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# Emotional Intelligence, Sense of Coherence, Engagement and Coping: A Cross-Sectional Study of University Students' Health

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Abstract: It is important to consider university settings as sustainable environments that promote student well-being. Our aim in this study was to determine how the variables of engagement, emotional intelligence, sense of coherence, and coping influence the health of students at a Spanish university. This was a descriptive, cross-sectional study. The instruments of measures administered were: The General Health Questionnaire, Trait Meta-Mood Scale, Uterch Work Engagement Scale, sense of coherence and brief coping scale to 463 students. The results showed that better-perceived health was associated with higher scores for dedication, vigor, clarity, repair, sense of coherence, active coping, positive reframing, and humor. Conversely, poorer perceived health was associated with higher scores for attention, instrumental support, self-distraction, venting, religion, denial, self-blaming, emotional support, and behavioral disengagement. In addition, the variables analyzed presented differences by sex. Our proposed predictive model of health and the associations between variables indicate the need to cultivate emotional skills, such as mood repair, a sense of coherence, and coping strategies, in order to promote student health. Facilitating students' acquisition of knowledge and resources by analyzing these and other variables can contribute to individual well-being and help university students to cope with present and future academic challenges.

**Keywords:** engagement; emotional intelligence; organizational environments; coping; sense of coherence; health; nursing student

# 1. Introduction

Learning environments are increasingly viewed as settings with the capacity to promote students' all-round development. This has prompted a renewed interest in positive psychology and its application to the field of education [1,2]. In addition, the psychology of sustainability has stressed the importance of creating sustainable and healthy organizational environments that promote well-being [3]. The positive organizational attitude proposes interventions at different levels: Individual, group, organizational, and inter-organizational [4]. Socio-emotional skills are especially valuable in professions where one of the major tasks is to care for others, as is the case of the health professions [5].

In university environments, the stress associated with being a student can influence factors such as class attendance, examinations, performance of compulsory tasks, time stress, and work overload [6–8], as well as the ability to cope with situations that arise in health settings during clinical placements [9]. Consequently, the use of appropriate coping strategies can reduce students' stress

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levels and improve their quality of life [10], exerting a positive influence on their health. Coping can be defined as the constantly changing cognitive and behavioral strategies adopted to tackle specific external and/or internal demands that appear to exceed the individual's resources, together with the associated unpleasant emotional state [11]. It is essential to develop good coping strategies while at university because these will help when facing subsequent challenges related to work and occupational stress [12].

Another factor that influences students' health and enables them to respond successfully to academic stress is engagement [13]. Engagement can be defined as a positive and satisfactory mood characterized by vigor, dedication, and absorption [14]. Students with higher levels of engagement cope better with academic stress and are more satisfied, which may help them in the future to become professionals with a greater sense of well-being and lower feelings of burnout [13]. This construct has also been positively related to learning capacity and time management in nursing students [15]. Engagement consists of a positive approach to the educational process that contributes to student well-being when tackling an academic challenge. It thus refers to the quality of a student's efforts to achieve positive academic outcomes [16]. Similarly, health is a predictor of subjective well-being [17], and life satisfaction in university students is positively and relatively strongly correlated with happiness, which is seen as synonymous. Another study of university students found that engagement is positively correlated with organizational justice, whereby the higher the students' sense of justice, the greater their vigor, dedication, and absorption towards the task [18].

Emotional intelligence (EI) has been defined as a type of social intelligence that includes the ability to monitor and understand one's own emotions and those of others, to distinguish between these and to use this (affective) information to guide one's thinking and actions [19]. Continuing with a positive approach, emotionally intelligent individuals are experts in regulating their emotions, and they, therefore, maintain the quality of their performance during periods of acute stress [20]. The mediating role of emotional intelligence between age and subjective well-being has also been studied, finding that using higher EI, can improve subjective well-being [21]. Positive and negative affects serve as potential mediators between EI ability and life satisfaction, that is, people with high EI could be satisfied with their lives because they can often experience positive emotions and/or because they rarely experience negative emotions [22]. People with lower EI are more likely to use non-productive coping strategies and focus on reducing their own distress rather than solving the problem [23]. EI can constitute a coping strategy that helps university students tackle the challenges that arise during their learning process. Students with higher levels of EI are potentially better equipped to handle the stressors encountered at university and in professional life [10]. It has been observed that EI skills develop with age, and that women score higher in EI values than men [24].

Another health promotion resource that facilitates positive mental health is a sense of coherence (SOC) [25]. An SOC is an important motivator that helps people understand the world around them and deploy their resources [26]. In university students, SOC is positively correlated with problem- and family support-oriented coping strategies, and negatively with emotion- and avoidance-oriented strategies [12]. It has also been found that social support and better performance in comparison with other classmates are associated with a stronger SOC [27]. In university students, SOC is significantly related to social capital, self-efficacy, and mental health [28]. In addition, it has been reported that students with a low SOC have a tendency to adopt inappropriate lifestyles [29].

The aim of this study was to analyze coping strategies, engagement, emotional intelligence, and a sense of coherence and how these variables differentially contribute to the prediction of self-reported health and well-being. In addition to contrasting the relationship between the sense of coherence and health by introducing emotional intelligence as a mediating variable. This is important because the university experience can help students develop resources that enable them to improve their well-being and tackle present academic challenges and future professional demands.

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#### 2. Materials and Methods

This was a predictive and descriptive quantitative research study without intervention.

The study population comprised 600 students taking a degree in nursing at a public Spanish university. A final sample of 463 students participated in the study, of whom 80.8% (374) were women and 19.2% (89) were men. The mean age of respondents was 20.96 years. The entire population was included to achieve a greater number of participants, to avoid the possibility of sample losses and to show the utmost respect for students' privacy. In addition, participants who did not complete all the questionnaire data were dropped from the study.

# 2.1. Instruments Used to Collect Data

Student health was measured using Goldberg's General Health Questionnaire (GHQ-12) [30]. This scale is used as an indicator of psychological well-being ( $\alpha$  = 0.835). Responses are given using a Likert-type scale with scores from 0 to 3. The total score for the scale ranges from 0 to 36, where the higher the score, the worse the psychological well-being.

Emotional intelligence was assessed using the shortened Spanish version of the Trait Meta-Mood Scale (TMMS-24) [31]. This consists of 24 items divided into three eight-item dimensions: Attention ( $\alpha=0.879$ ), clarity ( $\alpha=0.916$ ), and repair ( $\alpha=0.884$ ). Responses are given using a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). The scores obtained for each of the three dimensions are analyzed separately.

Engagement was assessed using the student version of the Utrecht Work Engagement Scale (UWES-Student) [32]. This scale contains 17 items which measure the three dimensions of this construct: Vigor ( $\alpha = 0.821$ ), dedication ( $\alpha = 0.793$ ), and absorption ( $\alpha = 0.861$ ). Responses to the statement in each item are given using a Likert-type scale from 0 (strongly disagree) to 6 (strongly agree). High scores in these dimensions indicate high levels of academic engagement.

We also used the sense of coherence scale, SOC-13 [33]. This consists of 13 items that are scored using a seven-point Likert-type scale. It contains three scales corresponding to the three dimensions of the construct: Comprehensibility ( $\alpha = 0.630$ ), manageability ( $\alpha = 0.596$ ), and meaningfulness ( $\alpha = 0.594$ ), and a total score ( $\alpha = 0.799$ ).

Lastly, coping was measured using the COPE-28 scale [34]. This contains 28 items scored using a Likert-type scale ranging from 0 (not at all) to 3 (a lot). The 28 items are grouped in pairs, yielding 14 coping modes: Active coping ( $\alpha=0.452$ ), instrumental support ( $\alpha=0.630$ ), acceptance ( $\alpha=0.516$ ), self-distraction ( $\alpha=0.482$ ), venting ( $\alpha=0.302$ ), planning ( $\alpha=0.585$ ), religion ( $\alpha=0.880$ ), denial ( $\alpha=0.458$ ), self-blaming ( $\alpha=0.617$ ), substance use, emotional support, positive reframing ( $\alpha=0.602$ ), humor ( $\alpha=0.835$ ), and behavioral disengagement ( $\alpha=0.654$ ).

# 2.2. Procedure

Having obtained students' consent to voluntarily participate anonymously, data were collected using the online LimeSurvey tool. The study procedure and objectives were explained to all students that requested this.

#### 2.3. Data Analysis

SPSS version 25.0 was used to construct the database and perform statistical analyses. Qualitative variables were described as frequencies and percentages, while quantitative variables were summarized as means and standard deviations. Statistical significance was set at p < 0.05. Comparisons of means between groups were performed using the Student's t-test. Multiple linear regression was used to construct a model of a dependent variable (health) in relation to others (emotional intelligence, engagement, cope, and a sense of coherence). The purpose of this analysis is to know if the different measures influence the measure of general health with the GHQ-12. For this analysis, the step method has been followed (criterion: Prob. Of F to enter  $\leq 0.050$ , Prob. Of F to exit  $\geq 0.100$ ). The psychometric

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properties of the instruments were calculated by means of an analysis of reliability and calculation of Cronbach's alpha. Pearson's correlation coefficient was used to determine the relationships between the variables. Pearson's partial correlations were calculated, and the Hayes test was used to determine if the mediation models obtained were significant [35].

## 2.4. Ethical Considerations

The questionnaires were accompanied by an information sheet and verbal and written informed consent was obtained. All subjects participated in the study voluntarily and the confidentiality and anonymity of their data was maintained at all times. We adhered to the Code of Ethics and the Declaration of Helsinki and observed the law regarding data confidentiality (Law 15/1999, of 13 of December, on personal data protection). This study was approved by the University Ethics Committee (ETHICS-ULE-027-2018), which ensures compliance with all ethical and legal aspects.

## 3. Results

Table 1 gives the results obtained for descriptive statistics and the differences in means (Student t) by sex according to the results of the Levenne test consideraing in all cases that do not assume equal variances.

Questionnaires		Items	α	Men (M $\pm$ SD)	Women (M ± SD)	Total (M ± SD)	t	p
GHQ-12		12	0.835	$10.99 \pm 5.223$	$12.13 \pm 4.935$	$11.91 \pm 4.175$	-1.874	0.63
UWES-S	Ab	6	0.831	$3.55 \pm 1.349$	4.23 ± 1.145	4.10 ± 1.215	-4.382	< 0.01
	De	5	0.793	$4.89 \pm 1.211$	$5.33 \pm 0.855$	$5.24 \pm 0.949$	-3.221	0.02 *
	Vi	6	0.821	$3.40 \pm 1.192$	$3.92 \pm 1.097$	$3.82 \pm 1.133$	-3.758	< 0.01
	At	8	0.879	$26.26 \pm 6.054$	27.61 ± 6.197	$27.35 \pm 6.186$	-1.891	0.61
TMMS-24	C1	8	0.916	$27.74 \pm 6.478$	$25.98 \pm 6.418$	$26.32 \pm 6.460$	2.305	0.23
	Re	8	0.884	$29.01 \pm 6.072$	$26.20 \pm 6.832$	$26.74 \pm 6.778$	3.832	< 0.01
SOC-13	Total	13	0.799	59.70 ± 12.953	59.74 ± 11.086	59.73 ± 11.453	-0.031	0.975
	A	2	0.452	4.01 ± 1.133	$4.13 \pm 1.067$	$4.11 \pm 1.080$	-0.906	0.367
	I	2	0.630	$3.20 \pm 1.358$	$3.82 \pm 1.302$	$3.70 \pm 1.335$	-3.892	< 0.01
	Ac	2	0.516	$4.01 \pm 1.248$	$3.62 \pm 1.147$	$3.69 \pm 1.176$	2.716	0.08
	Sd	2	0.482	$3.31 \pm 1.458$	$3.37 \pm 1.410$	$3.36 \pm 1.1418$	-0.334	0.739
	V	2	0.302	$2.39 \pm 1.311$	$2.63 \pm 1.265$	$2.59 \pm 1.276$	-1.548	0.124
	P	2	0.585	$3.56 \pm 1.296$	$3.58 \pm 1.231$	$3.58 \pm 1.242$	-0.122	0.903
COPE-28	R	2	0.880	$0.91 \pm 1.535$	$0.75 \pm 1.278$	$0.78 \pm 1.331$	0.935	0.352
COI E-20	D	2	0.689	$1.01 \pm 1.248$	$1.37 \pm 1.402$	$1.30 \pm 1.380$	-2.407	0.017 *
	Sb	2	0.617	$3.07 \pm 1.452$	$2.80 \pm 1.424$	$2.86 \pm 1.432$	1.539	0.126
	Su	2	0.884	$0.82 \pm 1.534$	$0.45 \pm 1.018$	$0.52 \pm 1.143$	2.155	0.033 *
	E	2	0.806	$3.44 \pm 1.484$	$4.06 \pm 1.424$	$3.94 \pm 1.455$	-3.572	< 0.01
	Pr	2	0.602	$3.19 \pm 1.453$	$3.39 \pm 1.331$	$3.35 \pm 1.356$	-1.150	0.252
	Н	2	0.835	$3.35 \pm 1.706$	$2.72 \pm 1.727$	$2.84 \pm 1.739$	3.092	0.02 *
	Bd	2	0.654	$1.13 \pm 1.227$	$0.98 \pm 1.191$	$1.01 \pm 1.198$	1.105	0.271

Table 1. Descriptive statistics and differences in means by sex.

Note; α: Cronbach's alpha, SD: Standard deviation, M: Mean, A: Absorption, De: Dedication, Vi: Vigor, At: Attention, Cl: Clarity, Re: Repair, A: Active coping, I: Instrumental support, Ac: Acceptance, Sd: Self-distraction, V: Venting, P: Planning, R: Religion, D: Denial, Sb: Self-blaming, Su: Substance use, E: Emotional support, Pr: Positive reframing, H: Humor, Bd: Behavioral disengagement.

As can be seen, the women obtained higher means than the men for the three dimensions of engagement: Absorption (p < 0.01), dedication (p = 0.02), and vigor (p < 0.01), indicating that they perceived themselves as more committed to their academic tasks. Conversely, in the case of emotional intelligence, men obtained higher scores than women for the subscale of repair (p < 0.01). We also found differences in means in five of the 14 dimensions of coping, whereby women scored higher than men in instrumental support (p < 0.01), denial (p = 0.017), and emotional support (p < 0.01), whereas men scored higher for substance use (p = 0.033) and humor (p = 0.02).

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Table 2 gives the correlations for the study variables. The representation in scatterplots has been performed to see the linearity of the points and check if the point clouds resemble a line. To control the effect of a possible lack of normality, the existence of outliers, and that possible lack of linearity, the Spearman rho coefficient was calculated. The results obtained were similar to the Pearson coefficient. As can be seen, the results show that health measured using the GHQ-12 was associated negatively and weakly with the engagement dimensions of dedication (r = -0.148) and vigor (r = -0.183), the TMMS-24 dimensions of clarity (r = -0.227) and repair (p = -0.350), SOC (r = -0.496), and the COPE-28 dimensions of active coping (r = -0.122), positive reframing (r = -0.175) and humor (r = -0.154). In addition, the GHQ-12 was positively correlated but weakly with attention to feelings (r = 0.158), instrumental support (r = 0.121), self-distraction (r = 0.107), venting (r = 0.166), religion (r = 0.157), denial (r = 0.165), self-blaming (r = 0.371), emotional support (r = 0.109), and behavioral disengagement (r = 0.138).

**Table 2.** Pearson's correlations between variables that influence students' health.

Questionnaires		GHQ-12		UWE-S			TMMS-24		SOC-13
		Total	Ab	De	Vi	At	Cl	Re	Total
UWES-S	Ab	-0.037	1						
	De	-0.148 ***	0.514 ***	1					
	Vi	-0.183 ***	0.796 ***	0.593 ***	1				
	At	0.158 ***	0.146 **	0.163 ***	0.115 *	1			
TMMS-24	Cl	-0.227 ***	0.244 ***	0.120 ***	0.282 ***	0.298 ***	1		
	Re	-0.350 ***	0.165 ***	0.167 ***	0.328 ***	0.090	0.408 ***	1	
SOC-13	Tot	-0.496 ***	0.262 ***	0.281 ***	0.361 ***	-0.048	0.340 ***	0.308 ***	1
	A	-0.122 **	0.217 ***	0.115 *	0.237 ***	0.193 ***	0.308 ***	0.322 ***	0.316 ***
	I	0.121 **	0.117 *	0.160 ***	0.095 *	0.295 ***	0.034	-0.010	0.020
	Ac	-0.043	0.024	0.041	0.031	0.069	0.163 ***	0.230 ***	0.165 ***
	Sd	0.107 *	0.102 *	-0.055	0.080	0.191 ***	0.022	0.099 *	-0.024
	V	0.166 ***	0.022	0.009	-0.029	0.289 ***	0.086	-0.082	-0.122 **
	P	-0.017	0.195 ***	0.101 *	0.211 ***	0.154 ***	0.213 ***	0.294 ***	0.143 **
COPE-28	R	0.157 ***	0.128 **	0.072	0.099 *	0.189 ***	0.163 ***	0.022	0.019
	D	0.165 ***	0.050	0.055	0.040	0.111 *	-0.054	-0.095 *	-0.180 ***
	Sb	0.371 ***	-0.074	-0.080	-0.189 ***	0.206 ***	-0.150 ***	-0.179 ***	-0.376 ***
	Su	0.077	-0.139 **	-0.153 ***	-0.159 ***	0.080	-0.062	-0.030	-0.186 ***
	E	0.109 *	0.086	0.157 ***	0.065	0.322 ***	0.067	0.021	0.078
	Pr	-0.175 ***	0.118 *	0.167 ***	0.225 ***	0.168 ***	0.174 ***	0.515 ***	0.188 ***
	Н	-0.154 ***	-0.020	-0.024	0.035	0.046	0.017	0.288 ***	0.008
	Bd	0.138 **	-0.083	-0.146 **	-0.102 *	0.013	-0.146 **	-0.110 *	-0.223 ***

Note; \*: p < 0.05, \*\*: p < 0.01, \*\*\* p < 0.001, Tot: Total, Ab: Absorption, De: Dedication, Vi: Vigor, At: Attention, Cl: Clarity, Re: Repair, A: Active coping, I: Instrumental support, Ac: Acceptance, Sd: Self-distraction, V: Venting, P: Planning, R: Religion, D: Denial, Sb: Self-blaming, Su: Substance use, E: Emotional support, Pr: Positive reframing, H: Humor, Bd: Behavioral disengagement.

In order to investigate the influence of the variables that correlate (IE, engagement, a sense of coherence, and coping) on health evaluated through the GHQ-12, the regression analysis was performed. The purpose of this analysis is to know if the different measures influence the measure of general health. The results of the eight models can be seen in Table 3. The model 2 explains 28.6% of the variance, where the selected variables for this model are SOC-13 and repair (TMMS-24) (see Table 4). Higher scores for sense of coherence and repair predicted better scores for health, as measured by the GHQ-12.

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Model	Predictive Variables	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Typical Estimation Error
1	Constant, SOC-13	0.496	0.246	0.244	4.352
2	Constant, SOC-13, Re	0.537	0.289	0.286	4.231
3	Constant, SOC-13, Re, Sb	0.568	0.323	0.319	4.132
4	Constant, SOC-13, Re, Sb, H	0.592	0.351	0.345	4.052
5	Constant, SOC-13, Re, Sb, H, R	0.607	0.368	0.361	4.001
6	Constant, SOC-13, Re, Sb, H, R, E	0.617	0.380	0.372	3.967
7	Constant, SOC-13, Re, Sb, H, R, E, A	0.622	0.387	0.377	3.950
8	Constant, SOC-13, Re, Sb, H, R, E, A, Sd	0.627	0.393	0.383	3.933

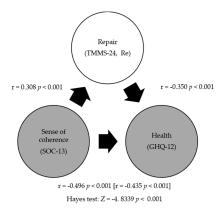
Table 3. Summary linear regression for the dependent variable, GHQ-12.

Note; Re: Repair, Sb: Self-blaming, H: Humor, R: Religion, E: Emotional support, A: Age, Sd: Self-distraction.

**Table 4.** Model 2 Linear regression for the dependent variable, GHQ-12.

Model 3	Non-Standard	ized Coefficients	Typified Coefficients	t	p
	В	Tip. Error	Beta	-	
Constant	27.409	1.152		23.794	< 0.01
SOC-13	-0.187	0.018	-0.429	-100.372	< 0.01
Repair	-0.161	0.031	-0.218	-50.278	< 0.01

Following the procedure and based on the previous regression analysis (model 2), the possible mediational role of the repair dimension of emotional intelligence in the relationship between health and a sense of coherence was analyzed. Figure 1 shows the partial correlation (r = -0.435, p < 0.001) between health and a sense of coherence. One partial mediation model was obtained (Z = 4.8339, p < 0.01). The results show that emotional repair is a mediating variable with little explanatory capacity, when analyzing the relationships between psychological health and the sense of coherence.



**Figure 1.** Analysis of emotional intelligence as a mediating variable in the relationship between health and a sense of coherence in students.

## 4. Discussion

Our aim was to analyze the variables of coping, engagement, EI, and SOC to determine the factors influencing university students' health. The instruments used to measure the variables, GHQ-12, TMMS-24, UWES-S and SOC-13, exceeded or came close to the recommended criterion of a Cronbach's alpha of 0.70 [29,36].

With respect to coping, past research has indicated that students' most frequently employed strategy to cope with stress is active problem-oriented coping [37]. These authors stressed the importance of clinical training as a tool for coping with stress. A similar study [38] found that students'

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most frequently employed strategies were positive thinking and social support. This latter research revealed that personalized coping strategies can help students reduce their stress. In addition, a recent study in nursing students in clinically simulated palliative care shows that the most frequent coping styles were: Positive reevaluation, focus on solutions, and the search for social support [39]. Other studies [40] have emphasized the importance of clinical placements for coping in students. These results showed that prior to the start of placements, the most frequently employed coping strategies were problem-solving followed by avoidance. However, by the end of placements, the most frequently employed coping strategies were acceptance followed by active coping. In addition, women relied more on denial and emotional and instrumental support whereas men turned more frequently to substance use and humor. We also found that coping was associated with engagement, emotional intelligence, and a sense of coherence.

The psychometric properties of the UWES-S questionnaire [41] indicate that it can be considered an appropriate instrument to assess engagement in educational settings. In 2013, Casuso-Holgado [42] reported that, as an indicator of motivation or well-being, this variable is one of the factors that exert a positive influence on students' academic performance. A subsequent study [15] also found evidence that engagement is positively related to learning capacity and time management. Team-based learning is a strategy that can be used to increase student engagement with academic tasks [43]. Furthermore, it has been shown that engagement exerts a positive influence on students' academic efficacy and health [44,45]. As regards differences by sex in engagement, a study of university health science students [46] found no significant differences between men and women. However, in our study, women reported more motivation and commitment to perform their academic tasks than men. In addition, and consistent with these previous studies, nursing students with higher scores for engagement also obtained higher scores for general health, emotional intelligence, a sense of coherence, and some coping strategies, including active coping, instrumental support, planning, substance use, and positive reframing.

Students' capacity for EI has been positively related to clinical performance [47], female nursing students score significantly higher for emotional intelligence than male students [48]. Among other variables, this study found significant correlations between EI and clinical performance, the female sex and higher age. The literature indicates that the dimension of mood repair presents the strongest association with academic performance [49], and that third-year female students obtain significantly higher scores for emotional intelligence than their male counterparts. Another article [50] confirmed that emotional skills increased in the final year of study. However, there does not appear to be consensus on this point, because a different study [51] found that first-year university students obtained higher scores for EI than their fourth-year counterparts. EI has been related to other variables, such as perceived self-efficacy in learning [52] and student well-being [53]. In addition, differences have been found between levels of EI among university students studying different degrees [54], whereby EI is highest in students with experience of patient care. In the present study, we found differences by sex, whereby men were better able to repair their mood, accepting both pleasant and unpleasant feelings. EI is also associated with better health status, engagement, a sense of coherence and strategies, such as active coping, planning, self-blaming, and positive reframing.

A sense of coherence has also been studied in university students [27], revealing a strong association between SOC and lower levels of perceived stress, preventive health strategies, and satisfactory integration at university. In nursing students [55], SOC has been related to stress, whereby high stress levels are associated with a low SOC and vice versa. SOC has also been positively correlated with active coping and reframing [56]. This latter study found that women made less use of substances and humor than men, and that men relied less on emotional and instrumental support than women. Similarly, the values for SOC reported here indicate an association with the variables of health, engagement, EI, and some coping strategies (active coping, acceptance, venting, planning, denial,

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self-blaming, substance use, behavioral disengagement, and positive reframing), in agreement with a previous study of nursing students [27].

With regard to health, students who showed greater dedication reported a better health status [46]. This finding is similar to results reported in previous studies [57], which found that perceived health is influenced by engagement. A significant relationship has also been reported between stress, self-esteem, social support, and health status [58]. This latter study found that as stress increased, it affected self-esteem and social support. Furthermore, this interaction appeared to influence students' general health status. In another study of university students, health was a predictor of subjective well-being, and more specifically, it correlated positively with psychological health [17]. In our sample, psychological health was associated with the dedication and vigor of engagement, EI in all its dimensions, sense of coherence and most of the coping strategies analyzed (active coping, instrumental support, self-distraction, venting, religion, denial, self-blaming, emotional support, positive reframing, humor, and behavioral disengagement).

As limitations of this study, it would be useful to conduct longitudinal studies wherein participants are measured at different time points (e.g., mid-term or final examinations) since our results shed no light on the causality between the variables analyzed. In addition, the data regarding differences by sex should be interpreted with caution because the sample analyzed was not homogeneous for this variable. Moreover, the possibility of bias problems due to the exclusive use of self-report data (social desirability for faking better answers) is contemplated. It would be interesting to corroborate the results obtained using objective execution measures or objective assessment variables (e.g., grades, evaluation of the supervisor/instructor of student performance). Lastly, our subjects were nursing students and, therefore, not representative of the university population as a whole. Consequently, further research is required in order to extend the study to other degree subjects.

#### 5. Conclusions

Our research reports on how the variables of engagement, coping, sense of coherence, and emotional intelligence can influence the health of university students taking a nursing degree. In particular, those students who perceived better levels of health obtained higher scores for engagement (dedication and vigor), EI (clarity and repair), sense of coherence and coping strategies (active coping, positive reframing and humor). Similarly, subjects who obtained the lowest scores for the dimension of attention in EI and for coping strategies (instrumental support, self-distraction, venting, religion, denial, self-blaming, emotional support, and behavioral disengagement) also reported better health. In addition, differences by sex indicated that women made more use of the coping strategies of denial and instrumental and emotional support, whereas men relied more on humor and substance use. Women also reported greater engagement with academic tasks, whereas men presented better mood repair, with a greater capacity to interrupt and regulate negative emotional states and prolong positive ones. In particular, improving university students' sense of coherence, fostering emotional skills, such as repair, would help promote the health of individual nursing degree students. In addition, according to the results of the mediation model, the sense of coherence influences health directly and, through emotional repair, indirectly.

A new awareness is needed in organizational contexts to foster healthy study environments. Improving people's resources, strengths, and talents is a way to achieve well-being. There is an evident need for further analysis of the variables involved in the optimal development and well-being of students. Such analyses should adopt an inclusive and positive approach, gradually incorporating other variables that may be mediating the effects on students' academic success and personal development. Parallel analyses of these variables are also required from the perspective of students' potential and opportunities, rather than focusing solely on the problems that threaten their well-being, thereby, contributing to the creation of educational organizational environments that promote well-being and sustainability.

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#### References

- 1. Esteban, M.; Bernardo, A.; Tuero, E.; Cervero, A.; Casanova, J. Variables influyentes en progreso académico y permanencia en la universidad. *Eur. J. Educ. Psychol.* **2017**, *10*, 75–81. [CrossRef]
- 2. Ramos-Díaz, E.; Rodríguez-Fernández, A.; Revuelta, L.; Axpe, I. El rol mediador de la implicación escolar sobre el apoyo del profesorado y la satisfacción con la vida. *Eur. J. Investig. Health Psychol. Educ.* **2016**, *6*, 151–165. [CrossRef]
- 3. Di Fabio, A. The psychology of sustainability and sustainable development for well-being in organizations. *Front. Psychol.* **2017**, *8*, 1534. [CrossRef] [PubMed]
- 4. Di Fabio, A. Positive healthy organizations: Promoting well-being, meaningfulness, and sustainability in organizations. *Front. Psychol.* **2017**, *8*, 1938. [CrossRef] [PubMed]
- 5. Waite, R.; McKinney, N.; Sahl, M.; Nguyen, P.; Schneider, A. Strengthening emotional and social competence: Undergraduate health professions students. *Int. J. Health Prof.* **2015**, 2, 84–92. [CrossRef]
- 6. Arribas, J. Hacia un modelo causal de las dimensiones del estrés académico en estudiantes de Enfermería. *Rev. Educ.* **2013**, *360*, 533–556. [CrossRef]
- 7. González-Cabanach, R.; Souto, A.; Freire, C.; Ferradás, M.M. Relaciones entre autoestima y estresores percibidos en estudiantes universitarios. *Eur. J. Educ. Psychol.* **2014**, 7, 43–57. [CrossRef]
- 8. Vizoso, C.M.; Arias, O. Engagement, burnout y rendimiento académico en estudiantes universitarios y su relación con la prioridad en la elección de la carrera. *Rev. Psicol. Y Educ.* **2016**, *11*, 45–60.
- 9. Karadag, G.; Guner, I.; Cuhadar, D.; Ucan, O. Self-esteem at the Gaziantep university health school for nursing students. *Fırat Saglık Hizmetleri Derg* **2008**, *3*, 29–42.
- Por, J.; Barriball, L.; Fitzpatrick, J.; Roberts, J. Emotional intelligence: Its relationship to stress, coping, well-being and professional performance in nursing students. Nurse Educ. Today 2011, 31, 855–860. [CrossRef]
- 11. Lazarus, R.S.; Folkman, S. Stress, Appraisal and Coping; Springer: New York, NY, USA, 1984.
- 12. Heiman, T. Examination of the salutogenic model, support resources, coping style, and stressors among Israeli university students. *J. Psychol.* **2004**, *138*, 505–520. [CrossRef] [PubMed]
- 13. Bruce, M.; Omne-Pontén, N.M.; Gustavsson, P.J. Active and emotional student engagement: A nationwide, prospective, longitudinal study of Swedish nursing students. *Int. J. Nurs. Educ. Scholarsh.* **2010**, *7*. [CrossRef] [PubMed]
- 14. Schaufeli, W.B.; Bakker, A.B. Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *J. Organ. Behav.* **2004**, 25, 293–315. [CrossRef]
- Liu, J.Y.; Liu, Y.H.; Yang, J.P. Impact of Learning Adaptability and Time Management Disposition on Study Engagement Among Chinese Baccalaureate Nursing Students. J. Prof. Nurs. 2014, 30, 502–510. [CrossRef] [PubMed]
- 16. Cavazos, J.; Encinas, F.C. Influencia del engagement académico en la lealtad de estudiantes de posgrado: Un abordaje a través de un modelo de ecuaciones estructurales. *Estud. Gerenc.* **2016**, *32*, 228–238. [CrossRef]
- 17. Serban-Oprescu, G.L.; Dedu, S.; Serban-Oprescu, A.T. An Integrative Approach to Assess Subjective Well-Being. A Case Study on Romanian University Students. *Sustainability* **2019**, *11*, 1639. [CrossRef]
- 18. Navarro-Abal, Y.; Gómez-Salgado, J.; López-López, M.; Climent-Rodríguez, J. Organisational justice, burnout, and engagement in university students: A comparison between stressful aspects of labour and university organisation. *Int. J. Environ. Res. Public Health* **2018**, *15*, 2116. [CrossRef]
- 19. Mayer, J.D.; Salovey, P. What is emotional intelligence? In *Emotional Development and Emotional Intelligence: Implications for Educators*; Salovey, P., Sluyter, D., Eds.; Basic Books: New York, NY, USA, 1997; pp. 3–31.

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20. Orak, R.J.; Farahani, M.A.; Kelishami, F.G.; Seyedfatemi, N.; Banihashemi, S.; Havaei, F. Investigating the effect of emotional intelligence education on baccalaureate nursing students' emotional intelligence scores. *Nurse Educ. Pract.* **2016**, *20*, 64–69. [CrossRef]

- 21. Chen, Y.; Peng, Y.; Fang, P. Emotional Intelligence Mediates the Relationship between Age and Subjective Well-Being. *Int. J. Aging Hum. Dev.* **2016**, *83*, 91–107. [CrossRef]
- 22. Extremera, N.; Rey, I. Ability emotional intelligence and life satisfaction: Positive and negative affect as mediators. *Personal. Individ. Differ.* **2016**, *102*, 98–101. [CrossRef]
- 23. García-Sancho, E.; Salguero, J.M.; Fernández-Berrocal, P. Relationship between emotional intelligence and aggression: A systematic review. *Aggress. Violent Behav.* **2014**, *19*, 584–591. [CrossRef]
- 24. Billings, C.E.; Downey, L.A.; Lomas, J.E.; Lloyd, J.; Stough, C. Emotional Intelligence and scholastic achievement in pre-adolescent children. *Personal. Individ. Differ.* **2014**, *65*, 14–18. [CrossRef]
- 25. Eriksson, M.; Lindström, B.; Lilja, J. A sense of coherence and health. Salutogenesis in a societal context: Åland, a special case? *J. Epidemiol. Community Health* **2007**, *61*, 684–688. [CrossRef]
- 26. Antonovsky, A. *Unravelling the Mystery of Health: How People Manage Stress and Stay Well;* Jossey-Bass: San Francisco, CA, USA, 1987.
- 27. Chu, J.J.; Khan, M.H.; Jahn, H.J.; Kraemer, A. Sense of coherence and associated factors among university students in China: Cross-sectional evidence. *BMC Public Health* **2016**, *16*, 336. [CrossRef]
- 28. Mato, M.; Tsukasaki, K. Factors promoting sense of coherence among university students in urban areas of Japan: Individual-level social capital. self-efficacy. and mental health. *Glob. Health Promot.* **2017**, *26*, 60–68. [CrossRef]
- 29. Vega, M.C.; Frías, A.; Del Pino, R. Validez y confiabilidad de la escala de sentido de coherencia en estudiantes de grado de enfermería de una universidad española. *Gac. Sanit.* **2019**, *33*, *310*–316. [CrossRef]
- 30. Goldberg, D.; Williams, P. Cuestionario De Salud General GHQ (General Health Questionnarie); Masson: Barcelona, Spain, 1996.
- 31. Fernández-Berrocal, P.; Extremera, N.; Ramos, N. Validity and reliability of the Spanish modified version of the Trait Meta-Mood Scale. *Psychol. Rep.* **2004**, *94*, 751–755. [CrossRef]
- 32. Schaufeli, W.B.; Salanova, M.; González-Roma, V.; Bakker, A.B. The measurement of engagement and burnout and: A confirmative an analytic approach. *J. Happiness Stud.* **2002**, *3*, 71–92. [CrossRef]
- 33. Antonovsky, A. The structure and properties of the sense of coherence scale. *Soc. Sci. Med.* **1993**, *6*, 725–733. [CrossRef]
- 34. Carver, C.S. You want to measure coping but your proocol's too long: Consider the brief COPE. *Int. J. Behav. Med.* **1997**, *4*, 92–100. [CrossRef]
- 35. Hayes, A.F. *Introduction to Mediation, Moderation, and Conditional Process Analysis A Regression-Based Approach;* Guilford Press: New York, NY, USA, 2018. Available online: https://lccn.loc.gov/2017039263 (accessed on 18 October 2019).
- 36. Nunnally, J.C.; Bernstein, I.H. Psychometric Theory; McGraw-Hill: New York, NY, USA, 1994.
- 37. Kim, J. Relationships between Nursing Practice Stress and Stress Coping of Nursing Students in Korea. *J. Digit. Converg.* **2014**, *12*, 409–415. [CrossRef]
- 38. Wolf, L.; Stidham, A.W.; Ross, R. Predictors of stress and coping strategies of US accelerated vs. generic Baccalaureate Nursing students: An embedded mixed methods study. *Nurse Educ. Today* **2015**, *35*, 20120–20125. [CrossRef]
- 39. Alconero-Camarero, A.R.; Sarabia-Cobo, C.M.; González-Gómez, S.; Ibáñez-Rementería, I.; Lavín-Alconero, L.; Sarabia-Cobo, A.B. Nursing students' emotional intelligence, coping styles and learning satisfaction in clinically simulated palliative care scenarios: An observational study. *Nurse Educ. Today* **2018**, *61*, 94–100. [CrossRef]
- 40. Alzayyat, A.; Al-Gamal, E. A review of the literature regarding stress among nursing students during their clinical education. *Int. Nurs. Rev.* **2014**, *61*, 406–415. [CrossRef]
- 41. Sánchez-Cardona, I.; Rodríguez-Montalbán, R.; Toro-Alfonso, J.; Moreno-Velázquez, I. Propiedades psicométricas de la Utrecht Work Engagement Scale-Student (UWES-S) en universitarios de Puerto Rico. *Rev. Mex. Psicol.* **2016**, *33*, 121–134.
- 42. Casuso-Holgado, M.J.; Cuesta-Vargas, A.I.; Moreno-Morales, N.; Labajos-Manzanares, M.T.; Barón-López, F.J.; Vega-Cuesta, M. The association between academic engagement and achievement in health sciences students. *BMC Med. Educ.* **2013**, *13*, 33. [CrossRef]

Sustainability **2019**, 11, 6953

43. Currey, J.; Oldlanda, E.; Considine, J.; Glanville, D.; Storyd, I. Evaluation of postgraduate critical care nursing students' attitudes to and engagement with. Team-Based Learning: A descriptive study. *Intensive Crit. Care Nurs.* **2015**, *31*, 19–28. [CrossRef]

- 44. Liébana-Presa, C.; Fernández-Martínez, E.; Gándara, Á.; Muñoz-Villanueva, M.C.; Vázquez-Casares, A.M.; Rodríguez-Borrego, M.A. Psychological distress in health sciences college students and its relationship with academic engagement. *Revista Da Escola De Enfermagem Da USP* **2014**, *48*, 715–722. [CrossRef]
- 45. Liébana-Presa, C.; Fernández-Martínez, E.; Vázquez-Casares, A.; López-Alonso, A.; Rodríguez-Borrego, A. Burnout y engagement en estudiantes universitarios de Enfermería. *Enfermería Glob.* **2018**, *17*, 142–152. [CrossRef]
- 46. Martos, M.C.; Pérez-Fuentes, M.; Molero, M.M.; Gázquez, J.J.; Simón, M.M.; Barragán, A.B. Burnout y engagement en estudiantes de Ciencias de la Salud. *Eur. J. Investig. Health Psychol. Educ.* **2018**, *8*, 23–36. [CrossRef]
- 47. Marvos, C.; Hale, F.B. Emotional intelligence and clinical performance/retention of nursing students. *Asia Pac. J. Oncol. Nurs.* **2015**, *2*, 63–71. [CrossRef] [PubMed]
- 48. Ghasemi, S.S.; Farrokhi, S.; Najafi, M.; Shojaeimotlagh, V.; Bozorgomid, A.; Torabi, M.; Yarahmadi, F. Emotional Intelligence and its relationship with demographic characteristics among nursing students. *J. Evol. Med. Dent. Sci. Jemds* 2018, 7, 3419–3422. [CrossRef]
- 49. Fernández-Lasarte, O.; Ramos-Díaz, E.; Sáez, I.A. Rendimiento académico. apoyo social percibido e inteligencia emocional en la universidad. *Eur. J. Investig. Health Psychol. Educ.* **2019**, *9*, 39–49. [CrossRef]
- 50. Di Lorenzo, R.; Venturelli, G.; Spiga, G.; Ferri, P. Emotional intelligence. empathy and alexithymia: A cross-sectional survey on emotional competence in a group of nursing students. *Acta Biomed.* **2019**, 90, 32–43. [CrossRef]
- 51. Hajibabaee, F.; Farahani, M.A.; Ameri, Z.; Salehi, T.; Hosseini, F. The relationship between empathy and emotional intelligence among Iranian nursing students. *Int. J. Med. Educ.* **2018**, *9*, 239–243. [CrossRef]
- 52. Liébana-Presa, C.; Fernández-Martínez, E.; Morán-Astorga, C. Relación entre la inteligencia emocional y el burnout en estudiantes de enfermería. *Psychol. Soc. Educ.* **2017**, *9*, 335–345. [CrossRef]
- 53. Aradilla-Herrero, A.; Tomás-Sábado, J.; Gómez-Benito, J. Associations between emotional intelligence. depression and suicide risk in nursing students. *Nurse Educ. Today* **2014**, *34*, 520–525. [CrossRef]
- 54. Štiglic, G.; Cilar, L.; Novak, Ž.; Vrbnjak, D.; Stenhouse, R.; Snowden, A.; Pajnkihar, M. Emotional intelligence among nursing students: Findings from a cross-sectional study. *Nurse Educ. Today* **2018**, *66*, 33–38. [CrossRef]
- 55. He, F.X.; Lopez, V.; Leigh, M.C. Perceived acculturative stress and sense of coherence in Chinese nursing students in Australia. *Nurse Educ. Today* **2012**, *32*, 345–350. [CrossRef]
- 56. Gambetta-Tessini, K.; Mariño, R.; Morgan, M.; Anderson, V. Coping strategies and the Salutogenic Model in future oral health professionals. *BMC Med. Educ.* **2016**, *16*, 224. [CrossRef]
- 57. Londoño, M.E. Influencia de los factores Psicosociales en la Salud percibida, el Burnout y compromiso del personal. *ORP J.* **2017**, *4*, 2–12.
- 58. Yıldırım, N.; Karaca, A.; Cangur, S.; Acıkgoz, F.; Akkus, D. The relationship between educational stress. stress coping. self-esteem. social support. and health status among nursing students in Turkey: A structural equation modeling approach. *Nurse Educ. Today* **2017**, *48*, 33–39. [CrossRef]



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