



# Social Anxiety and Depression in Portuguese and Spanish Adolescents: The Moderating Role of Emotional Intelligence

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## Abstract

Social anxiety (SA) and depressive disorder usually coexist. Emotional Intelligence (EI) is a protective factor against emotional disorders. The aim of this study is to examine the moderating role of EI in the relationship between SA and depression among Spanish and Portuguese adolescents. Information on these variables was collected through a cross-sectional study with 1456 students between 12 and 19 years of age. The software PROCESS was used to perform the analysis of conditional processes (model 1). The moderation model was conducted, including the covariate country, and showed significant differences between countries in the relationship between SA and Depression. The summary model explained that 42% of the Depression. The statistical analysis was repeated separately for Portuguese and Spanish adolescents, with EI as the moderating variable. The effect of SA on depression was significant for individuals with low or moderate EI, while for adolescents with high EI there was no statistically significant effect. To prevent these outcomes, early interventions, including the enhancement of Trait EI, with adolescents with SA could reduce the risk of developing SA disorder, as well as subsequent depressive disorders in adolescence and early adulthood. This is especially important because research indicates that depression caused by SA is strongly associated with a worse course of depression.

**Keywords** Social anxiety disorder · Depression · Emotional intelligence · Adolescents

## Introduction

In 2017, the World Health Organization (WHO) published a report ranking the symptoms of depression, along with anxiety, as the third-highest cause of disability among adolescents. Both mental health issues are highly prevalent among adolescents, with a 10% prevalence for any mood disorder and a 24.9% prevalence for any anxiety disorder over a 12-month period [1]. The meta-analysis conducted by Polanczyk et al. [2] revealed a significant global prevalence of mental disorders in children and adolescents with a rate of 6.5% (95% CI 4.7–9.1) for any anxiety disorder and 2.6% (95% CI 1.7–3.9) for any depressive disorder.

Anxiety and depression often co-occur [3]. The mere presence of an anxiety disorder during adolescence is an indicator of depression persistence into adulthood [4–6],

which implies a longer duration and severity of the symptoms [7]. Various studies have shown that early anxiety more frequently predicts later depression than vice versa [8–14]. Comorbidity between depression and anxiety results in greater impairment than either depression or anxiety, and leads to an increase in suicidal tendencies, worse prognosis, less favorable treatment outcomes, reduced life satisfaction, more physical health problems, lower likelihood of attending university, greater overall deterioration, academic difficulties, and decreased quality of life [11, 15–19]. Furthermore, longitudinal studies have shown that 60% of adolescents with comorbid anxiety and depression encounter issues related to both disorders in adulthood [20, 21].

Anxiety disorders have an earlier age of onset [22] and are generally more prevalent during childhood, whereas depression is more prevalent during adolescence [6, 23–25]. Social anxiety disorder (SAD) is highly prevalent in this population [26]. According to Merikangas et al. [6], the observed increase in SAD at this stage of development may be due to high academic demands, physical, psychological, and hormonal changes in puberty, and/or peer interaction.

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Nonetheless, many young people with an anxiety disorder, specifically social anxiety (SA), do not always develop depression [10, 27]. Social anxiety (SA) is characterized by a significant fear of social or performance situations in which the individual is exposed to possible scrutiny by others. Therefore, for a more targeted prevention, it is necessary to understand heterogeneity among adolescents with SA and their probability of developing depression to identify those adolescents with an anxiety problem who are at a higher risk of developing a problem with depression. Adolescents are a vulnerable population because they are in a period where the highest prevalence figures occur and the consequences associated with SA have the greatest effect. The study of its origin or the factors related to its suffering could point to the causes and are key to its prevention in the adolescent stage, which could considerably limit the prevalence rates in the future.

Emotional intelligence (EI) may be one of the factors in this heterogeneity, because it is a protective factor against anxious-depressive symptomatology. Numerous studies have demonstrated EI's influence on different outcomes such as academic performance, stress, life satisfaction, internalizing or externalizing behavioral problems, and being a victim or perpetrator of bullying among others [28–30].

Salovey and Mayer [31] defined EI as the ability to control one's own feelings and emotions as well as those of others, along with positive control over social performance. Petrides and Furnham [32] formulated the trait EI model and conceptualized EI as a personality trait. The trait EI model has 15 dimensions: two are independent (adaptability and self-motivation) and the other 13 are grouped according to four factors: well-being (a general sense of well-being that extends from past accomplishments to future expectations), self-control (the ability to regulate external pressures, stress, control impulses, and desires), emotionality (the ability to understand and express emotions, and utilize those capacities to develop and maintain intimate relationships with significant people), and sociability (skills of social interaction, listening, and clear and confident communication). Trait EI is a personality trait related to individual differences in the recognition, processing, and regulation of emotionally charged information. Trait EI is an essential variable in determining psychosocial adjustment among adolescents [33].

Adolescents and adults with higher levels of EI present lower levels of SA [34–36]. According to Diaz-Castela et al. [37], this may be because, although adolescents with SA symptoms are able to feel and express feelings appropriately, they have difficulties in comprehending and regulating their emotional states compared to adolescents without SA symptoms. In addition, adolescents who report higher EI have a greater ability to control their emotions and are less predisposed to developing problems related to SA [34].

There is also evidence of a negative relationship between EI and depression in adolescents [38, 39]. Specifically, trait EI plays an important role in well-being and adaptation during adolescence [40]. It also plays a protective role against psychological problems [41] and correlates positively with the identification of emotional expression, mood control, and quantity of social support [42], and may affect learning and academic achievement [43]. According to Diaz-Castela et al. [37], the further development of EI could increase adolescents' awareness of their own emotions and those of others and help them to self-regulate their emotions. This level of self-awareness assists in reducing anxiety, developing interpersonal relationships, growing emotions, and overcoming high-stress situations [37]. Therefore, adolescents with higher levels of EI are better able to discriminate feelings, regulate mood, and consequently reduce anxiety and depression [38].

### Transcultural Differences in Study Variables

According to data from the WHO [24], there are minor differences in the prevalence of the most common mental disorders across countries. In a meta-analysis by Polanczyk et al. [2], studies from various countries assessed psychopathology in children and adolescents from a dimensional perspective and found more similarities than differences in terms of psychopathology. These studies demonstrated an association between anxiety disorders and only slight disparities in symptom rates [44–46]. A more recent study [47] examined trends in the incidence rates and burden of anxiety disorders in children and adolescents over the past 30 years across 204 countries. The study found that Portugal had the highest age-standardized incidence rates (ASIR) in relation to anxiety disorders. However, definitive conclusions cannot be drawn about the independent effect of culture and social aspects on prevalence estimates because cultural diversity is intrinsically linked to variations in study methods in previous literature.

Regarding EI as a trait, some studies explored transcultural differences among adolescents and yielded results reflecting differences between countries. For example, Gökçen et al. [48] observed that Chinese participants who completed the English version of the trait emotional intelligence questionnaire. *The trait emotional intelligence questionnaire* (TEIQue) showed higher scores in both the overall aspect of EI and in the sociability factor of the TEIQue than those who completed the assessment in their native language. Additionally, Nozaki [49] examined European-American and Japanese populations and revealed a moderating effect of culture on the emotional regulation process underlying EI traits. These findings suggest that cultural context can significantly influence how adolescents develop and express their EI.

Despite the extensive research on the prevalence and impact of social anxiety and depression among adolescents, there remains a gap in understanding the moderating role of emotional intelligence (EI) in the relationship between these conditions. This study aims to fill this gap by investigating how EI can influence the association between social anxiety and depression, providing insights that could lead to more effective preventive and therapeutic strategies.

Due to the high prevalence of depression and SA among adolescents, it is essential to investigate the moderating role of EI [6, 50] in the relationship between SA and depression as it offers a deeper understanding of the nature of these conditions in this population [51]. Specifically, determining how EI can amplify or mitigate the association between SA and depression and shed light on the underlying mechanisms that contribute to the co-occurrence of these disorders and provide valuable information for the development of more effective preventive and therapeutic interventions [52]. This expanded perspective would not only enrich our scientific understanding of the prevalence of depression and SA in adolescents but also provide more specific and tailored strategies to address the individual needs of at-risk youth [3, 53].

## Objectives and Hypothesis

The literature shows a relationship between the prevalence of SA and depression; however, not all adolescents with SA develop depression. Furthermore, according to data from the WHO [24], there are differences in the prevalence of different anxiety and depression disorders. EI is negatively related to both SA and depression); however, to our knowledge, no research has been published either on the relation between the three variables or with samples from two countries. Therefore, this study aims to verify the relationship between SA and depression by analyzing the possible moderating role of EI in a sample of Spanish and Portuguese adolescents, with the country acting as a co-variable.

We expect depression and SA to present a positive and significant correlation, and both correlate in a negative and significant way with EI (Hypothesis 1) as previous studies in the literature have indicated a relationship between the prevalence of SA and depression; however, this relationship is not expected to be deterministic, as not all adolescents with SA develop depression. Additionally, we posit that both depression and SA will correlate negatively and significantly with EI, as the literature suggests an inverse relationship between emotional problems and emotional regulation capacity. We also expect EI to function as a moderating variable in the relationship between SA and depression (Hypothesis 2). This assumption is based on the idea that adolescents with high levels of EI may be able to manage SA symptoms and therefore experience fewer depressive symptoms. Furthermore, the literature suggests that EI may

mitigate the negative effects of emotional problems such as SA and depression. Furthermore, we hypothesize that country will not act as a covariate (Hypothesis 3). This hypothesis is based on the lack of evidence suggesting that cultural differences between Spain and Portugal may significantly influence the relationship between these variables. However, it is important to evaluate this assumption empirically to confirm its validity.

## Method

### Participants

Using a non-probability convenience sampling method, we collected a random sample of students from three secondary schools in the province of Alicante (Spain) and eight secondary schools in city of Coimbra (Portugal). Seventy adolescents were excluded because of incomplete questionnaires. The final sample consisted of 1456 participants, with 677 Spanish (46.50%) and 779 Portuguese (53.50%) adolescents. In Spain and Portugal, students were evaluated from their seventh to twelfth year of schooling—in Spain, this corresponds to the 1st *Educación Secundaria Obligatoria* (ESO, compulsory secondary education) to the 2nd *Bachillerato* or vocational training. Statistically significant interdependence was found between the country and the courses, with a significant Chi-square value ( $\chi^2 = 70.55, p < 0.001$ ), although the association's effect size was small (Cramer's  $V = 0.23$ ).

The distribution of boys and girls was similar in both samples: 349 boys (44.70%) and 431 girls (55.30%) in the Spanish sample and 336 boys (49.70%) and 340 girls (50.30%) in the Portuguese sample ( $\chi^2 = 0.06$ , not significant). The age range was 12–19 years old. The average age of the Spanish and Portuguese samples was 14.88 and 14.64, respectively, with a standard deviation (SD) of 1.47 for both samples. A Student's *t*-test was performed and a significant value of  $t = -3.04$  was obtained, but with a small effect size ( $d = 0.16$ ).

The exclusion criteria were: (a) refusal to participate in the study, (b) not being enrolled in secondary education, (c) age under 12 years, and (d) age over 19 years.

### Instruments

Information on the sociodemographic variables (sex, age, and course) was obtained using an *ad-hoc* questionnaire.

The Spanish version of the *Social Phobia and Anxiety Inventory-Short Form* (SPAI-B) developed by García López et al. [54] and its Portuguese version [55] were used to determine participants' level of anxiety and social phobia. The instrument consists of 16 items. Level of anxiety is evaluated using a Likert-type scale ranging from 1 ("Never") to

5 (“Always”). The total score reflects the frequency of anxiety experienced by individuals in various social situations. Higher scores indicate a higher level of SA. The instrument has good psychometric properties in both Spanish and Portuguese versions with an internal consistency of  $\alpha=0.92$  and  $\alpha=0.93$ , respectively, similar to those obtained in this study ( $\alpha=0.93$ ).

The *TEIQue-Adolescent Short Form* (TEIQue-ASF; [56], Spanish version [57]; Portuguese version [58] was used to assess participants’ EI level. The TEIQue-ASF measures global trait EI using 30 items. There are two items for each of the 15 facets of trait EI: emotional expression, empathy, self-motivation, emotional regulation, happiness, social awareness, low impulsivity, emotional perception, self-esteem, assertiveness, and emotion control. In both the Spanish and Portuguese versions, the internal consistency was  $\alpha=0.84$ , similar to that of the original version [56]. In this study, the internal consistency coefficient was  $\alpha=0.85$ . Level of depression was evaluated using the Spanish [59] and Portuguese [60] versions of the *Depression Anxiety Stress Scales* (DASS-21) [61]. The instrument is composed of three scales (depression, anxiety, and stress) with seven items each. Only information from the depression scale was used. Bados et al. [59] and Pais-Ribeiro et al. [60] found the scale’s internal consistency was good at  $\alpha=0.70$  and  $\alpha=0.85$ , respectively. In our study,  $\alpha=0.86$ .

## Procedure

This is a cross-sectional and cross-cultural study of secondary school adolescents in the province of Alicante (Spain) and the city of Coimbra (Portugal). The study was approved by the Ethics Committee of the University of Miguel Hernández, National Commission of Data Protection (CNPD), General Direction of Innovation and Curriculum Development (DGIDC), and the Ethics Commission of the Faculty of Psychology and Educational Sciences of the University of Coimbra. The centers were responsible for obtaining parents and participants’ informed consent before participation in the study.

Data collection was completed during the 2017–2018 academic year. The selection of these schools was based on their willingness to participate in the study, which facilitated access and data collection within the constraints of our resources. This convenience sampling method is commonly used in psychological research when random sampling is not feasible due to logistical limitations [62, 63]. To enhance the representativeness of our sample, we included a mix of urban and suburban schools to capture a broad range of sociodemographic backgrounds. The protocol was administered in a classroom. Student participation was voluntary and anonymous, and students could discontinue their participation at any time. Assessments were administered in pencil and paper during a single

pass of the 2017/2018 academic year. Data collection was conducted by students in their final year of their psychology degree.

## Data Analysis

Data were statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 22) for Windows [64].

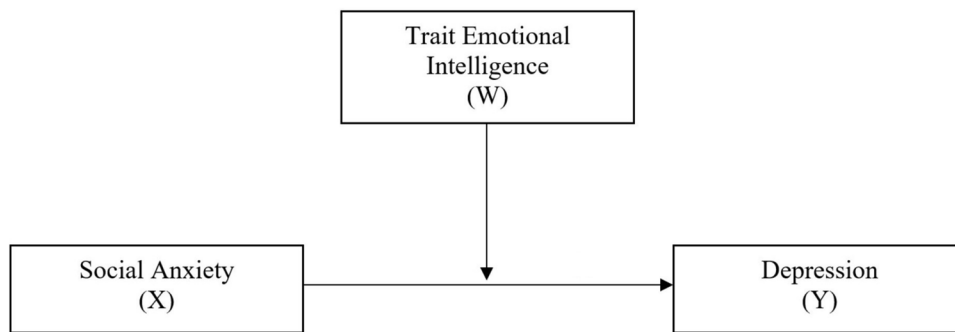
We conducted a Kolmogorov–Smirnov test to evaluate the normality of the sample, that is, the asymmetry (skewness), the concentration of data in the mean (kurtosis), and the outliers were analyzed through a graphic representation of the results (box plot).

The internal consistency analysis followed George and Mallery’s [65] reference values. A *Cronbach’s alpha* of between 0.61 and 0.70 was deemed questionable, between 0.71 and 0.80 acceptable, between 0.81 and 0.90 good, and above 0.90 excellent. To identify possible covariates and study the associations between variables according to the study’s hypotheses, correlations were made (Pearson’s parametric test) between all the variables. A correlation coefficient below 0.20 was considered very low, between 0.21 and 0.39 low, between 0.40 and 0.69 moderate, between 0.70 and 0.89 high, and above 0.90 very high [66].

In addition, the two samples’ descriptive information (mean and SD) were compared using Student’s *t*-test for independent samples. Effect sizes were calculated using Student’s *t*-test (Cohen’s *d*: 0.2 = small, 0.5 = medium and 0.8 = large) [9]. Simple regression analyses were performed a priori to establish whether the relationships between the predictor and criteria variables were significant.

Finally, the SPSS PROCESS computing tool [67] was used to analyze the conditional processes (Model 1). Moderating variables, as defined by Hayes [68], are factors or conditions that impact the magnitude of *X*’s impact. Referred to as statistical interaction, moderation holds significant importance in research since the inclusion of a moderating variable in a theoretical framework can enhance our comprehension of the association between two variables [69]. As shown in Fig. 1, regression coefficients were estimated using a model, where the path b1, b2, b3 was calculated using the bootstrapping procedure (10,000 resamples), which resulted in a corrected 95%. The interaction is considered significant if zero is not present between the lower and upper confidence intervals (CI) and significant if the value is less than 0.05.

**Fig. 1** Moderation model: the influence of trait emotional intelligence on the relationship between social anxiety and depression



**Table 1** Comparison in the scores obtained by the Spanish ( $N=677$ ) and the Portuguese sample ( $N=779$ )

Instruments	<i>M (SD)</i> Spain	<i>M (SD)</i> Portugal	<i>t</i>	<i>d</i>
DASS-21-Dep	4.65 (4.52)	5.20 (4.50)	2.35*	- 0.12
SPAI-B	38.52 (12.72)	41.23 (11.46)	- 8.01***	- 0.22
TEIQue-ASF	145.51 (22.52)	136.39 (21.08)	4.25***	0.42

*M* mean, *DE* standard deviation, *DASS-21-Dep* depression scale from the depression, anxiety, stress scales, *SPAI-B* short version of the adolescent anxiety and social phobia inventory, *TEIQue-ASF* trait emotional intelligence questionnaire-adolescent short form

\* < 0.05, \*\* < 0.01, \*\*\* < 0.001

## Results

### Preliminary Analyses

No data indicated a violation of the assumptions of normality for the distribution of the variables. Although atypical cases were detected, we decided not to eliminate them from the sample for reasons of ecological validity. Missing values were addressed; subjects with more than 20% missing data were excluded as they met the exclusion criterion of not having completed the survey ( $N = 70$ ).

### Descriptive Analysis and Correlations Between Variables

The average scores on the different scales are listed in Table 1 and show differences between the results of the Spain and Portugal samples. The means of depression and SA were higher among Portuguese adolescents than Spanish adolescents. The highest EI was reported among Spanish adolescents, all significant but with a small effect size.

Table 2 presents the correlations between the different variables in relation to testing the first hypothesis. The results demonstrate that depression and SA correlate

**Table 2** Correlations between all study variables ( $N=1456$ )

Variable	1	2	3
1. DASS-21	1		
2. SPAI-B	0.44**	1	
3. TEIQue-ASF	- 0.62**	- 0.53**	1

*DASS-21-Dep* depression scale from the depression, anxiety, stress scales *SPAI-B* short version of the adolescent anxiety and social phobia inventory. *TEIQue-ASF* trait emotional intelligence questionnaire-adolescent short form

\*\* $p < 0.01$

moderately, positively, and significantly with each other. In addition, both SA and depression have a negative, moderate and significant correlation with EI.

### The Moderating role of EI in the Relationship between SA and Depression and Country as a Co-variable

Preliminary regression analysis showed that trait EI, SA, and depression were introduced simultaneously in the same model (controlling for the country of origin) and accounted for 44% of the variance in psychosocial adjustment. These results suggest that all the constructs are relevant in determining adolescents' psychological problems.

To test the second and third hypotheses, a moderation model was proposed to provide a comprehensive representation of the relationships among SA, EI, and depression. In this model, SA served as the predictor variable, EI as the moderating variable, and depression as the outcome variable. Due to the differences between the scores in the Spanish and Portuguese sample, country was added as a co-variable. The gender variable did not correlate with the scores and was not included in the model.

The correlation coefficients for the different relationships are presented in Table 3.

Therefore, Table 3 shows the summary model including all Spanish and Portuguese adolescents. In the first case, we developed a moderation model that included the covariate country. Country was statistically significant in the model,

**Table 3** Model summary

	$\Delta R^2$	<i>b</i>	SE	<i>t</i>	CI	<i>p</i>
Model 1 ( <i>N</i> =1456)	0.42	10.27	1.95	5.28	6.45–14.08	<0.0001
SA		0.24	0.04	5.54	0.15–0.32	<0.0001
EI		–0.06	0.01	–4.65	–0.08 to –0.03	<0.0001
Interaction	0.7%	–0.001	0.0003	–4.31	–0.002 to –0.001	<0.0001
Country		0.59	0.18	3.19	0.23–0.96	<0.01
Model 2 ( <i>N</i> =780)	0.39	13.67	2.93	4.66	7.91–19.43	<0.0001
SA		0.18	0.06	2.87	0.06–0.31	<0.001
EI		–0.06	0.02	–3.76	–0.12 to –0.04	<0.0001
Interaction	0.4%	–0.001	0.0005	–2.22	–0.002 to –0.001	<0.05
Model 3 ( <i>N</i> =676)	0.45	8.07	2.66	3.03	2.85–13.30	<0.001
SA		0.31	0.05	5.22	0.19–0.42	<0.0001
EI		–0.04	0.02	–2.41	–0.07 to –0.008	<0.01
Interaction	1.5%	–0.002	0.0004	–4.14	–0.002 to –0.001	<0.0001

CI confidence intervals, *Model 1* total population, *Model 2* Portuguese population, *Model 3* Spanish population, SE standar error,  $\Delta R^2$  represents the change in  $R^2$

suggesting that differences between countries could influence the relationship between SA and depression. The statistical analysis was repeated after separating the Portuguese and Spanish samples. The model could explain 42% of the variance in the depression scores. After including EI as a moderating variable, a slight change of 0.7% in  $R^2$  was observed, and this change was statistically significant.

In the second case, the model was applied only to the Portuguese population. Here, the model explained 39% of the variance in depression and was also statistically significant. The change in  $R^2$  was 0.4% and statistically significant, indicating that EI as a moderating variable also influenced the relationship, although to a lesser extent than in the first case.

Finally, in the third case, only the Spanish sample was analyzed. The model explained 45% of the variance in depression and was statistically significant. The change in  $R^2$  was 1.5%, also statistically significant, suggesting that the moderating effect of EI had a more relevant impact and contributed an additional 1.5% to the variability of depression.

In all three cases, the effect of SA on depression was statistically significant for individuals with low or moderate EI. In adolescents with high EI, the association between SA and depression was not significant. The findings are reflected in Fig. 2.

In Fig. 2, the x-axis represents the different values of EI, and the y-axis represents the effect or predictive capacity of the model's variable. The reference line on the x-axis indicates the critical point at which the moderating variable starts to take effect, with the statistically significant region to the left. A similar trend was observed in all three models, which indicates that the model is statistically significant when the EI score is low to moderate but not when it is high.

In summary, the statistical analysis reveals that EI has a significant moderating effect on the relationship between

SA and depression in the studied populations. However, this moderating effect is small and may vary depending on the country, being more pronounced in the Spanish population.

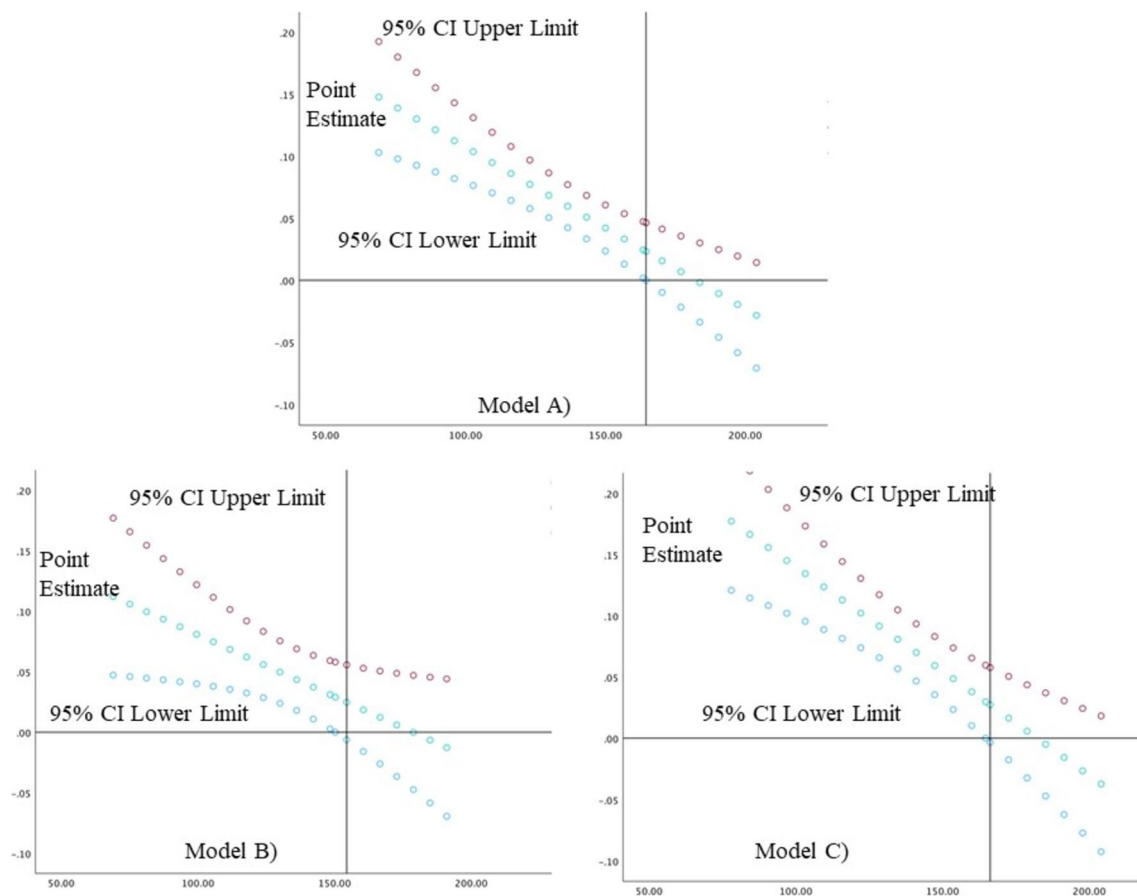
## Discussion

The high prevalence of depression and SA among adolescents, along with their comorbidity between the two, underscores the importance of exploring variables that may serve as protective factors. This study investigated the potentially moderating role of EI in the relationship between SA and depression to deepen our understanding of SA and depression in adolescents, while considering the potential influence of the country on these relationships.

In the context of Hypothesis 1, we expected the results to reflect a positive and significant correlation between depression and SA, as well as a negative and significant correlation between both with EI. The results obtained in the study are consistent with our expectations regarding the relationships between depression, SA, and EI. Specifically, SA has a significant direct effect on depression.

Similar results were reported by Beesdo [70]. In a 10-year longitudinal study of 321 adolescents and adults aged 14–34 years old, found that SAD was consistently associated with the development of depression, regardless of the age of onset of the affective disorder. In addition, a review by Cummings et al. [11] that included studies on anxiety-depression comorbidity (1993–present) found that social phobia in adolescence was a predictor of later depression.

A study of 527 adolescents [14] reported that SA symptoms were predictors of depression, explaining 39% of the variance in depressive symptoms. It is important to note that this relationship was expected as young people with



**Fig. 2** Graphical results: moderating effects of trait emotional intelligence across different levels of social anxiety and depression

SA find it more difficult to relate to others due to deficits in social skills and conflict resolution [71, 72]. Therefore, it is likely that SA in adolescence can predict future depression or depressive symptoms. Social relationships and support are essential to mitigate depression [73].

Previous studies support our results on the association between EI and both depression and SA. Specifically, a systematic review that included 32 studies, showed that adolescents with higher EI levels, evaluated through a self-report or peak performance test, showed less depression and anxiety [74].

Similarly, Inam et al. [34] found a negative association between SA and EI in adolescents, wherein adolescents with higher EI levels were less susceptible to developing SA. Petrides [32] concluded that adolescents with higher levels of EI are better able to regulate their emotions and manage stress situations better (EI management dimension); moreover, they also have a greater capacity to cope with adversities (EI emotional regulation dimension) that can occur during social interactions, which helps them to decrease their level of SA. Additionally, low EI can be a possible risk factor for emotional problems [75], specifically SA and depression.

The second hypothesis suggests that EI could mitigate the negative effects of emotional problems, such as SA and depression. In other words, EI functions as a moderating variable in the relationship between SA and depression. Indeed, the results of the statistical analysis reveal that EI has a significant moderating effect on the relationship between SA and depression. The effect of SA on depression was significant for individuals with low or moderate EI, while for adolescents with high EI, there was no statistically significant effect. All three models (total population, Spanish population, and Portuguese population) show a similar trend, indicating that the model is statistically significant when EI scores are low and, especially, moderate, but not when EI scores are high. However, this moderating effect is small and may vary depending on the country, being more pronounced in the Spanish population. The observed differences in these results could be due to several factors. In Spain, the educational system includes comprehensive social and emotional learning (SEL) programs, such as those mandated by the Organic Law for the Improvement of Educational Quality (LOMCE) and its successors, which emphasize the development of emotional skills in students [76]. Spanish

culture also places a strong emphasis on expressive communication and social interactions, which could contribute to higher levels of EI [77]. Additionally, mental health policies in Spain tend to be more accessible and better funded, which may provide more support for adolescents dealing with emotional problems [78]. For example, Spain's National Mental Health Strategy includes specific provisions for school-based mental health services and the promotion of emotional well-being among students [79].

The findings of this study are consistent with those of previous studies. For example, previous studies found that higher levels of EI are associated with a better ability to manage stress, regulate emotions, and adapt to stressful situations, which may reduce the risk of emotional problems, such as depression [75, 80]. SA and depression in adolescence can result of psychological and social adjustment problems due to the interaction between internal and external factors, which can lead to specific emotional and behavioral patterns of maladjustment [81]. For example, social isolation can reduce the number of social relationships and increase peer rejection, feelings of loneliness, sadness, and low self-esteem or self-worth [82–84]. These factors are characteristic of depression. During adolescence, deficits in emotional regulation and social relationship skills become risk factors that increase vulnerability to psychopathology, leading to increased in negative affect and emotional reactivity that is often observed among youth with depression [58].

There are several pathways through which SA can influence depression when considering EI. Thus, the presence of difficulties in emotion regulation is associated with a wide range of emotional disorders [85]. Similarly, high levels of EI are related to adaptation processes that would facilitate adequate responses to different stressful situations and decrease maladaptive emotional reactions, facilitating the experience of positive moods and reducing negative ones [86].

EI also plays a role in modifying or influencing the strength or direction of the relationship between SA and depression. In this context, previous studies have already established that there is a statistically significant relationship between SA and depression, indicating that both variables are related to each other in some way; however, the inclusion of EI as a moderating variable adds a new dimension to the analysis.

EI acts as a factor that can amplify or mitigate the relationship between social anxiety and depression. In other words, depending on a person's level of EI, the relationship between SA and depression can be stronger or weaker. The results of this study show that this effect occurs in individuals with low or moderate EI.

In intervention programs, it is important to consider the development of these processes, since SA is a problem with an early onset in adolescence and associated with a

substantial and consistent increase in the risk for developing depression. In addition, previous studies on the association between comorbid SAD and a more severe course and character of depression, and prevention trials and early intervention programs that promote an increase of EI and reduce the burden of SA and the development of depression should also be taken into consideration.

Regarding the last hypothesis, namely, that country does not influence the role of EI as a moderating variable, was not confirmed in the results. On the contrary, our model shows that there were significant differences between the Spanish and Portuguese populations, where depression and SA were higher in the Portuguese sample and EI was higher in the Spanish sample.

The differences in EI levels may be related to differences in Portugal and Spain's educational, mental health systems and parenting practices [87]. For example, on Portugal, mental health services might be less accessible or less developed compared to Spain, potentially leading to higher levels of untreated depression and SA [78]. The Portuguese educational system may also place less emphasis on the integration of emotional education in schools. However, recent initiatives, such as the Programa Nacional de Saúde Escolar (National School Health Program), aim to promote mental health and well-being in schools, but these programs may not yet be as widespread or deeply integrated as in Spain [88]. Additionally, the National Mental Health Plan of Portugal emphasizes mental health promotion and prevention, but resource allocation and implementation might vary regionally, affecting overall efficacy [89].

Cultural attitudes towards mental health in Portugal may differ, with possibly greater stigma associated with seeking help for emotional problems, thereby exacerbating the prevalence of these issues [90]. In contrast, Spanish schools are more likely to implement SEL programs and provide resources that promote EI development, as seen in various regional educational policies and initiatives that support emotional well-being [91]. Therefore, these educational, cultural, and policy-related differences between Spain and Portugal may contribute significantly to the varying levels of EI, depression, and SA observed in the two populations. Future research should explore these dimensions more thoroughly to develop targeted interventions that address the unique needs of adolescents in different cultural and national contexts.

The results show that depression prevention programs based on decreasing SA and increasing EI can be implemented in both countries. Schools can incorporate SEL programs to enhance students' EI, providing them with better tools to manage SA and reduce the risk of depression. Mental health professionals can use EI assessments for early identification of at-risk adolescents, allowing for timely interventions such as cognitive-behavioral therapy

(CBT) tailored to enhance EI. Additionally, training programs for parents and teachers can be developed to support the development of EI in adolescents, creating supportive environments that foster emotional and social growth [92, 93]. Policymakers can advocate for the integration of EI development into national education standards and mental health strategies, promoting systemic changes that enhance adolescents' emotional and psychological well-being [78].

## Limitations

The limitations of this study should be highlighted when generalizing the results. First, only self-reported research instruments were used in a sample of the general population. It is crucial to acknowledge the inherent limitations of using self-report instruments exclusively in mental health research, particularly during the COVID-19 pandemic. Studies have demonstrated that the incident rates of mental health problems, such as depression and anxiety, underwent significant changes during the pandemic due to stress, social isolation, and health-related concerns, which could bias the results compared to data collected before the pandemic [94, 95]. Therefore, it is crucial to consider the timing of data collection and how it may influence the interpretation of the results.

When generalizing the results of a study that relies on self-report instruments, it is important to consider the possibility that the results may not fully reflect the current reality of the target population, especially in dynamic contexts such as the COVID-19 pandemic. Caution is needed when interpreting these findings, an important limitation of this study lies in the handling of missing data, as information from 70 adolescents was excluded due to incomplete questionnaire responses. No comprehensive analysis of missing values was conducted to determine if they followed a completely random pattern. Self-report data should ideally be supplemented with other objective measures and sources of information, such as clinical assessments and direct observations, to obtain a more comprehensive and accurate picture of a population's mental health [96].

Second, we conducted a cross-sectional study; therefore, we recommend caution when attributing causal meanings to the observed relationships. Future research should consider conducting longitudinal studies to better understand the causal relationships between social anxiety, depression, and emotional intelligence [97]. Longitudinal studies would allow researchers to track changes over time and provide more robust evidence for the directionality of these relationships.

Third, both the Portuguese and Spanish samples were collected from specific regions, which may not be representative of the entire country. Additional studies investigating cultural differences in mental health and EI between Spain

and Portugal would be beneficial. These studies could examine specific factors such as mental health policies, educational and parenting practices, and attitudes towards mental health to better understand the observed differences in levels of depression, SA, and EI between the two populations.

The results would be more representative and relevant if structured clinical interviews had been used and a clinical sample was collected. However, while causal relationships could not be established in this study, there is an intuition that SA precedes the development of depression, which is supported by the cited scientific literature [8–14]. The current study contributes to the knowledge of this phenomenon, the development of more effective therapeutic protocols, and awareness of prevention and early intervention.

In conclusion, the results of this study show that (1) SA and the presence of depression present a positive and significant correlation, and simultaneously correlate in a negative and significant way with the EI; (2) EI is a moderating variable in the relationship between SA and depression; and (3) country acts as a covariate in these relationships.

Specifically, the data indicate that adolescents with SA who also experience depression tend to have lower levels of EI. This is evident from the decreased impact of SA on depression when EI is accounted for. Various EI factors, such as social awareness, social relationships, adaptability, stress management, and assertiveness, are hypothesized to influence this relationship and contribute to the development of depression. Conversely, low self-esteem, reduced happiness, and low optimism within EI are associated with higher levels of depression, suggesting that the SA-depression link varies depending on an individual's EI capacity.

The moderation analysis provides a deeper understanding of how EI impacts the relationship between SA and depression. The significant moderating effect of EI underscores its importance in assessing the connection between SA and depression among adolescents. By offering a comprehensive perspective on how these variables interrelate, the study highlights the role of EI in mitigating the adverse effects of SA on depression.

The findings emphasize the necessity of early interventions to enhance EI, which could reduce the risk of depressive disorders during adolescence and early adulthood. Prompt identification and intervention for adolescents with SA can decrease the likelihood of developing severe depressive episodes, which are often associated with increased frequency, prolonged duration, and higher severity, potentially leading to suicidal ideations and attempts [98]. Moreover, when exploring the relationship between SA, depression, and EI, it is essential to consider cultural and socioeconomic factors. These findings advocate for the integration of EI-focused programs in schools and mental health practices, as well as further research to understand and address the cultural nuances affecting these relationships.

## Summary

This study investigates how Trait Emotional Intelligence (EI) moderates the relationship between Social Anxiety (SA) and Depression among adolescents in Spain and Portugal. Using a cross-sectional approach with 1,456 participants, the analysis revealed that the association between SA and depression varies depending on levels of EI. Specifically, adolescents with low or moderate EI were found to experience a stronger link between SA and depression, while those with high EI showed no statistically significant relationship. Cultural differences between the Spanish and Portuguese samples added further depth to the findings, suggesting that context plays a role in the moderating effect of EI. The research contributes to the understanding of protective factors in adolescent mental health. By highlighting the buffering role of EI, it provides evidence that higher emotional competencies can reduce the psychological burden of SA and its progression to depression. These findings underscore the potential of EI-focused interventions in schools and mental health services. Such programs could help adolescents manage SA more effectively, lowering the risk of depression and improving their overall well-being. Future studies should focus on longitudinal methods to clarify causality and investigate the long-term impact of interventions aimed at enhancing EI. Additionally, exploring how cultural and systemic differences shape these relationships may offer insights for tailoring interventions to specific populations.

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**Data Availability** No datasets were generated or analysed during the current study.

## Declarations

**Conflict of interest** The authors declare that there are no conflicts of interest.

**Ethical Approval** The approval of the Ethics Committee of the University Miguel Hernández and the National Commission of Data Protection (CNPD), the General Direction of Innovation and Curriculum Development (DGIDC) and the Ethics Commission of the Faculty of Psychology and Educational Sciences of the University of Coimbra was obtained for this study to collect information from the participants and to publish the results through the data obtained. The centers were responsible for obtaining informed consent for student participation.

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