

## **Mental Health, affect and emotions in Spanish university students of Health and Social Sciences Salud mental, afecto y emociones en estudiantes universitarios españoles de Ciencias de la Salud y Ciencias Sociales**

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**Abstract.** Background: Students attending university have to adjust to a new learning context and are under increased academic pressure. The aim of the study was to assess mental health, affective status and emotions in Health Sciences and Social Sciences undergraduates using an explorative approach in a cross sectional study. Methods: A sample of 693 first-to-fourth-year students enrolled in different degree courses. We used the Symptom CheckList-90-Revised (SCL-90-R) and the Positive and Negative Affect Schedule (PANAS) and an “ad hoc” questionnaire. Results: Health status was good, although 60.9% had experienced anxiety or stress. We found no high scores on the SCL-90-R and no psychological distress. Positive affect was reported generally and for the last week, as well as emotions such as curiosity, joy, security and admiration. We found interesting relationships between gender, year group and chronic illness, where female, young students and students with chronic illness had worse mental health and psychological distress. By degree course, Social Sciences students had a worse psychological distress prognosis and Health Sciences students presented an emotional profile based on pleasant and adaptive emotions, although the latter also reported the highest levels of fear. Conclusion: Preventive measures are needed in higher education to minimize anxiety, stress, mental health and maladaptive emotions.

**Key words:** mental health, affect, emotions, anxiety, university students.

**Resumen.** Antecedentes: Los estudiantes en la universidad tienen que adaptarse a un nuevo contexto de aprendizaje y están bajo una mayor presión académica. El objetivo del estudio fue evaluar la salud mental, el estado afectivo y las emociones en estudiantes de Ciencias de la Salud y Ciencias Sociales mediante un estudio transversal.

Método: Muestra de 693 estudiantes de primero a cuarto año matriculados en diferentes Grados de Ciencias de la Salud y Ciencias Sociales. Usamos el instrumento de la lista de síntomas (SCL-90-R), la escala de Afecto Positivo y Negativo (PANAS) y un cuestionario elaborado “ad hoc”. Resultados: El estado de salud era bueno, aunque el 60,9% había experimentado ansiedad o estrés. No encontramos puntuaciones altas en el SCL-90-R ni malestar psicológico. La afectividad positiva en general y para la última semana fue alta, y en cuanto a las emociones aparecieron la curiosidad, alegría, seguridad y admiración. Encontramos relaciones interesantes entre el género, el grupo de edad y la enfermedad crónica, donde las mujeres, los estudiantes jóvenes y los estudiantes con enfermedades crónicas tenían peor salud mental y malestar psicológico. Por Grados, los estudiantes de Ciencias Sociales tienen un peor pronóstico de malestar psicológico y los estudiantes de Ciencias de la Salud presentan un perfil emocional basado en emociones agradables y adaptativas, aunque estos últimos también reportan los niveles más altos de miedo. Conclusión: Se necesitan medidas preventivas en la educación superior para minimizar la ansiedad, el estrés, la salud mental y las emociones desadaptativas.

**Palabras clave:** salud mental, afecto, emociones, ansiedad, estudiantes universitarios.

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### **Introduction**

Emotional stress, anxiety, mental health, psychiatric symptoms and behavioral problems are increasingly being detected among students in institutions of higher education and are now the subject of growing attention.

Students attending university have to adjust to a new learning context and are under increased academic pressure (Cañero et al., 2019). Entry into higher education is also part of the transition to adulthood and can result in an overload of challenges, anxiety, fear and low psychological well-being, which can cause anxiety disorders (one of the most common pathologies) (Dilber et al., 2016; Tang et al., 2018). This is considered one of the life cycle stages with the greatest levels of anxiety, with high levels of psychological distress compared with the general population and lower levels of psychological well-being in university students (Morales-Rodríguez et al., 2020; Sanchis-Soler et al., 2022).

Several factors related to university life may be stressors potentially leading to psychopathology, mental health disorders, self-injury and suicidal behavior or to a negative impact on academic achievement and satisfaction (e.g. academic workload, competition, financial hardship, pressure to succeed and worries about the future, psychopathological distress and mental health problems, presence of social, emotional, physical and family problems) (Reyes-Rodríguez et al., 2013; Tang et al., 2018; Vázquez et al., 2012; Zeppego et al., 2014). Moreover, studies on predictors of university outcomes have found educational constructs (academic self-efficacy, exams, clinical practice, grade goal, achievement motivation and effort regulation) are the strongest predictors in learning, abilities, academic performance, poor memorization, and concentration, and even predict dropout at undergraduate and postgraduate degree level and residency training (Dilber et al., 2016; Richardson et al., 2012; Robbins et al., 2004; Zeppego et al., 2014). Many of this mental health

problems are in international student education (Cao et al., 2021; Hyun et al., 2007; Nurunnabi et al., 2021), although sometimes mental health appears more similar than different between international and domestic students (King et al., 2021). However, the evolution of the research on international students' mental health is expanding quickly and exploring new research directions, since the research focusing on the symptoms of disorder, well-being, mental health, and acculturation until researches focus on contemporary problems such as COVID-19, the Internet and social media use (Cao et al., 2021).

According to Aguado (2014; 2015) and Morales-Rodríguez et al. (2020), emotions are key constructs related to psychological well-being and satisfaction with life. In many cases, however, university students present difficulties in emotion regulation skills (Hervás and Jódar, 2008).

Early identification, prevention and interventions for psychological distress ought to be included amongst the concerns and competences of universities and may reduce the serious consequences (Balaji et al., 2019; Fernández-Rodríguez et al., 2019; Tang et al., 2018). To establish proper education and professional training in students from different academic fields (e.g., medical students, nursing, engineering or arts students), it is important to achieve their optimal well-being and quality of life during the years of training (Balaji et al., 2019; Fernández-Rodríguez et al., 2019; Dilber et al., 2016) as this is an indicator of their level of adjustment and adaptation.

The aim of the study was to assess health mental, affective and emotions in Health Sciences and Social Sciences university students using an explorative approach in a cross sectional study. We expected to find that 1) anxiety and stress were present in students; 2) women would score higher on all the measures used; 3) age or number of years at university would affect students' scores; 4) there would be differences in the variables between students on different degree courses (Health Sciences and Social Sciences); 5) having a chronic illness would impact the variables under study; and finally 6) different emotional profiles (pleasant and unpleasant emotions) existed, where the presence of pleasant emotions would show a more positive influence on the study variables.

A further aim of this study was to determine whether the statistically significant differences found in the variables under analysis are maintained or disappear when students that had suffered stress or anxiety were dropped from the sample. We thus hypothesised that many of the differences would disappear when students with anxiety or stress were eliminated from the overall sample, which could underline the significant impact of anxiety and stress as mediating variables.

## Methodology

### Participants

The target population comprised undergraduates in Health Sciences and Social Sciences Grades across different

year groups (from first to fourth) at the University of Castilla-La Mancha on its Talavera de la Reina campus (n=693) (see Table 1).

Table 1.  
Socio-demographic data

(n= 693)	
<b>Entire Cohort</b>	21,19 (4,74)
Age (median, SD)	Range (17-64)
<b>Gender (n, %)</b>	
Male	103 (14,9)
Female	590 (85,1)
<b>Degrees (n, %)</b>	
Health Sciences	442 (63,9)
Nursing	184 (26,6)
Speech and Language Therapy	128 (18,5)
Occupational Therapy	130 (18,8)
Social Sciences	251 (36,2)
Working Social	104 (15)
Education Social	84 (12,1)
Business Administration and Management	63 (9,1)
<b>Course (n, %)</b>	
First	271 (39,1)
Second	184 (26,6)
Third	135 (19,5)
Fourth	103 (14,9)
<b>Place of birth (n, %)</b>	
Castilla-La Mancha	368 (53,1)
Madrid	69 (10)
Andalucía	66 (9,5)
Extremadura	60 (8,7)
Castilla y León	25 (3,6)
País Vasco	13 (1,9)
Others	56 (8,1)
Foreign country	36 (5,2)
<b>Family's incomes (n, %)</b>	
High	12 (1,7)
Medium	626 (90,3)
Low	55 (7,9)

### Instruments

First, we collected background demographic information on gender, age, degree, year of study, income, health and psychological/psychiatric treatment and emotions during academic year scored on a ten-point Likert scale for different emotions (fear, anger, guilt, disgust, sadness, surprise, curiosity, admiration, security and joy) by Aguado (2014).

### The Symptom CheckList-90-Revised (SCL-90-R)

The SCL-90-R developed by Derogatis (1975) is a self-report instrument containing 90 items and is designed to measure nine current psychiatric symptoms, as well as psychological distress. The SCL-90-R sub-scales assess the following psychiatric symptoms: Somatization, Obsessive Compulsive Disorder, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation and Psychoticism, and three global indexes of psychopathology: the Global Severity index (GSI) is the sum of all 9 subscales; the Positive Symptoms Total (PST) is the total number of items with positive responses; and to assess the severity of overall psychological distress, we computed the Positive Symptom Distress Index (PSDI). Each item has five following response categories: 0 = not at all, 1 = a little bit, 2 = moderately, 3 = quite a bit, 4 = extremely. Although this instrument was designed in the 1970s, it is still useful to understand psychiatric disorder. The Cronbach's alpha

ranges from 0.70 to 0.80 (Derogatis, 1975).

#### *Positive and Negative Affect Schedule (PANAS)*

(Watson et al., 1988). The PANAS has been shown to be a valid, reliable tool to independently measure the presence and level of positive and negative affect in clinical and healthy population and in adolescents, adults and older adults. It comprises 20 items: 10 items that evaluate positive affect and 10 that measure negative affect. The items consist of different words that describe feelings and emotions. The respondent is asked to indicate to what extent they generally experience these emotions and the extent to which they felt them in the last week, on a five-point scale, where 1 is “very slightly or not at all” and 5 is “extremely”. We administered the Spanish version by Robles and Páez (2003), which has shown good psychometric properties with a Cronbach’s alpha from 0.86 to 0.90 for positive affect, and from 0.84 to 0.87 for negative affect.

#### *Procedure*

This research was conducted by means of a descriptive, epidemiological, cross-sectional study. Professors of the Faculty of Health Sciences and the Faculty of Social Sciences were informed of the aim of the study and their permission was requested to administer the tests in a paper-based format. Before applying the tests, participants were informed of the objective, procedure, anonymous nature and ethical guarantees of the study and their informed consent to participate was requested. Filling out the questionnaires took between 15 and 20 minutes at the beginning and/or end of the classes. Non-probability quota sampling was used (aged 18 or over, enrolled in a university degree course, years 1 to 4). This study received ethical approval and was supervised by the Research Ethics Commission of the of the Talavera de la Reina Integrated Health Service Management in Talavera de la Reina, Toledo, Spain (31/2018).

#### *Data analysis*

The data analysis was conducted using the IBM® SPSS® Statistics 22.0 computer program. For the statistical analysis, first, we checked whether the variables to be statistically analyzed followed a normal distribution, using the K-S test for normality. The sample does not follow a normal distribution of data as indicated by the analysis of the Kolmogorov-Smirnov test of normality in which all the variables evaluated follow a probability of less than or equal to 0.05. Therefore, for the analysis of the data, the non-parametric Mann-Whitney test was performed, which is the non-parametric test parallel to the t test for independent samples, and the Kruskal-Wallis test was performed, the non-parametric test parallel to the analysis of variance. A confidence level of .05 was set for all statistical analyses. In addition, descriptive and frequency distribution (mainly means and standard deviations) and Chi-square independence tests were used.

## **Results**

The survey was completed by a total of 693 university students at the University of Castilla-La Mancha, 85.1% were female, and ages ranged between 18 and 64 years ( $M = 21.19$ ,  $SD = 4.74$ ). Most of the students were studying Health Sciences Degrees (63.9%) and Social Sciences Degrees (36.2%). They were from different areas of Spain although 53.1% were born in Castilla-La Mancha. The quantitative sociodemographic characteristics of the final survey respondents are summarised in Table 1, and characteristics related to their health are presented in Table 2.

Table 2.  
Characteristics of the survey respondents related to health

<b>Health (n, %)</b>	
Good	676 (97,5)
Bad	17 (2,5)
<b>Chronic disease (n, %)</b>	
Yes	75 (10,8)
No	618 (89,2)
<b>Which? (n, %)</b>	
Asthma	20 (3,1)
Allergy	9 (1,3)
Headaches	5 (0,9)
Celiac disease	8 (1,2)
Diabetes	11 (1,5)
Colon irritable	5 (0,9)
Atopic dermatitis	8 (0,9)
Hiatus hernia	3 (0,3)
Fibromyalgia	1 (0,1)
Dyslexia	1 (0,1)
Thalassemia	4 (0,5)
<b>Anxiety (n, %)</b>	
Yes	422 (60,9)
No	271 (39,1)
<b>Medication for anxiety (n, %)</b>	
Yes	57 (8,2)
No	635 (91,6)
<b>Are you going to psychologist? (n, %)</b>	
Yes	86 (12,4)
No	606 (87,4)
<b>Are you going to psychiatric? (n, %)</b>	
Yes	15 (2,2)
No	675 (97,4)

#### *Descriptive statistics in measures of instruments and emotions*

Table 3 shows the descriptive statistics for each of the scales used in this work, and for the emotions experienced by the students in their university environment.

#### *Relationships between anxiety and the main study variables*

Table 4 shows the statistically significant differences between the variables of having suffered stress or anxiety and most of the main study variables.

#### *Relationships between sex and the main study variables*

Table 5 reveals significant differences between sex and the different variables measured by the instruments used in this study. In general, the female participants showed statistically significant differences in many of the items with higher mean ranges compared to their male counterparts. When individuals with anxiety were eliminated

from the sample, some of these differences disappeared, although the women continued to exhibit higher mean ranges on the variables under analysis.

Table 3.

Descriptive statistics in measures of instruments and emotions

SCL-90-R	M (SD)	Min	Max
GSI	0,95 (0,6)	0	3,21
PST	42,76 (19,54)	0	90
PSDI	1,9 (0,49)	0	3,5
SOMATIZACION	0,97 (0,73)	0	4,16
OBSESSIVE COMPULSIVE	1,38 (0,74)	0	5
INTERPERSONAL SENSITIVITY	0,99 (0,75)	0	3,66
DEPRESSION	1,12 (0,78)	0	3,6
ANXIETY	1,11 (0,83)	0	9
HOSTILITY	0,77 (0,75)	0	6
PHOBIC ANXIETY	0,57 (0,65)	0	4
PARANOID IDEATION	0,86 (0,82)	0	5
PSYCHOTICISM	0,59 (0,64)	0	5

  

PANAS	M (SD)	Min	Max
POSITIVE LAST WEEK	28,56 (6,65)	0	49
NEGATIVE LAST WEEK	20,44 (6,97)	0	46
POSITIVE USUALLY	29,74 (6,21)	0	47
NEGATIVE USUALLY	19,88 (6,14)	0	42

  

EMOTIONS IN THE UNIVERSITY SITUATION	M (SD)	Min	Max
FEAR	3,92 (2,63)	0	10
ANGER	2,72 (2,73)	0	10
GUILT	1,81 (2,5)	0	10
DISGUST	1,01 (1,92)	0	10
SADNESS	2,51 (2,58)	0	10
SURPRISE	4,64 (2,64)	0	10
CURIOSITY	7,76 (2)	0	10
ADMIRATION	6,05 (2,36)	0	10
SECURITY	7,04 (2,47)	0	10
JOY	7,61 (1,98)	0	10

Table 5.

Significant differences between sex in different samples in measures of instruments and emotions

SCL-90-R	SEX (total sample)				SEX (sample without anxiety)			
	Males (N= 103)	Females (N= 590)	Z	p	Males (N= 62)	Females (N= 209)	Z	p
GSI	280,88	358,54**	-3,633	≤0.000				
PST	287,13	357,45**	-3,290	≤0.001				
PSDI	286,73	357,52**	-3,312	≤0.015				
SOMATIZACION	251,37	363,69**	-5,259	≤0.000	117,92	141,36*	-2,072	≤0.038
OBSESSIVE COMPULSIVE								
INTERPERSONAL SENSITIVITY	301,81	354,89**	-2,486	≤0.013				
DEPRESSION	267,40	360,90**	-4,376	≤0.000				
ANXIETY	265,59	361,21**	-4,478	≤0.001				
HOSTILITY								
PHOBIC ANXIETY	253,22	363,37**	-5,254	≤0.001	118,00	141,34*	-2,108	≤0.035
PARANOID IDEATION					155,72*	130,15	-2,274	≤0.023
PSYCHOTICISM								

  

PANAS	Males	Females	Z	p
POSITIVE LAST WEEK	392**	339,14	-2,475	≤0.013
NEGATIVE LAST WEEK				
POSITIVE USUALLY				
NEGATIVE USUALLY	290,29	345,91**	-2,592	≤0.010

  

EMOTIONS	Males	Females	Z	p
FEAR	266,18	360,55**	-4,450	≤0.000
ANGER				
GUILT				
DISGUST				
SADNESS				
SURPRISE				
CURIOSITY	293,35	345,65**	-2,928	≤0.003
ADMIRATION	397,07**	335,85	-2,906	≤0.004
SECURITY				
JOY	298,38	353,77**	-2,642	≤0.008

\*\* =p<0.01; \* =p<0.05

**Relationships between degree course and the main study variables**

Table 6 shows the scant statistically significant differ-

Table 4.

Significant differences in anxiety or stress in measures of instruments and emotions

SCL-90-R	ANXIETY or STRESS		Z	p
	Yes (N= 422)	No (N= 271)		
GSI	394,48**	273,07	-7,791	≤0.000
PST	389,29**	281,14	-6,941	≤0.000
PSDI	387,49**	283,95	-6,644	≤0.000
SOMATIZACION	394,31**	273,33	-7,771	≤0.000
OBSESSIVE COMPULSIVE	378,59**	297,81	-5,188	≤0.000
INTERPERSONAL SENSITIVITY	372,03**	308,03	-4,112	≤0.000
DEPRESSION	394,14**	273,59	-7,740	≤0.000
ANXIETY	395,67**	271,22	-7,995	≤0.000
HOSTILITY	377,06**	300,19	-4,960	≤0.000
PHOBIC ANXIETY	378,89**	297,35	-5,295	≤0.000
PARANOID IDEATION	373,52**	305,70	-4,372	≤0.000
PSYCHOTICISM	385,87**	305,70	-6,409	≤0.000

  

PANAS	Yes	No	Z	p
POSITIVE LAST WEEK	334,65	366,23*	-2,028	≤0.043
NEGATIVE LAST WEEK	390,79**	278,81	-7,194	≤0.000
POSITIVE USUALLY				
NEGATIVE USUALLY	376,61**	277,51	-6,447	≤0.000

  

EMOTIONS	Yes	No	Z	p
FEAR	364,74**	318,17	-3,012	≤0.003
ANGER	364,65**	318,31	-3,044	≤0.002
GUILT	364,51**	318,52	-3,192	≤0.001
DISGUST				
SADNESS	368,83**	310,62	-3,822	≤0.000
SURPRISE	358,04*	3216,12	-2,069	≤0.039
CURIOSITY				
ADMIRATION	332,99	363,53*	-1,986	≤0.047
SECURITY				
JOY				

\*\* =p<0.01; \* =p<0.05

ences between the degree course variable (Health Sciences and Social Sciences) and the study variables, for both the overall sample and the subsample without the students

reporting episodes of stress or anxiety. It can be seen that and the subsample. the differences are maintained across the overall sample

Table 6. Significant differences between degrees in different samples in measures of instruments and emotions

	DEGREES (total sample)				DEGREES (sample without anxiety)			
	Health De- grees (N=442)	Social Degrees (N=251)	Z	p	Health De- grees (N=174)	Social Degrees (N=97)	Z	p
<b>SCL-90-R</b>								
GSI								
PST								
PSDI								
SOMATIZACION								
OBSESSIVE COMPULSIVE	334,33	369,32*	-4,376	≤0.000				
INTERPERSONAL SENSITIVITY								
DEPRESSION								
ANXIETY								
HOSTILITY								
PHOBIC ANXIETY								
PARANOID IDEATION	328,98	378,73**	-4,376	≤0.000	125,58	154,69**	-2,955	≤0.003
PSYCHOTICISM	334,31	369,35*	-4,376	≤0.000	129,11	148,37**	-1,996	≤0.049
<b>PANAS</b>								
POSITIVE LAST WEEK								
NEGATIVE LAST WEEK								
POSITIVE USUALLY								
NEGATIVE USUALLY								
<b>EMOTIONS</b>								
FEAR	368,63**	307,38	3,898	≤0.000	143,98*	121,68	-2,263	≤0.024
ANGER								
GUILT								
DISGUST								
SADNESS								
SURPRISE								
CURIOSITY	360,61**	318,90	-2,588	≤0.007	145,79**	118,44	-2,798	≤0.005
ADMIRATION								
SECURITY	369,49**	303,28	-4,238	≤0.000	146,46**	117,24	-2,976	≤0.003
JOY	364,21**	312,56	-3,323	≤0.001	147,20**	115,91	-3,212	≤0.001

\*\* =p<0.01; \* =p<0.05

Table 7. Significant differences between courses in different samples in measures of instruments and emotions

	COURSES (total sample)				COURSES (sample without anxiety)			
	First (N= 271)	Fourth (N= 103)	Z	p	First (N= 110)	Fourth (N= 35)	Z	p
<b>SCL-90-R</b>								
GSI	204,28**	143,34	-4,870	≤0.000	80,08**	50,74	-3,600	≤0.000
PST	202,88**	147,03	-4,464	≤0.000	79,30**	53,19	-3,205	≤0.001
PSDI	197,01**	162,48	-2,759	≤0.006	77,35*	59,34	-2,209	≤0.027
SOMATIZACION	196,06*	164,98	-2,487	≤0.013	77,30*	59,50	-2,188	≤0.029
OBSESSIVE COMPULSIVE	204,16**	143,66	-4,829	≤0.000	80,66**	48,93	-3,898	≤0.000
INTERPERSONAL SENSITIVITY	203,80**	144,62	-4,736	≤0.000	79,87**	51,40	-3,501	≤0.000
DEPRESSION	201,35**	151,05	-4,023	≤0.000	79,00**	54,14	-3,053	≤0.002
ANXIETY	199,97**	154,69	-3,622	≤0.001	78,30**	56,36	-2,698	≤0.007
HOSTILITY	202,01**	149,32	-4,232	≤0.000	77,33*	59,40	-2,216	≤0.027
PHOBIC ANXIETY	200,28**	153,86	-3,761	≤0.000	78,29**	56,39	-2,745	≤0.006
PARANOID IDEATION	202,12**	149,04	-4,265	≤0.000	78,31**	56,31	-2,732	≤0.006
PSYCHOTICISM	200,55**	153,17	-3,807	≤0.000	78,75**	54,94	-2,961	≤0.003
<b>PANAS</b>								
POSITIVE LAST WEEK	174,43	221,90**	-3,798	≤0.000	69,03	85,47*	-2,020	≤0.043
NEGATIVE LAST WEEK	195,30*	166,97	-2,267	≤0.023				
POSITIVE USUALLY	170,81	208,73**	-3,064	≤0.002				
NEGATIVE USUALLY	188,79*	157,08	-2,644	≤0.008				
<b>EMOTIONS</b>								
FEAR	195,63*	164,06	-2,537	≤0.011				
ANGER								
GUILT								
DISGUST								
SADNESS								
SURPRISE								
CURIOSITY								
ADMIRATION	169,68	228,83**	-4,745	≤0.000	67,18	91,30**	-2,991	≤0.003
SECURITY	176,11	214,39**	-3,084	≤0.002	67,07	91,64**	-3,406	≤0.002
JOY								

\*\* =p<0.01; \* =p<0.05

### Relationships between year group and the main study variables

Comparing the students by year group (first compared to fourth), Table 7 reflects the number of statistically significant differences for each variable in both samples. When the students reporting episodes of anxiety and stress are excluded, the statistically significant differences are maintained in the SCL-90-R and to a very small extent in

affect and emotions.

### Relationships between the presence of chronic disease and the main study variables

Table 8 shows the impact of having a chronic disease on the study variables, and how this impact disappears when the students reporting anxiety or stress are excluded from the sample.

Table 8.

Significant differences between chronic disease in different samples in measures of instruments and emotions

	CHRONIC DISEASE (total sample)				CHRONIC DISEASE (sample without anxiety)			
	Yes (N= 75)	No (N= 618)	Z	p	Yes (N= 27)	No (N= 244)	Z	p
<b>SCL-90-R</b>								
GSI	395,12*	341,16	-2,204	≤0.027				
PST								
PSDI	422,65**	337,82	-3,466	≤0.0010				
SOMATIZACION	404,09**	340,07	-2,618	≤0.009				
OBSESSIVE COMPULSIVE	395,45*	341,12	-2,221	≤0.026				
INTERPERSONAL SENSITIVITY								
DEPRESSION	404,93**	339,97	-2,655	≤0.008				
ANXIETY								
HOSTILITY	411,62**	339,16	-2,976	≤0.003				
PHOBIC ANXIETY	391,66*	341,58	-2,070	≤0.038				
PARANOID IDEATION								
PSYCHOTICISM								
<b>PANAS</b>								
POSITIVE LAST WEEK								
NEGATIVE LAST WEEK	389,84*	341,80	-1,965	≤0.049				
POSITIVE USUALLY								
NEGATIVE USUALLY								
<b>EMOTIONS</b>								
FEAR	388,09*	314,44	-1,921	≤0.05				
ANGER								
GUILT								
DISGUST								
SADNESS								
SURPRISE								
CURIOSITY								
ADMIRATION	292,94	351,36*	-2,422	≤0.015	107,35	139,17*	-2,025	≤0.043
SECURITY								
JOY								

\*\* = $p < 0.01$ ; \* = $p < 0.05$

### Discussion

University students are a unique group of individuals in a critical transitional period. Many students experience different emotions, such as frustration, pressure of competition for good grades and the failure to find work, mental health problems, psychological distress, etc., and the present study provides important evidence to inform about this phenomenon.

The sociodemographic data are in line with our expectations considering the mean age and gender female of the sample, which are similar to other studies (Fernández-Rodríguez et al., 2019; Zeppego et al., 2014). The place of origin shows that most of the students are from the Autonomous Community of Castilla-La Mancha, although the sample includes students from other parts of Spain, suggesting the open nature and mobility of students from other areas. Although we administered the tests in a paper-based format to all the students at the university, a significant proportion of respondents were students of Health Sciences (63.9%), with those from the first

(39.1%) and second year (26.6%), being the majority. This is likely due to the fact that Health Science students and first- and second-year students are more used to cooperating in surveys like the one we conducted (Zeppego et al., 2014). This consideration, nevertheless, is exclusively based on our empirical experience.

Regarding the characteristics of the sample, the undergraduates' health status was good, as in previous studies, (Alvear-Galindo et al., 2014). Only 10.8% presented chronic diseases, with asthma, diabetes and allergies being the most prevalent (Kim et al., 2020; Mullins et al., 2017). However, 60.9% reported having experienced anxiety or stress, which is consistent with other studies where approximately 50% of university students have experienced significant levels of anxiety (Balanza Galindo et al., 2009; Cooke et al., 2006; Morales-Rodríguez et al., 2020; Sanchis-Soler et al., 2023; Recabarren et al., 2019). Of our undergraduates, 12.4% were receiving psychological support and 8.2% were taking psychotropic medication (mainly anxiolytics), with these figures being similar to those in the work by Torales et al. (2019) with medical

students from Paraguay, but higher than those found by Zeppego et al. (2014) in Italian second-year university students. However, other studies (Gras et al., 2020; Lecat et al., 2020; McCabe et al., 2006) have found undergraduate students reporting rates of medically prescribed use of sedative or anxiety medication and sleeping medication.

The mean scores in the measures used show, for the psychopathology screening tool SCL-90, high scores on the obsessive-compulsive subscale and lower scores on the phobic anxiety subscale, which is similar to the findings of Robles et al. (2002) with a clinical sample and those of Tang et al. (2018) with university students. In our case, additionally, the scores were high in the subscales of depression, anxiety and interpersonal sensitivity, coinciding with Tang et al. (2018). It appears that symptoms of anxiety and depression, according to these authors, may be the most common mental health symptoms among university population (Tang et al., 2018).

The different indicators included in the test are designed to express in a single score the level of a respondent's psychopathology, given that is an instrument with psychopathology screening capability. The Global Severity Index (GSI) is the sum of all 9 subscales and is a sound indicator of the severity of the respondent's current level of distress. It combines the number of symptoms identified as present with the severity of the perceived distress. In our case, the GSI presented a mean score of 0.95, representing an accumulated frequency of 60%, meaning the severity was not high. The Positive Symptoms Total (PST), which is the total number of items with positive responses, was computed to assess the severity of overall psychological distress, and findings show a mean score of 42, with an accumulated percentage of 50%. Finally, the Positive Symptom Distress Index (PSDI) is intended to assess the response style, assessing whether the respondent tends to exaggerate or attenuate their symptoms, such that feigning attitudes can be detected. The mean score of our sample on the PSDI was not high either, being 1.9, with an accumulated percentage of 54%.

The questionnaire is useful to understand psychiatric disorder and has good psychopathology screening capacity, but, in our case, the level of psychopathological disorder and the severity of psychological distress in our participants, as evaluated on each of the overall measures of the SCL-90-R, are not high, with scores being around mean values. Thus, it appears our undergraduates do not present a high degree of psychopathology (Dilber et al., 2016). Nonetheless, other works have found high rates of psychiatric and psychopathological problems among university students (Kontoangelos et al., 2015; Lei et al., 2016; Tang et al., 2018; Zeppego et al., 2014).

In recent decades, the study of affectivity, emotions and their regulation, and their potential impact on the daily life in university populations has generated much interest. Our undergraduates' affective states, measured using the PANAS, revealed the presence of positive affect both as a general occurrence and over the last week, with

this positive affect indicating that university the students feel excited, alert, and active. Similar results have been found in other studies with university samples (Merchán-Clavellino et al., 2019).

As regards the ten basic emotions analysed, our results show that the highest-scoring emotions were the pleasant ones of curiosity, joy, security and admiration, with a lower presence of unpleasant emotion. This finding suggests the students are emotionally prepared for academic life, with sufficient resources of interest, motivation and control to deal with study and curricular content, with improved well-being and personal satisfaction (Aguado, 2014; 2015; Fredrickson, 2001; Kamthan et al., 2019; Van Cappellen et al., 2018).

With regard to the relationships between variables, our findings suggest the importance of **anxiety and stress** in the undergraduates, as reported for students from different parts of the world and for students enrolled on different types of degree courses (Balaji et al., 2019; Dias Lopes et al., 2020; Mohamad et al., 2021; Morales-Rodríguez and Pérez-Mármol, 2019; Zeppego et al., 2014). A high level of anxiety affects not only academic performance but can also causes many other detrimental effects such as depression, a decline in health and suicide. Our data confirm that students reporting episodes of anxiety or stress exhibited worse psychopathological prognosis in all the indicators and subscales of the SCL-90-R, with the presence of negative affect as a general occurrence and over the last week. They present a maladaptive emotional status, characterised by fear, anger, guilt, sadness, surprise and a lower capacity for admiration.

Thus, our results show that anxiety has an impact on all the variables under analysis. These findings can be used to design appropriate and systematic interventions and programmes to help students at risk of anxiety. Robust support and increased psychological assessment and monitoring among students must be given serious attention to avoid higher prevalence rates of anxiety in the future (Mohamad et al., 2021).

As regards **sex**, we posited that the women would score worse on all the indicators used, compared to their male counterparts, and, indeed, they exhibited more psychiatric symptoms in almost all the SCL-90-R subscales and in its three psychopathology indexes (GSI, PST and PSDI). Coinciding with previous studies (Garlow et al., 2008, Tang et al., 2018, Vazquez et al., 2012), our data show that female students reported higher levels of psychopathological distress and psychological distress than their male counterparts on almost all the measures. A possible explanation for these gender differences in psychological status in the university students might be that female students, when faced with rapid changes, are more likely to focus on feelings of personal inadequacy and inferiority (Martínez et al., 2014).

Additionally, our female students presented higher levels of general negative affect and lower positive affect over the last week, suggesting that the women experience

negative affective distress as a general phenomenon or over time (Kyräl et al., 2019).

Finally, the women's emotional universe is characterised by a greater presence of the emotions of fear, curiosity and joy. Previous works have also reported female university students present greater levels of fear (Velasco et al., 2019). Curiosity being higher among the women is an interesting finding, given that that the female population in universities tends to be greater than that of men, and curiosity would encourage cognition, a motivator for learning, better decision-making, which is associated with well-being and healthy development (Kidd & Hayden, 2015). This might make them feel joyful, happy, and satisfied, although Kamthan et al. (2019) showed female university students to be unhappier than males. In contrast, it is striking that the male students showed higher levels of admiration. As proposed by Aguado (2014; 2015) and Shin (2020), admiration is associated with academic engagement and prosocial behaviour. Admiration is defined by traits that are appreciated as valuable behaviours and promotes learning by imitation, contemplation and observation, which are key aspects of university life.

Many of these statistically significant differences in the sex variable disappeared when we excluded the students who reported anxiety or stress. However, the differences are maintained in the subscales of somatization and phobic anxiety, as well as in the emotions of fear, curiosity and joy, with surprise also revealing differences.

We expected the **type of degree course** (Health Sciences and Social Sciences) to yield many statistically significant differences, but such differences were actually scant yet interesting, as we found that, in the overall sample, the Social Sciences students presented higher levels of obsessive-compulsive behaviours, paranoid ideation and psychoticism. When the students with anxiety or stress were excluded, these findings were maintained, with the exception of the differences in the obsessive impulse, which disappeared

As regards emotions, the Health Sciences students, in both the overall sample and the subsample, reported higher levels of the emotions of curiosity, security and joy, although it is worth noting that they also felt more fear.

Hence, it seems that the Social Sciences students (Social Work, Social Education and Business Administration and Management) present a worse psychological distress prognosis, while the Health Sciences students (Nursing, Speech and Language Therapy and Occupational Therapy) present an emotional profile grounded in a set of pleasant, adaptive emotions, despite also being those showing the highest levels of fear. These results clearly appear to evidence the existence of a particular, well-defined profile for each type of degree course, depending on the theoretical or practical study plan, academic demands and early involvement in a clinical environment (González Cabanach et al., 2017). Nonetheless, other studies (Fernández-Rodríguez et al., 2019) have not identified this differentiating profile.

These findings provide information that is useful for designing programmes intended to develop the skills needed to manage and regulate emotions and to prevent and reduce psychological distress (González Cabanach et al., 2017; Martínez-Lorca et al., 2017; 2023), especially in Social Sciences. This would help provide students with the intrapsychic resources required to deal with academic demands and stress, but also the skills they will need in their future careers. We trust that future research will delve deeper into this aspect.

We expected the variable of **year of study** to reveal numerous statistically significant differences. This was confirmed by our results, where scores on the GSI, PST, PSDI and all the subscales of questionnaire SCL-90-R were significantly higher in first-year students in comparison with fourth-year ones, involving higher levels of current psychiatric symptoms and stress during the first year, possibly associated with factors in the process of adjustment to university life (Dilber et al., 2016), such as different approaches, variation in assessment and grading system of each course, differences in teaching methods in the different academic years, difficulty adjusting to the new university life and having problems to handle experiences independently (Mohamad et al., 2021). Psychological distress among young adults, especially during their university years, is more than just a temporary problem (Eisenberg et al., 2007, Mowbray et al., 2006, Srinath et al., 2010). A number of factors can contribute to psychological distress during university years because of the changes and challenges in individuals' social and physical environments. Cultural beliefs, peer relationships and the transition itself from home to college influence the students' behaviour and adjustment (Dyson and Renk, 2006).

Furthermore, the same results were found when the students reporting episodes of anxiety or stress were dropped from the sample. Thus, it seems that first-year students are in a situation of greater psychological and psychopathological vulnerability. This is something that should be addressed by the institutions as soon as freshers take up their places at university.

Affectivity was also found to be poorer in the first-year students, who presented higher levels of negative affect and lower positive affect, both over the last week and generally. These effects were not found once the students with anxiety were excluded from the sample, with only lower positive affect in the last week being found in our first-year participants. Negative affect is a general dimension of anguish and dissatisfaction. This is worrisome as the consequences of negative affect can be linked to mental illness, causing poorer academic performance, thus compromising an individual's professional future or even causing lack of engagement and discontent with their chosen degree course (Dias Lopes et al., 2020).

Finally, as regards their emotional universe, we found that the young students exhibited greater levels of fear, while those from later years felt admiration and security. These two latter emotions were maintained in the fourth-



year students in the subsample without students reporting anxiety or stress. This is an interesting finding as it suggests that age might play a key role in maturation and emotion management, with older students presenting an emotional pattern that is more adaptive and better suited to the demands of university (Author 2014; 2015).

We can thus conclude that the first year of university is a stressor due to factors such as the changes and adjustments it involves, new friendships, leaving the family home in some cases, and new-found independence, which correlated with worse indicators of health, anxiety and emotion regulation. University authorities should monitor and design interventions for these students in order to avoid high rates of anxiety, psychological distress and dropout.

**Chronic disease** is a global health concern and is frequently associated with mental health comorbidities (Madavanakadu Devassy et al., 2020; Mullins et al., 2017). The students with a chronic disease diagnosis presented worse scores on some of the SCL-90-R subscales, such as somatization, obsession-compulsion, depression, hostility, phobic anxiety and GSI and PSDI. The students with chronic disease also presented greater negative affect in the last week, with their predominant emotion being fear. Authors including Kim et al. (2020) have shown how poor health due to the presence of chronic diseases is an indicator of levels of anxiety, emotional difficulties and poor mental health.

All these association disappeared when students with anxiety or stress were excluded from the sample. Thus, it may be said that the presence of episodes of anxiety or stress affects the comorbidity between greater emotional difficulties and poor mental health (Mullins et al., 2017).

## Conclusion

Our results indicate the need for preventive measures in students of higher education to minimise anxiety, stress, mental health and maladaptive emotions and feelings and help maintain necessary levels of well-being during this phase of academic development, particularly in young students. To this end, it is suggested that educational institutions adopt effective health policies and implement empirically effective emotional education programmes across the curriculum, spanning the period from entry to higher education to entry into the labour market (Balaji et al., 2019; Dias Lopes et al., 2020; Dilber et al., 2016; Fernández-Rodríguez et al., 2019; Martínez-Lorca et al., 2017; 2023; Mónaco et al., 2017; Tang et al., 2018). This would increase their subjective well-being, emotional response, health status, academic adaptation, achieving greater personal satisfaction and, consequently, a more successful professional future.

## Limitations

One of these is that it is a transversal study, which

does not allow us to establish any causal relationships. Future research should focus on analysing this relationship through longitudinal studies. Furthermore, in our study, the sample comprises only Spanish students. It might therefore be worth extending the sample to other universities. We also consider that the sample is sufficiently extensive, although only the students in class on the day of data collection participated in the study. Hence, many students were unable to take part and the results may not be representative of all young people. Finally, many scales such as the SCL-90-R do not provide specific psychiatric diagnoses and only help ascertain the presence or absence of psychological distress. We used validated instruments for the subjective reporting of health, which support the quality of the data, with the exception of emotions where we used a Likert scale.

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