

# Mediating Role of Emotional Intelligence in the Relationship Between Resilience and Academic Engagement in Adolescents: Differences Between Men and Women

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**Introduction:** Resilience and academic engagement have become some of the most important elements in the academic context, due to their relationships with school adjustment, the protective role against risky behaviors and the well-being of adolescents.

**Purpose:** Therefore, the objective of this study was to analyze the relationships established between the variables of resilience and academic engagement, the differences according to sex, as well as to determine the mediating role of emotional intelligence in the relationship between resilience and academic engagement in adolescence.

**Participants and Methods:** A cross-sectional descriptive study was performed. The sample consisted of 802 secondary school students, with an average age of 13.65 years ( $SD = 1.24$ ) (where 50.6% were women and 49.4% men) who filled out the Connor-Davidson Resilience Scale (CD-RISC 10), the General Academic Engagement Scale for Spanish Adolescents (CAADE) and the Spanish version of the Wong Law Emotional Intelligence Scale (WLEIS-S).

**Results:** The results showed the existence of positive relationships between resilience and factors of academic engagement. Furthermore, the mediation models showed the direct effect of emotional intelligence on this relationship. On the other hand, with respect to sex, men showed significantly higher averages in resilience and emotional intelligence, with no significant differences in the variable of academic engagement.

**Conclusion:** Concluding, design of emotional intelligence intervention programs in secondary is recommended as an effective measure for promoting resilience and a positive academic trajectory.

**Keywords:** resilience, academic engagement, emotional intelligence, adolescents, mediation models

## Introduction

In recent decades, resilience has become one of the most necessary elements in the academic context. This is partly due to its relationship with students' positive performance, academic adjustment and engagement to schoolwork.<sup>1-3</sup> Along with the connection of resilience with academic adjustment indicators, it stands out because of its protective role against stressful circumstances and to adapt to the difficulties of the academic environment.<sup>4-6</sup> Thus and as has been shown, the study of resilience in adolescents is of great interest in secondary education.<sup>7</sup>

## Resilience in the Academic Context

One of the main objectives of education for adolescents is to attain a certain degree of well-being and adaptation in high schools.<sup>8,9</sup> However, abrupt changes associated with the transition from Primary Education to Secondary Education, such as the excessive load of homework and the need to clarify their interests to choose their future path in education, hinder the educational trajectory of students and, as a consequence, can cause behavioral and emotional problems.<sup>10,11</sup> To avoid

these consequences, adolescents need to develop certain personal resources, such as resilience. Thus, students will be able to cope with sudden changes and adapt to the adversities of the academic context.<sup>4-6</sup>

Resilience is broadly defined as the ability or competence of the individual to overcome unfavorable situations and adapt positively to setbacks, even being conceived as a characteristic of the individual's personality.<sup>7,12,13</sup> Various authors have considered resilience as an individual characteristic of each student that manifests itself in specific and extremely traumatic conditions,<sup>14,15</sup> being a characteristic identified in those students who face difficult situations during their academic trajectory.<sup>16</sup>

In fact, resilient students are more protected from severe forms of maladjustment, are able to successfully deal with stressful situations that appear in the academic context, appear to be more involved and motivated in schoolwork, and report high performance despite difficulties.<sup>17-21</sup> In addition, the sex of students should be taken into account, since the biological and physical differences of each sex influence their development, especially in adolescence.<sup>22</sup> Authors such as<sup>23</sup> stated that women have lower levels of resilience than their male counterparts because the latter show a greater capacity to cope with stressful and adverse situations. In contrast, the study of<sup>24</sup> showed contradictory results, with women having higher averages than men, but without significant differences. All these researches have led to the hypothesis that there are sex differences in the levels of resilience of students. In short, although adolescence is a complex evolutionary moment in which adolescents must struggle with challenges and new social, individual and academic situations,<sup>25</sup> resilient adolescents are those who re-engage and do not give up in harsh academic situations and daunting tasks. This feature predicts positive outcomes, such as academic satisfaction, active class participation, and high levels of academic engagement.<sup>26,27</sup>

## Academic Engagement in Secondary Education

Academic engagement, or engagement, refers to a cognitive-emotional-behavioral state characterized by satisfaction, interest and motivation that allows students to participate in the academic context, learning and curricular activities.<sup>28,29</sup> According to the model of the authors,<sup>28</sup> adapted from the model of the authors,<sup>30,31</sup> being the base model of this study, this multidimensional construct is especially characterized by cognitive components (referring to the use of management strategies, cognitive and metacognitive for learning and persistence in the effort to perform school tasks), emotional (in terms of motivation, psychological well-being, interest and satisfaction with achievements, ie, the level of emotional response of the student towards their learning process) and behavioral (related to student interactions and responses within the school and in extracurricular settings).<sup>29,32-35</sup>

High levels of academic engagement in students improve the academic performance, successfully achieve their studies, face academic challenges and, consequently, decrease levels of school leaving.<sup>28,29,36-40</sup> As a result, it has become one of the most important elements in the academic context, attracting increasing interest in secondary education.<sup>33</sup> However, in spite of its importance, some adolescents present low levels of academic engagement.<sup>33,41</sup> Moreover, this variable tends to be unstable, that is, it changes over time, diminishing at the beginning of adolescence, specifically in male adolescents.<sup>40,42</sup> Thus, from the previous literature, one of the hypotheses of this study focused on the sex differences in students' academic engagement.

Some studies have shown that another variable linked to the school context that has been shown related to academic engagement is resilience.<sup>43,44</sup> Along the same lines, authors such as<sup>45</sup> have analyzed the relationship between resilience and academic engagement, affirming the existence of a positive and close relationship. When resilient students show optimal levels of academic engagement, cope with and persist with difficult tasks, invest more time, energy and effort to achieve their goals, participate in the academic context and feel satisfied and motivated with it.<sup>1,28,35,46-49</sup> Studies such as that by,<sup>50</sup> where resilience predicts higher levels of academic engagement, demonstrate this. Likewise, the demand-resources model applied to education suggests that considering personal resources, such as resilience, could favor school goals and academic engagement.<sup>19,49,51</sup> However, although existing literature has reported contrasting findings regarding the directionality of the relationship between resilience and academic engagement,<sup>52,53</sup> a recent systematic review stated that academic engagement should be seen as an outcome of positive resilience adaptation.<sup>45</sup> Therefore, previous evidence seems to show that academic engagement and resilience are related variables. Therefore, the hypothesis stated that there are positive relationships between academic engagement and resilience.

Much of the research on academic engagement in adolescents has concentrated on social aspects, such as social relations of minors with peers, teachers and family members.<sup>42,54-56</sup> However, beyond the social aspects, an important part of academic engagement is emotional in nature.<sup>57</sup> Emotions play an essential role in the academic context, since the ability to manage emotions is a predictor of well-being and anxiety, corroborating that individuals with emotional control

skills cope better with stress situations.<sup>58,59</sup> In this sense, emotional intelligence acts as a mediating and protective variable before mentioned situations.<sup>60</sup> Referring to the previous literature, one of the hypotheses of the study has been formulated, which states that there is a significant relationship between emotional intelligence and academic engagement.

## The Mediating Role of Emotional Intelligence in the Relationship Between Resilience and Academic Engagement in High School Students

Even though continuous exposure to school-related stressors often leads to a wear, it has been evidenced that the presence of some resources and personal characteristics such as emotional intelligence, act in this relationship and affect the engagement of students.<sup>60</sup> Individual variables such as emotional skills play an essential role in students' school life. Emotional intelligence in high school students has been shown to be a predictor of academic performance and protects against school burnout by increasing levels of resilience and managing stress.<sup>19,61</sup> According to the four-branch model and theory of emotional intelligence,<sup>62</sup> emotional intelligence is an ability to perceive, assimilate, understand and regulate one's own emotions and those of others.

Of the factors that make up this construct, it has been shown that emotional intelligence and resilience have a positive relationship, more significant in terms of the emotional repair factor.<sup>62</sup> Similarly, studies such as those of<sup>63-65</sup> confirmed that students who show good emotional control, present higher levels of resilience and therefore, they tend to deal effectively with the difficulties and stress situations that arise in the academic context. Along the same lines,<sup>66,67</sup> demonstrated that emotional intelligence facilitates resilience in difficult situations. Indeed, the four factors of emotional intelligence seemed to facilitate resilient responses to adverse situations. In this way, resilient adolescents properly manage their emotions to improve their academic engagement. Conversely, poor emotional regulation decreases levels of resilience in adolescents.<sup>68</sup> Based on the studies examined, this study hopes to find positive relationships between emotional intelligence and resilience.

On the other hand, another variable linked to the academic context which has been shown to be related to emotional intelligence is academic engagement.<sup>69,70</sup> Students who effectively regulate their emotions present more adaptability to the environment and school tasks, feeling a greater emotional connection with the academic context.<sup>61,71</sup> Likewise, the study by<sup>69</sup> confirmed that the perception and regulation of emotional states acted as predictors of the dimensions of academic engagement. Other studies showed that factors of emotional intelligence were related to factors of academic engagement. However, students who suffer incessantly adverse school situations, over time, may become less involved in the school context or abandon their academic engagement.<sup>72,73</sup> All these positive effects of emotional intelligence and its relationship with resilience and academic engagement have led to the last hypothesis of the study, which states that emotional intelligence acts as a mediator in the relationship between resilience and academic engagement in adolescents.

In short, despite the existing evidence, it is very useful to expand on previous findings, deepening the mediating role of emotional intelligence in the relationship between resilience and academic engagement, since, in the secondary stage, emotion management is crucial for school adaptation and increasing levels of student academic engagement.<sup>74,75</sup>

## Objective and Hypothesis of the Study

The aim of this research is to figure out the mediator role of emotional intelligence in the relation between resilience and academic engagement, as well as to analyze the relations established between the variables of resilience and academic engagement. The initial hypotheses previously argued that have been considered for this study are the following (Figure 1):

Hypothesis 1 (H1). There are positive relationships between resilience and academic engagement.

Hypothesis 2 (H2). There are positive relationships between emotional intelligence and academic engagement, with young people with higher emotional intelligence also having higher scores in academic engagement.

Hypothesis 3 (H3). There are also positive relationships between emotional intelligence and resilience.

Hypothesis 4 (H4). There are sex differences among adolescents in the variables examined (resilience, academic engagement and emotional intelligence).

Hypothesis 5 (H5). Emotional intelligence acts as a mediator of resilience and academic engagement in adolescents.

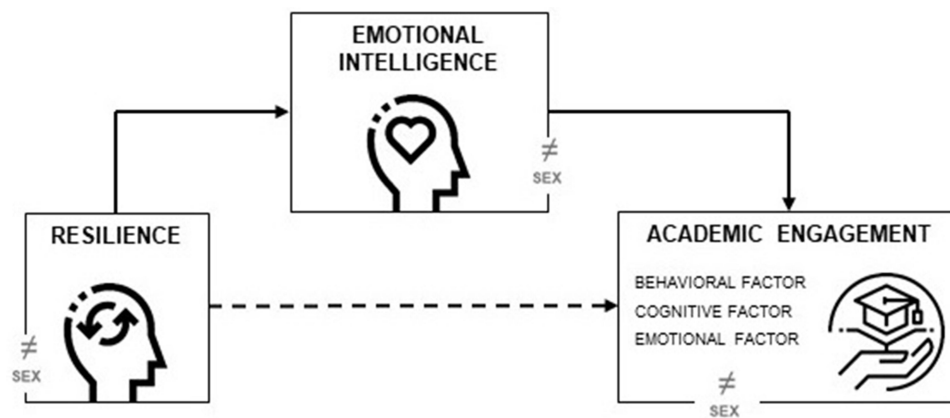


Figure 1 Hypothesized Mediation Model.

## Materials and Methods

### Study Design and Participants

This quantitative study was based on a cross-sectional descriptive design and, therefore, followed the STROBE guidelines for cross-sectional studies.<sup>76</sup> The sample was made up of 802 students from six high schools in the province of Almería (Spain), aged 12 to 17 with a mean age of 13.65 years ( $SD = 1.24$ ). The gender distribution was 50.6% girls ( $n = 406$ ) and 49.4% boys ( $n = 396$ ), with mean ages of 13.68 ( $SD = 1.14$ ) and 13.63 ( $SD = 1.24$ ), respectively. Overall, 27.4% of these students were in first grade ( $n = 220$ ), 31.9% of these students were in second grade ( $n = 256$ ), 24.8% of these students were in third grade ( $n = 199$ ) and 15.8% in fourth grade ( $n = 127$ ).

### Instruments

A booklet containing the instruments already validated was prepared by the authors together with an ad hoc questionnaire that revealed sociodemographic aspects of the participants such as sex, age, nationality or academic year.

#### Connor-Davidson Resilience Scale (CD-RISC 10)<sup>13</sup>

This instrument consists of 10 items rated on a Likert-type scale with 5 response options from 0 (at all) to 4 (almost always), which in its original version are grouped in a single dimension (eg “Facing difficulties can make me stronger”). The interpretation of this scale is made based on the total score obtained, taking into account the following classification: low score  $\leq 27$  points and high score  $\geq 36$  points. The internal consistency achieved with this scale with the sample of the present study was  $\alpha = 0.82$ .

#### General Scale of Academic Engagement for Spanish Adolescents (CAADE)<sup>77</sup>

This scale consists of 17 items to measure adolescents’ sense of academic engagement. It consists of six items that evaluate the affective-emotional factor, six items that measure the cognitive factor and five items that measure the behavioral factor. With a 4-point Likert response scale ranging from 1 (never) to 4 (always). The affective-emotional factor refers to the level of emotional response of the student towards their learning process (eg “I am interested in the work I have to do”), the cognitive is related to the use of management strategies, cognitive and metacognitive for learning and persistence to perform school tasks (eg “I reorganize my tasks in case of unforeseen events”) and behavioral concerns the student’s interactions and responses within the educational center and in extracurricular environments (eg “In general, I behave well”). The internal consistency achieved with this scale with the sample of the present study was  $\alpha = 0.90$ . The reliability for the behavioral factor is  $\alpha = 0.71$ ; for the cognitive factor it is  $\alpha = 0.87$  and for the emotional factor it is  $\alpha = 0.83$ .

## Wong Law Emotional Intelligence Scale (WLEIS<sup>78</sup>)

Specifically, the Spanish adaptation of the original WLEIS questionnaire has been used (WLEIS-S<sup>79</sup>). This self-administered instrument consists of 16 items that evaluate the 4 dimensions of emotional intelligence that were described by:<sup>80</sup> intrapersonal perception (eg “I can most often distinguish why I have certain feelings”), interpersonal perception (eg “I always know my friends’ emotions through their behaviors”), emotional assimilation (eg “I always set goals and then try my best to achieve them”) and emotional regulation (eg “I am able to control my temper and handle difficulties rationally”). Responses should be given using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (totally agree). Higher scores are considered higher levels of emotional intelligence. The internal consistency achieved with the scale with the sample of the present study was  $\alpha = 0.86$ .

## Procedure

Once the booklet was prepared with the instruments of the variables that were to be examined, several educational centers of different municipalities in the province of Almería were contacted. A total of six secondary schools agreed to participate in this study, so, it was agreed with the management of the high school one day to attend and the students completed the paper booklet in person. Before starting the data collection, all students and their legal guardians were informed of the purpose of the study and gave their written informed consent to participate in it. The data collection was carried out during the months of January to April 2023. A total of 834 questionnaires were collected, of which 32 questionnaires were removed due to control questions, leaving 802 questionnaires to be able to carry out the study in a representative sample. The research was approved by the Committee of Bioethics of the University of Almería with reference UALBIO2020/046.

## Analysis of Data

In a preliminary analysis stage, the database underwent a thorough debugging process, where outliers were discarded. Missing values were replaced by the mean of the series in each case. In addition, the collinearity between the variables was examined, in order to rule out the presence of a high degree of collinearity, which would affect the accuracy of the estimators in the computer models. Values of the tolerance index (TI) lower than 0.10 or of the variance inflation factor (VIF) higher than 10 produce biased and inefficient parameters.<sup>81</sup> In our case, the collinearity between the variables was discarded by estimating the tolerance index (TI = 0.699) and the variance inflation factor (VIF = 1.431). In addition, to complete the diagnosis of collinearity, the index of condition was calculated, which must have values lower than 30 to rule out the collinearity between the variables, in our case: CI = 12.78.

First, in order to explore the relationship between the variables, correlation analysis are performed (0.1 small, 0.3 medium, 0.5 large),<sup>82</sup> and descriptive ones are presented. For the comparison of the groups by sex, a Student *t* test is performed, with the Cohen *d* statistic<sup>83</sup> for the estimation of the effect size. The statistical package SPSS version 24.0 for Windows<sup>84</sup> was used for data processing and analysis.

Subsequently, the estimation of simple mediation models (Model 4)<sup>85</sup> is carried out, where the independent variable will be resilience, as a mediating variable the total score in emotional intelligence and, for each model, each of the factors of academic engagement (behavioral, cognitive and emotional) is introduced as a dependent variable. For the calculation of mediation models, the macro PROCESS (v. 4.0) is used for SPSS,<sup>85</sup> applying the bootstrapping technique with coefficients estimated from 5000 bootstrap samples, and a 95% confidence interval.

## Results

### Resilience, Academic Engagement and Emotional Intelligence: Descriptive Analyses and Correlations

As shown in Table 1, resilience correlates positively with the three factors of academic engagement: behavioral ( $r = 0.29$ ;  $p < 0.001$ ), cognitive ( $r = 0.27$ ;  $p < 0.001$ ) and, above all, with the emotional factor ( $r = 0.34$ ;  $p < 0.001$ ) whose correlation is moderate. Also, resilience strongly correlates with emotional intelligence ( $r = 0.55$ ;  $p < 0.001$ ), both with the total score and with each of its dimensions. Similarly, emotional intelligence, in turn, establishes moderate

**Table 1** Bivariate Correlation Matrix and Descriptive Data (N = 802)

	1	2	3	4	5	6	7	8	9
1. Resilience	–								
2. F. Behavioral	0.29	–							
3. F. Cognitive	0.27	0.56	–						
4. F. Emotional	0.34	0.63	0.60	–					
5. Emotional Intelligence Total	0.55	0.44	0.44	0.50	–				
6. Intrapersonal Perception	0.52	0.43	0.43	0.47	0.87	–			
7. Interpersonal Perception	0.51	0.33	0.36	0.41	0.89	0.75	–		
8. Emotional Assimilation	0.44	0.40	0.40	0.45	0.86	0.61	0.68	–	
9. Emotional Regulation	0.47	0.40	0.37	0.43	0.90	0.70	0.72	0.73	–
Media	25.42	3.10	2.66	2.76	4.85	5.06	4.73	4.55	5.04
SD	7.33	0.55	0.75	0.66	0.98	1.04	1.14	1.16	1.12

Notes: All correlations with significance level  $p < 0.001$ .

associations with factors of academic engagement, with positive results in all cases: behavioral ( $r = 0.44$ ;  $p < 0.001$ ), cognitive ( $r = 0.44$ ;  $p < 0.001$ ) and emotional ( $r = 0.50$ ;  $p < 0.001$ ).

Table 2 shows the mean scores obtained in the study variables for each of the groups by sex. As can be seen, from the results of the Student's  $t$ -test for independent samples, there are statistically significant differences in resilience, with the male sex obtaining a higher average score. As for the factors of academic engagement, there are no significant differences between the sexes. Finally, according to emotional intelligence, there are significant differences according to sex, both in the total score of the emotional intelligence scale, and in each of the dimensions of the construct. In all cases, men score significantly higher than women.

## Analysis of the Mediating Effect of Emotional Intelligence on the Relation Between Resilience and Academic Engagement

Table 3 and Figure 2 correspond to the simple mediation model for the behavioral factor of academic engagement. In the first regression analysis, emotional intelligence (M) is taken as a result variable, and the effect of resilience is estimated, being significant ( $\beta = 0.07$ ,  $p < 0.001$ ). With the following regression analysis, taking as a result variable the behavioral factor of academic engagement ( $Y_1$ ), an estimate of the effect of the independent variable ( $\beta = 0.004$ ,  $p = 0.086$ ) and the mediator ( $\beta = 0.23$ ,  $p < 0.001$ ) is made, the latter being statistically significant. The total effect of the model is significant

**Table 2** Resilience, Academic Engagement and Emotional Intelligence. Descriptive and  $t$ -Test by Sex (N = 802)

	Sex						t	p	d
	Male			Female					
	N	Media	SD	N	Media	SD			
Resilience	396	26.75	7.31	406	24.12	7.12	5.17 ***	0.000	0.36
F. Behavioral	396	3.08	0.55	406	3.12	0.55	-1.17	0.244	-0.08
F. Cognitive	396	2.62	0.75	406	2.70	0.74	-1.52	0.129	-0.11
F. Emotional	396	2.77	0.71	406	2.76	0.61	0.14	0.888	0.01
Emotional Intelligence Total	396	4.97	0.96	406	4.72	0.99	3.61 ***	0.000	0.26
Intrapersonal Perception	396	5.14	1.02	406	4.98	1.06	2.16 *	0.031	0.15
Interpersonal Perception	396	4.88	1.16	406	4.59	1.09	3.57 ***	0.000	0.25
Emotional Assimilation	396	4.70	1.14	406	4.41	1.16	3.52 ***	0.000	0.25
Emotional Regulation	396	5.18	1.07	406	4.90	1.15	3.50 ***	0.000	0.25

Notes: \*\*\* $p < 0.001$ ; \* $p < 0.05$ .

**Table 3** Mediation Estimates. Simple Mediation Model of Emotional Intelligence on the Relationship Between Resilience and the Behavioral Factor of Academic Engagement

Effect	Estimate	SE	95% CI		p	Standardized Estimates
			Lower	Upper		
Indirect	0.016	0.001	0.013	0.020	< 0.001	0.222
Direct	0.004	0.002	-0.001	0.010	0.086	0.065
Total	0.021	0.002	0.016	0.026	< 0.001	0.287

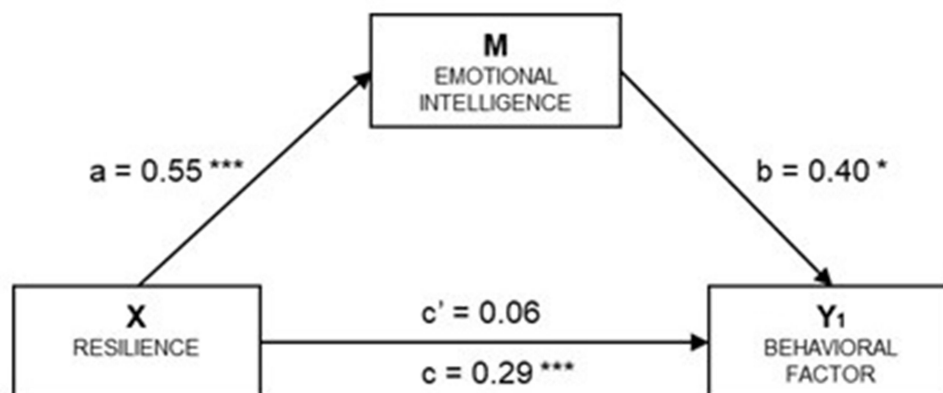
( $\beta = 0.02$ ,  $p < 0.001$ ). Finally, with the analysis of indirect effects using the bootstrapping technique, a significant effect was obtained ( $\beta = 0.02$ ,  $SE = 0.001$ , 95% CI 0.013, 0.020). The standardized coefficients are shown in the figure.

Table 4 and Figure 3 show a significant relationship between resilience (X) and emotional intelligence (M) ( $\beta = 0.07$ ,  $p < 0.001$ ). The estimation of the direct effect  $X \rightarrow Y$  rules out the existence of significance in the relationship ( $\beta = 0.003$ ,  $p = 0.349$ ). On the other hand, the estimation of the  $M \rightarrow Y$  effect is significant ( $\beta = 0.32$ ,  $p < 0.001$ ). In reference to the total effect of the model, significance is observed ( $\beta = 0.03$ ,  $p < 0.001$ ). Finally, with the analysis of indirect effects ( $X \rightarrow M \rightarrow Y$ ), using the bootstrapping technique, significant values are obtained ( $\beta = 0.02$ ,  $SE = 0.002$ , 95% CI 0.018, 0.029). The standardized coefficients are shown in the figure.

Finally, Table 5 and Figure 4 represent the simple mediation model for the emotional factor of academic engagement. In the first regression analysis, emotional intelligence (M) is taken as a result variable, and the effect of resilience is estimated, being significant ( $\beta = 0.07$ ,  $p < 0.001$ ). With the following regression analysis, taking as a result variable the emotional factor ( $Y_3$ ), the effects of the independent variable ( $\beta = 0.01$ ,  $p < 0.01$ ) and the mediator ( $\beta = 0.30$ ,  $p < 0.001$ ) are estimated, with a total effect of the model that also presents significance ( $\beta = 0.03$ ,  $p < 0.001$ ). Finally, from the analysis of indirect effects, in this case, a significant effect was obtained ( $\beta = 0.02$ ,  $SE = 0.002$ , 95% CI 0.017, 0.026). The standardized coefficients are shown in the figure.

## Discussion

The involvement of resilience in academic adjustment and engagement to schoolwork,<sup>1-3</sup> as well as protective role against stressful situations<sup>4-6</sup> have led to a growing interest in the variables involved in their development and promotion in the secondary stage.<sup>7</sup> As emotions are an active part of resilience<sup>66,67</sup> and academic engagement,<sup>57</sup> this research was able to respond to the objectives initially set out, so that the different relationships between the variables analyzed (resilience, academic engagement and emotional intelligence), the differences according to sex and whether emotional intelligence acts as a mediating factor in the relationship between resilience and academic engagement of adolescents

**Figure 2** Simple Mediation Model of Emotional Intelligence on the Relationship Between Resilience and the Behavioral Factor of Academic Engagement.

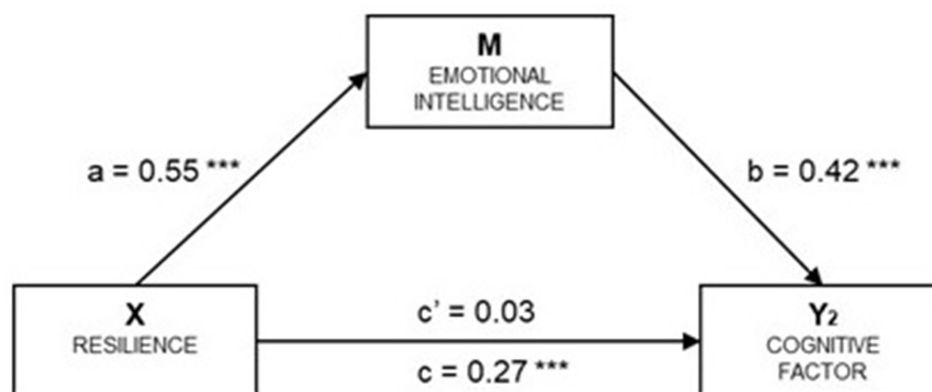
**Notes:** a = Direct effect of X on M; b = Direct effect of M on  $Y_1$ ; c' = Direct effect of X on  $Y_1$ ; c = Total effect of X on  $Y_1$ . Indirect effect of X on  $Y_1$  through (M)  $\beta = 0.22$ ,  $SE = 0.025$ , 95% CI (0.173, 0.272). Standardized coefficients are presented. \*  $p < 0.05$ ; \*\*\*  $p < 0.001$ .

**Table 4** Mediation Estimates. Simple Mediation Model of Emotional Intelligence on the Relationship Between Resilience and the Cognitive Factor of Academic Engagement

Effect	Estimate	SE	95% CI		p	Standardized Estimates
			Lower	Upper		
Indirect	0.023	0.002	0.018	0.029	< 0.001	0.233
Direct	0.003	0.003	-0.004	0.011	0.349	0.035
Total	0.027	0.003	0.020	0.034	< 0.001	0.268

have been verified. The first hypothesis was corroborated by the results obtained, since the data collected indicate that there is a positive correlation between resilience and academic engagement. This idea is linked to the idea that high levels of resilience make students cope with difficult tasks and persist in them, striving to achieve their goals and, consequently, feel satisfied and motivated with studies, increasing their levels of academic engagement.<sup>1,19,35,46,48,49</sup> Thus, as other studies have shown, resilience could support school goals, as it predicts positive outcomes, such as school satisfaction, active classroom participation, and high levels of academic engagement.<sup>26,27,51</sup> It is necessary to encourage academic engagement in adolescents to improve academic performance, achieve success in studies, address academic challenges and reduce levels of school attendance.<sup>28,29,36-40</sup>

In addition, the results confirmed the second hypothesis focused on the existence of positive relationships between emotional intelligence and academic engagement. The analyses carried out show that emotional intelligence establishes associations with the factors of academic engagement (behavioral, cognitive and emotional), being positive in all cases. This statement is associated with other studies indicating that the perception and regulation of emotional states act as predictors of factors of academic engagement.<sup>69,70</sup> These results may be related to the fact that young people with higher emotional intelligence are those who show higher scores in academic engagement and, consequently, reduce the levels of school attendance,<sup>72,73</sup> thus corroborating the extracted data. The third hypothesis was also confirmed by indicating that resilience correlates positively with emotional intelligence, both with the total score and with each of its dimensions. This idea is linked to the idea that emotional intelligence facilitates resilience to difficult situations.<sup>66,67</sup> Therefore, as other studies have shown, factors of emotional intelligence facilitate resilient responses to adverse situations.<sup>64,65</sup> In contrast, poor emotional regulation decreases levels of resilience in adolescents.<sup>68</sup> Emotional intelligence needs to be promoted to reduce the consequences of stressful and adverse situations and increase resilience in adolescents.<sup>62,63</sup> In turn, the fourth hypothesis was confirmed in two of the three variables analyzed. Specifically, sex-related differences were found in resilience and emotional intelligence among adolescents. With regard to resilience, it was found that males report higher

**Figure 3** Simple Mediation Model of Emotional Intelligence on the Relationship Between Resilience and the Cognitive Factor of Academic Engagement.

**Notes:** a = Direct effect of X on M; b = Direct effect of M on Y<sub>2</sub>; c' = Direct effect of X on Y<sub>2</sub>; c = Total effect of X on Y<sub>2</sub>. Indirect effect of X on Y<sub>2</sub> through (M) β = 0.23, SE = 0.025, 95% CI (0.185, 0.282). Standardized coefficients are presented. \*\*\* p < 0.001.



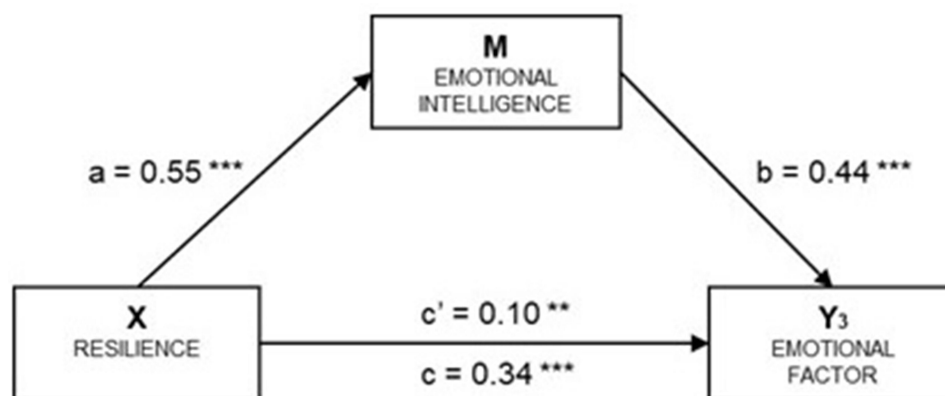
**Table 5** Mediation Estimates. Simple Mediation Model of Emotional Intelligence on the Relationship Between Resilience and the Emotional Factor of Academic Engagement

Effect	Estimate	SE	95% CI		p	Standardized Estimates
			Lower	Upper		
Indirect	0.021	0.002	0.017	0.026	< 0.001	0.243
Direct	0.009	0.003	0.002	0.015	0.006	0.099
Total	0.030	0.003	0.025	0.036	< 0.001	0.342

scores compared to females. Previous research affirms that women have lower levels of resilience than their male counterparts, as they show lower ability to cope with adverse and stressful situations,<sup>23</sup> thus corroborating the extracted data. These results may be related to the theory that the biological and physical differences of each sex influence their development, especially in adolescence.<sup>22</sup> Both sexes receive different education in coping with adverse situations.<sup>23</sup> On the other hand, in relation to emotional intelligence, it was found that men obtained significantly higher average scores than women, both in the total score of the emotional intelligence scale, and in each of the dimensions of the construct. This statement may be linked to the fact that, as shown in previous studies, women have greater difficulty coping and regulating their emotions in situations of stress.<sup>65</sup> Finally, no significant differences were found between adolescents of both sexes regarding academic engagement.

Finally, the analysis shows that the relationship between resilience and factors of academic engagement is mediated by emotional intelligence, corroborating the fifth hypothesis of the study. This statement is associated with other studies that indicate that emotional intelligence influences the behavioral, cognitive and emotional factors of academic engagement.<sup>69,70,72,73</sup> On the other hand, in the relationship between resilience and factors of academic engagement, only the relationship with behavioral and emotional factors is mediated by emotional intelligence. These results may be related to the fact that resilience interacts with emotional intelligence in relation to the behavioral and emotional factor of academic engagement rather than the cognitive factor.<sup>66,69</sup>

All of the above highlights the importance of emotional intelligence in secondary education, even more so when its trajectory is difficult. Therefore, designing intervention programs on emotional skills in high school is suggested as an effective measure to help students in their struggle with the challenges they face in adolescence. As well as, promote emotional intelligence and a positive academic trajectory, due to the involvement of resilience in performance and engagement to studies.<sup>1-3</sup>

**Figure 4** Simple Mediation Model of Emotional Intelligence on the Relationship Between Resilience and the Emotional Factor of Academic Engagement.

**Notes:** a = Direct effect of X on M; b = Direct effect of M on Y<sub>3</sub>; c' = Direct effect of X on Y<sub>3</sub>; c = Total effect of X on Y<sub>3</sub>. Indirect effect of X on Y<sub>3</sub> through (M)  $\beta = 0.24$ , SE = 0.023, 95% CI (0.199, 0.289). Standardized coefficients are presented. \*\*\*  $p < 0.001$ .

This study has some limitations. First, environmental factors that may have been affecting the participants were not considered. Thus, the variables analyzed were individual, and other elements, such as exposure to stressful situations, were not taken into account. Therefore, as future lines of research, a deeper study of the relationship between resilience, academic engagement and emotional intelligence in high-school students would be favorable in this area. In addition, given the relevance of stress in the development of resilience, academic engagement and emotional intelligence, future studies should include this variable, as well as other variables that promote the correct development of adolescents in the academic context, in order to favor these constructs, reduce levels of school attendance and increase their personal well-being.

## Conclusion

Resilience in the academic context is a vital personal resource, due to its involvement in other behaviors that favor a better adaptation and long-term individual trajectory. The results of this study show the involvement of resilience in increasing the levels of academic engagement in adolescents, where emotional intelligence acts as a mediator in this relationship, being men who show significantly higher averages in resilience and emotional intelligence than women, with no significant differences in the variable of academic engagement. Therefore, intervention and promotion of emotional skills in secondary education can be an effective measure to increase adolescents' interest, enthusiasm and energy in studies. And, in turn, generating higher levels of resilience will help foster feelings of competence to face the challenges that arise in the academic context.

## Ethical Statement

Our study complies with the Declaration of Helsinki. Our study was approved by the Committee of Bioethics of the University of Almería with reference UALBIO2020/046, with all participants providing written informed consent.

## Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

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## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

## Disclosure

The authors declare no conflicts of interest.

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