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The Importance of Personality and Self-efficacy for Stress Management in Higher Education

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The Importance of Personality and Self-efficacy for Stress Management in Higher Education

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Abstract

The psychological implications of stress have become an issue of concern for university students around the world over the past decade. It is thought that the perception of stress varies depending on students' personality traits and their beliefs about being able to manage their academic life. To investigate this further, a study was conducted with a sample of 200 university students. The main findings of this study were: (1) All of the Big Five Model of personality traits significantly contribute to developing positive academic self-efficacy, with some of these being moderated by gender. Self-efficacy is characterised by agreeableness, conscientiousness, extraversion, emotional stability and openness to experience. (2) People with high academic self-efficacy are able to take advantage of eustress and manage distress better than people with low academic self-efficacy. (3) There are some personality traits that contribute to distress and eustress. Specifically, people who are introverted and have low emotional stability and low openness to experience tend to suffer from distress more than people who do not have these traits. In contrast, conscientious people tend to experience eustress more than people without these characteristics. All these traits were mediated by self-efficacy, and in some cases were moderated by gender.

Keywords: Personality, Self-efficacy, Stress, Higher education, Mediation.



La Importancia de la Personalidad y la Autoeficacia para Hacer Frente al Estrés en Educación Superior

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Resumen

En la última década, el estrés se ha convertido en un tema global por sus implicaciones psicológicas en los estudiantes universitarios. No obstante, se piensa que la percepción del estrés podría variar en función de la personalidad de los estudiantes y sus creencias de poder desarrollar y gestionar su vida académica. Para ello, participaron en este estudio 200 estudiantes universitarios. Tres son los principales hallazgos de este estudio: (1) Los rasgos de personalidad de los cinco modelos grandes contribuyen significativamente a desarrollar una autoeficacia académica positiva, algunos de ellos moderados por género. El patrón de una persona de autoeficacia es aquel que es agradable, responsable, extrovertido, emocionalmente estable y abierto a la experiencia. (2) Las personas con alta autoeficacia académica son capaces de aprovechar el eustrés y manejar mejor el distrés en comparación con las personas con baja autoeficacia académica. (3) Hay algunos rasgos de personalidad que contribuyen a desarrollar angustia y eustrés. Específicamente, las personas introvertidas, con baja estabilidad emocional y abiertas a la experiencia tienden a desarrollar distrés más fácilmente que las personas sin estas características, mientras que las personas responsables tienden a desarrollar eustrés más fácilmente que las personas sin estas características. Todos estos rasgos fueron mediados por la autoeficacia y, en algunos casos, moderados por el género.

Palabras clave: Personalidad, Autoeficacia, Estrés, Educación Superior, Mediación.

Stress is a normal, necessary, and unavoidable lifelong phenomenon that can cause temporary discomfort, as well as having short- and long-term consequences (Dumitru & Cozman, 2015). Based on Lazarus and Folkman's (1984) cognitive appraisal theory of stress, stress can appear when people perceive the demands of their environment as threatening their well-being. As Naz et al. (2019) explained, the appraisal component refers to the weight that people give to a situational demand compared to their personal ability to cope with that demand. When a situational demand is perceived as outweighing the personal resources available to deal with it, people tend to perceive and experience psychological stress. Appraisal theory explores how emotions are elicited as a result of an individual's subjective interpretation or assessment of important events or situations (Lazarus, 1999). This is carried out by means of two types of appraisals. In primary appraisal, individuals assess a certain event as a potential hazard to their well-being. In other words, individuals evaluate the magnitude of an event that could possibly harm them physically or psychologically. Secondary appraisal involves individuals assessing their capacities and resources for handling a specific event. Thus, stress could be considered as negative firstly, when the subjective evaluation or interpretation of an event is regarded to be threatening, and, secondly, when individuals consider that they do not possess the necessary inner and outer resources to deal with that situation (Mathieu & Ivanoff, 2006).

The literature has gone one step further by considering that stress could be interpreted as a positive response to a stressor, also known as eustress, or as a negative response to a stressor, also known as distress (McGowan et al., 2006). Despite the fact that eustress has been largely ignored by scholarly research over the years, it has been observed how increasing stress can be beneficial to improving performance to a certain point. That is why people who experience a certain level of stress can work more productively and efficiently than if they were without it (Sajjad, 2017). Benson & Allen (1979) turned to the Yerkes-Dodson Law to describe the effect of stress on performance, and argued that a certain, optimal level of stress is considered beneficial to performance.

Although academic stress among higher education students is not a new topic and seems to have an impact regardless of the country, culture or ethnic group, studies have been carried out in recent decades in order to discover how it is experienced and find ways to tackle this psychological

problem (Childs et al., 2016; Naz et al., 2019). Studies such as that by Durand-Bush et al. (2015) have shown how university students in recent years reported higher levels of stress than previous studies that used the same measurement instrument. Moreover, the study by Price et al. (2006) discovered a major prevalence of stress, depression and anxiety disorders among their university student sample compared to the general population. These types of studies show the circumstances surrounding a problem suffered by a gradually increasing number of students.

Earlier research into high education has identified a wide range of sources of stress that can cause these psychological problems, the main ones being academic and environmental stressors (Reddy et al., 2018). These include, to name a few, fear of failure, poor time management, negative evaluation of the future, and an inability to concentrate. All these sources of stress could have both psychological and physiological consequences. Unless sources are controlled, students with high levels of academic stress could suffer from psychological problems such as depression, anxiety, behavioural problems, and irritability, among others, and from physical problems such as rapid heart rate, high blood pressure, and respiratory rate changes (Reddy et al., 2018).

The literature has also shown that there are dozens of intrapersonal and interpersonal variables that could affect stress levels. It has been detected that, in other fields, personality traits could explain almost 60% of the perceived stress variance (Mirhagui & Sarabian, 2016).

Since Goldberg (1990) proposed a simplified, organised, and parsimonious explanation of personality traits, the Big Five Model of personality traits is one of the most commonly used scientific models to measure personality traits (Domínguez-Lara et al., 2018). From the very beginning Goldberg (1990) used complex factorial analyses to establish five clusters that brought together more than 1400 personality traits. These clusters were related to Surgency/Extraversion (gregariousness, playfulness, spontaneity, talkativeness...), agreeableness (amiability, courtesy, generosity, empathy...), conscientiousness (organisation, efficiency, caution, punctuality...), emotional stability (lack of insecurity, lack of fear, independence...), and intellect/openness (insight, intelligence, creativity, curiosity...).

As argued by Leger et al. (2016), the vast majority of scientists have recently focused on the negative effects caused by neuroticism and extraversion on people's stress, but fewer studies have studied the role of the

Big Five Model's personality traits and their effect on stress. Nonetheless, there is evidence to support the idea that there are other traits that could better predict high stress. Specifically, it has been seen how people with a low social presence, low empathy, low intellectual efficiency, and low work orientation tend to experience negative stress more than people without these characteristics (Dumitru & Cozman, 2015). Considering the Big Five Model's relationship to stress, the literature has found that people with higher levels of agreeableness (Ervasti et al., 2019), extraversion (Ervasti et al., 2019; Leger et al., 2016; Mirhagui & Sarabian, 2016), conscientiousness (Ervasti et al., 2019; Leger et al., 2016; Mirhagui & Sarabian, 2016), emotional stability (Leger et al., 2016; Mirhagui & Sarabian, 2016) and openness to experience (Leger et al., 2016) are less prone to have stressor-related negative effects.

This does not mean that an emotionally unstable individual, for instance, will always perceive an event as stressful, but that negative traits can be trained and modified, as supported by recent literature (Beckmann & Wood, 2017). Some recent studies have focused on the trainability of personality and personality changes in addressing life situations (e. g. Niehoff et al., 2017; Beckmann & Wood, 2017; Bleidorn et al., 2016).

Previous studies have shown that self-efficacy could mediate this causality in the sense that feeling able to carry out a certain academic task could enhance the response of university students to environmental demands; in turn, this may reduce negative stress and increase positive stress, as they would feel more productive. Self-efficacy could play a significant role in assessing and coping with threatening or challenging situations (Luszczynska & Schwarzer, 2005; Karademas & Kalantzi-Azizi, 2004).

The main personality traits that seem to predict better self-efficacy are higher levels of agreeableness (Delgado-Rodríguez et al., 2018; Hayat et al., 2020; Matteo & Porto, 2016), conscientiousness, emotional stability (Brown & Gali, 2016), openness (Abbod et al., 2020; Hayat et al., 2020), and extraversion (Delgado-Rodríguez et al., 2018; Matteo & Porto, 2016). Nonetheless, these findings are still subject to discussion, as other recent studies have found that all personality traits significantly contribute to developing self-efficacy (Ebstrup et al., 2011; Wang et al., 2014).

This study aims to explore how personality and academic self-efficacy beliefs affect distress and eustress among university students. The main objectives of this study are: (1) to discover whether positive academic self-efficacy beliefs are developed by a specific pattern of university student with certain

personality traits; (2) to identify any possible association between academic self-efficacy beliefs and stress levels experienced by university students; and (3) to explore what personality traits better contribute to positive and negative stress among university students.

Methodology

Sample

A total of 200 students pursuing education-related degrees participated in this study (Age = 20.46; SD = 4.44): there were 41 Early Childhood Education students, 154 Primary Education students, and 5 Social Education students. Some 59 of them were in their 1st year, 67 in their 2nd year, 41 in their 3rd year, and 33 in their 4th year of university. There were 160 women and 40 men; 79 participants came from a public university, whereas 121 were pursuing their degree at a private university. A total of 194 of them were enrolled in face-to-face learning, 3 of them had a combination of face-to-face and virtual learning, and 3 of them only engaged in virtual learning.

Instruments

In order to measure each one of the constructs indicated above, the following instruments were used:

- The Spanish version of *Goldberg's 50 Personality markers for Big Five Model's Questionnaire* (García et al., 2004) was used to measure personality traits. This scale is made up of a total of 25 items for measuring five dimensions of personality: Agreeableness, Conscientiousness, Extraversion, Neuroticism and Openness.
- The *Perceived Self-efficacy Scale in Academic Situations* (Palenzuela, 1983) was used to measure academic self-efficacy. This scale is made up of a total of 10 items for measuring a single dimension: *academic self-efficacy*.
- In order to measure stress, the Global Stress Perception Scale was used (Guzmán-Yacaman & Reyes-Bossio, 2018). This scale is made up of 13 items to measure two dimensions of stress: negative stress (or *distress*), and positive stress (or *eustress*).
- Finally, students were also asked to provide information about some specific contextual variables, including gender, degree, type of university, age, and year of degree.

Procedure

A review of the most optimal instruments was initially carried out in order to achieve the set objectives. A database of universities that might be interested in participating was searched, and the questionnaire was distributed online among the teaching staff of these universities so that they could send it to their students.

Once this data collection process was completed, the data were analysed using the SPSS Statistics and the SPSS AMOS statistical software programmes.

This procedure was supported by the Dean and the coordinator of the faculty, and complied with ethical principles at all times, as 1) it was carried out on adults, who did not require an informed consent to be signed, 2) it was voluntary and anonymous, and 3) each participant was free to leave the study whenever they considered it appropriate. These conditions allowed risks to be eliminated and ensured that the applicable ethical principles of human research were followed.

Data Analysis

The database was initially built using SPSS Statistics. A confirmatory factor analysis based on the theoretical model was carried out first, using SPSS AMOS. At this point, X^2/df , CFI, RMSEA and AIC indices were analysed. Next, descriptive statistics, a correlation, and a reliability analysis were carried out using SPSS Statistics. Finally, a hierarchical linear regression analysis and a moderated mediation analysis using the bootstrap method (10,000 samples) were conducted using Process macro for SPSS to meet the study's aims.

Results

Descriptive statistics, correlations, and reliability analyses

The results of the hypothetical framework indicated acceptable fit with the data ($X^2 [828] = 1408.61$, $p < .000$; RMSEA = .059 (95%CI = [.054, .065]); CFI = .862; AIC = 1730.61). Specifically, although the CFI value was slightly below the desired threshold of .90 (CFI = .862), the X^2/df test was below the threshold of 2 ($X^2/df = 1.70$), and the RMSEA test was below the threshold of .08 (RMSEA = .059) (Hooper et al., 2008). Moreover, as Kenny & McCoach (2003) concluded, the CFI fit index tended to worsen as the number of variables increased. Something that penalises researchers involved in proving

complex theoretical interesting models with a large number of variables. In view of the fact that the structural equation model included 8 latent variables and almost 50 observed variables, the model fit was regarded as being appropriate.

On this basis, a descriptive statistics, correlation, and reliability analysis was then carried out. Firstly, as shown in Table 1, it was seen that, whereas extraversion ($r = -.207$; $p = .003$) and neuroticism ($r = -.308$; $p < .000$) correlated negatively and significantly with distress; agreeableness ($r = .249$; $p = .003$), conscientiousness ($r = .497$; $p < .000$), neuroticism ($r = .185$; $p = .009$) and openness ($r = .155$; $p = .028$) correlated positively and significantly with eustress. These data provided enough information to partially satisfy the first requirement in Baron and Kenny's method (1986) to run mediation and moderator analyses, since not all independent variables were correlated with the outcome variable. Secondly, all personality dimensions correlated positively and significantly with academic self-efficacy (agreeableness: $r = .313$, $p < .000$; conscientiousness: $r = .238$, $p < .000$; extraversion: $r = .215$; $p < .000$; neuroticism: $r = .273$; $p < .000$; openness: $r = .368$; $p < .000$). Therefore, these data provided enough information to satisfy the second requirement of Baron and Kenny's method (1986) to run mediation and moderator analyses, since independent variables were all correlated with the mediation variable. Thirdly, academic self-efficacy correlated negatively with distress ($r = -.238$; $p < .000$) and positively with eustress ($r = .361$; $p < .000$). Finally, reliability values ($\alpha = .759$ to $\alpha = .899$) contained enough evidence of the robustness of the instruments used.

Table 1

Statistic descriptives, correlations and Cronbach’s alpha values.

	M	SD	1	2	3	4	5	6	7	8
1 AGR	4.37	.575	(.838)	.510***	.263***	.334***	.346***	.313***	.025	.249***
2 CON	4.05	.620		(.759)	-.035	.154*	.231***	.238***	.017	.497***
3 EXT	3.47	.654			(.786)	.322***	.221***	.215***	-.207***	.039
4 NEU	3.21	.762				(.798)	.172*	.273***	-.308***	.185***
5 OPE	3.95	.772					(.816)	.368***	.092	.155*
6 ASE	3.88	.609						(.899)	-.238***	.361***
7 DIS	3.52	.863							(.863)	-.277***
8 EUS	3.38	.589								(.853)

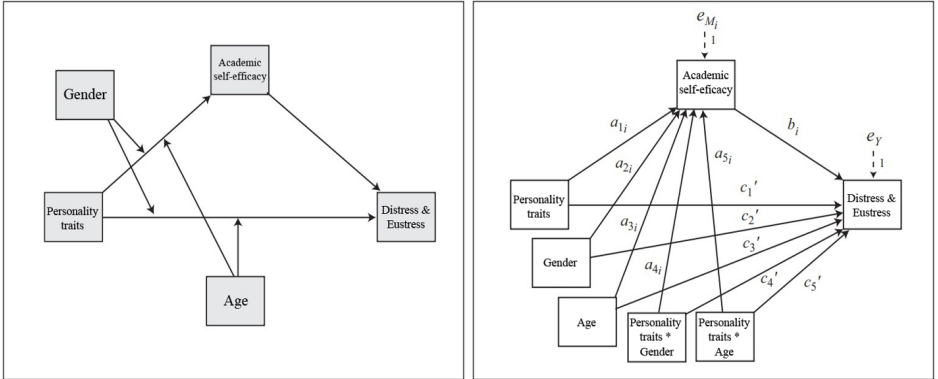
Note. AGR = Agreeableness; CON = Conscientiousness; EXT = Extraversion; NEU = Neuroticism; OPE = Openness, ASE = Academic Self-efficacy; DIS = Distress; EUS = Eustress; *p<.05; **p<.01; ***p<.00; Cronbach’s alpha values are displayed on the main diagonal.

Academic self-efficacy as a mediator between personality traits and positive and negative stress

It was hypothesised that self-efficacy mediated the relationship between personality traits and positive and negative stress, and could be moderated by gender and age, as indicated in Figure 1. In order to further the analysis, some contextual variables were taken as moderators between personality-self-efficacy and personality-stress. These contextual variables were considered to be prospective in this analysis and a limitation of previous studies, which pointed to the need to find evidence for age and sex as moderators of personality and negative health behaviours such as stress, depression, anxiety or even mortality ratio (Turiano, 2015). To test this hypothesis, a moderated mediation analysis was conducted, considering each personality dimension as an independent variable (X), academic self-efficacy as a mediator variable (M), distress and eustress as outcome variables (M), and gender and age as moderator variables (W) between X→M and X→Y. In the latter case, interactions and conditional effects were studied.

Figure 1

Conceptual and statistical diagram of hypothesized moderated mediation



The results showed positive, statistically significant direct effects of all personality traits on academic self-efficacy (agreeableness: $\beta = .332$; $p < .000$, conscientiousness: $\beta = .233$; $p = .001$, extraversion: $\beta = .200$; $p = .002$, neuroticism: $\beta = .218$; $p < .000$, openness: $\beta = .291$; $p < .000$), as well as statistically significant, direct effects of self-efficacy on distress ($\beta = -.386$; $p < .000$) and eustress ($\beta = .249$; $p < .000$). Nonetheless, after carrying out a moderation analysis for agreeableness and neuroticism, it was seen how this direct effect was moderated by gender, as females, being agreeable ($\beta = -.548$; $\theta_{FEM} = .469$ ($p < .000$); $\theta_{MAL} = -.079$ ($p = .585$)) and emotionally stable ($\beta = -.275$; $\theta_{FEM} = .253$ ($p < .000$); $\theta_{MAL} = -.079$ ($p = .867$)) developed higher levels of academic self-efficacy in comparison with males with same personality traits, whose academic self-efficacy scarcely changed regardless of their agreeableness and emotional stability.

In addition, direct effects were statistically significant when distress was considered as an outcome variable for extraversion ($\beta = -.215$; $p = .021$) and neuroticism ($\beta = -.297$; $p < .000$). Both direct effects were moderated by gender, as females with high levels of extraversion ($\beta = .402$; $\theta_{FEM} = -.295$ ($p = .005$); $\theta_{MAL} = .107$ ($p = .619$)) and emotional stability ($\beta = .680$; $\theta_{FEM} = -.437$ ($p < .000$); $\theta_{MAL} = .242$ ($p = .166$)) tended to experience lower levels of distress and higher levels of eustress in comparison with males with the same

personality traits. Extraversion results must be taken cautiously, since conditional effects were significant, but the interaction between extraversion and gender resulted in a positive tendency ($\beta = .402$; $p = .089$). In addition, age tended to operate as a moderator variable ($\beta = .044$; $p = .074$) in this direct effect between extraversion and distress, as extraverted younger university students tended to reduce their distress by taking advantage of this personality trait. Therefore, it was seen that extraversion tended to stop acting as a shock-absorber against distress with the passage of time. These results are discussed in the following section.

By the same token, it is worth noting that openness to experience, which also had a significant direct effect ($\beta = .232$; $p < .000$), usually had a greater impact on experiencing higher levels of distress for males, in contrast to females with the same personality features ($\beta = .366$; $\theta_{FEM} = .167$ ($p = .059$); $\theta_{MAL} = .534$ ($p = .003$)). In view of this result, gender appeared to be a trending moderator between openness and distress and, therefore, the direct effect was modified by gender, as male students with high levels of openness experienced higher levels of distress in comparison with females with also high levels of openness.

Regarding direct effects, when eustress was considered an outcome variable, some significant differences were found. In fact, agreeableness ($\beta = .154$; $p = .031$) and conscientiousness ($\beta = .414$; $p < .000$) were able to predict eustress, regardless of gender and age. This was not the case for neuroticism, where gender was considered to be a significant moderator. Females with high levels of emotional stability ($\beta = -.237$; $\theta_{FEM} = .127$ ($p = .034$); $\theta_{MAL} = -.110$ ($p = .359$)) experienced higher levels of eustress in comparison with males with the same personality traits, who tended to maintain more stable eustress levels, regardless of their neuroticism levels.

The results of the bootstrapping method indicated that the indirect effects (a * b) of agreeableness ($\beta = -.128$; BCa 95% CI = [-.243, -.032]), conscientiousness ($\beta = -.085$; BCa 95% CI = [-.176, -.020]), extraversion ($\beta = -.057$; BCa 95% CI = [-.118, -.009]), neuroticism ($\beta = -.051$; BCa 95% IC = [-.102, -.004]) and openness ($\beta = -.129$; BCa 95% IC = [-.222, -.057]) on distress for academic self-efficacy were statistically significant. Based on the Sobel test statistic, all these mediation effects were statistically significant (agreeableness: $z = -2.90$, $p = .003$; conscientiousness: $z = -2.52$, $p = .011$; extraversion: $z = -2.37$, $p = .017$; neuroticism: $z = -2.72$, $p = .006$; openness: $z = -3.11$, $p = .001$)

This was also present in the indirect effects of agreeableness ($\beta = .101$; BCa 95% CI = [.030, .182]), conscientiousness ($\beta = .058$; BCa 95% CI = [.016, .113]), extraversion ($\beta = .071$; BCa 95% CI = [.017, .136]), neuroticism ($\beta = .071$; BCa 95% CI = [.028, .122]) and openness ($\beta = .099$; BCa 95% CI = [.050, .266]) on eustress for academic self-efficacy, which were all statistically significant. Based on the Sobel test statistic, all these mediation effects were also statistically significant (agreeableness: $z = 3.11$, $p = .001$; conscientiousness: $z = 2.66$, $p = .007$; extraversion: $z = 2.48$, $p = .012$; neuroticism: $z = 2.88$, $p = .003$; openness: $z = 3.36$, $p < .000$). These results are shown in Table 2.

Table 2
Results of the moderated mediation

	Effect	Path	Coeff	<i>p</i>	SE	LL	UL	θ
IV: AGR	Direct effect on ASE	a1i	.332	.000	.072	.190	.473	
	AGR * Gen on ASE	a4i	-.548	.001	.164	-.871	-.224	(0) $\theta = .469^{***}$
	AGR * Age on ASE	a5i	.003	.802	.013	-.023	.030	(1) $\theta = -.079$
	Direct effect on DIS	c1'	.166	.129	.109	-.049	.380	
	Indirect effect on DIS	a1ibi	-.128	(Sig)	.054	-.243	-.032	
	AGR * Gen on DIS	c4'	.224	.380	.254	-.278	.726	
	AGR * Age on DIS	c5'	.029	.162	.021	-.012	.071	
	Direct effect on EUS	c1'	.154	.031	.071	.015	.294	
	Indirect effect on EUS	a1ibi	.101	(Sig)	.039	.030	.182	
	AGR * Gen on EUS	c4'	.019	.907	.166	-.308	.347	
AGR * Age on EUS	c5'	-.010	.445	.013	-.038	.016		
IV: CON	Direct effect on ASE	a1i	.233	.001	.068	.100	.367	
	CON * Gen on ASE	a4i	.078	.655	.174	-.266	.422	
	CON * Age on ASE	a5i	-.005	.817	.023	-.052	.041	
	Direct effect on DIS	c1'	.109	.273	.099	-.086	.304	
	Indirect effect on DIS	a1ibi	-.085	(Sig)	.040	-.176	-.020	
	CON * Gen on DIS	c4'	.780	.001	.245	.296	1.26	(0) $\theta = -.028$
	CON * Age on DIS	c5'	.010	.770	.034	-.058	.078	(1) $\theta = .751^{***}$
	Direct effect on EUS	c1'	.414	.000	.058	.300	.528	
	Indirect effect on EUS	a1ibi	.058	(Sig)	.025	.016	.113	
	CON * Gen on EUS	c4'	-.170	.248	.146	-.459	.119	
CON * Age on EUS	c5'	-.010	.627	.204	-.050	.030		

Table 2 (continued)

IV: EXT	Direct effect on ASE	a1i	.200	.002	.065	.072	.327	
	EXT * Gen on ASE	a4i	.018	.916	.166	-.311	.346	
	EXT * Age on ASE	a5i	-.012	.447	.017	-.047	.021	
	Direct effect on DIS	c1'	-.215	.021	.092	-.397	-.033	
	Indirect effect on DIS	alibi	-.057	(Sig)	.028	-.118	-.009	
	EXT * Gen on DIS	c4'	.402	.089	.235	-.062	.866	(0) $\theta = -.295^{***}$ (1) $\theta = .107$ (18.0) $\theta = -.345^{***}$
	EXT * Age on DIS	c5'	.044	.073	.024	-.004	.093	(20.4) $\theta = -.235^*$ (24.9) $\theta = -.038$
	Direct effect on EUS	c1'	-.036	.552	.061	-.157	.084	
	Indirect effect on EUS	alibi	.071	(Sig)	.031	.017	.136	
EXT * Gen on EUS	c4'	-.048	.760	.157	-.357	.261		
EXT * Age on EUS	c5'	.005	.746	.016	-.027	.038		
Direct effect on ASE	a1i	.218	.000	.055	.110	.326		
IV: NEU	NEU * Gen on ASE	a4i	-.275	.053	.141	-.553	.004	(0) $\theta = .253^{***}$ (1) $\theta = -.021$
	NEU * Age on ASE	a5i	.034	.114	.021	-.008	.076	
	Direct effect on DIS	c1'	-.297	.000	.079	-.452	-.142	
	Indirect effect on DIS	alibi	-.051	(Sig)	.025	-.102	-.004	
	NEU * Gen on DIS	c4'	.680	.000	.194	.295	1.06	(0) $\theta = -.437^{***}$ (1) $\theta = .242$
	NEU * Age on DIS	c5'	.038	.208	.030	-.021	.099	
	Direct effect on EUS	c1'	.072	.175	.053	-.032	.177	
	Indirect effect on EUS	alibi	.071	(Sig)	.024	.028	.122	
	NEU * Gen on EUS	c4'	-.237	.078	.134	-.502	.027	(0) $\theta = .127^*$ (1) $\theta = -.110$
NEU * Age on EUS	c5'	-.007	.715	.021	-.049	.034		
Direct effect on ASE	a1i	.291	.000	.052	.188	.393		
IV: OPE	OPE * Gen on ASE	a4i	.164	.212	.131	-.094	.422	
	OPE * Age on ASE	a5i	.007	.852	.036	-.065	.079	
	Direct effect on DIS	c1'	.232	.005	.082	.071	.393	
	Indirect effect on DIS	alibi	-.129	(Sig)	.042	-.222	-.057	
	OPE * Gen on DIS	c4'	.366	.059	.193	-.014	.746	(0) $\theta = .167$ (1) $\theta = .534^{***}$
	OPE * Age on DIS	c5'	-.045	.403	.054	-.151	.061	
	Direct effect on EUS	c1'	.020	.719	.055	-.088	.127	
	Indirect effect on EUS	alibi	.099	(Sig)	.028	.050	.266	
	OPE * Gen on EUS	c4'	.051	.695	.129	-.205	.307	
OPE * Age on EUS	c5'	-.033	.370	.036	-.104	.039		

Agr, Agreeableness; Con, Conscientiousness; Ext, Extraversion; Neu, Neuroticism; Ope, Openness; Gen, Gender; ASE = Academic Self-efficacy; DIS = Distress; EUS = Eustress; Conditioning values selected by pick a point technique (-1SD, Mean, +1SD); Gender: (0) = Female, (1) = Male; + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .00$. Coeff, non-standardized β coefficients; SE, standard error; LL, lower limit; UL, upper limit; (sig.), significant $p < .05$; (ns), non-significant. 10,000 bootstrap samples used. IV: Independent variable.

Discussion

The main objective of this study was to explore the relationship between personality traits, and positive and negative stress, considering academic self-efficacy beliefs as a mediator variable in this relationship in a sample of university students.

The results were similar to other studies carried out using different sample types (ex. [Ebstrup et al., 2011](#); [Park et al., 2016](#); [Şahin & Çetin, 2017](#); [Wang et al., 2014](#)). The results showed that, academic self-efficacy worked as a mediator variable in university students between all studied personality traits, and distress and eustress, with extroversion, neuroticism, and openness being the traits that were the best predictors of distress, whereas agreeableness and, especially, conscientiousness, were the best predictors of eustress. In addition, in both cases, academic self-efficacy significantly predicted distress and eustress. Nonetheless, some aspects of these results need to be discussed further.

Firstly, as seen from the direct effects of the mediation analysis, all personality traits were significant predictors of academic self-efficacy. Nevertheless, in the case of agreeableness and neuroticism, this link was moderated by gender, so females who had high values in these two personality traits, agreeableness, and emotional stability, developed higher levels of academic self-efficacy in comparison with males with the same levels of agreeableness and neuroticism. These results were consistent with the previous literature ([Ebstrup et al., 2011](#); [Wang et al., 2014](#)).

Secondly, as can be seen from the direct effects of the mediation analysis, extraversion, neuroticism, and openness were the main predictors of distress among the university student sample studied. Previous literature supports the idea that extraversion could be beneficial for coping with stress and affords positive health outcomes ([Ervasti et al., 2019](#); [Leger et al., 2016](#); [Mirhagui & Sarabian, 2016](#)).

Analysing this pattern, previous studies pointed out that extraverted individuals are happier due to the features inherent in them, such as social participation, warmth and sociability, which contribute to positive life satisfaction ([Gomez et al., 2012](#)). Nonetheless, these findings still seem unclear, as extraversion has not been generally found to reduce distress in all countries. As [Schneider & Jackson \(2014\)](#) noted, we have to ask ourselves whether personality is truly universal in such a way that social norms could

impact the value of specific traits and behaviours within a specific culture. For instance, western cultures are more likely to value individualism and place greater emphasis on extraversion in a way that behaviours related to this trait are rewarded within family, schools, and careers. On the contrary, eastern cultures typically place emphasis on the collective aspects and give more importance to other traits such as agreeableness. In these kinds of cultures, social behaviour is built by means of honour, respect, and duty (Lucas et al., 2000). In this sense, some studies carried out within eastern cultures found that the relationship between extraversion and perceived stress was either weak or non-significant (Otonari et al., 2012; Zhang, 2012).

Our findings suggest that neuroticism seems to continue being a significant and more reliable personality trait predictor of negative stress (Ervasti et al., 2019; Leger et al., 2016; Mirhagui & Sarabian, 2016; Schneider & Jackson, 2014; Uliaszek et al., 2010). This finding could be explained by the fact that individuals with low emotional stability tend to use more inefficient coping styles such as excitement. Therefore, they do not give themselves a chance to assess a specific situation and fail to understand certain events appropriately. This poor ability to tackle academic and professional situations involves that they avoid dealing with their problems; this causes successive failures, which are the perfect scenario for stress to thrive (Abbasi et al., 2018). As the literature has shown, neuroticism is associated with several maladaptive behaviours in learning situations, such as poor resilience and coping strategies, a low sense of personal control, low self-efficacy, and a poor use of self-regulation skills, among others, which are more likely to promote acute stress (Galindo-Domínguez et al., 2020; Kondratyuk & Morosanova, 2014; Szymura, 2010).

Higher levels of openness to experience, oddly enough, tended to be associated with higher levels of distress among male participants, in comparison with females. These results may be explained by considering that individuals with high levels of openness are more likely to develop well-structured academic self-efficacy beliefs, as shown by our results. According to previous studies, people with high levels of self-efficacy tend to use more complex and more recurrent metacognition skills (Taghizadeh & Radfar, 2016). These metacognition skills could operate in line with the Socratic paradox 'I know that I know nothing'. It could therefore be the case that individuals with high levels of openness could perceive their knowledge and competencies as a drop in the ocean, in comparison with individuals with low

openness levels who, due to ignorance, might believe that they already have a vast knowledge. This assessment of the event, which may unveil individuals' actual lack of knowledge, could entail higher distress levels. Nonetheless, although these results have not analysed the effect of gender, they are not consistent with other studies (Abbod et al., 2020; Leger et al., 2016; Xin et al., 2017) and further research may be required.

Thirdly, as can be seen from the direct effect estimates from the mediation analysis, regardless of gender and age, agreeableness and especially conscientiousness were the main predictors of eustress. These results were similar to those obtained in previous studies, where it was seen how conscientiousness could be a protective buffer against distress up to a certain point (Vollrath, 2001; Carver & Connor-Smith, 2010). Individuals with high levels of conscientiousness tend to be more perfectionist and are more likely to assess a specific event as being stressful. The reason for this is that they feel the pressure of having to achieve excellent results (Włodarczyk & Obacz, 2013).

Theoretical and Practical Implications

Our results may be of use to universities, as they provide some directions and tools that could be relevant to them.

Firstly, the theoretical findings from the study are unique and original. Even though a few previous studies also considered this theoretical model as their research axis (Ebstrup et al., 2011; Şahin & Çetin, 2017; Wang et al., 2014), none of them carried out their studies in the educational field; they analysed self-efficacy in general terms, rather than academic self-efficacy, as this study has done. Şahin & Çetin (2017) argued that there is a need to continue studying and contrasting how personality traits could have an impact on self-efficacy beliefs and stress within different sample types, countries, and cultures. Based on these results, our findings bear the psychological idea that positive and stable personality traits might have a positive effect on the individual's appraisal of stressors and coping resources (Lazarus, 2000).

Secondly, in an attempt to solve one of the limitations of previous research studies, the effect of some personal variables such as age and gender were taken into account in the mediational model. These variables worked as moderators between the main paths of the mediation model and were helpful in furthering the analysis of the results.

Finally, previous studies that have examined either the relationship between personality and stress, or the relationship between self-efficacy and stress, have only considered stress as a negative response to a specific event. They have therefore ignored how stress can be potentially beneficial, as in many cases it can improve productivity and coping strategies. This study has shed some light on how and why eustress is experienced.

There are three main practical implications for these findings. (1) It is very important to identify individual differences in academic environments. These results can be used for university students to conduct a self-assessment to become aware of how their way of being and acting significantly influences how they perceive stressful threats from their environment. This could enable them to shape their personality and improve their self-regulating system (e.g., by detecting what the main threats in their environment are and why they are perceived as such); and to improve their stress responses. (2) These results also emphasise the need for universities to teach students not only cognitive and procedure-related competencies, but also those aimed at ‘learning to be’. Only by doing this will it be possible to reduce dropout rates and psychological problems caused by negative stress and to improve their emotional well-being, resilience, and self-regulation systems through eustress. (3) Finally, the need to adapt university curricula by using constructivist, interdisciplinary methodologies based on the cognitive and work needs of students. In this way, students could begin to perceive themselves as gradually becoming more able to carry out their tasks, see their connection with the workplace, and believe that they are more capable of completing similar tasks in other situations in the near future. Student-centred methodologies such as problem/project-based learning could help students to gain confidence and feel that their academical self-efficacy is enhanced. This would also facilitate the development of transversal competencies. Academic self-efficacy should be an important personal resource when appraising stressful situations and coping strategies. In this way, individuals would be more likely to consider a stressful event as a challenge and less likely to consider it as a threat (Bandura, 1997). Using techniques such as biofeedback, yoga, life-skills training, or mindfulness meditation within these programmes could be an effective means of reducing stress among university students. These techniques could be included in a wide variety of interventions, which would involve providing guidance, career planning programmes, or interventions focused on enhancing certain traits or improving person-

environment fit (Trógolo & Medrano, 2012). Holistically improving the welfare of university students would be ultimately beneficial not only for individuals, but also for the overall institutions (Reddy et al., 2018).

Limitations and Avenues for Further Research

There are some limitations to this study that must be acknowledged. Firstly, data were collected at the same point in time by means of a self-reporting measure, so situational variables might have altered these results. Participants' recollection may have been influenced by a large number of factors. For instance, it has been seen how emotionally unstable individuals tend to selectively recall negative information more often in comparison with emotionally stable individuals (Martin et al., 1983; Thomas & Diener, 1990; Urban et al., 2018). In an attempt to overcome this limitation, the anonymity of responses was guaranteed, and the recommendations provided by the questionnaires' authors were followed. It would be interesting for future studies to carry out longitudinal research studies using a wider variety of instruments with a view to further addressing this limitation.

Secondly, analysing the sample raises some questions about the generality of the findings, regarding both size and heterogeneity, as all participants came from the educational field. Nonetheless, this study has attempted to complement previous studies by trying to provide a more complex theoretical framework than that used in some previous studies in a new sample (in terms of interest, nationality, and culture), which was noted as a limitation in some studies (Şahin & Çetin, 2017). Future studies should include a wider variety of samples in order to obtain more generalised results.

Thirdly, despite the fact that this study has used complex multilevel analysis to investigate the relationship among the factors studied, as indicated by Şahin & Çetin (2017), causality should be interpreted cautiously, since other unstudied individual and environmental variables could have influenced outcome variables.

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