirmed that the form, design, difficulty, length and time needed to complete the questionnaire were appropriate. Access to the questionnaire was anonymous. They were also informed that the data would be aggregated, thus further guaranteeing the confidentiality of the published results.

The fieldwork was carried out between April and May 2020, coinciding with the period of total lockdown imposed by the Spanish government; 340 valid responses were received. Analysis of the data obtained from the responses provided the main characteristics of the sample (Table 1). Most of the students in the final sample were from University 1 (62.6%), followed by University 3 (27.4%) and University 2 (10.0%). Of the 18 academic disciplines analysed (which included business studies and economics, technological and experimental sciences, health sciences and social sciences), 16 were bachelor's degrees and two, master's degrees. Most of the students were in the second year of their studies (36.1%), followed by fourth and then third years with percentages of around 20%. First year students accounted for 10.6%, and postgraduates, 7.4%. Fifth and sixth year students were studying medicine and the double degree in business management and marketing. The sample students' total average age was 22 years old and their average academic grade was 7.3 (out of 10). Finally, the sample was largely female (75.9).

3.2. Measurement instruments

We followed Ye et al.'s (2007) recommendations on how to prevent self-generated validity in the questionnaire design. The questions were carefully ordered and written in simple language and used terminology that was easy to understand. We also ordered the analysed constructs in a different sequence from the hypotheses (antecedents → mediating variable → consequences).

All the scales used to measure the constructs corresponded exactly to their theoretical definitions and were adapted from scales previously used and tested by other authors. The items were closed attitudinal questions measured with 7-point Likert scales, where 1 represented 'totally disagree' and 7, 'totally agree' with the statement.

Specifically, we measured EI with a scale of five components including emotional perception (4 items), use of emotions (4 items), emotional understanding (4 items), individual emotional management (4 items), and social emotional management (4 items) To measure resilience we drew on the five-item scale developed by Caza and Bagozzi (2010). Engagement was measured using Schaufeli et al.'s (2002) three-dimensional scale, comprising vigour (4 items), dedication (5 items) and absorption (4 items). Finally, we used the students' academic records to measure their academic performance.

We followed the reverse translation method proposed by Brislin (1970) to prepare the Spanish version of the original English measurement instrument.

3.3. Preliminary analyses

First, we performed a variance inflation factor analysis between the latent variables of the proposed model to identify possible signs of multicollinearity. The values were below 10, suggesting that multicollinearity was not an issue in this study (Hair et al., 2010; Myers, 1979). Second, we conducted an analysis of means on independent samples for each of the model variables; our comparison of responses from the first 45 and the last 45 respondents revealed no significant differences at a significance level of 0.05, indicating the absence of non-response bias (Armstrong and Overton, 1997). Third, we used Harman's one factor test (Harman, 1976) to check for common method
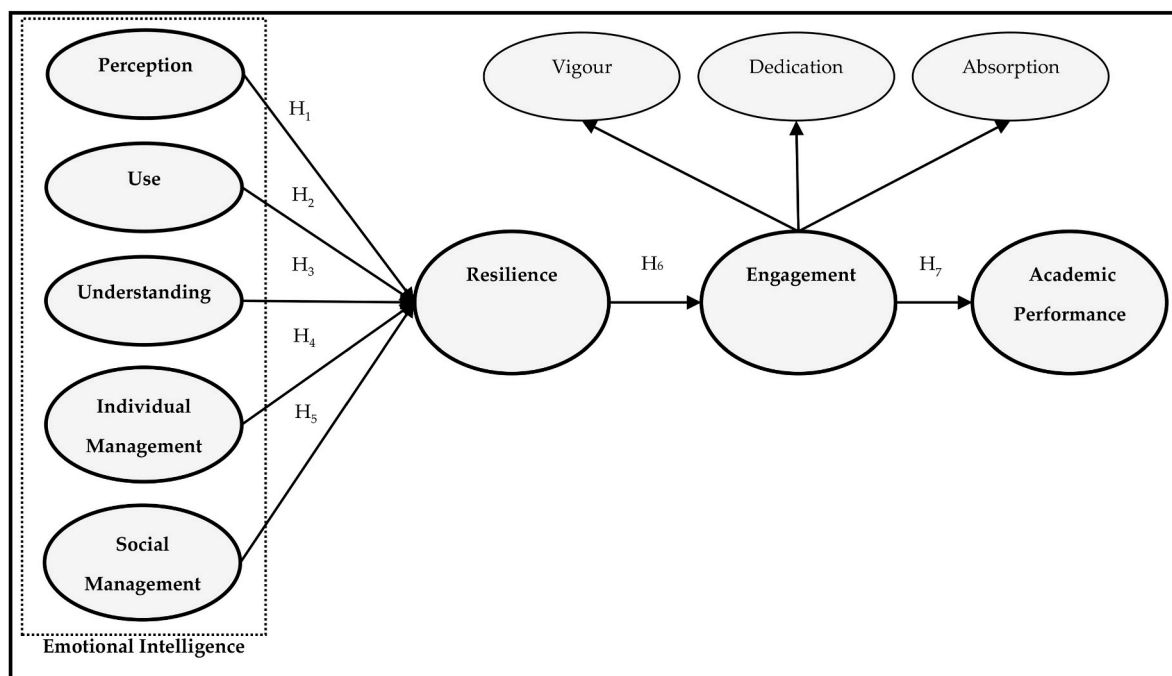

Fig. 1. Model of effects.

Table 1

General sample characteristics.

Institution: *category (%)*						
University 1 (62.6)		University 2 (10.0)		University 3 (27.4)		
Degree: *category (%)*						
1 Business Administration[a]	(14.4)	14 Industrial Design Engineering[b]	(8.2)	21 Primary Education[c]	(13.5)	
16 Occupational Therapy[a]	(2.6)	8 Computer Engineering[b]	(1.8)	15 Social Education[c]	(6.8)	
20 Law[a]	(3.2)	13 Agri-food Engineering[b]	(1.2)	2 Audiovisual Communication[c]	(5.0)	
3 Labour Relations and Human Resources[a]	(3.8)	17 Video Game Design and Development[b]	(1.8)	10 Advertising and Public Relations[c]	(7.6)	
19 Business Management and Marketing[a]	(6.8)	18 Gastronomy[b]	(3.8)	5 Psychology[d]	(6.8)	
11 Master in Marketing[a]	(1.2)	12 Master for Secondary Education Teaching[c]	(6.2)	4 Medicine[d]	(5.3)	
Course: *category (%)*						
First (10.6)	Second (36.1)	Third (19.1)	Fourth (21.2)	Fifth (4.1)	Sixth (1.5)	Postgraduate (7.4)
Gender: *category (%)*		Age average		Academic grade average		
Male (24.1)	Female (75.9)	22 years old		7.3		

Note.

[a] Denotes business studies and economics disciplines.

[b] Denotes technological and experimental science disciplines.

[c] Denotes social sciences disciplines.

[d] Denotes health science disciplines.

variance bias. Results showed that the bias deriving from the method used had no effect on the validity of the results from the subsequent testing of the hypotheses (Farrell and Oczkowski, 2019; Friedrich et al., 2009; Podsakoff et al., 2003). We also performed several ANOVA to rule out any effect of sample characteristics on the model constructs. The control variables used in these analyses were gender, degree studied and university attended. No significant differences were found in any of the analyses.

3.4. Scale validity and reliability

We performed confirmatory factor analysis to refine the scales, using structural equations models and version 6.2 of the EQS statistical program. The maximum likelihood approach was followed, supported by robust methods to estimate the parameters.

Specifically, the model development strategy adopted, based on the structures of the latent variables for the constructs, consisted of a refinement process to improve the initial models by eliminating the least appropriate indicators (Hair et al., 2010; Monferrer et al., 2015, 2019). Following Jöreskog and Sörbom (1993), we first examined the estimation parameters. Indicators were eliminated that did not meet the strong convergence condition, that is, standardised coefficients (λ) below 0.6, and mean values of the loading on each factor above 0.7 (Hair et al., 2010; Bagozzi and Youjae, 1988). Second, compliance with the weak convergence condition (Steenkamp and Van Trijp, 1991) was verified by examining the significance of the regression coefficients between the indicators and their corresponding latent variable. To this end we revised the Student's t values by imposing the maximum requirement (t > 2.58; P = 0.01). This process led us to remove the following indicators: PER4, IND1, RES1, RES2, ENG4 and ENG12. Finally, we controlled the evolution of the main fit indexes of the model once the indicators had been removed. The following indices were used to evaluate the fit of the conceptual model to the empirical data: χ^2, NFI, NNFI, IFI, CFI and RMSEA.

Various tests were then conducted to confirm that the refinement process had not affected the level of reliability of the scales. Internal consistency was tested with Cronbach's alpha ($\alpha > 0.7$); we also analysed the constructs' compound reliability (CR > 0.7) and variance extracted (VE > 0.5) (Churchill, 1979; Fornell and Larcker, 1981; Nunnally, 1979). Table 2 presents a summary of the results of the factor, validity and reliability analyses.

Finally, the discriminant validity was analysed. We found a high and significant estimated value of the correlations between the scale dimensions, thus confirming validity. The variance extracted (VE) method was used to assess discriminant validity (Fornell and Larcker, 1981); when the square root of the VE between each pair of factors is higher than the estimated correlation between those factors, as in our case, discriminant validity is confirmed (Table 3).

4. Results

Hypotheses were tested following structural equations models with EQS 6.2 program, which enabled us to simultaneously explore a series of dependence relationships (Hair et al., 2010). Fig. 2 shows the step diagram of the resulting relationship model after its specification and identification, the contrast of which allows us to verify the fulfilment of the hypotheses proposed.

Looking at each hypothesis proposed in the model and the results obtained after its estimations (Table 4), hypotheses H2, H3, H4, H6 and H7 were confirmed and H1 and H5 were not confirmed. That is, the intrapersonal dimensions of EI have a direct effect on resilience (use of emotions, H2: $\lambda = 0.114$, t = 2.159*; emotional understanding, H3: $\lambda = 0.299$, t = 4.608*; individual emotional management, H4: $\lambda = 0.559$, t = 9.039*), whereas the interpersonal or social dimensions have no effect on resilience (emotional perception, H1: $\lambda = 0.061$, t = 1.247; social emotional management, H5: $\lambda = 0.083$, t = 1.659). H6 and H7 were also confirmed, thus showing the ripple effect of resilience on engagement (H6: $\lambda = 0.608$, t = 8.216*), and engagement on academic performance (H7: $\lambda = 0.411$, t = 5.870*). All model fit indices were adequate.

Fig. 3 illustrates the results shown in Table 4 graphically.

5. Discussion

According to the results, it seems the intrapersonal sphere of EI has an impact on students' resilience, which in turn relates to academic engagement and academic performance. Our study offers further evidence for the key role that EI has in overcoming challenging times and still remaining engaged in one's studies and performing well, despite the situation. This supports the need for investment in EI as a key competence in EDS in academic settings due to the relevant link between emotion management and outcomes such as resilience, engagement and academic performance. Moreover, this paper suggests that in this

Table 2
Summary of the results of the factor, validity and reliability analyses.

Items	Loading	t value
EMOTIONAL PERCEPTION (α = 0.791; FC = 0.79; VE = 0.56)		
PER1: When I see teachers and classmates' facial expressions through virtual media (Meet, Skype, Hangouts, etc.), I recognise the emotions they are feeling.	0.813	15.455*
PER2: I'm aware of the non-verbal messages that other people transmit through virtual media.	0.765	17.539*
PER3: I can tell when someone is lying to me by looking at their facial expression through virtual media.	0.659	13.361*
PER4: My first impression of what people are feeling in a virtual media context is generally correct.	Deleted	
EMOTIONAL USE (α = 0.850; FC = 0.85; VE = 0.59)		
USE1: I'm an emotional person and I assess my feelings before taking any decisions.	0.700	12.174*
USE2: When facing a problem, I use different emotions to approach it from different points of view.	0.680	11.161*
USE3: I trust my emotions to give the right response to problems.	0.834	17.234*
USE4: When I'm taking decisions, I assess my feelings to see if the decision is the right one.	0.843	15.307*
EMOTIONAL UNDERSTANDING (α = 0.857; FC = 0.86; VE = 0.62)		
UND1: I find it easy to write down lots of synonyms for emotion words like happiness or sadness.	0.692	12.498*
UND2: I can explain the emotions I feel.	0.777	17.283*
UND3: I have a wide vocabulary to describe my emotions.	0.911	24.027*
UND4: I'm able to describe how emotions evolve from lower to higher intensity (e.g. how we go from happiness to euphoria).	0.740	13.457*
EMOTIONAL INDIVIDUAL MANAGEMENT (α = 0.860; FC = 0.87; VE = 0.69)		
IND1: When I am angry I am able to change my mood.	Deleted	
IND2: I can handle stressful situations without getting too nervous.	0.812	21.919*
IND3: I am able to handle most problems.	0.774	15.877*
IND4: I know how to keep calm in difficult or stressful situations.	0.901	23.357*
EMOTIONAL SOCIAL MANAGEMENT (α = 0.896; FC = 0.90; VE = 0.71)		
SOC1: When somebody I know is in a bad mood, I'm able to help them calm down and feel better.	0.845	17.804*
SOC2: I know how to improve the mood of other people.	0.924	19.953*
SOC3: I'm good at helping others to feel better when they feel sad or angry.	0.896	18.116*
SOC4: I'm the type of person others go to when they need help with a difficult situation.	0.672	11.771*
RESILIENCE (α = 0.815; FC = 0.82; VE = 0.60)		
RES1: In my studies, I improve because I learn from my mistakes.	Deleted	
RES2: Dealing with difficult classmates (or situations) helps me grow.	Deleted	
RES3: I see challenges as opportunities to learn.	0.692	10.502*
RES4: I find ways to handle unexpected situations.	0.848	14.531*
RES5: I recover after facing the possible difficulties that arise in my studies.	0.780	14.778*
ENGAGEMENT (FC = 0.85; VE = 0.65)		
Vigour (α = 0.852; FC = 0.87; VE = 0.69)	*0.759*	*12.298**
ENG1.1: In the current context, I feel full of energy when I study.	0.762	Fixed
ENG1.2: I can study for long periods of time.	0.777	13.825*
ENG1.3: I feel strong and energised when studying.	0.942	16.052*
ENG1.4: When I get up in the morning, I feel like going to class.	Deleted	
Dedication (α = 0.941; FC = 0.94; VE = 0.76)	*0.745*	*13.246**
ENG2.1: My studies are full of meaning and purpose for me.	0.891	Fixed
ENG2.2: My studies inspire me.	0.934	33.696*
ENG2.3: I'm enthusiastic about my studies.	0.921	29.017*
ENG2.4: I'm proud of my studies.	0.822	18.616*
ENG2.5: I find my studies challenging.	0.790	18.169*
Absorption (α = 0.778; FC = 0.77; VE = 0.53)	*0.913*	*12.740**
ENG3.1: Time flies when I'm studying.	0.672	Fixed
ENG3.2: When I'm studying, I forget about everything that's going on around me.	0.739	14.144*
ENG3.3: I'm happy when I'm concentrating on my studies.	Deleted	
ENG3.4: I tend to do my very best when I'm studying.	0.779	13.086*

Note: Model fit: $\chi^2 = 449.760$, df = 414, p = 0.109; NFI = 0.927; NNFI = 0.992; IFI = 0.994; CFI = 0.994; RMSEA = 0.016.
*p < 0.01.

Table 3
Discriminant validity analysis.

	1	2	3	4	5	6	7
1. Emotional Perception	0.75						
2. Use of Emotions	0.21*	0.77					
3. Emotional Understanding	0.33*	0.45*	0.78				
4. Individual Emotional Management	0.23*	0.12*	0.41*	0.83			
5. Social Emotional Management	0.18*	0.40*	0.47*	0.17*	0.84		
6. Resilience	0.30*	0.37*	0.63*	0.73*	0.37*	0.78	
7. Engagement	0.41*	0.22*	0.45*	0.36*	0.24*	0.61*	0.81

Note: Below the diagonal: estimated correlation between the factors. Diagonal: square root of the VE. *p < 0.05.

context, Mayer and Salovey's (1997) dimensions to explain the EI construct were not developed to the same level of significance. Our results show that the students seem to have prioritised, albeit minimally, dimensions linked to intrapersonal intelligence over those associated with interpersonal intelligence. These are novel and original findings, and are likely explained by the context of social isolation in which education took place during those months.

This study is unique because it was carried out during the full lockdown. This situation precluded any direct physical interaction between students and teachers and among peers, and the impersonal distance imposed by the use of computers, tablets, and other devices led to greater individuality. This unique set of circumstances was brought about, first, by the isolation, fear and anxiety that students –and society in general– were not prepared for; and second, by the lack of direct interaction, whether in a formal setting (in the classroom) or in an informal context (interaction among peers between lectures or in other contexts outside the formal educational setting). In fact, the world has changed after this situation and the way we interact with people has clearly been influenced. Therefore, one of the principles of EDS (Lambrechts et al., 2013) is to enhance the competences necessary to ensure today's and future leaders' skills that, beyond uncertainty and crisis, are able to manage difficulties, perform properly and build a better society. Hence, our paper reveals the relevance of emotional competences to resilience and engagement, which in turn impact academic performance.

On the other hand, our results may appear to contradict those of other studies that have highlighted the development of interpersonal intelligence to explain the widespread altruistic, compassionate and socially cohesive behaviours shown by most sectors of society in the last year (Extremera, 2020; Moya et al., 2020; Sabucedo et al., 2020). However, this is far from the case: a person may manifest a highly developed intrapersonal intelligence to empathise with another's suffering, yet not express this intelligence to the same intensity in social relationships with their peers in a virtual learning context. The explanation again lies in the lack of emotional information about the other's situation that, due to its very characteristics, the virtual teaching-learning context imposes.

As for intrapersonal intelligence, the data show a certain difficulty in perceiving not only others' emotions but also one's own; this is revealing, but not entirely surprising given the accumulation of new emotions students experienced in this crisis situation. Fear, anxiety, loneliness, vulnerability and stress brought about by completely novel circumstances may have led students into an initial state of confusion that clouded not only the perception of these emotions in their peers, but also the recognition and identification of their own personal emotional situation. Despite these nuances, however, as a general construct EI has emerged as an outstanding factor in coping with this adverse situation
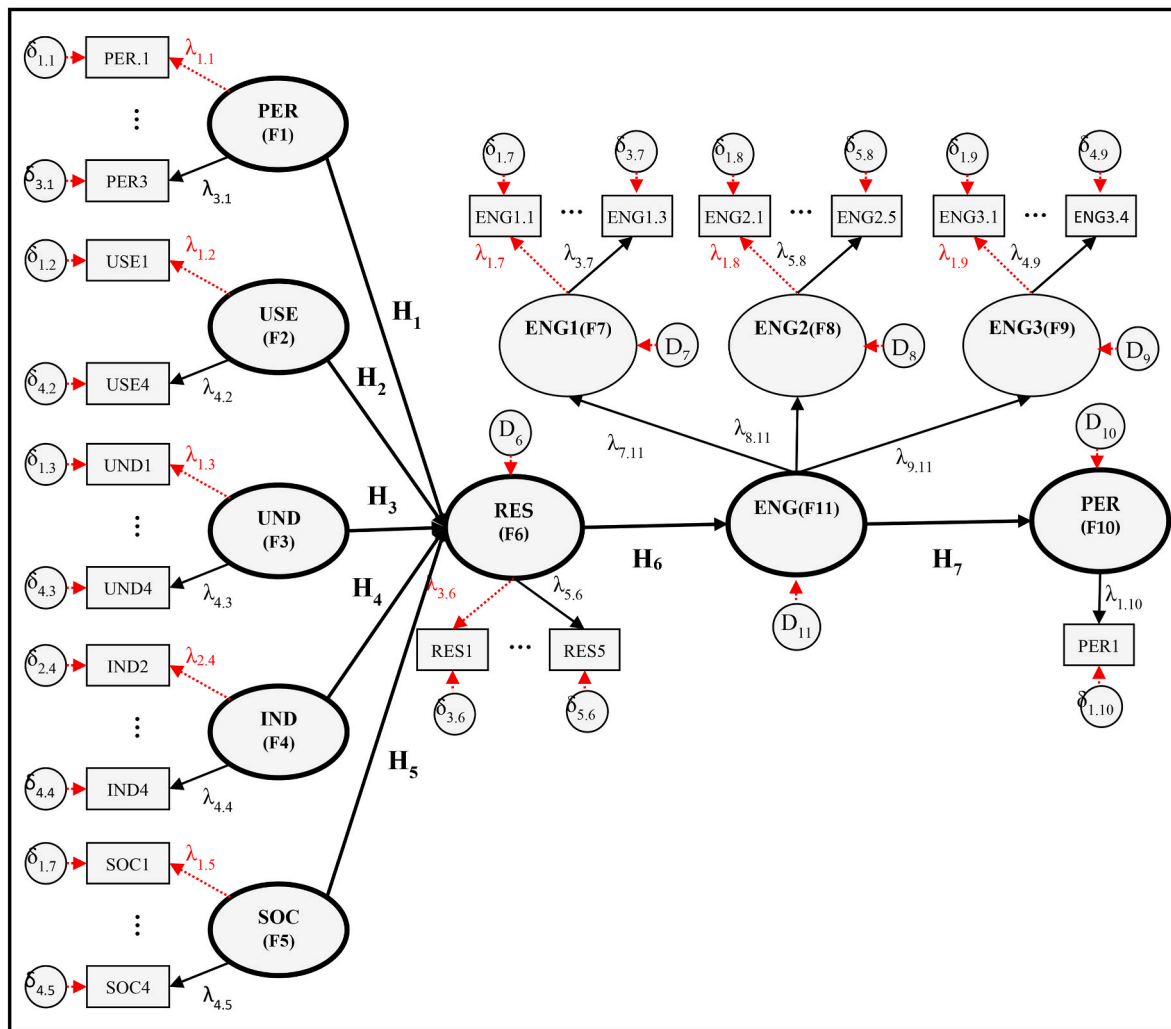
Fig. 2. Structural equation model diagram
Note: Covariances between the independent variables of the model (F1 to F5) have also been taken into account.

Table 4
Summary of the results of testing the structural model.

Hyp.	Relation	Parameter	t value	Result
H_1	Emotional Perception → Resilience	0.061	1.247	Rejected
H_2	Use of Emotions → Resilience	0.114	2.159*	Not rejected
H_3	Emotional Understanding → Resilience	0.299	4.608*	Not rejected
H_4	Individual Emotional Management → Resilience	0.559	9.039*	Not rejected
H_5	Social Emotional Management → Resilience	0.083	1.659	Rejected
H_6	Resilience → Engagement	0.608	8.216*	Not rejected
H_7	Engagement → Academic Performance	0.411	5.870*	Not rejected

Note: Model fit: $\chi^2 = 458.081$, df $= 421$, p $= 0.103$; NFI $= 0.925$; NNFI $= 0.992$; IFI $= 0.994$; CFI $= 0.993$; RMSEA $= 0.016$.
*p < 0.05.

(Extremera, 2020). EI helps us understand how, through intelligence and adapting, we can influence our own emotions and our interpretation of other people's emotional states (Regader, 2020). It is the students with the most highly developed EI who, according to this study, showed the greatest capacity to overcome these traumatic circumstances, and revealed a higher resilience that helped them engage more with the subject and therefore achieve better academic outcomes. These findings highlight the need to continue advocating the inclusion of emotional skills development alongside the technical elements of curriculums on all courses (note that our study found no significant differences in the results of students on different courses and in different universities). The paper also evidences the vital role of resilience in difficult situations like the recent lockdown, and shows how students can engage with their studies despite having to cope with a complex situation and a radical change in the teaching-learning process.

In addition, and in line with previous research (Schaufeli et al., 2002; Chambel and Curral, 2005), this work confirms the relationship between engagement and academic performance evaluated by objective measures (students' academic grades). This relationship has been widely explored in the literature, but what is relevant here is its confirmation in the complex and emotionally stressful situation of the Covid-19 lockdown. All in all, the study findings highlight the need to take care of emotional competences in education for sustainable development, since the role of emotions is key to overcoming difficulties such as those experienced during the pandemic.

6. Conclusion

Framed within the literature on EDS and the antecedents of social psychology, this study focused on the challenging and game-changing context of the Covid-19 pandemic. The severest moment of the
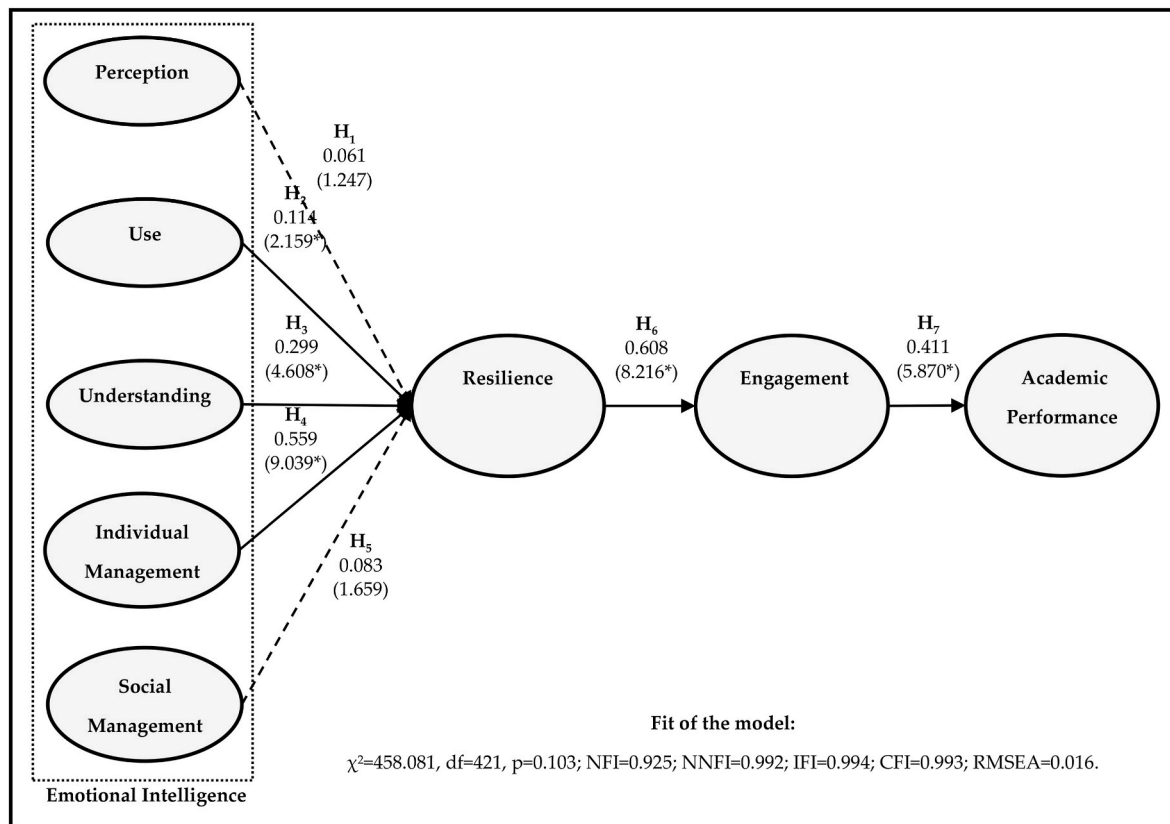
Fig. 3. Results of the structural model.

pandemic, spring of 2020, was marked by a strict, prolonged lockdown that took a heavy emotional toll on everyone involved in the process of university learning, due to the sudden radical changes in social interaction they had to face. This new context of social isolation tested university students' emotion management capacity, and as a result, the capacity of the education system to apply EDS successfully. In this context, the present study proposed a model of effects on two questions: (1) the extent to which students' emotional competences are relevant in facilitating the development of resilient emotional learning that enables them to mitigate the negative effects associated with the crisis; and (2) the extent to which better emotional competence helps enhance not only the students' engagement with their studies, but also their academic performance. Through an empirical analysis of a sample of 340 university students in Spain, consulted during the lockdown, this study finds positive responses to both questions, concluding that emotional intelligence is positively related to resilience, which in turn is related to engagement and, therefore, better academic performance. Several contributions can be derived from these conclusions. Firstly, although the relationships of the model had been studied in isolation in previous research, our study is innovative in that it explores these relationships in the context of the social isolation that students experienced during the most severe months of the pandemic, as well as through the lens of ESD. Secondly, we conclude that the traditional dimensions of EI were not developed at the same intensity in a Covid-19 context, showing that the students seem to prioritise the dimensions linked to intrapersonal emotional intelligence rather than the interpersonal dimensions. Finally, this study extends our understanding of the existing causal interrelationship (antecedent–consequence) between strengthening the skills that contribute to students' emotional learning and improvements in their engagement with and performance in their studies. In sum, in a social, economic and political context such as the current one, marked by the challenge of achieving the SDG, these findings emphasise the importance of developing emotional intelligence in education, not only

because it gives students sufficient emotional skills (in line with EDS) to cope with potential adverse situations –such as those analysed here– in the future, but also because of its positive short-term impacts in the classroom.

7. Limitations

The study has several limitations, which in turn suggest lines for future research. First, the sample comprised mainly university students. It would be useful to validate the study at different educational stages so as to compare results. Secondly, the study focused on Spanish universities and consequently most of the students in the sample were Spanish. Future research could replicate this study in other European, Asian or North American contexts in order to draw more generalised conclusions taking into consideration other geographical and cultural contexts. It is important not to ignore the close relationship between cultural factors and how emotions are perceived; a more broadly based study would therefore yield more robust results that could be generalised at a global level.

Credit author

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence

the work reported in this paper.

Data availability

The authors do not have permission to share data.

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